

# A Review of the Eighth District's Agricultural Economy in 1986

*Kenneth C. Carraro*

**A**GRICULTURE is one of the most important industries in the Eighth Federal Reserve District. The District is home to important food and feed processing businesses in Arkansas and the St. Louis area, as well as the extensive agricultural transportation networks of the Mississippi, Missouri, Ohio, Arkansas and Tennessee-Tombigbee waterways. Ranging from farm-level production through farm inputs and commodity processing up to final consumption, the agricultural sector accounts for more than 20 percent of the nation's gross national product.<sup>1</sup> Because of the high concentration of agriculturally related business, agriculture likely accounts for an even higher percentage of total District output.<sup>2</sup>

Eighth District agriculture consists of an extremely diverse mix of crops, including such traditionally "southern" crops as tobacco, rice and cotton as well as the Corn Belt crops of soybeans and corn. Livestock production ranges from racehorses in Kentucky and the nation's largest broiler industry in Arkansas to the

traditional hog and cattle operations throughout the entire region. This article provides an overview of District agricultural highlights in 1986.<sup>3</sup>

## CROP HIGHLIGHTS

### *Production*

Since a very high number of farmers participated in government price support programs, which mandate acreage reduction, crop production dropped significantly in the District. The number of crop-acres harvested in the four states that make up the bulk of the District's economy — Arkansas, Kentucky, Missouri and Tennessee — fell from 32.3 million acres in 1985 to 30.8 million acres in 1986, a drop of 4.7 percent. This decline followed a 5.5 percent decline in 1985.

Weather conditions varied widely across the District. Tennessee, Kentucky and Arkansas suffered from particularly dry conditions early and midway through the growing season. This dryness was a by-product of the severe drought that was centered in the Carolinas and Georgia. While late season rains and favorable harvest conditions allowed major crops to recover to

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<sup>1</sup>*Economic Report of the President*, p. 148.

<sup>2</sup>The Eighth Federal Reserve District officially comprises all of Arkansas and parts of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. In most cases, this article uses data for the entire states of Arkansas, Kentucky, Missouri and Tennessee to represent the District. Due to the availability of comprehensive bank financial data, the entire District is referred to in the section covering agricultural lenders.

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<sup>3</sup>Data for crop and livestock production were derived from the annual reports of the four states' agricultural statistics services. Price data were obtained from the USDA's Agricultural Outlook publication while farm income and assets data are from the USDA's Economic Indicators of the Farm Sector. Sources of farm lender data are footnoted in the appropriate section.

Table 1  
Crop Yield Data<sup>1</sup>

ARKANSAS				KENTUCKY			
	1986	1985	81 to 85 Average		1986	1985	81 to 85 Average
Cotton	605	767	622	Corn	92	102	90
Rice	5300	5200	4578	Soybeans	32	34	28
Sorghum	62	72	63	Tobacco	2081	2300	2161
Soybeans	21	26.5	23	Wheat	33	34	37
Wheat	41	32	39				
MISSOURI				TENNESSEE			
	1986	1985	81 to 85 Average		1986	1985	81 to 85 Average
Corn	116	110	90	Corn	74	98	83
Cotton	591	653	535	Cotton	573	600	514
Sorghum	81	83	73	Soybeans	25	31	25
Soybeans	33.5	34.5	27	Tobacco	1720	2065	1991
Wheat	33	39	39				

<sup>1</sup>Crop yields are generally expressed as a unit of quantity per acre. Soybeans, sorghum, wheat and corn yields are measured in bushels per acre, while rice, cotton and tobacco yields are measured in pounds per acre.

SOURCE: Agricultural Statistics Service in each of the four states.

near their five-year average yields, the lower acreage resulted in overall reduced crop production in the District. Table 1 provides yield data for major crops in the four-state region for 1986, 1985 and the five-year average yields from 1981 to 1985.

In Arkansas, rice and wheat yields surpassed both their 1985 yields and their yield patterns of the past five years. Total rice production increased by .9 percent in 1986. Yields of other major crops in the state, such as soybeans, sorghum and cotton, were below their 1985 levels but near the average yields over the past five years. Total soybean production in the state was 29.3 percent lower in 1986 than in 1985 because of lower yields and smaller acreage.

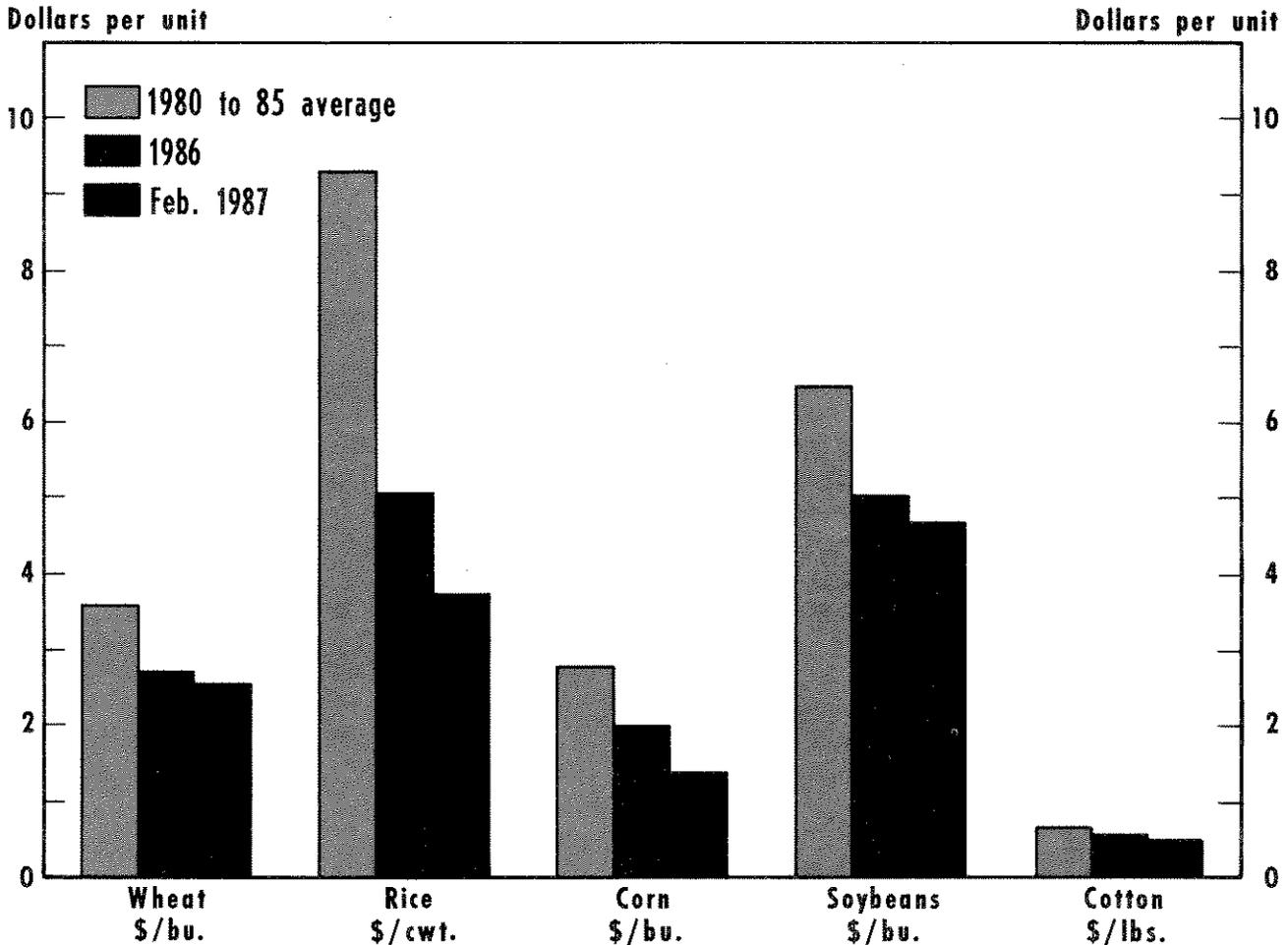
Yields of all major crops in Kentucky were below the yields of 1985 but were near the five-year average yields. Total production of the state's most valuable crop, tobacco, was down 22.7 percent because of production controls and dry weather. The federal price support program for tobacco, which controls its production, was primarily responsible for a 14.6 percent decline in harvested acreage, while dry weather caused below-average yields. Soybean yields, which

benefited most from the late-season favorable weather, were above their five-year average, while most other crops were close to their five-year average.

Of the four states, Tennessee was the most severely affected by the year's dry weather. Yields of all major crops were below their 1985 levels. Cotton yields, however, were above the average of the past five years. The soybean yield was approximately at the longer-term average for the state while corn, tobacco and most other crop yields were below their five-year averages. Soybean production in 1986 was 17.1 percent lower than in 1985, while corn production was 28.2 percent lower than 1985 due to smaller yields and reduced acreage for both crops.

Missouri crop farmers benefited from the most favorable weather in the District. All crop yields in 1986, except for wheat, were above their five-year averages. The 1986 corn yield of 116 bushels per acre was significantly higher than the previous record set in 1985. Total corn production was 2.9 percent higher. Sorghum yields were slightly below their record yields of 1985. Although 200,000 acres of soybeans were lost to late-season flooding, soybean yields were also at near-

Chart 1  
**Crop Price Comparisons**



record levels in the state. Total soybean production was only 1.6 percent smaller in 1986 than 1985.

**Prices**

Prices of food and feed grains fell sharply, despite the lower average levels of output nationally. Soybean and other oilseed crop prices were also below 1985 levels.

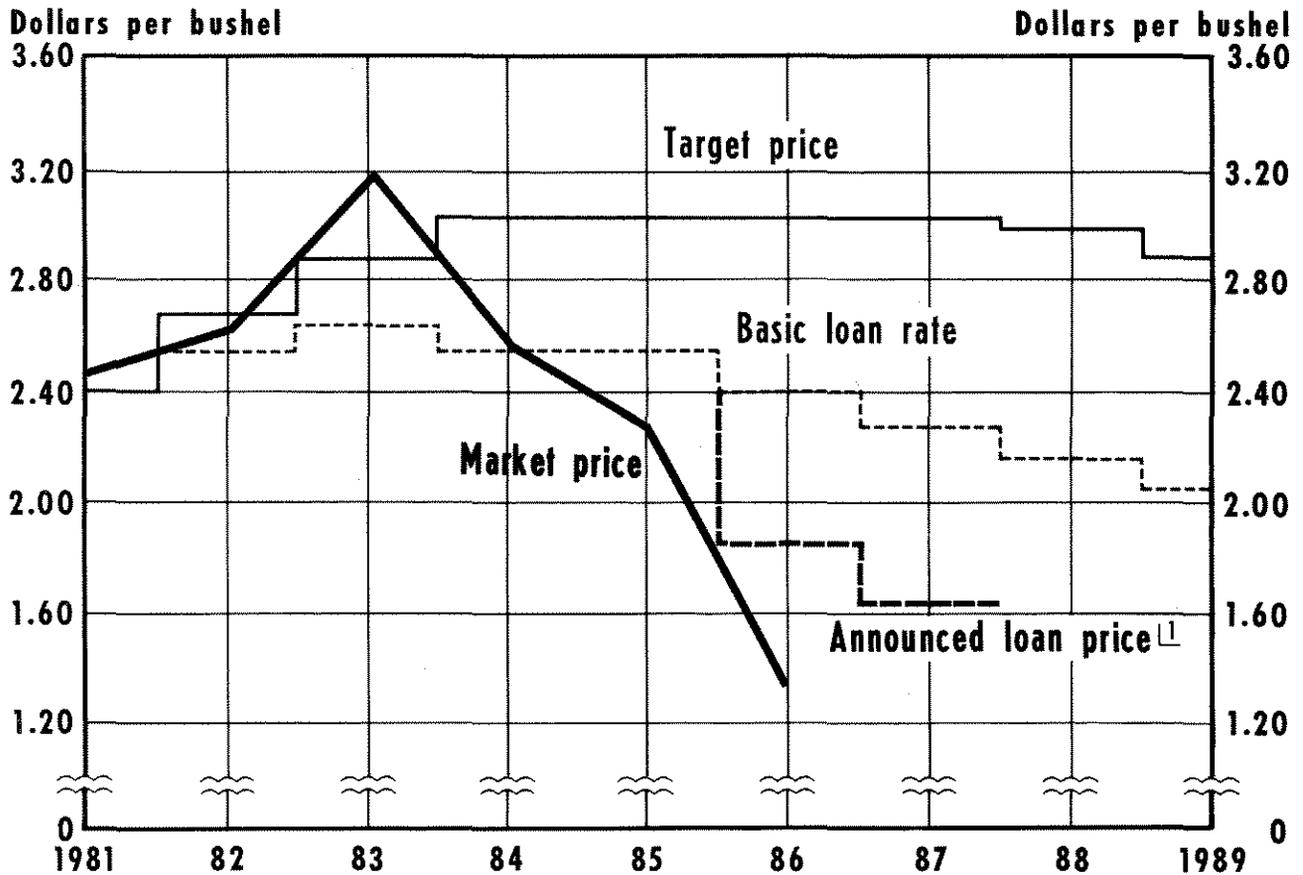
Chart 1, which compares the prices for major crops in the Eighth District, shows that prices in 1986 were below the average prices over the 1980-85 period. Moreover, the most recent crop prices (February 1987) indicate that the pattern of falling prices has continued.

Sharply lower levels of price support loans provided by the discretionary authority of the 1985 Farm Bill were primarily responsible for the crop price declines. The loan levels usually provide a lower bound for commodity prices. Chart 2 shows how the market price for corn has fallen as the loan support price was lowered sharply over the past two years. Food grain prices fell 18.0 percent from 1985 levels; feed grain prices were down 21.3 percent.

For some crops, such as corn and wheat, market prices have declined to levels well below their price support levels. Some analysts have attributed this to the government's use of generic commodity certificates in lieu of direct cash payments to farmers to reduce stocks of government-owned commodities

Chart 2

## Corn: Target Price, Loan Rate and Market Price



□ Set by the Secretary of Agriculture within mandated limits.

Source: U.S. Department of Agriculture. See Economic Report of the President 1987, p.154.

(see shaded box on opposite page for more information). The certificates have a stated value and allow the holder to receive commodities stored by the Commodity Credit Corporation (CCC). The commodities then may be sold at prevailing market prices. The release of government stockpiles tends to increase market supply and reduce market prices.

Soybean prices also were below 1985 levels despite lower total production in 1986 primarily because of the large stocks that have been accumulated in the United States. As chart 3 indicates, while soybean stocks held elsewhere in the world remained level over the last eight years, U.S. stocks of soybeans have grown sharply since 1983 when a drought and the

Payment-In-Kind (PIK) program reduced stocks sharply.

### LIVESTOCK HIGHLIGHTS

#### Production

District cattle and calf production, which declined in both 1984 and 1985, bounced back in 1986, increasing by 2.2 percent. Cattle and calf production increased in Arkansas and Kentucky, while declining in both Missouri and Tennessee. District hog production, which also declined in 1984 and 1985, continued its descent, closing at 6.5 percent lower in 1986 than in

## Generic Commodity Certificates

In 1983, the United States Department of Agriculture (USDA) authorized the Payment-In-Kind (PIK) program to reduce the mounting surplus of government-owned commodities. Farmers were given surplus commodities in exchange for large reductions in crop acreage. Farmers then were free to use the grain as feed or sell it at the prevailing market price. The 1985 Farm Act makes similar provisions for government-owned commodities to be used in partial payment of price supports. Under the provisions of the Farm Act, the USDA issues certificates for a stated dollar value that can be exchanged for government owned commodities.

The certificates can be redeemed for any of the numerous commodities that the government has acquired through the Commodity Credit Corporation, therefore the name "generic certificates." Certificate holders are able to sell the certificates. In

fact, the certificates have become somewhat of a commodity of their own right. The Merchants' Exchange of St. Louis, for example, has created a market for the certificates. At one point in 1986, certificates sold at a premium of 30 percent over their face value.

One important effect of the certificates has been to increase the supply of commodities and reduce market prices. This has occurred because commodities that otherwise would not be available to the market under the provisions of the government storage programs, are being redeemed by certificate holders and sold on the market. The mechanics of the generic certificate program have given farmers a *de facto* marketing loan price support, which allows them to receive a supported price for their commodities and then sell them at world market prices.

Chart 3

### Soybean Carryover Stocks

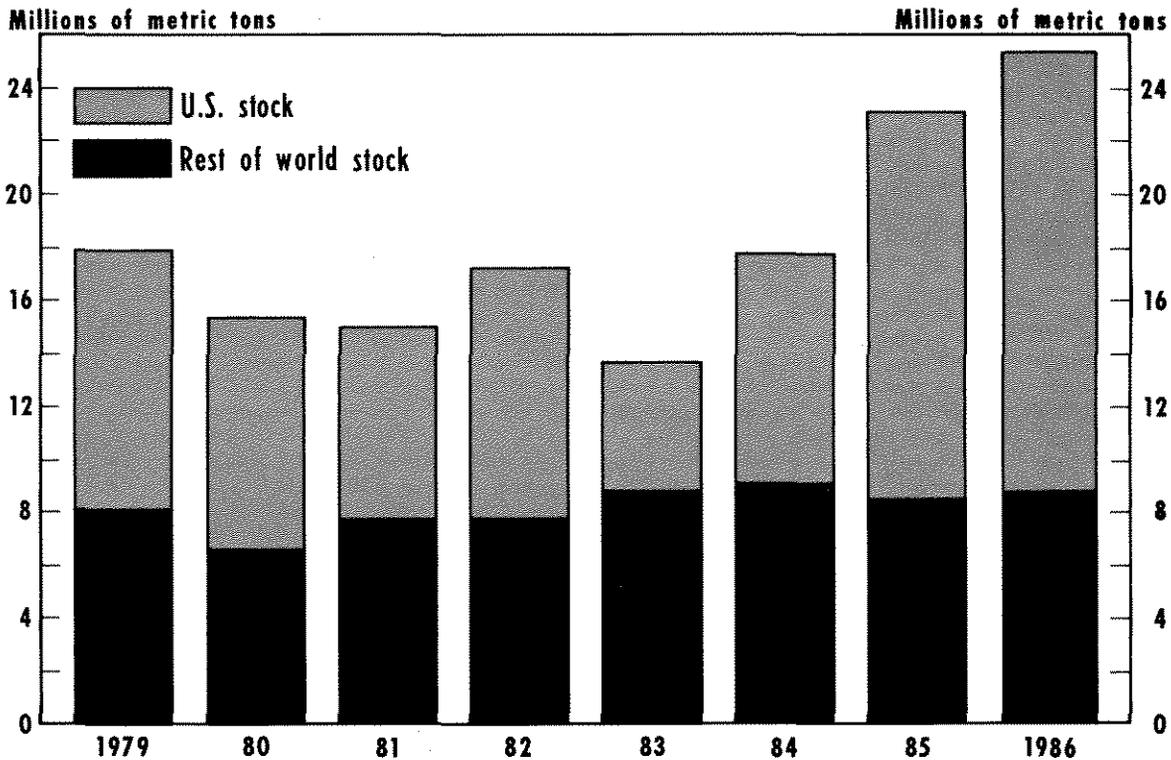
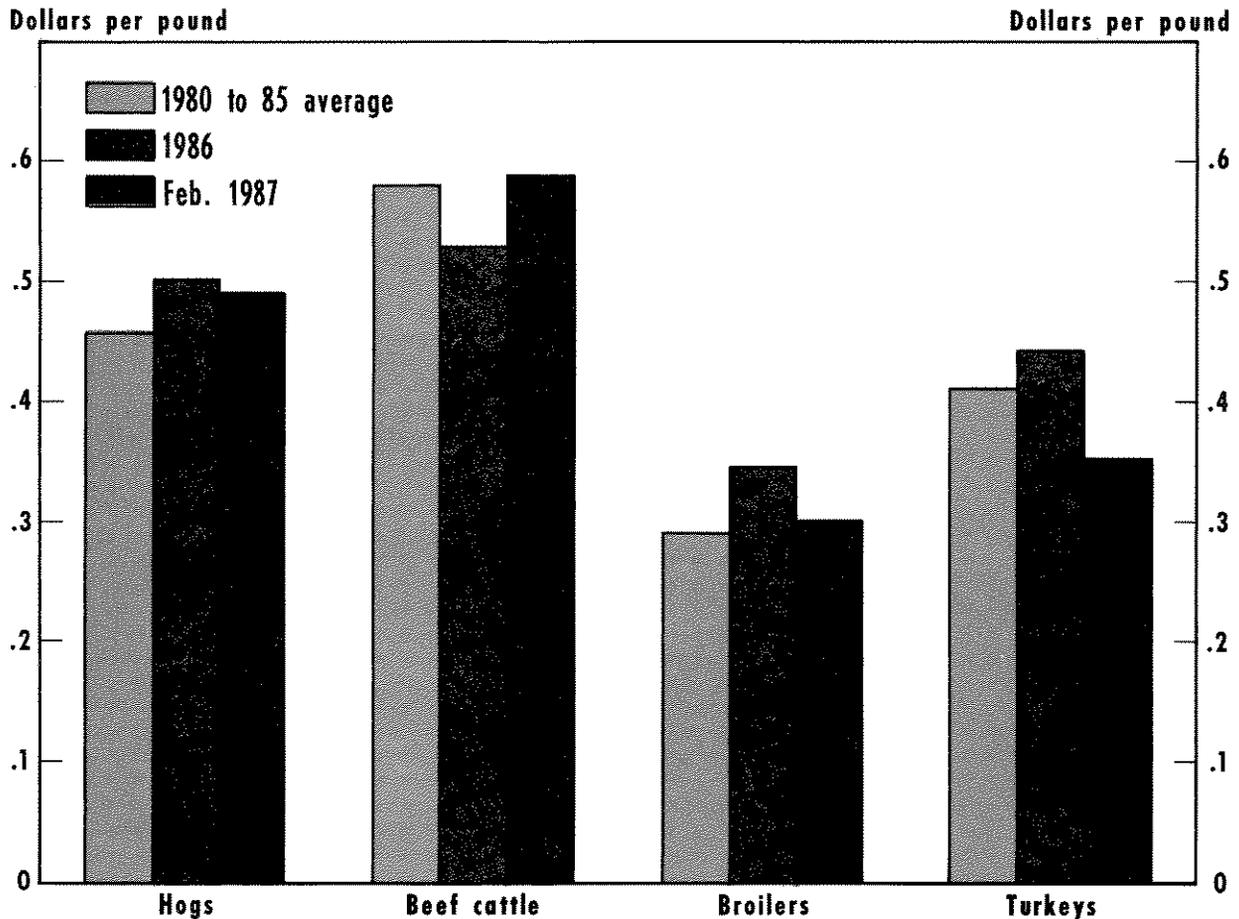


Chart 4  
**Livestock Price Comparisons**



1985. Missouri, the most important hog-producing state in the District, showed a decline of 10.9 percent from 1,234 million pounds in 1985 to 1,099 million pounds in 1986.

Poultry production continued to grow, especially in Arkansas, the nation's leading producer of broilers. Broiler production accounts for over 25 percent of all farm cash receipts in Arkansas. Turkey production in Missouri also has exhibited strong growth over the past two years.

**Prices**

Livestock prices remained below 1985 levels through the first half of 1986, but price hikes during the second half boosted the price index of meat animals up 2.1 percent in 1986. As chart 4 shows, over a

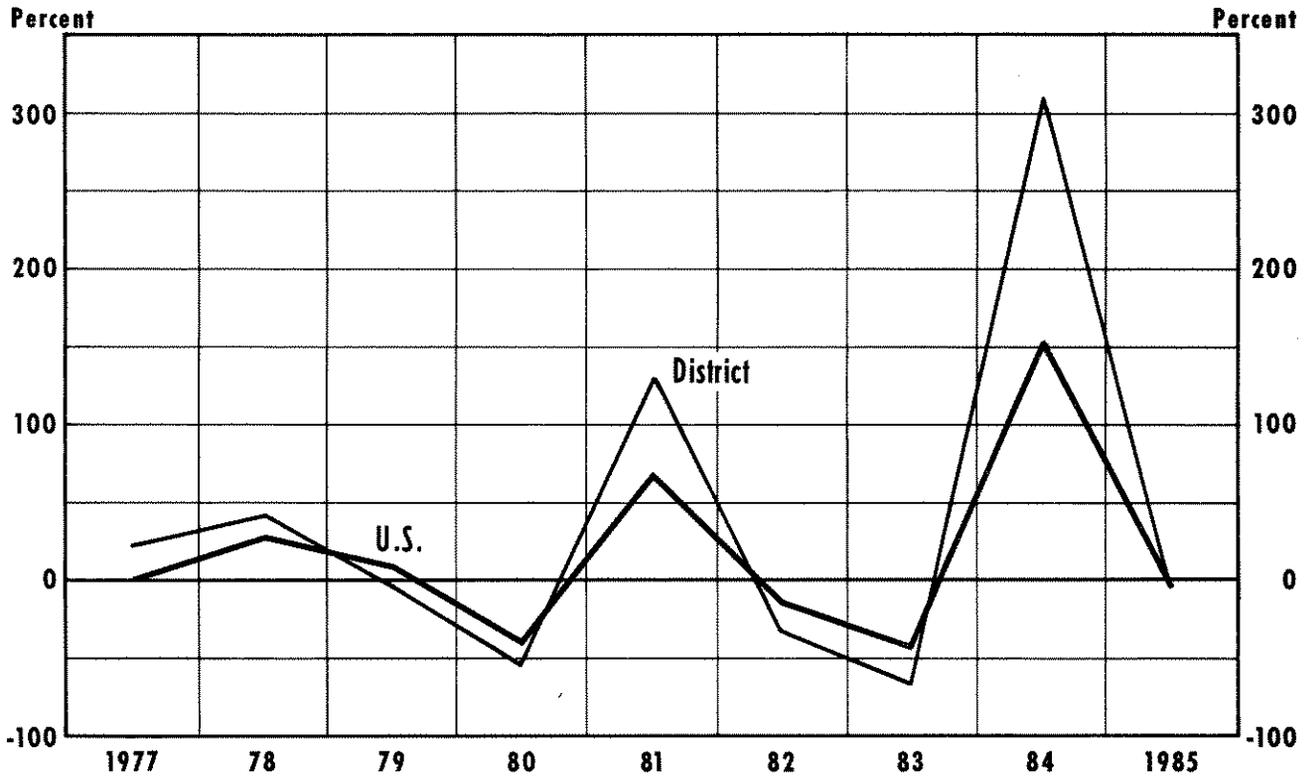
longer-term perspective, all major livestock groups except beef cattle registered prices in 1986 that were higher than the average price over the 1980-85 period. In addition, both beef cattle and hog prices in early 1987 have remained near or above their 1986 average levels.

**FARM FINANCES**

Nationally, total net farm income has been estimated at \$33 billion to \$37 billion in 1986, up from \$30.5 billion in 1985. Sharply lower production costs are responsible for the increase. Net farm income is forecast at the same level for 1987. Chart 5 shows the relationship between the growth of District net farm income and national net farm income growth from 1977 to 1985. Although 1986 net farm income data for

Chart 5

### Net Farm Income Growth



individual states will not be available until this fall, the close relationship between changes in national and District farm income suggests that District net farm income also rose in 1986 and will be unchanged in 1987.<sup>4</sup>

Government payments accounted for a growing share of farm income both nationally and District-wide. Nationally, government payments of \$12 billion represented approximately 34 percent of total net farm income in 1986; they are expected to grow to \$16 billion this year, almost half of projected net farm income.

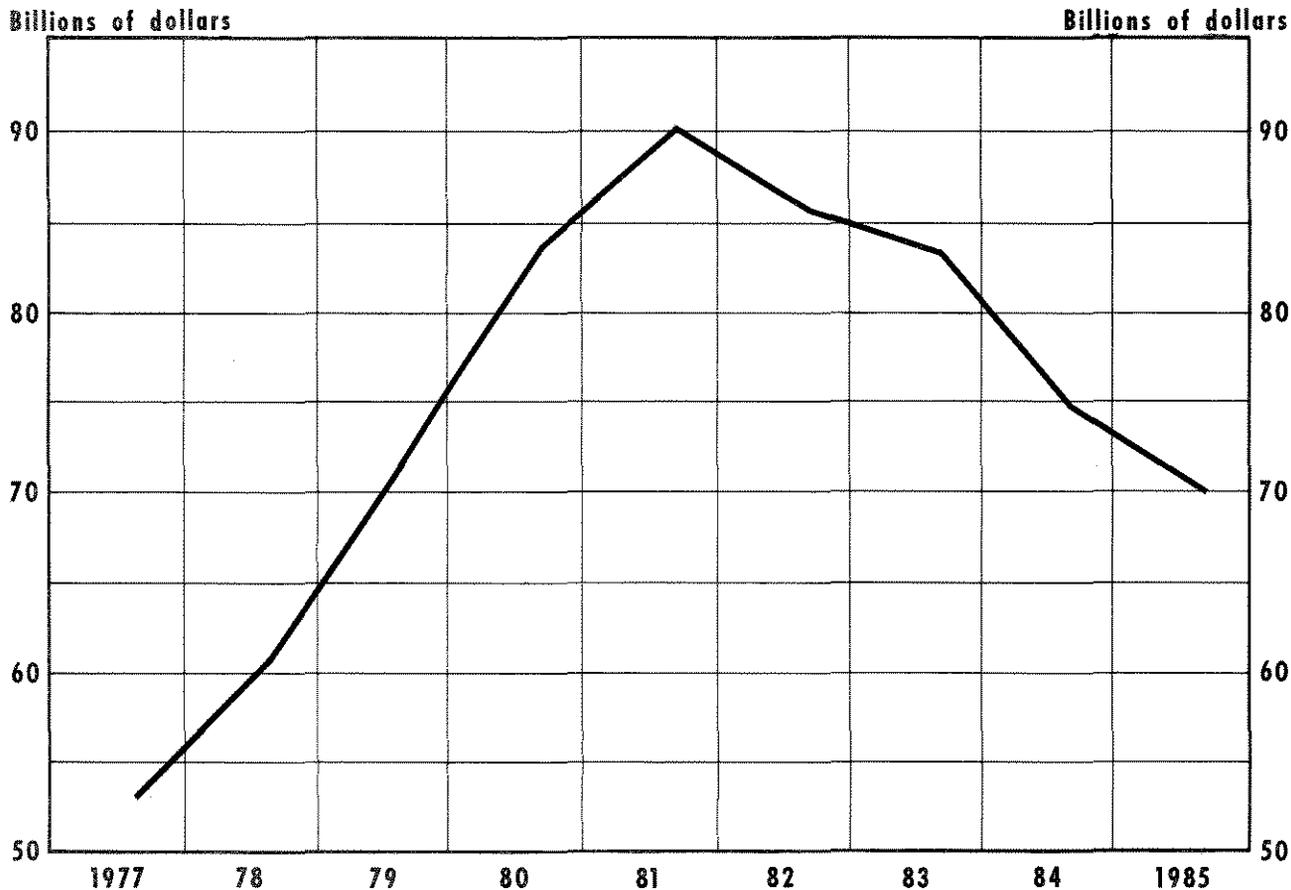
In 1985, farmers in the four-state District region received payments of \$626 million. This figure repre-

sented 20.1 percent of net farm income for the year. Government payments to District farmers were undoubtedly even larger in 1986, for several reasons. First, price support loan levels were lowered, while target prices were unchanged. The wider gap between target and support prices caused a larger proportion of crop payments received by farmers to come from direct government payments. Second, under a marketing loan program for rice and cotton, which are major crops in Arkansas, Missouri and Tennessee, farmers repaid their price support loans at the lower world commodity price rather than at the higher price they received for the original crop loan. This, of course, implicitly allowed farmers to keep a portion of their original CCC loan as a direct support payment.

Meanwhile, farm production expenses dropped for the second consecutive year in 1986. Lower levels of farm debt, lower interest rates on such debt and reduced expenses for production inputs contributed to the reduction. The chief areas of input price declines

<sup>4</sup>When net farm income data are adjusted for inflation, it becomes apparent that farm income has been declining since World War II, with the exception of the early 1970s. See Belongia (1986) for a detailed examination of the long-term decline in the farm sector.

Chart 6  
**Total Farm Assets**  
 Arkansas, Kentucky, Missouri and Tennessee



were petroleum (used for fuel, fertilizers and chemicals) and feed grains (used for animal feed).

As chart 6 shows, the value of total farm assets in the four-state region of the District has been declining steadily since 1981. In 1986, land values in the District continued to decline in Arkansas, Kentucky and Missouri, but increased in Tennessee. Table 2 indicates that, of the four-state region, Arkansas experienced the largest land value decline in 1986, while Missouri had the largest decline since the 1981-82 peak.

**FARM LENDERS**

The overall volume of farm loans outstanding in the District continued to decline in 1986. This secular

decline is associated with lower input costs, falling land values, increased government payments, and the weakened financial position of many farm borrowers.

The two most important sources of credit for farmers in the District are agricultural banks and the Farm Credit System (FCS).<sup>5</sup> The volume of farm loans outstanding at District agricultural banks increased by

<sup>5</sup>Agricultural banks are considered to be commercial banks with above-average percentages of farm loans. At the end of 1986, agricultural banks were those with more than 16 percent of their total loans in farm loans. All bank data are derived from banks' end-of-year Reports of Conditions and Income, which FDIC-insured banks must file. The FCS has offices in St. Louis and in Louisville. The St. Louis District covers the entire states of Arkansas, Illinois and Missouri. The Louisville District includes Indiana, Kentucky, Ohio and Tennessee.

Table 2  
District Farmland Values

	February 1987 (\$/acre)	Change from February 1986	Change from peak value <sup>1</sup>
Arkansas	\$ 634	- 10.1%	- 42.2%
Kentucky	791	- 9.1	- 25.2
Missouri	552	- 8.9	- 44.2
Tennessee	1,012	+ 2.0	- 5.4

Land values peaked in Arkansas and Kentucky in 1982 and peaked in Missouri and Tennessee in 1981.

SOURCE: Agricultural Statistics Service in each of the four states.

.9 percent from 1985 but was 6.1 percent lower than in 1984. The slight increase at agricultural banks in 1986 can be attributed to the 13.1 percent growth in farm loans secured by farm real estate.<sup>6</sup>

Total farm loans outstanding at the two FCS Districts fell by 19.4 percent from 1985 and by 34.3 percent from 1984, a much steeper drop than for most other farm lenders. These declines in the share of farm debt held by Farm Credit System lenders may be influenced by factors such as the higher interest rates charged by FCS lenders relative to commercial banks or concern on the part of FCS borrowers over the possible loss of value of borrower stock.

According to preliminary data, the financial condition of agricultural banks in the District has begun to improve. The delinquency rate on all loans at District agricultural banks fell from 6.4 percent at the end of 1985 to 5.8 percent at the end of 1986. The delinquency rate on agricultural loans fell from 6.6 percent of total farm loans outstanding at the end of 1985 to 5.4 percent at the end of 1986.<sup>7</sup> The proportions of total loans and agricultural loans charged off at agricultural

<sup>6</sup>Melichar (1987) cites a Federal Reserve survey indicating that most of the new farm loans secured by real estate have short maturities and are for farm operating or other non-real-estate purposes. This suggests that bankers may be demanding farmland as collateral for operating and machinery loans.

<sup>7</sup>The delinquency rate includes loans that are 30 days or more past-due as well as nonaccrual loans. The agricultural loan delinquency rate is calculated as delinquent agricultural loans over the sum of farm non-real-estate loans and farm real-estate loans outstanding. The delinquency rates on all loans and agricultural loans declined at agricultural banks in each of the District states except Mississippi where both rates increased slightly.

banks, while up sharply in 1985, declined slightly in 1986.

An additional indication of this improvement can be found in the number of agricultural banks at which the volume of past-due and nonaccrual loans exceeds bank capital and loss reserves. Most banks that failed in 1986 reported past-due and nonaccrual loans in excess of the bank's capital and reserves. The number of agricultural banks in this position, which had been steadily increasing for a number of years, peaked in 1985; by the end of that year, 17 agricultural banks in the District were in this condition. Only 11 such District agricultural banks fell into this category in 1986. Moreover, only three District agricultural banks failed last year.

Profitability at District agricultural banks, as measured by banks' return on assets and return on equity, improved in 1986 after stabilizing in 1985. Prior to 1981, agricultural banks generally had enjoyed significantly stronger earnings than similar-sized nonagricultural banks. Since 1981, however, the earnings gap between these kinds of banks first narrowed and then was eliminated because of rising loan losses and provisions to cover these loan losses at agricultural banks. Chart 7 plots the profitability of nonagricultural banks and similar-sized agricultural banks.<sup>8</sup>

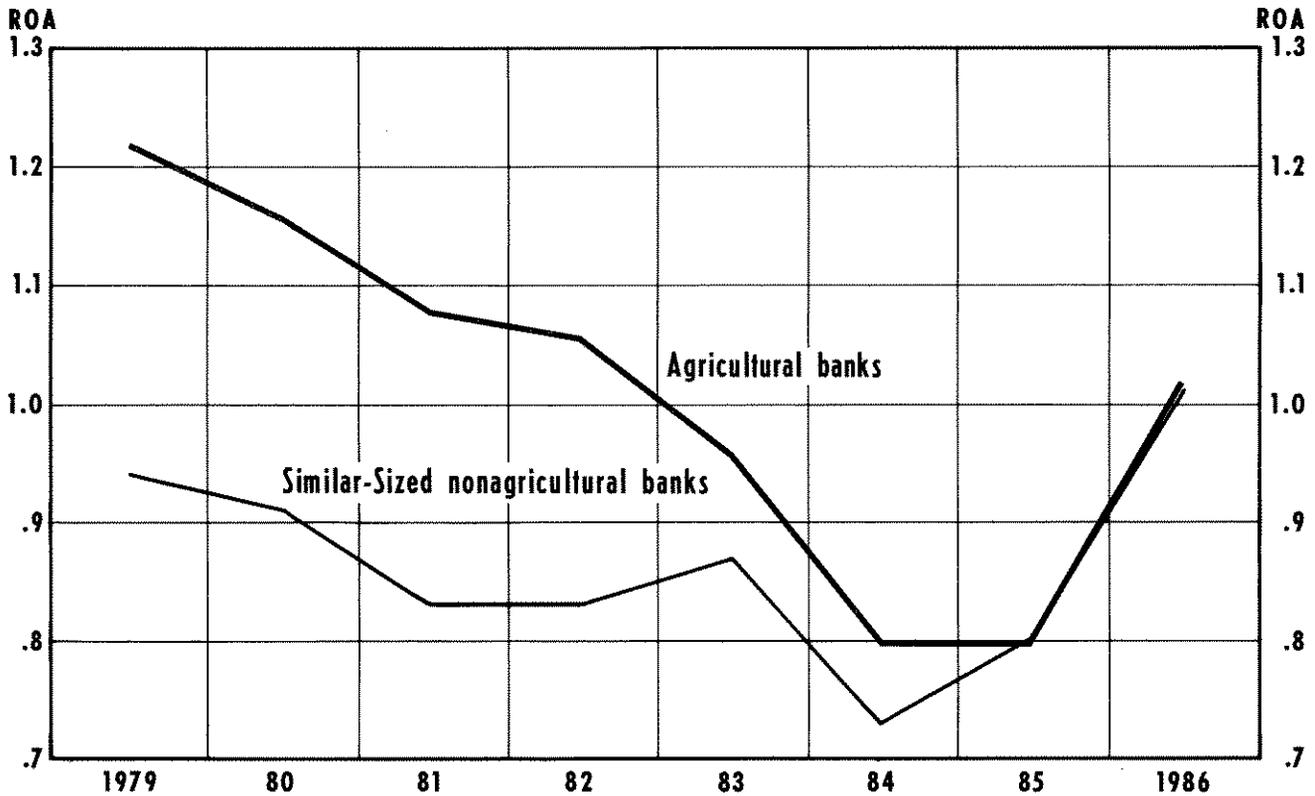
While agricultural banks have shown some improvement, problems at the two Farm Credit Districts in the area have continued to worsen. The rate of nonaccrual and restructured loans at the two FCS Districts combined rose from 9.3 percent of all loans at the end of 1985 to 14.3 percent at the end of 1986.<sup>9</sup> The combined rate of loans charged off at the two Districts rose from 1.8 percent to 2.5 over the same period.

<sup>8</sup>This comparison was made by first calculating the average size and standard deviation for agricultural banks. Banks were restricted to those smaller than the average agricultural bank size plus one-half standard deviation. For 1986, this size limit was \$57.9 million in total bank assets. Nonagricultural banks include banks with an agricultural loan to total loan ratio of less than 5 percent.

<sup>9</sup>This rate is not strictly comparable to the delinquency rate for commercial banks. It is calculated as the sum of nonaccrual and restructured loans over total loans outstanding for the Federal Land Banks, the Federal Intermediate Credit Banks and the Banks for Cooperatives. In all cases, the amount of restructured loans are extremely small relative to the nonaccrual loans. These data are derived from the annual reports of the St. Louis and Louisville FCS Districts. When more complete data from the Farm Credit Administration's Summary Report of Conditions and Performance are used, the rate of nonperforming loans rose from 13.5 percent on September 30, 1985, to 24.6 percent one year later. Nonperforming loans include nonaccrual and restructured loans plus "other high-risk loans."

Chart 7

**District Bank Profitability**  
Return on Assets



Although loan chargeoffs increased in the District, total net income improved at the local FCS lenders. Losses at the Farm Credit Banks of St. Louis were \$121 million in 1986, down from \$254 million in 1985. Losses at the Farm Credit Banks of Louisville fell from \$294 million to \$101 million over the same period. Nationally, losses at the Farm Credit System were \$1.9 billion for all of 1986, down from the \$2.7 billion loss in 1985.

While losses have decreased both nationally and locally, the capital of the Federal Land Banks in both St. Louis and Louisville has been reduced to the point that their stock, which borrowers must purchase to obtain a loan, has become impaired. This means that, under generally accepted accounting principles, the stock's book value is less than the \$5 full par value. Currently, the stock is being redeemed at full par value thanks to the use of regulatory accounting principles that were permitted under the Farm Credit Act Amendments passed by Congress in 1986.

Both the St. Louis and Louisville Farm Credit Banks called upon the loss-sharing provisions of the Farm Credit System to receive financial assistance from other entities of the System in 1986. The Federal Land Bank of Louisville received \$140 million (net) from other institutions, while the Louisville Federal Intermediate Credit Bank and Bank for Cooperatives were net contributors of financial assistance under the System's Bank Capital Preservation Agreement. The Federal Land Bank of St. Louis received \$15.6 million in financial assistance but contributed \$18.4 million to other institutions. The other two St. Louis FCS banks were net contributors as well.

**SUMMARY**

District agricultural conditions in 1986 exhibited a large degree of variability due to weather conditions. While record yields of some major crops occurred in

Missouri, Tennessee yields were below average due to dry weather. In general, however, District-wide yields were near their five-year trend levels.

Government farm policy had a major effect on agriculture. In part because of government price support programs that require acreage reductions, harvested acreage fell by 4.7 percent in 1986 after falling 5.5 percent in 1985. Despite the reduced acreage, crop surpluses continued to mount causing crop prices to fall. Falling crop prices in turn led to high levels of direct government price support payments. Such payments to District farmers were particularly high for cotton and rice, the two crops supported by the government's marketing loan program.

While crop producers were faced with falling market prices, livestock producers experienced steady or rising prices and increasing profits due to lower feed costs.

As was true for the nation, District net farm income is predicted to increase from 1985. Farm debt continued to decrease in 1986 as a result of lower production levels and lower input costs. Despite the lower debt levels, farmers' debt-to-asset ratios have deteriorated because of falling asset values.

During 1986, agricultural banks generally reversed a five-year pattern of declining profitability and rising delinquency rates. While the Farm Credit System had smaller losses in 1986 than in 1985, loan delinquency rates rose sharply and the two local Farm Credit System Districts required financial assistance from other Districts.

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