

Nothing is forever: Boom and bust in Midwest farming

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Agricultural production in the Seventh Federal Reserve District is overwhelmingly concentrated on the production of feed and livestock products. Five commodities—corn, soybeans, hogs, cattle and milk—account for almost 90 percent of the marketing receipts of District farmers. Thus, the forces that have influenced supply and demand for these commodities since the 1970s have controlled the fortunes of the District's agricultural sector.

This period encompasses the economic boom of the 1970s that saw U.S. agriculture become inextricably connected to international commodity markets. During the boom, resources were drawn to the production of export commodities and away from other traditional uses. It was a period of rapid expansion in agriculture, and was accompanied by a sharp increase in debt to fund land purchases and the highly capital intensive production processes that characterize the U.S. agricultural sector.

The experience of the 1980s, however, has been far different. A drastic decline in exports of crops important to the District, combined with a severe financial squeeze on highly leveraged farm operators, fostered a series of wrenching adjustments in the agricultural sector. For many the period of adjustment is not ended, but there are growing indications that the long decline in the fortunes of the District's agricultural sector may be ending. However, these indications point to a period of stabilization in agriculture and not to a return to the rapid growth of the previous decade.

The rise in corn and soybean output during the 1970s was spurred by an increase in the demand for these commodities. Domestic utilization of corn increased by 30 percent while soybean use rose 45 percent. Corn used for feeding livestock and poultry, which accounts for the bulk of domestic corn demand, rose by a fourth during the period. The number of cattle on feed held at high levels through most of the decade, as did hog inventories. Domestic use of corn for food, seed, and industrial purposes, although only a small component of total demand, jumped more than 75

percent between 1970 and 1980. Much of this increase came from the development of markets for high fructose corn syrup and grain alcohol production for industrial and fuel uses.

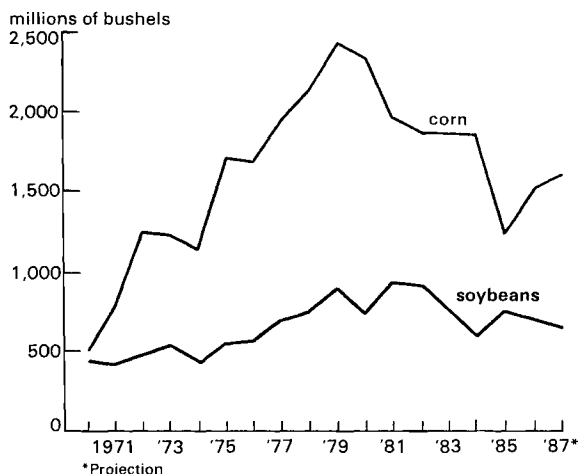
Although the increase in domestic utilization was substantial, the major impetus for the expansion of corn and soybean output came from the burgeoning world demand for U.S. grains and feeds. Overall, United States agricultural exports rose at an unprecedented annual rate of 8 percent during the 1970s. (see Figure 1). During that period the U.S. share of world coarse grain trade grew from about 40 percent to more than 70 percent. Corn exports, the principal component of the nation's coarse grain exports, grew at an annual compound rate of almost 16 percent. Soybean exports grew at a rate in excess of 6 percent per year and consistently held a world market share of about 80 percent. Combined with strong domestic demand, these increases in exports ushered in a boom period for Midwest grain farmers.

As the leading corn and soybean producers, farmers in District states responded to the growing demand in world grain and oilseed markets by greatly expanding output. By the early 1980s, corn acreage harvested in District states had jumped about 28 percent from the decade earlier level, with large increases recorded in every District state. Moreover, impressive gains in per acre yields boosted output even more, resulting in District-wide production in the early 1980s almost 60 percent above the levels of ten years earlier.

Soybean production in the District registered substantial gains as well. Acreage harvested increased about 43 percent during the 1970s, while soybean production increased by more than 64 percent. Once again, increases were recorded throughout the District, with the major producing states, Illinois, Indiana, and Iowa, recording increases of a third to a half over early 1970s levels.

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Figure 1
Exports of major District commodities



The shift in resources toward corn and soybean production is reflected in the more intensive use of cropland in the District. Cropland under cultivation in District states increased almost 7 percent between 1974 and 1982. During that period, idled cropland acres dropped almost 13 percent. However, the most substantial shift occurred in cropland used for grazing purposes. By 1982, the number of acres of cropland used as pasture in the District states had dropped almost 36 percent from eight years earlier.

This shift toward crop production to supply an expanding world market contributed further to a reduction in the importance of livestock production that had been occurring for some time in most areas of the District. After accounting for almost two-thirds of total cash receipts in the mid 1960s, livestock marketings had fallen to less than half of the total receipts generated by District farmers by 1980. Only Iowa and Wisconsin were generating more receipts from livestock marketings than crop marketings among the District states at the end of the 1970s.

Much of the falloff in livestock marketing receipts in the District was accounted for by the decline of the cattle feeding industry. By 1980, cattle feeding in the District was down about a fourth from 10 years earlier. The plains states of Texas, Kansas, Nebraska, and Colorado experienced substantial gains in cattle feeding, replacing the District as the premier cattle feeding area and accounting for almost 47 percent of the cattle in feedlots at the end of 1980.

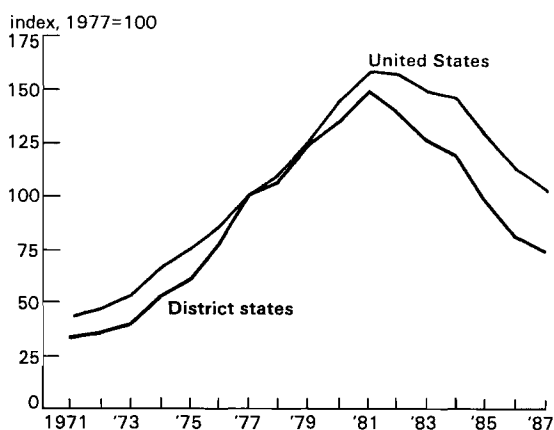
Hog production in District states largely followed the national trend during the 1970s, although some reduction in the share of year-end inventories of hogs and pigs accounted for by the five states did occur. In the mid 1960s, District states accounted for more than half of the nation's inventories of hogs and pigs, with Iowa alone accounting for a fourth of the total. By the end of 1980, however, inventories of hogs and pigs on farms in District states increased about 17 percent, while the U.S. inventory jumped about 28 percent. As a result, the District's share of total inventories slipped slightly to 46 percent, although Iowa retained its dominant position within the industry with 25 percent of the inventory of hogs and pigs.

The shift in resources toward crop production is also evident in milk production trends among District states. In 1980, milk output in the five-state region was down 2.5 percent from the level of the mid 1960s, compared to a 3.5 percent gain in production nationwide. The largest grain producers in the District, Illinois, Indiana, and Iowa, saw milk production decline by 25 to 34 percent during the period. The importance of dairy production in the region, therefore, was maintained by a 19 percent increase by Wisconsin dairy farmers.

The boom of the 1970s brought rising farm income and a rapid escalation in farmland values throughout the Midwest. Farmland in District states registered more than a four-fold increase in value during the decade of the 1970s (see Figure 2). However, the rapid increase in values was accompanied by a substantial increase in the amount of debt held by District farmers.

The rise in debt was particularly rapid in the second half of the 1970s, as farmers scrambled to acquire additional land and expand their operations to meet what many perceived as a permanent increase in demand. Between 1974 and 1979, the proportion of farm operators with debt in the District jumped from about 42 percent to more than 63 percent. In comparison, 54 percent of farm operators nationwide had outstanding debt in 1979. Moreover, the average amount outstanding to these indebted farmers doubled between 1974 and 1979. As a result, total debt outstanding to farm operators in District states underwent a three-fold increase in the five-year period.

Figure 2
Changes in farmland values



The huge increase in debt contributed further to already escalating production expenses. While higher oil prices triggered significantly higher farm expenses in the 1970s, mortgage and nonreal estate debt interest expenses boosted expenses further. By 1979, interest expenses among District states had jumped more than 150 percent from the 1974 level, and continued to rise sharply into the early 1980s. Despite the increases in interest and other expenses during the 1970s, however, farm income remained strong. Real net farm income in the District, an inflation-adjusted measure of the value of a given year's production whether it is sold, fed to livestock, or held in inventory, averaged more than 11 percent higher in the 1970s than during the previous decade.

The boom period for agriculture which characterized the 1970s ended abruptly in the early 1980s. Exports, which had fueled the expansion of production dropped off sharply, pressuring prices and income lower. Moreover, the huge expansion of debt in the late 1970s was compounded by the sharp escalation of interest rates in 1980. By 1982, interest expenses among District farmers had climbed to more than \$4.8 billion, 67 percent above the high 1979 level. As a result, many of the District's highly leveraged farm operators were experiencing severe financial stress.

The drop in U.S. agricultural exports in the 1980s is the result of a combination of forces. The worldwide recession of the early 1980s had a devastating effect on U.S. agricultural exports. Stalled economic growth

limited export demand and persistent debt problems and foreign exchange shortages in many regions of the world further dampened demand. In addition, increased production and exports by countries other than the United States contributed to mounting competitive pressures.

The success that other exporting countries enjoyed in competing with U.S. agricultural exports in recent years is attributable to a number of factors. Among these are increased production and export subsidy policies in many exporting nations. In addition, U.S. domestic agricultural and macroeconomic policies inadvertently enhanced the export opportunities of other nations and limited the cost of their subsidy programs.

Nonrecourse price-support loans from the Commodity Credit Corporation (CCC), which are the cornerstone of U.S. agricultural price stabilizing policies, had a major effect on trade patterns. Under these programs, producers can pledge commodities as collateral for a specified amount of loan per bushel, referred to as the loan rate. Farmers then have the option of repaying the loan in cash or by forfeiting ownership of the commodities pledged as collateral. The latter option is typically used when the loan rate exceeds market prices. Therefore, the loan rate can act as a floor under the market price of the supported commodity.

Following the inflation of the 1970s, farm price supports in the United States were designed to rise annually to cover anticipated increases in production costs. But, increased world production pressured prices lower, leaving loan rates well above market clearing prices and resulting in disastrous consequences for U.S. agricultural exports. Rather than being directed toward export channels to satisfy demand at the prevailing world price, U.S. commodities moved under loan and into inventories. The void this movement created was then filled by competing exporters. The situation was further exacerbated by domestic macroeconomic policies that contributed to the rising exchange value of the dollar, making U.S. commodities more expensive in terms of other countries' currencies.

Because of the dominant role played by the United States in world agricultural trade, the U.S. policy of removing commodities from market channels to maintain price supports, in combination with the appreciating value of the

dollar, formed a protective umbrella over world markets, allowing prices elsewhere to rise. That had the dual effect of encouraging additional production abroad and discouraging consumption. Moreover, the generally higher level of world prices fostered by U.S. policies reduced the cost of subsidies paid by some countries disposing of their own surplus production in world markets.

The result of these forces, along with generally favorable growing conditions in most areas of the world, was a substantial increase in output throughout much of the world. By the mid 1980s, coarse grain production in countries other than the United States had increased 14 percent since the end of the 1970s and soybean output was about a third higher than it had been five years earlier. The increases occurred in both major importing and exporting countries, and resulted in much greater competition for shrinking agricultural trade markets. In 1980, U.S. coarse grain exports accounted for about two-thirds of world trade. By 1986, U.S. coarse grain exports had dropped by 49 percent and accounted for little more than a third of world trade in coarse grains. Soybean exports hit a low in 1985 that was more than third below the 1982 peak, with world market share over the period falling from about 86 percent to 65 percent.

Despite the falloff in exports of major District commodities, production continued to expand. With price and income support payments insulating farmers from the effects of lower exports, producers responded with record corn crops in 1981 and 1982 and near-record soybean output. Crop inventories, particularly of corn, began to build to burdensome levels. To alleviate this problem, the government instituted the Payment in Kind Program (PIK) in 1983, which paid farmers in commodities to reduce their acreage of grains and cotton.

District farmers producing corn and other feed grains participated heavily in the program, sharply reducing acreage. Corn acreage harvested dropped 27 percent from a year earlier, but a severe drought further trimmed District corn production to about half the previous year's level. The drought also curtailed soybean production in District states, dropping it by about a fourth from the 1982 level.

The PIK program, combined with the drought, boosted feed grain prices sharply, transferring the financial stress that had been

experienced by grain farmers to livestock producers. High feed costs accentuated the decline of cattle feeding in the District and severely squeezed the operating margins of all livestock enterprises. By the end of 1986, the number of cattle on feed in District states had dropped another 32 percent from the 1980 level, compared to a 6 percent drop nationwide. Low and negative operating margins for hog producers following the PIK- and drought-reduced feed grain crop of 1983 contributed to a 15 percent decline of hog inventories in Seventh District states in 1985 compared to five years earlier.

Declining marketing receipts and mounting expenses pressured both income and land values in the 1980s. Despite a huge increase in government expenditures for price supports and related programs, which have averaged more than \$12 billion a year in the 1980s compared to \$3 billion in the previous decade, net farm income declined. Among District states, inflation-adjusted net farm income in the first half of the 1980s averaged less than half the level of the 1970s. The declines were most pronounced in Illinois, Indiana, and Iowa, ranging from almost 60 percent to more than 70 percent lower than the previous decade. By comparison, inflation-adjusted net farm income nationwide in the first half of the 1980s averaged 39 percent lower than in the 1970s.

The steep decline in net farm income and expectations of continuing declines precipitated a huge reduction in District farmland values. By the end of 1986, farmland values across the District had plummeted to about half of their 1981 peak. Adjusted for inflation the decline was about 60 percent from the peak. As a result of the drop, the wealth that had accumulated to farmland owners during the 1970s was completely eroded. The drop in net worth undermined the financial positions of all producers, and for some it resulted in insolvency.

The mounting financial pressures of the 1980s contributed to a decline in farm numbers. Nationwide, the number of farms dropped 9 percent between 1980 and 1986. The number of farms in District states declined by a somewhat larger proportion, falling 11.5 percent over the seven-year period. By far the largest proportional drop in farm numbers among District states occurred in Illinois, where there were almost 19 percent fewer farms in 1986 than at the beginning of the decade.

The declines in farm numbers during the 1980s extends a downturn that has been in progress since the 1930s. The 11.5 percent drop during the first seven years of the 1980s about equals the decline registered in the 1970s, but it is far short of the steep 20 percent to 30 percent declines registered in the 1960s and 1950s.

Through attrition and efforts to restructure balance sheets and streamline operations, farmers have been adjusting to the economic realities of the 1980s. Although farm debt continued to expand through 1983, it has declined steadily since that time. By the end of 1985, outstanding farm debt among the District states (excluding price support loans from the CCC) had dropped almost 11 percent from the 1983 peak. With farm debt nationwide registering a further 8 percent decline last year, it is likely that outstandings among District farmers continued to fall as well.

The sharp declines in debt, along with generally lower interest rates, have contributed to lower production expenses. Paced by a 16 percent decline in interest expenses between 1982 and 1985, total production expenses of District farmers fell by more than 6 percent over the period. Although data for individual states is not available, farm expenses nationwide fell sharply again last year, suggesting even further declines among District states. The decline in expenses largely reflects lower interest charges, and declines in input use and their prices have also been important factors.

Lower production expenses and greatly improved returns to livestock producers over the last two years along with large government payments have contributed to improving prospects for a recovery in the farm sector. With the District states benefiting from government feed grain programs and strong cattle, hog, and dairy returns, while continuing to cut production expenses, continued improvement is likely.

Further encouraging signs for District farmers are evident in export trends. Although soybean exports continue to be pressured by stiff competition from Southern Hemisphere

producers, a substantial rebound in corn and feed grain exports has occurred this year. Coarse grain exports in the current year are expected to increase almost a fourth from the dismal level of a year ago, and are projected to increase an additional 9 percent next year.

The improved outlook for grain exports is attributable to several factors. Production setbacks in some regions of the world along with greater use of export subsidies by the United States have contributed to the recent recovery of exports. In addition the lower exchange value of the dollar and important changes in commodity price support programs have greatly improved the overall price-competitiveness of U.S. grains in world markets. Although lower loan rates mandated by the 1985 farm legislation lowered prices, the introduction of generic PIK certificates have further improved the competitiveness of U.S. grain. The certificates, issued in lieu of cash for government program payments, can be exchanged for commodities owned by the CCC or used to redeem commodities pledged as collateral for CCC price support loans. Use of the certificates has channelled additional grain, mostly corn, into commercial markets rather than into storage. The resulting increase in free supplies has pressured market prices lower, effectively circumventing the loan rate price floor. The lower feed grain prices have benefited domestic livestock producers and stimulated export sales.

The recent trends suggest that the long recession in agriculture may have ended, and that some stability may have come to the District's agricultural sector. Additional support is provided by stable farmland values in the District during the first half of 1987. Further moderating of expenses, additional improvement in exports, and continued high government support payments through the remainder of the decade could set the stage for a recovery in the District's agricultural sector. However, the recovery is likely to be characterized by slow steady improvement rather than the rapid gains of the 1970s.