
FARM BANKS: RESILIENCE THROUGH CHANGING CONDITIONS

Overview

The U.S. agricultural sector prospered from 2004 through 2013 as commodity prices soared to historic highs and farmers benefitted from strong income and farmland appreciation. The sector struggled from 2014 through 2019, however, after a sudden, sharp drop in prices and incomes was followed by a slow, weak recovery. The swings in farmers' fortunes—both positive and negative—in these periods were far more pronounced in the middle of the country than elsewhere. The start of 2020 was a continuation of the weak trends of the prior five years, but the year ended as a fairly strong year for farmers. Early forecasts suggest 2021 will not be as strong as 2020, but will still be above long-term average.¹

As of year-end 2020, farm banks have held up well despite the agricultural industry's challenges since 2014. The long period of prosperity in the agricultural sector that preceded the downturn positioned the vast majority of farm banks with strong capital levels, solid earnings, and low credit problems that largely continue today. Though a small subset of farm banks reports elevated loan delinquencies, problem loan levels at farm banks overall remain modest. Farm banks have been able to manage stress in the agricultural sector in part because many farmers still have the farmland equity needed to restructure debt to cope with operating shortfalls.

Most farmers and farm banks were cautious with farm real estate lending during the recent boom in farmland values. This contrasts with behavior during a similar price boom in the 1970s. Agricultural credit concentrations among farm banks remained flat during the recent boom, which has bolstered the resiliency of these institutions during the current downturn.

The COVID-19 pandemic initially looked to be devastating for U.S. agriculture, pushing income far lower than levels seen in the years since the previous boom and adding to financial stress. But record levels of government assistance, a rebound in commodity prices in the latter half of 2020, and a resurgence in export demand combined to significantly reverse the agricultural results. Net farm income for 2020 is forecast to increase 46 percent to \$121.1 billion, a level not seen since the farm income boom. But the extent to which high income cures the industry's challenges is unclear. Absent a sustained improvement in agricultural conditions, stress is likely to continue for some farmers and their lenders.

This paper is organized into two sections. The first analyzes the income boom in the U.S. agricultural sector from 2004 through 2013, weaknesses in the sector from 2014 through 2019, and the events of 2020. We focus on 12 states in the Upper Midwest where the effects of the boom and subsequent downturn were most substantial.² In the second section, we discuss the impact of agricultural issues on farm bank conditions during the downturn and assess potential challenges ahead.

¹Farm income figures are based on U.S. Department of Agriculture (USDA) Farm Income and Wealth Statistics data as of February 5, 2021, and offer the USDA's fourth forecast of 2020 results and first forecast of 2021 results. See <https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics/>.

²For this article, the Upper Midwest states are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

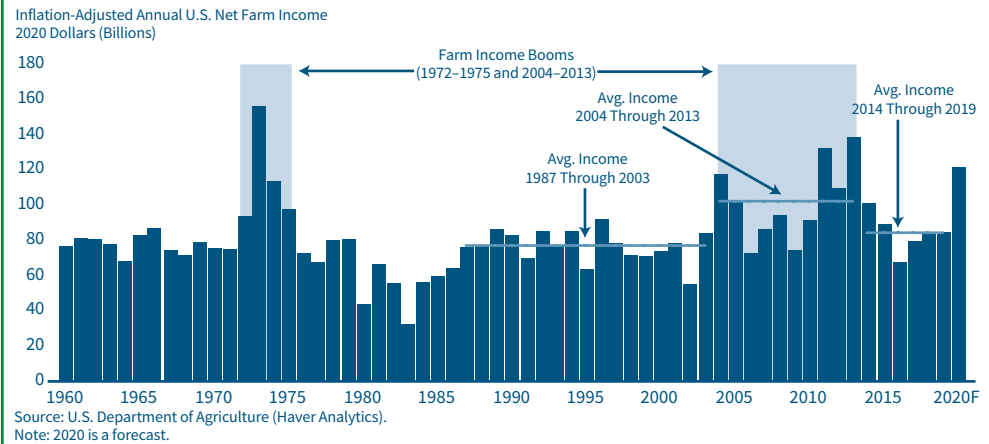
I. U.S. AGRICULTURAL CONDITIONS

Following a Decade of Prosperity, the U.S. Agricultural Sector Weakened in 2014

U.S. agricultural sector income has fluctuated widely in recent years. From 2004 through 2013, inflation-adjusted U.S. net farm income averaged \$101.6 billion per year, above the \$76.5 billion annual average from 1987 through 2003.³ While farm income did not spike as high during the 2004 through 2013 period as it did during the farm income boom of the 1970s, it was stronger for a much longer duration (Chart 1).⁴

Chart 1

U.S. Agriculture Experienced a Farm Income Boom From 2004 Through 2013



The boom in farm income from 2004 through 2013 was fueled by significant price increases across many important agricultural commodities, including corn, soybeans, wheat, cattle, dairy, and hogs. Combined, these six commodities accounted for 61 percent of aggregate U.S. agricultural cash receipts during that period.⁵ Chart 2 shows the dramatic increases in average annual prices for these commodities during the farm income boom. Wheat prices peaked at 233 percent of 2003 levels in 2008, corn reached 294 percent in 2012, and soybeans reached 231 percent in 2013. Strong growth in U.S. agricultural exports, tight global supplies, and rapid growth in U.S. biofuel demand drove commodity prices higher.⁶

³In this article, 1972 through 1975 and 2004 through 2013 are labeled “farm income boom” periods. Each period contains multiple years of abnormally high incomes. The 1972 through 1975 period includes three of the ten highest incomes reported from 1960 through 2019, and the 2004 through 2013 period includes six of the ten highest incomes. The year 2014 rounds out the top ten.

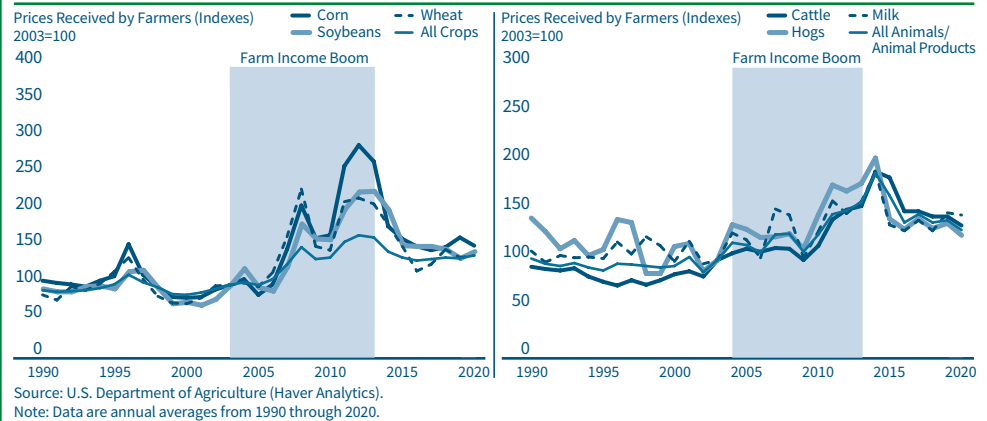
⁴According to agricultural economist David Kohl, 2003 through 2013 marked the fourth and longest commodity “super cycle” in the past century, lasting 2.5 times longer than the next longest. See David Kohl, “The History of the Great Commodity Super Cycles,” *Farm Progress*, February 12, 2013, <https://www.farmprogress.com/blog/history-great-commodity-super-cycles>.

⁵Shares of U.S. agricultural cash receipts from 2004 through 2013 are as follows: cattle (17 percent), corn (14 percent), milk and dairy products (10 percent), oilseed crops (10 percent), hogs (6 percent), and wheat (4 percent). Soybean cash receipts, which were not separately reported before 2008, represented between 93 percent and 96 percent of oilseed crop totals annually from 2008 through 2019. See USDA Farm Income and Wealth Statistics data as of February 5, 2021, <https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics/>.

⁶The Renewable Fuels Standard, introduced in the Energy Policy Act of 2005 and expanded in the Energy Independence and Security Act of 2007, created significant new demand for U.S. corn to make ethanol fuel. Today, an estimated 40 percent of the U.S. corn crop is used in ethanol production. See USDA, “Feedgrains Sector at a Glance,” <https://www.ers.usda.gov/topics/crops/corn-and-other-feedgrains/feedgrains-sector-at-a-glance/>.

Chart 2

Prices of Many U.S. Agricultural Commodities More Than Doubled During the Farm Income Boom



During the farm income boom, production expenses rose as prices increased for inputs, such as seed and fertilizer. Farmland became more expensive to purchase or rent. But commodity prices rose more than expenses, leading to higher farm net income. The long period of prosperity ended in 2013 as strong farming returns incentivized farmers to expand production of crops in the United States and globally, pressuring commodity prices.

As Chart 2 shows, prices dropped precipitously following the boom, and by 2016, average annual prices farmers received for corn and wheat were nearly 50 percent below their peaks. Prices for hogs, milk, and soybeans were down by roughly one-third from recent peaks, and cattle prices were down by roughly one-fifth. Lower prices resulted in a 19 percent decline in aggregate inflation-adjusted production value between 2013 and 2016, while total inflation-adjusted farm expenses declined by 6 percent during that period. Even though 2016 commodity prices were still above long-term averages, inflation-adjusted U.S. net farm income of \$66.9 billion in 2016 was 52 percent below its 2013 peak.

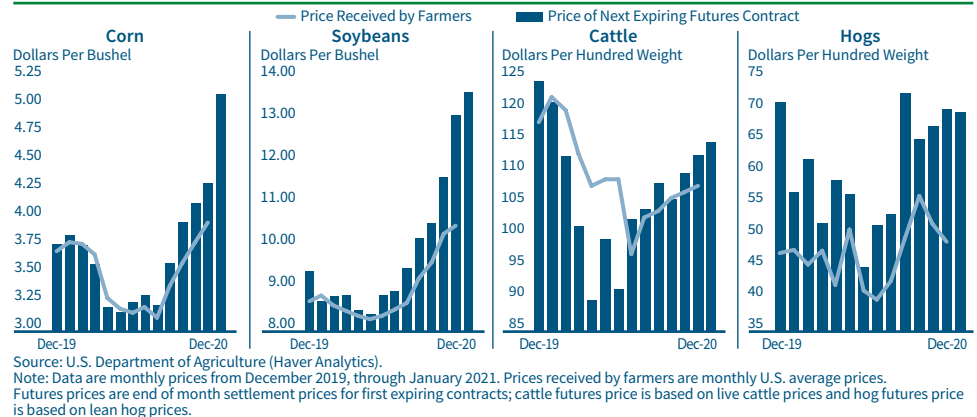
From 2016 to 2019, farm income gradually improved as commodity prices found a floor and production expenses further declined. Still, 2019 inflation-adjusted net farm income of \$84.0 billion remained well below the \$94.9 billion average since the start of the previous farm boom.

The COVID-19 pandemic caused significant disruptions to food demand and supply chains in April and May. Closures of schools and entertainment venues and declines in restaurant dining and travel created a sudden drop in commercial demand for food products. In some instances, such as in dairy and fresh produce, farmers dumped their products because they had no buyers. COVID-19 outbreaks among plant workers at meat-processing facilities across the country caused shutdowns that created processing bottlenecks and backlogs of market-ready animals, forcing some growers to destroy animals.

Prices farmers received for many of their commodities fell swiftly and sharply (Chart 3). Corn prices were particularly hurt by the severe curtailment in travel and commerce that led to sharp reductions in fuel demand, which caused many corn-fed ethanol plants to shut down or drastically curb production.

Chart 3

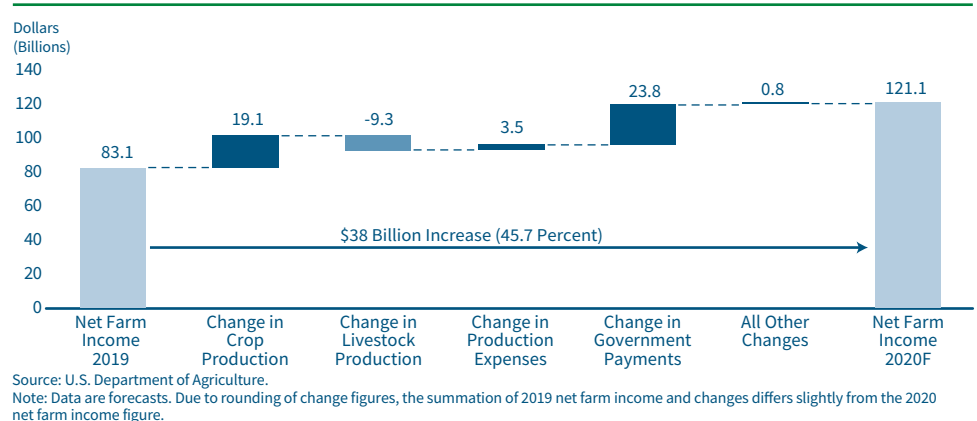
Many Agricultural Commodity Prices Fell Sharply When the COVID-19 Pandemic Began but Rallied in Late 2020



Given the disruptions caused by the COVID-19 pandemic, the U.S. Department of Agriculture's (USDA) February 2021 forecast for a \$38.0 billion, or 46 percent, increase in net farm income from \$83.1 billion in 2019 to \$121.1 billion for 2020 seems counter-intuitive. While part of the improvement stems from the late 2020 commodity-price rallies shown in Chart 3, most of the increase stems from a significant jump in direct federal payments (projected to rise \$23.8 billion, or 106 percent, in 2020) and a \$3.5 billion reduction to total expenses that includes sizeable cuts in interest costs and fuel expenses (Chart 4).

Chart 4

Additional Government Payments Account for Two-Thirds of the Forecasted Increase in Net Farm Income for 2020



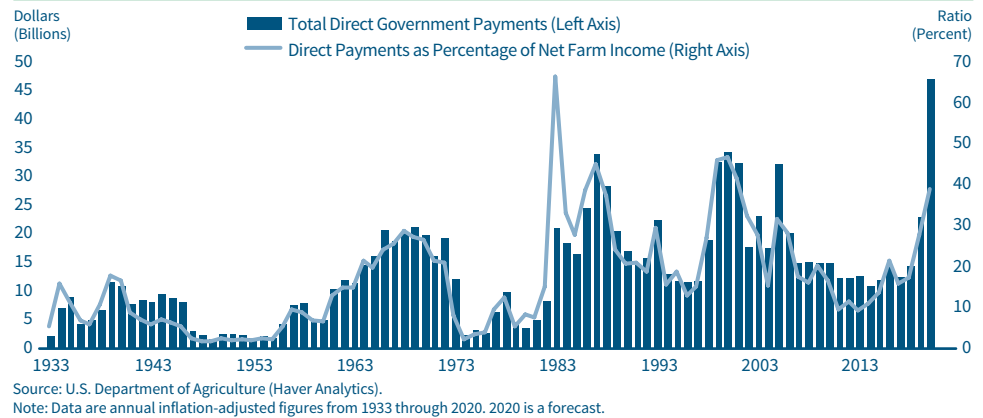
Direct government payments forecast for 2020 include \$32.1 billion in supplemental, ad-hoc payments that are mostly tied to COVID-19 pandemic relief programs. Also included is \$3.7 billion in disbursements under the USDA's Market Facilitation Program (\$23.1 billion in total payments from 2018 through 2020).⁷ Payments from COVID-19 pandemic relief

⁷The USDA Market Facilitation Program was designed to offset harm to U.S. agricultural producers as a result of ongoing trade disruptions that began in early 2018 between the United States and some key agricultural trading nations. The program is forecast to have paid a total of \$23.1 billion: \$5.1 billion in 2018, \$14.2 billion in 2019, and \$3.7 billion in 2020.

programs and the Market Facilitation Program pushed direct government payments to a forecast record inflation-adjusted \$46.3 billion in 2020, or 38 percent of net farm income in 2020, the highest percentage since 2001 (Chart 5). This ratio was eclipsed only during the agricultural crisis of the 1980s and in the early 2000s when farm incomes were much lower.

Chart 5

Record Government Payments Are Forecast to Account for 38 Percent of Net Farm Income in 2020



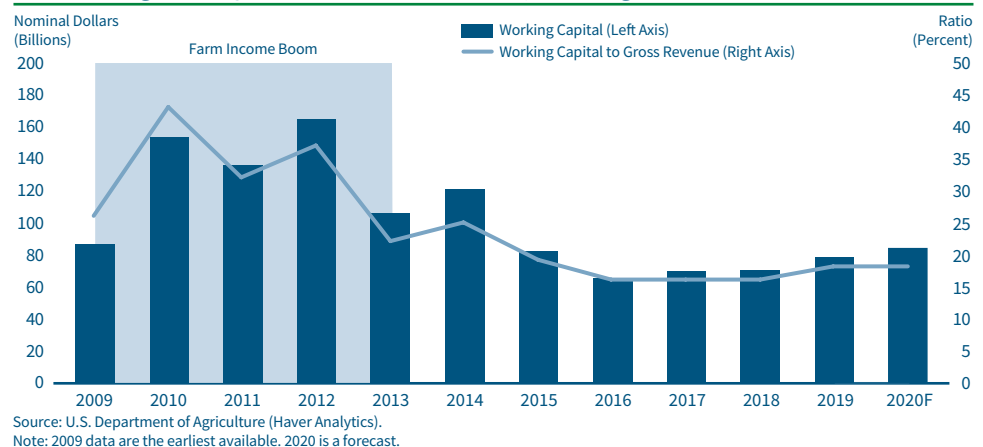
The U.S. Agricultural Sector Has Faced Margin and Income Challenges Since 2013, and Debt Levels Have Diverged From Income and Farmland Values

Financial stress in the U.S. agricultural sector has increased since the farm income boom ended in 2013. Although net farm income has improved since it bottomed in 2016, farmers have lower levels of working capital and rising debt burdens.

Working capital remains well below the levels achieved during the boom years (Chart 6). After peaking at \$165 billion in 2012, U.S. farm working capital declined 61 percent to \$65 billion in 2016. In the past four years, working capital inched up to a forecast \$84 billion in 2020, though that level is still just half the 2012 peak. Indeed, at a forecasted 18 percent as a percentage of farm income for 2020, the ratio remains near the lowest since this series began being reported in 2009.

Chart 6

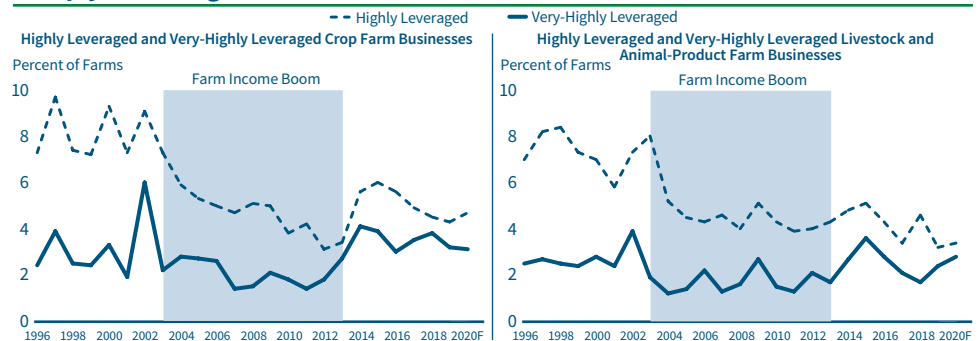
After Falling Sharply Between 2012 and 2016, Working Capital Has Stabilized



Farmers with very high debt burdens also have increased since the farming income boom ended. According to the USDA, the percentages of crop farm businesses and livestock and animal-product farm businesses that are highly or very-highly leveraged jumped sharply starting around 2012 (Chart 7).⁸ Higher leverage is worrisome as higher debt costs could create cash-flow difficulties for these producers, particularly should farm income decline. The percentage of very-highly leveraged farms, those with debt greater than 70 percent of assets, has returned to pre-farm boom levels for both crop producers and livestock and animal-product producers, and continues to rise in the latter.

Chart 7

The Percentage of Highly and Very-Highly Leveraged Farm Businesses Increased Sharply Following the End of the Farm Boom



Source: U.S. Department of Agriculture.

Note: Data are as of December 2, 2020. 2020 is a forecast. Highly leveraged operations have debt-to-asset ratios of 41 percent to 70 percent. Very-highly leveraged operations have debt-to-asset ratios exceeding 70 percent. A farm business is one in which farming is the operator's primary occupation or any operation with annual gross cash farm income of \$350,000 or more.

Perhaps most concerning for the sector since 2013 is that farm debt levels no longer track farm incomes. Indexed values of U.S. farm sector debt and gross farm income closely tracked each other since 1960, except during the agricultural crisis when debt levels rose even as incomes stagnated or declined (Chart 8).⁹ Since the crisis, indexed values for income and debt levels again closely tracked each other but diverged substantially when the farm income boom ended in 2013. U.S. net farm incomes declined in 2014 through 2016 and then partially rebounded from 2017 through 2019. Yet total farm-sector debt rose from \$315 billion at 2013 to \$432 billion at 2020.

Much of the divergence in indexed income and debt levels is in loans secured by farm real estate (Chart 8). A divergence also occurred between indexed values of total farm-sector debt and indexed farmland values (Chart 9). Indexed farmland values have exceeded indexed total farm-sector debt since 2004, but indexed debt secured by farm real estate has outpaced indexed farmland values since 2016.

⁸ Highly leveraged operations have debt to asset ratios between 41 percent and 70 percent. Very-highly leveraged operations have debt to asset ratios exceeding 70 percent.

⁹ Divergences in indexed values show the cumulative effects of differing growth rates of farm debt and farm income. Similar indexed values indicate that debt and income were growing at similar rates; diverging indexed values indicate dissimilar growth rates.

Chart 8

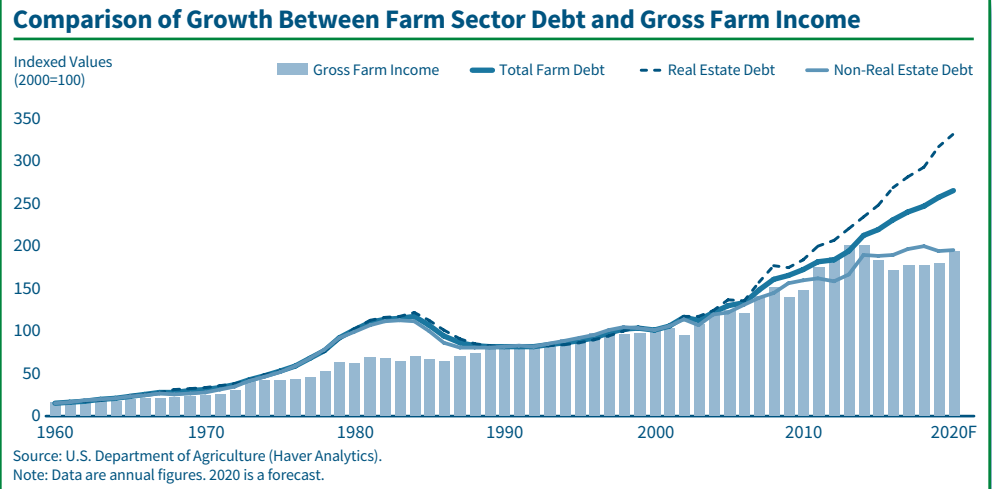
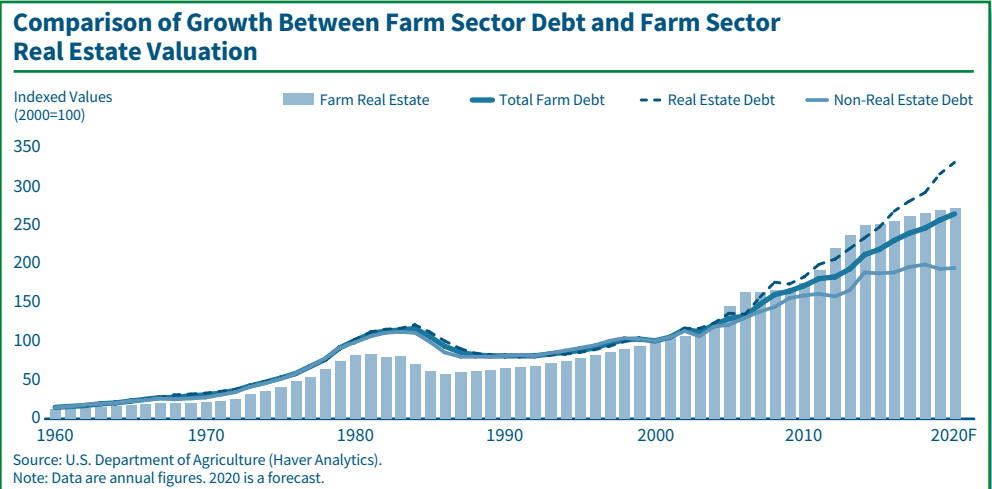


Chart 9

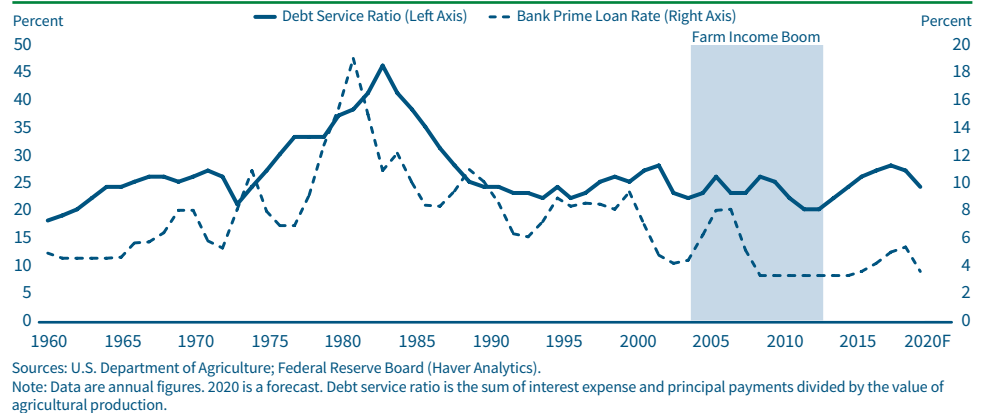


Debt levels generally correlate with debt costs, though interest rates, especially when they are unusually high or low, can also play a significant role in costs. For example, the bank prime lending rate doubled between 1978 and 1981. Higher rates amplified farmers' high leverage and severely strained their ability to service their debts. The debt-service ratio, or interest and principal payments as a percentage of the value of agricultural production, for the U.S. farm sector increased from 26 percent in 1972 to 38 percent in 1981 as debt levels and interest rates rose, and jumped to 46 percent in 1983 as farm incomes fell. This significant repayment load contributed to the agricultural crisis of the 1980s when weak farm incomes and sharply falling farmland values resulted in thousands of farm failures and hundreds of bank failures.

More recently, after reaching a decades-low debt-service ratio in 2013, the U.S. farm sector's debt service ratio rose sharply through 2018 before moderating in 2019 and 2020 (Chart 10). Because interest rates have been at or near historical lows for over a decade, debt service since the boom has been more moderate than overall debt levels might have suggested.

Chart 10

The Share of Agricultural Production Going Toward Debt Service Is Elevated Despite Historically Low Interest Rates

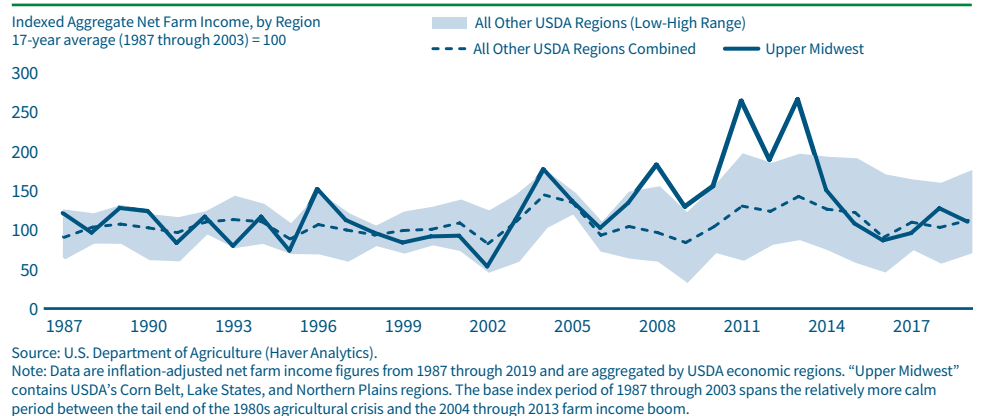


Agricultural Incomes in the Upper Midwest Fluctuated Widely During the Boom and Thereafter

Even before the farm income boom, the center of the country was more sensitive to changes in agricultural income. Swings in farm income in three USDA economic regions—the Corn Belt, Lake States, and Northern Plains, collectively referred to in this paper as the “Upper Midwest”—were much more pronounced than in any other USDA region from about 1987 to about 2005 (Chart 11). The Upper Midwest had among the lowest net farm income of any region throughout the early 2000s but then quickly rose to among the highest. Then, during the farm income boom, the Upper Midwest often led all regions in income performance. As the farm income boom ended, the Upper Midwest again experienced a sizeable swing and fell to among the lowest-performing regions. At its peak in 2011 and 2013, aggregate farm income in Upper Midwest states was 2.4 times greater than its long-term pre-boom average. Income then fell by more than two-thirds to its bottom in 2016.

Chart 11

The Upper Midwest Has Had Much Greater Swings in Net Farm Income Than the Rest of the Nation

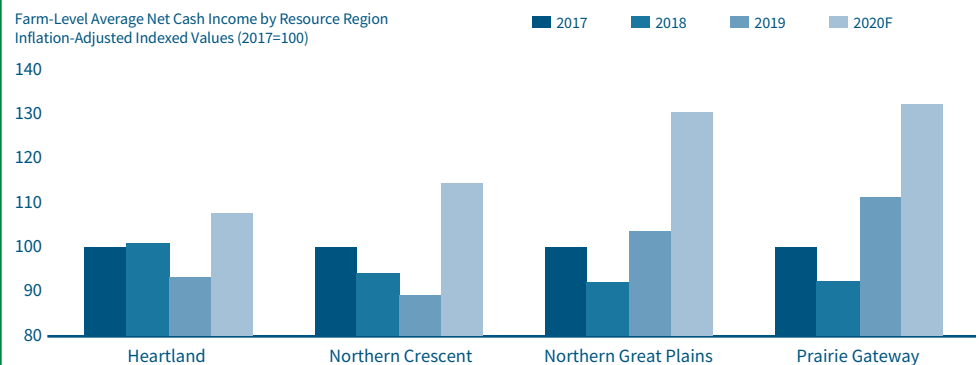


The large swing in farm income among Upper Midwest states mirrors the swings in corn, soybean, and hog prices shown in Chart 2. Corn and soybeans generate the largest share of total agriculture cash receipts in these twelve states, and hog and cattle production are also important. The twelve Upper Midwest states include the ten leading states in both corn receipts and soybean receipts, eight of the ten leading states in hog receipts, and six of the ten leading states in cattle production.¹⁰

Although state-level 2020 forecasted results will not be available from the USDA until mid-2021, the latest forecast by USDA resource regions suggests that the large government payments shown in Chart 5 and late rally of commodity prices shown in Chart 3 will boost incomes of Upper Midwest states in 2020 (Chart 12). Each of the resource regions shown in Chart 12 overlap the Upper Midwest states to a varying degree.¹¹

Chart 12

Net Cash Income Is Forecast to Increase Sharply in 2020 Across USDA Farm Resource Regions That Overlap the Twelve Upper-Midwest States



Source: U.S. Department of Agriculture.
Note: Resource regions are defined by the U.S. Department of Agriculture.

Farmland Values Rose Substantially From 2005 to 2014, Especially in the Upper Midwest

Farmland values are important to farmers as farmland constitutes a large percentage of farm assets. In the 50 years from 1971 through 2020, farm real estate (including land and improvements) accounted for 71 percent to 83 percent of total farm assets on the USDA's annual farm sector balance sheet.¹² Increases in farmland values augment farmers' wealth and expand their collateral position for future borrowing to grow operations in good times or to restructure debt in stressful periods.

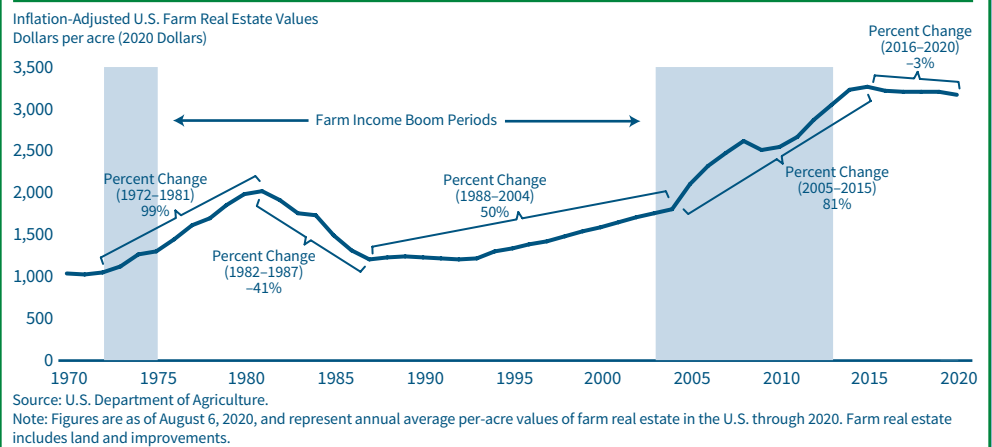
Chart 13 shows that farmland values tend to fluctuate with the prosperity of the agricultural industry. Ignited by booming farm incomes in the mid-1970s, on an inflation-adjusted basis, average U.S. farm real estate values doubled during the ten years from 1972 through 1981.¹³ Farm real estate values then fell sharply during the agricultural crisis of the 1980s, erasing nearly all the former gains by the time real estate values bottomed in 1987. Following the crisis, farm real estate values grew much more slowly for the next 17 years, and the average U.S. farm real estate value did not eclipse its 1981 peak until 2005.

¹⁰ Based on USDA 2019 (latest available) state ranking of cash receipts by commodity. Upper Midwest states also include the top two states in wheat production. See "Cash Receipts by State, Commodity Ranking, and Share of U.S. Total," <https://data.ers.usda.gov/reports.aspx?ID=17843>.

¹¹ For a map and description of USDA resource regions, see USDA, Economic Research Service, *Agricultural Information Bulletin*, Number 760, September 2000, https://www.ers.usda.gov/webdocs/publications/42298/32489_aib-760_002.pdf?v=6384.5.

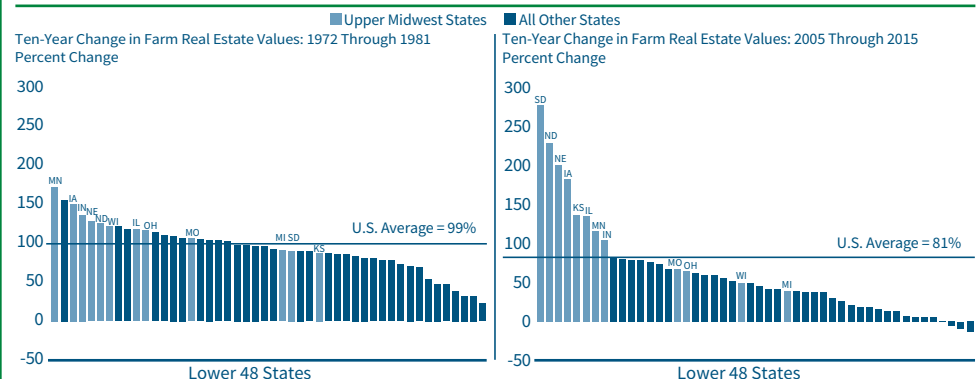
¹² See USDA, "Farm Balance Sheet and Financial Ratios, U.S.," <https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics/>.

¹³ Based on U.S. average per-acre values reported by the USDA.

Chart 13**U.S. Farm Real Estate Values Rose Substantially Between 2005 and 2015**

Beginning in 2005, U.S. average farm real estate values again grew more rapidly, peaking in 2015 at 62 percent above the 1981 peak, after adjusting for inflation. This boom in farm real estate values coincided with the strong commodity prices and farm incomes discussed earlier and was also fueled by low interest rates.

Although the increase in the average per-acre value of farm real estate in the United States from 2005 through 2015 was lower than the increase from 1972 through 1981, many states reported greater increases in the recent boom. Chart 14 shows the state-by-state increases in real farmland values for the two booms. Farmland values in 20 states doubled or more than doubled during the 1972 through 1981 boom and increased at least 50 percent in another 22 states. During that boom, Minnesota recorded the highest increase in farmland values at 173 percent. The recent farmland price boom was characterized by greater polarization. Less than half of all states experienced real price increases of more than 50 percent, and 40 states reported a lower valuation change in the recent farmland price boom than in the previous boom.

Chart 14**The Recent Farmland Boom Was Concentrated in the Upper Midwest, but the 1970s Boom Was Broad-Based**

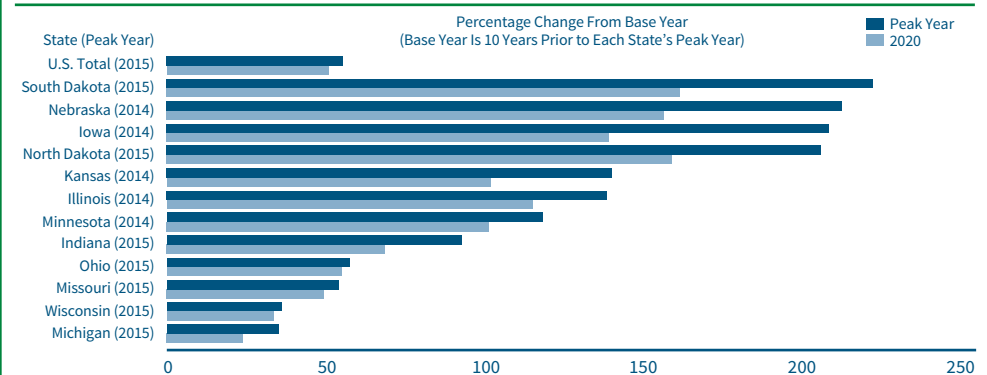
As illustrated by Chart 14, Upper Midwest states were heavily represented among leading states in both farmland booms, but price increases were more concentrated in those states in the recent boom.¹⁴ The eight states in which farmland values at least doubled during the 2005 through 2015 boom all were in the Upper Midwest. In addition, valuation changes among some Upper Midwest states were far greater in the recent boom than in the previous boom. The valuation change during the 2005 through 2015 boom in South Dakota was 3.1 times greater than during the 1972 through 1981 boom. In Kansas, North Dakota, and Nebraska, the recent run-up was 1.6 to 1.8 times greater.

Farmland Values Have Remained Resilient in the Nation and Upper Midwest

Despite lower farming returns in recent years, farmland values have remained relatively stable nationally. Since peaking in 2015, the average per-acre U.S. farm real estate value declined just 3 percent through 2020. Even in Upper Midwest states, valuation declines compared with recent peaks are modest in comparison with the increases reported during the boom (Chart 15).¹⁵ For example, by 2020, Iowa farmland valuations had declined 23 percent from peak levels reached in 2014 but still remained 140 percent above their valuation from 2004. In fact, all twelve states in the Upper Midwest have retained at least two-thirds of the farmland price increases they gained during the boom in farmland prices.¹⁶

Chart 15

Upper Midwest States Retained Over Two-Thirds of Their Increases in Farmland Values Since the Farm Boom Ended



Source: U.S. Department of Agriculture.
Note: Data are based on inflation-adjusted values.

¹⁴ A significant reason why these states are among leading states in farmland appreciation is that the price increases of corn and soybeans—leading crops in these states—were much greater than price increases of other agricultural commodities (Chart 2).

¹⁵ The farm real estate values discussed extensively in this paper come from USDA Land Values Summary Reports, which provide a lengthy time series of state and regional values using a consistently applied methodology. We also performed a limited review of alternative farmland survey data of some Upper Midwest states. Differences in methodologies (geographies, survey respondents, land attributes) prevent direct comparisons with USDA results, but overall, the alternative survey data were generally consistent with that of the USDA.

¹⁶ When comparing each state's farmland values during its peak year, values 10 years prior to its peak, and values in 2020.

Low and stable interest rates have kept capitalization rates low and have supported farm real estate values.¹⁷ Few active farmers are willingly selling land. Possible reasons include a bullish long-term outlook for U.S. agriculture, projections of global population growth and economic development, lackluster investment alternatives, tax considerations, and a desire to maintain family farm legacy.¹⁸

Government aid also helped bolster farmland values after the recent boom. Crop and live-stock insurance programs, federal farm commodity programs, and ad hoc assistance such as natural disaster aid have provided substantial downside risk protection for the U.S. farm sector and farmland values.¹⁹

II. THE U.S. AGRICULTURAL LENDING LANDSCAPE

Farm banks provide a significant share of financing to the agricultural sector. According to the USDA, U.S. commercial banks held 40 percent of all U.S. farm debt in 2019, the latest data available.²⁰ This article focuses on farm banks, defined by the FDIC as banks with 25 percent or more of total loans concentrated in agriculture.²¹ As of December 31, 2020, the number of farm banks in the nation totaled 1,163, or about one-quarter of all commercial banks. These farm banks held \$76 billion of agricultural loans, or 44 percent of aggregate agricultural loans held by commercial banks.

The vast majority of farm banks report that their agricultural loans exceed their total capital levels; in other words, they report a “capital concentration” of more than 100 percent.²² But many farm banks are focused on the agricultural sector to a greater degree. Specifically, 59 percent of all farm banks have capital concentrations of at least 200 percent, and 25 percent have concentrations of 300 percent or more. A small minority of 26 farm banks, or 2 percent of all farm banks, have agricultural loan concentrations in excess of 500 percent of capital.

Farm banks tend to be small: nearly three quarters of these institutions have less than \$250 million in total assets.²³ About 35 percent of farm banks are very small, with under \$100 million in total assets. Because of their small size and geographic footprint—45 percent of farm banks have only one or two locations—nearly all farm banks are considered “community banks” by the FDIC’s definition.²⁴ The Upper Midwest has a disproportionate share of farm banks. More than 78 percent of all farm banks in the nation are headquartered in the Upper Midwest (see Map 1 and Table 1).

¹⁷ Bruce J. Sherrick, “Understanding Farmland Values in a Changing Interest Rate Environment,” *Choices Magazine*, Agricultural & Applied Economics Association, 1st Quarter 2018 33(1), Farmer Mac, <https://www.farmermac.com/choices-understanding-farmland-values-changing-interest-rate-environment/>.

¹⁸ Nathan Kauffman, “2019 Agricultural Symposium Summary: Exploring Agriculture’s Path to the Long Term,” August 5, 2019; Ed Maixner and Sara Wyant, “Big Changes Ahead in Land Ownership and Farm Operators?” *Agri-Pulse*, February 5, 2019, <https://www.agri-pulse.com/articles/11869-big-changes-ahead-in-land-ownership-and-farm-operators>.

¹⁹ Christopher Burns, Nigel Key, Sarah Tulman, Allison Borchers, and Jeremy Weber, “Farmland Values, Land Ownership, and Returns to Farmland, 2000–2016,” USDA Economic Research Report, No. 245, February 2018, <https://www.ers.usda.gov/webdocs/publications/87524/err-245.pdf?v=0>.

²⁰ The Farm Credit System’s share of all U.S. agricultural debt was just slightly higher at 43 percent. Other agricultural lenders include input suppliers, such as feed and equipment dealers, and insurance companies and private lenders.

²¹ Since this farm bank definition is based solely on loan portfolio mix, it captures some banks that, because of low loan volumes, have low asset and capital concentrations in agriculture. Conversely, the loan portfolio test can overlook banks with higher asset or capital concentrations because of high loan volume or low capital levels. Overall though, the definition has done a good job identifying groups of banks with heavy agricultural concentration exposure for analytical purposes. It also has a long track record, including usage in the FDIC publication *History of the Eighties*, which covers the 1980s agricultural crisis.

²² “Capital concentration” in this article is shorthand for the volume of a bank’s agricultural loans expressed as a percentage of its total qualifying capital. It is used as a numerical measurement and is not intended to denote examination concerns.

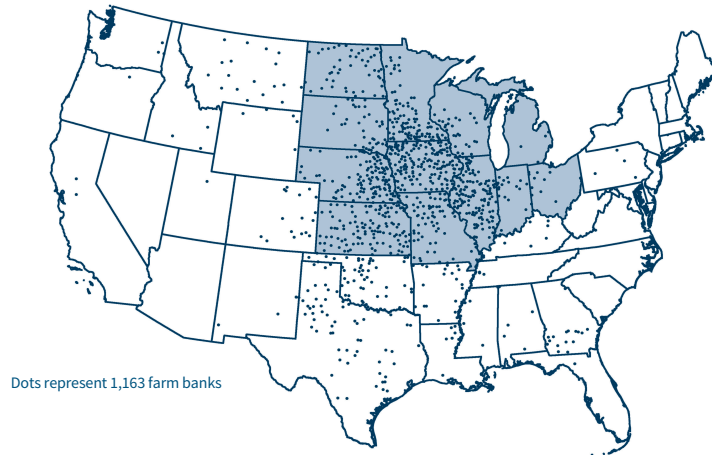
²³ At December 31, 2020, the median size of farm banks was \$143 million compared with a median \$356 million for nonfarm banks.

²⁴ At December 31, 2020, only nine farm banks were not community banks. For more information about how the FDIC defines community banks, refer to the FDIC Community Banking Initiative web page, <https://www.fdic.gov/resources/community-banking/cbi-study.html>.

Given the dominance of corn and soybean production in the Upper Midwest, it is not surprising that FDIC examiners overwhelmingly list corn and soybeans among the three most important commodities at farm banks.²⁵

Map 1

Three of Every Four U.S. Commercial Farm Banks Are Based in Upper Midwest States



Source: FDIC.

Note: Data are as of December 31, 2020. The FDIC defines farm bank as an FDIC-insured institution with 25 percent or more of total loans concentrated in agriculture. Farm banks located based on state of headquarters office. Shaded states are defined as Upper Midwest states.

Table 1

Three of Every Four U.S. Commercial Farm Banks Are Based in Upper Midwest States

State	Farm Bank Totals		Capital Concentrations in Agricultural Loans			
	Number of Farm Banks in State	Percentage of All Farm Banks in U.S.	Median Ratio (Percent)	Number With Ratio Exceeding 200%	Number With Ratio Exceeding 300%	Number With Ratio Exceeding 500%
Illinois	133	11.4	208.2	74	23	1
Indiana	19	1.6	191.9	9	2	0
Iowa	185	15.9	247.7	124	55	5
Kansas	130	11.2	206.6	69	22	0
Michigan	6	0.5	178.7	3	1	0
Minnesota	103	8.9	258.1	79	37	7
Missouri	79	6.8	200.2	40	13	0
Nebraska	122	10.5	286.9	95	56	7
North Dakota	52	4.5	302.7	42	27	4
Ohio	10	0.9	144.9	2	1	0
South Dakota	39	3.4	272.3	28	17	1
Wisconsin	33	2.8	190.7	14	4	0
Upper Midwest States	911	78.3	237.0	579	258	25
All Other States	252	21.7	182.6	103	30	1
Total for U.S. Farm Banks	1,163	100.0	223.7	682	288	26

Source: FDIC.

Note: Data are as of December 31, 2020. Banks are assigned to states based on their headquarters location. Capital concentration ratio is total agricultural loans divided by total qualifying capital.

²⁵ As part of examinations at farm banks in the FDIC's Chicago and Kansas City Regions, examiners are asked to identify up to three agricultural commodities deemed most important to the bank's loan portfolio. These two FDIC regions encompass all 12 Upper Midwest states, as well as Kentucky, and were headquarters to 79 percent of all farm banks as of December 31, 2020. Out of 930 responses, corn was listed in 90 percent of the responses and soybeans were listed in 84 percent of the responses. At 65 percent, cattle was the third most commonly listed commodity.

Farm Banks Reported Strong Financial Results During the Farm Income Boom

Although financial results at farm banks greatly improved during the boom in farm income, loan demand became a challenge. Similar to agriculture sector economic conditions, farm bank financial conditions changed when the boom in U.S. agriculture ended. The farm income boom occurred from 2004 through 2013, a period that encompassed one of the deepest U.S. recessions since the Great Depression. Despite the economic stress of the recession, the rural locations and agricultural focus of farm banks largely insulated these institutions from much of the negative financial effects. In particular, farm banks' lower concentrations in hard-hit residential and commercial real estate loans resulted in much lower volumes of credit delinquencies and credit losses compared with nonfarm banks during this period.

But not all factors were positive for farm banks during the boom. While loan demand from residential and commercial real estate developers broadly slowed across the banking industry during the recession and its aftermath because of weaknesses in those sectors, farm borrowers also required less agricultural credit, but for the opposite reason.²⁶ Flush with cash from multiple years of exceptionally strong incomes, many farmers self-financed operating expenses and capital expenditures, or reduced debt. As a result, even though the U.S. agricultural sector was booming, many rural banks simultaneously faced increasing deposit balances and declining loan demand.²⁷ The median fourth quarter loan-to-deposit ratio among farm banks declined from a decades-high 77 percent in 2008 to a 16-year low of 66 percent in 2012.

As a group, farm banks have maintained strong capital ratios. As seen in Chart 16, farm banks with relatively high capital ratios (at the 90th and 75th percentile among all farm banks) saw those ratios decline during the farm income boom and U.S. recession. Conversely, farm banks with relatively lower capital ratios saw those ratios stay the same, or slightly increase, during that period. But since the end of the farm income boom, farm banks across the spectrum of capital positions have bolstered their capital ratios, generally to levels exceeding capital ratios before the boom. For example, fourth quarter 2020 ratios were greater than fourth quarter 2003 ratios for all percentile groups in the chart except the 90th percentile. The across-the-board drop in capital ratios between fourth quarters 2019 and 2020 reflects the unprecedented effects of the COVID-19 pandemic including significant growth in loans, deposits, and assets that depressed capital ratios.²⁸

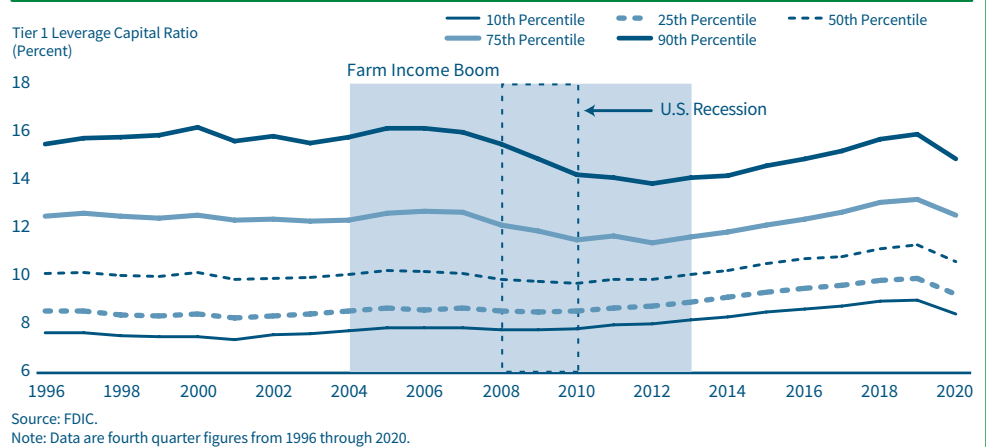
²⁶ Banker survey data from the Federal Reserve Bank of Chicago and Federal Reserve Bank of Kansas City (districts that encompass a large share of the nation's farm banks) show that during the agricultural boom, demand for agricultural credit fell to its lowest level since the aftermath of the agricultural crisis of the 1980s.

²⁷ Not only was agriculture booming, but oil production was also booming, creating windfall oil royalties for many farm customers in oil production areas in Kansas, North Dakota, and Texas.

²⁸ 91 percent of farm banks experienced a year-over-year increase in Tier 1 risk-based capital in fourth quarter 2020, in line with the 90 percent to 92 percent range the previous five years. However, because of the pandemic-induced balance sheet growth, just 13 percent of farm banks reported an increase in their Tier 1 Leverage capital ratio compared with the previous five-year range of 60 percent to 74 percent.

Chart 16

Farm Banks Have Bolstered Their Capital Positions Since the Farm Boom Ended

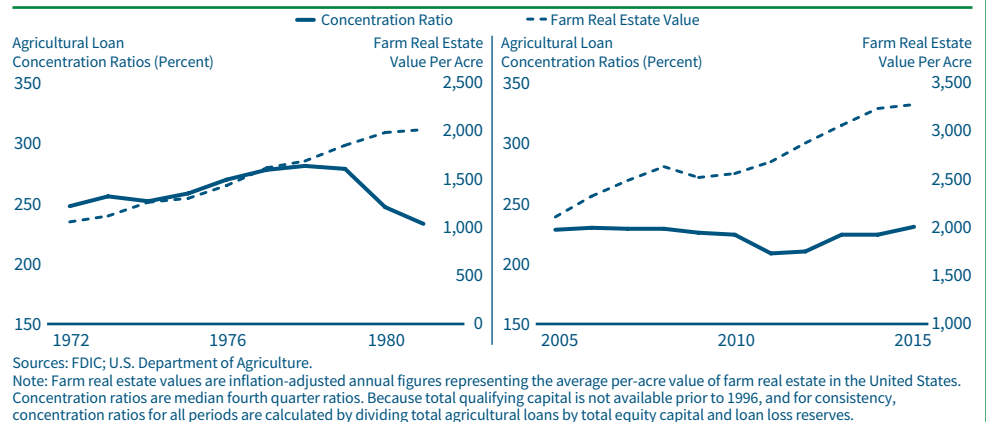


Farm Bankers and Borrowers Were Cautious During the Agricultural Boom

On the credit side, the large increase in farm real estate values between 2005 and 2015 provided ample opportunity for farmers to seek more credit and for farm banks to allow increased borrowing regardless of cash-flow considerations. Nevertheless, farm bankers and their borrowers were generally conservative during this period. This cautious behavior contrasted with the previous farm boom in the 1970s, a period in which farm banks responded to surging farmland prices by dramatically increasing lending to fund expanding farms. The two panels in Chart 17 show the relationship between U.S. farmland values and the median capital concentration in agricultural loans at farm banks. The left panel shows that farm banks increased agricultural loan concentrations in tandem with increases in farm real estate values throughout most of the 1970s. It was not until 1979, after several years of lower farm income and on the cusp of the 1980s agricultural crisis, that banks reined in agricultural lending concentrations. During the more recent period, shown in the right panel of Chart 16, the median farm bank agricultural loan concentration ratio—which was already lower than before the boom of the 1970s—remained low even as farmland values soared.

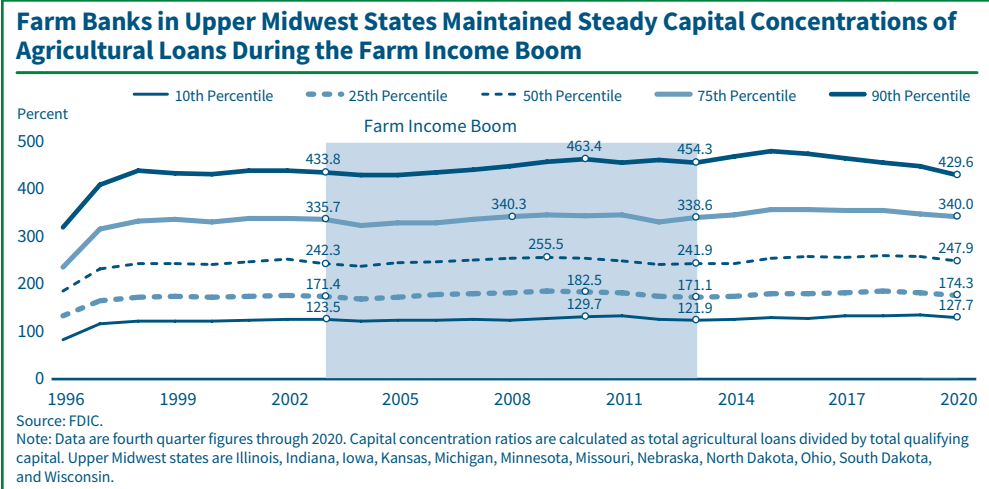
Chart 17

Agricultural Loan Concentrations at Farm Banks Remained Low During the Recent Boom in Farm Real Estate Values



Even in Upper Midwest states, where farmland values rose higher and peaked later and where concentration ratios have tended to run higher, agricultural credit concentration ratios remained stable. Chart 18 shows capital concentrations among Upper Midwest farm banks by percentiles. Identified on each percentile series are the concentration ratios at the beginning and end of the farming boom, the peak value during the boom, and finally, the 2020 value. Farm bank agricultural loan concentration ratios rose slightly from the start of the farm income boom to the peak and then generally retreated by the end of the boom.

Chart 18



Agricultural concentration ratios remained subdued partly because farmers were increasingly self-financing during the good times. But just as important was farm bankers' cautious approach to underwriting. At agricultural banker outreach meetings conducted by the FDIC over the past 15 years, farm lenders commonly told regulators they were wary of repeating the aggressive lending that occurred during the 1970s farm boom; instead, they were showing restraint in lending for expansion against rapidly increasing farmland values. To insulate themselves from a possible crash in farmland values, lenders commonly described how they lowered loan-to-value policy limits on farm real estate loans or even placed hard-dollar limits on the amount of funds they would lend per acre of farmland, regardless of how high farmland values climbed.

The Post-Boom Period Has Begun to Weigh on Agricultural Loan Quality, but Carryover Debt Has Masked the Stress

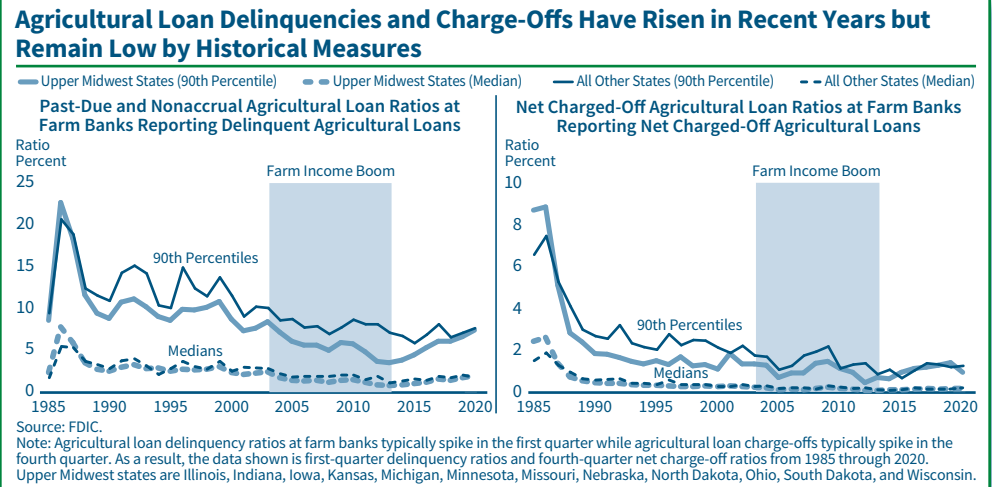
Agricultural credit quality at farm banks steadily improved during the decades following the aftermath of the 1980s agricultural crisis. Shares of farm banks reporting agricultural delinquencies and charged-off agricultural loans both declined, and farm banks with delinquencies and charge-offs reported fewer of them.²⁹ By the time the farm income boom began in 2004, agricultural credit quality was already strong, but the boom drove delinquency and charge-off metrics to historic lows.³⁰ Agricultural credit delinquencies and charge-offs have since edged higher, echoing the ongoing stress in the agricultural sector described earlier, but they generally remain at or below levels seen immediately before the boom (Chart 19). These trends are not unique to the commercial farm bank sector. The

²⁹ Bank reporting of delinquent and charged-off agricultural loans began in 1984 for agricultural production loans and 1991 for loans secured by farmland. As a result, any calculated delinquency or charge-off ratio for total agricultural loans (production plus farmland-secured) before 1991 will be understated.

³⁰ The share of farm banks reporting delinquent agricultural loans fell to 57 percent in first quarter 2013 from 78 percent a decade earlier. There is considerable seasonality in agricultural loan data. As a result, historical analysis is best done by same-period comparisons. Delinquencies typically are highest in the first quarter as bankers and borrowers work through results of the previous harvest season. Charge-offs typically spike in the fourth quarter.

Farm Credit System has seen similar trends in its aggregate loan portfolio.³¹ Where more significant increases in delinquent loans have occurred is in the “tail” of agricultural banks—those at the 90th percentile of delinquencies. The March 31, 2020 90th-percentile delinquency ratio of 7.3 percent among Upper Midwest banks was the highest first quarter figure since 2003.

Chart 19



Reported delinquency ratios may not fully reflect loan repayment weaknesses. Because of the variability in agricultural production factors beyond producers’ control, such as weather conditions, crop yields, and commodity prices, it is not unusual in any given season that some farmers cannot repay their debt obligations. In these cases, it is common for farm lenders to “carry over” the remaining debt into the next year if the farmer has the collateral (usually farmland equity) to support the new loan.³² Since these unpaid balances are carried over into new loans, they are not reflected in delinquent-loan figures on bank financial reports.

When the agricultural sector turns downward, as it did after the farm income boom, this carryover practice can occur for several years until there is a positive outcome (farm returns improve so that the carryover debt is extinguished) or a negative one (the farmer runs out of equity to support increasing carryover debt). Therefore, the level of agricultural credit delinquencies may not reflect weaknesses in the sector for some time.

In this post-boom period, the lag in reported credit stress may be longer than usual. Farmers had high working capital coming out of the boom (Chart 6), and those with cash-flow issues in subsequent years likely tapped into those reserves to help cover shortfalls. When working capital no longer covered operating shortfalls, most farmers used their improved farmland equity positions to secure carryover debt. Many farmers now use that farmland equity to rebalance debt loads into more manageable repayment cash flows.

Although banks do not report specific levels of carryover debt, FDIC bank examiners have noted increasing carryover debt at farm bank examinations, and industry participants have discussed the trend at meetings with regulators. Recent quarterly agricultural credit condition data from the Federal Reserve Banks of Chicago, Kansas City, Minneapolis, and St. Louis noted continued weakness in loan repayment rates and higher renewal and

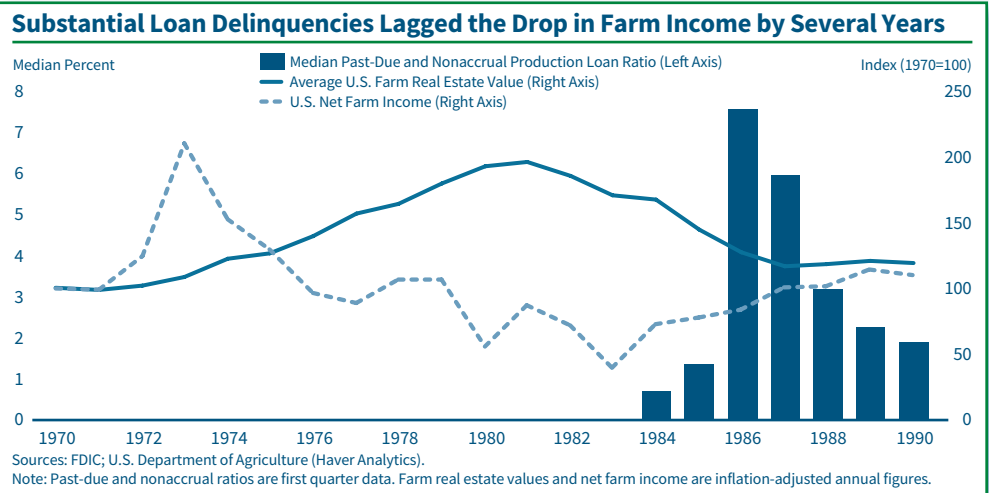
³¹ Steven Koenig and Hal Johnson, “Quarterly Report on FCS Condition,” Farm Credit Administration, December 10, 2020, <https://www.fca.gov/template-fca/about/2020DecQuarterlyReportonFCSCondition.pdf>.

³² Carryover debt is extended at normal interest rates and terms and with firm expectation of full repayment. Carryover debt is not considered abnormal, and though it may be a precursor to problems, it does not in itself indicate a problem credit. It should not be confused with troubled debt restructurings, which involve impaired credits that have been given some form of concession.

extension rates among surveyed bankers, a pattern seen since late 2013.³³ These Federal Reserve Banks cover most of the Upper Midwest.

The ability to carry over debt likely has kept credit problems at bay for many struggling farm borrowers, but debt carryover cannot continue indefinitely. Increasing debt balances eventually strain debt-servicing ability and collateral protection margins. Once restructuring capacity is exhausted, problems can escalate quickly, as was the case during the agricultural crisis of the 1980s. Farm income had been sliding throughout the latter half of the 1970s, but it was not until the mid-1980s that problems became widely evident.³⁴ As Chart 20 shows, farm real estate values began to decline significantly in 1982 in response to weaknesses in the agricultural sector. Farmers could restructure their loans for a few years, but as farmland values continued to fall and loan balances continued to rise, past-due and nonaccrual agricultural production loans spiked in 1986 when carryover debt capacity reached its limits for many borrowers.³⁵

Chart 20



The benefit that resilient farm real estate values have provided in agriculture lending today is significant. Land values have provided the capacity for operating loan restructuring over the past few years. But the concern is that carryover debt capacity may be reaching its end for some borrowers who continue to experience operating shortfalls, especially those who are highly leveraged. At some point, financially stressed borrowers could place much greater quantities of land on the market, outpacing demand and causing prices to decline rapidly. In such a scenario, the equity positions of farmers—and therefore their restructuring capacity—would be adversely affected.

Looking Ahead: Ongoing Concern for Highly Leveraged Farmers

Overall, farmers and their lenders remain financially sound despite weaknesses in commodity prices and farm incomes that began in 2014. Strong working capital positions helped farmers for a few years. Since then, strong equity levels have allowed operating losses to be carried over to subsequent years in hopes that rising farm incomes will cure the accumulated shortfalls. A strong 2020, with higher commodity prices late in the year,

³³ Federal Reserve Bank of Kansas City/ag credit survey data/historical data <https://www.kansascityfed.org/research/indicatorsdata/agfinancedatabook>. Combined, quarterly reports from these four Federal Reserve Banks include all of the Upper Midwest states except Ohio.

³⁴ For a fuller description of carryover debt's "lag effect" on delinquencies, see John Anderlik and Jeffrey Walser, "Agricultural Sector Under Stress: The 1980s and Today," *FDIC Regional Outlook* (Third Quarter 1999): 18–26, <https://www.fdic.gov/bank/analytical/regional/k3q1999.pdf>.

³⁵ Banks did not report farmland-secured loan delinquencies and charge-offs before 1991.

improved exports, and record-high governmental support, boosted the sector overall. And the USDA's 2021 forecast suggests a continuation of the positive trends.

Highly leveraged farmers, however, face greater challenges in the near term than those with continued strong equity positions. These borrowers have continued to struggle despite improving U.S. net farm income over the past three years, and it is unclear whether the strong results in 2020 have provided enough income to mitigate their struggles. How such borrowers react—or are forced to react—if they reach the end of their ability to restructure loans is the most important issue we will continue to monitor.

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