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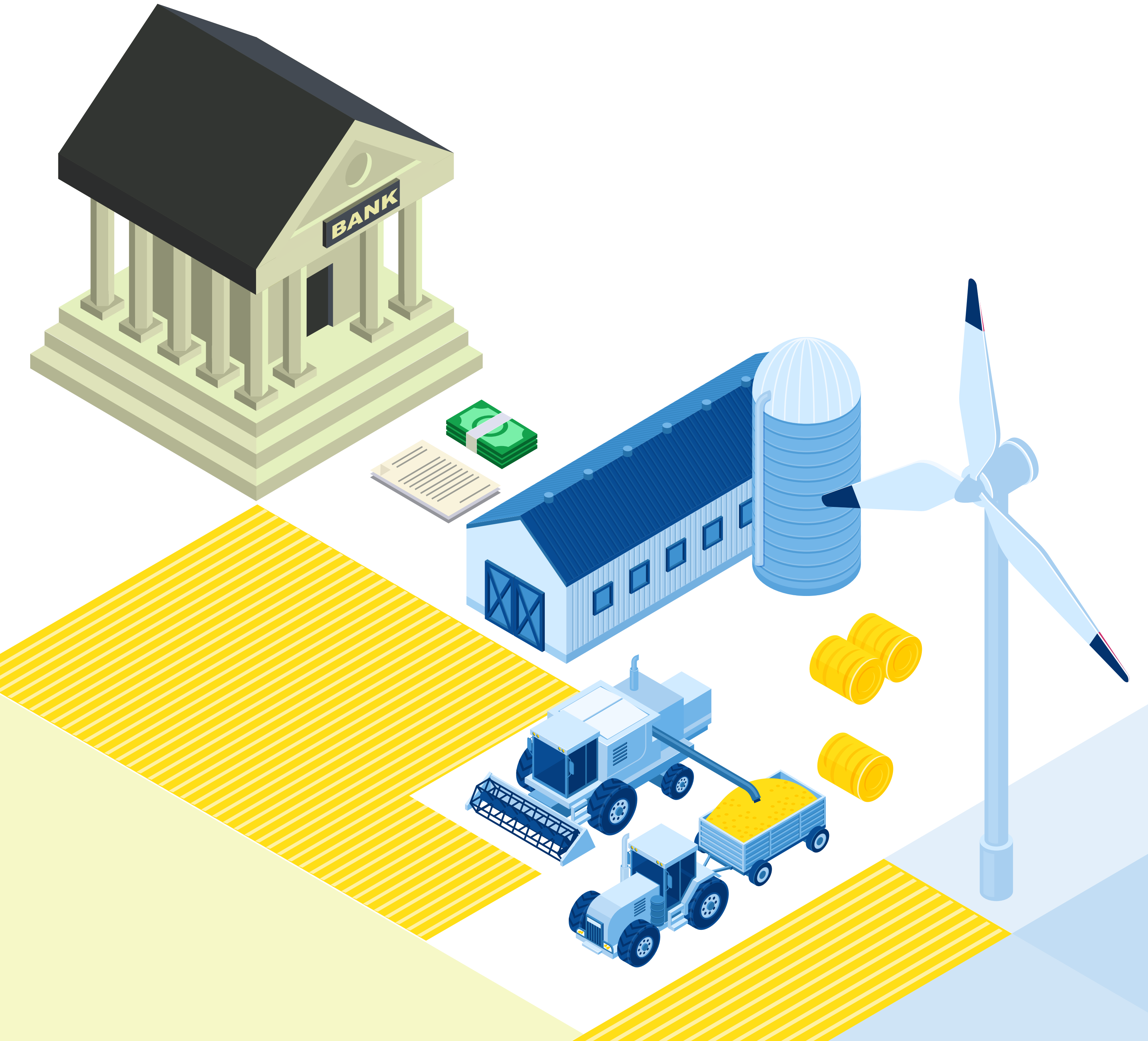
Debt Use by U.S. Farm Businesses, 2012–2021

Dipak Subedi and Anil K. Giri



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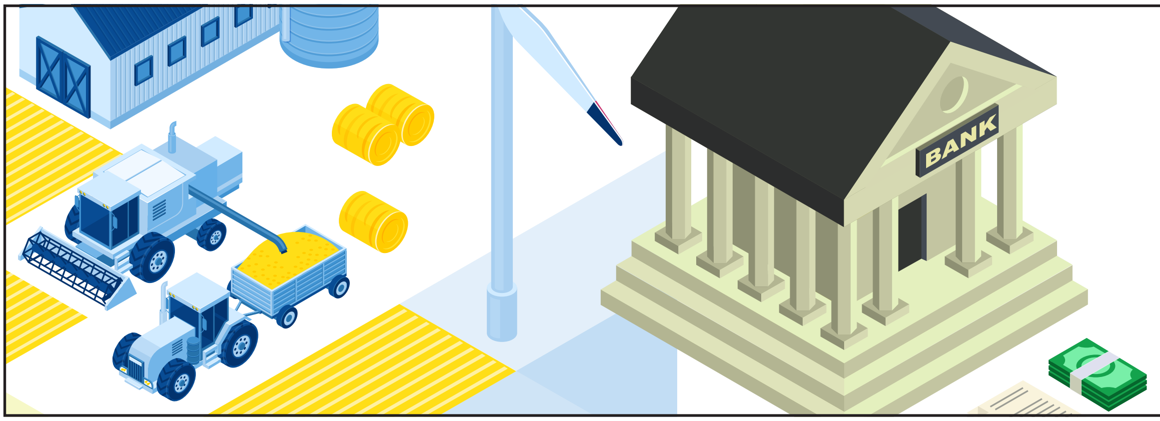

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Abstract

The short-term Federal funds rate, which impacts the interest rate of other loans, has been increasing since March 2022. The rate can disproportionately affect demand for different types of loans, as well as the choice of the lender for different farm sizes. This report examines farm debt by lenders, as well as other attributes, such as the use of different loan types (real estate and non-real estate) among different types of farm businesses. The authors used data from multiple sources, including the USDA, Economic Research Service's Farm Income and Wealth Statistics and the USDA, ERS Agricultural Resource Management Survey (ARMS), from 2012 to 2021 to understand the farm debt situation. Total U.S. farm debt in 2021 was $503.7 billion (in 2022 dollars), which was $127.8 billion (34 percent) higher compared with 2012 and was primarily driven by farm real estate debt. Total farm real estate debt was $344.5 billion, or more than two-thirds of total debt in 2021. The Farm Credit System, a nationwide network of borrower-owned lending institutions and specialized service organizations, provided 45 percent of total debt, and commercial banks provided 35 percent, resulting in these two lender entities providing 80 percent of the sector's debt. The share of farm businesses with some debt grew as gross cash farm income increased along with the average and median loan size.

Keywords: U.S. farm debt, lenders, loan type, real estate, non-real estate, interest rate, farm types

About the Authors

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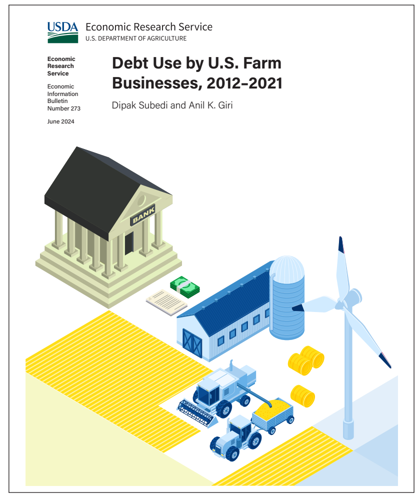


What Is the Issue?

Farm operators obtain loans to expand operations, cover day-to-day expenses, and survive a financial downturn. Farm debt can significantly impact the overall welfare of farm households and the financial health of farm operations. High farm debt relative to income hinders growth, as more income goes toward interest payments and can result in farm bankruptcy. In 2022, the U.S. Federal Reserve began quantitative tightening and rapidly increased the short-term Federal funds rate, so understanding the debt landscape of the farm sector is important. Higher interest rates can affect longer term debt and reduce profitability for many farm operations. The financial well-being of farm operations and farm households depends on the economic vitality and competitiveness of financial institutions as well. The existence of competitive credit sources is beneficial to farmers for multiple reasons, including possibly lower borrowing costs and the opportunity to choose from different lenders. This report examines farm debt by lenders from 2012 through 2021, as well as other attributes, such as loan type (real estate and non-real estate) among different types of farm businesses.

What Did the Study Find?

The total debt (the sum of real estate and non-real estate debt) held by the farm sector has been rising every year since 2012. In 2021, total farm sector debt was $504 billion, which is $128 billion (34 percent) higher than 2012 in inflation-adjusted 2022 dollars. Additional findings are as follows:

- Real estate farm debt increased more than non-real estate debt.
- Total debt as a percent of total cash receipts increased from 74 percent in 2012 to 109 percent in 2021.
- Of all farm businesses that owned some farmland, 19 percent had real estate debt. In 2021, farm real estate debt was $345 billion, which comprised more than two-thirds of total farm sector debt.
- In 2021, the Farm Credit System (FCS) provided the largest share (almost half) of farm real estate loans compared to other lenders.

- As the size of farm businesses increased, the share of total farm real estate debt the FCS provided also increased.
- Farm operators relied more on other individuals and other sources (such as credit cards) for non-real estate loans, compared with real estate loans.
- Both farm real estate and non-real estate interest rates had decreased in recent years and stood at 4.0 percent and 4.5 percent in 2021, respectively.
- Farm interest expenses were 5.5 percent of total cash expenses at the sector level in 2021 compared to less than 5 percent in 2012.
- The share of farm operations with some debt and average and median loan size for those with some debt increased with farm size.

How Was the Study Conducted?

This report used data for 2012 through 2021 from three sources: (1) USDA, Economic Research Service (ERS) Farm Income and Wealth Statistics, (2) USDA, ERS Agricultural Resource Management Survey (ARMS), and (3) U.S. Federal Reserve Bank of Chicago's 2022 AgLetter on Seventh District credit conditions. USDA, ARMS data from 2012 to 2021 were used to examine the type and sources of debt utilized by farm businesses. USDA, ARMS collects data from farm operators regarding the debt type and type of lender. The authors examined changes in the average debt level of different types of farm businesses over time (from 2012 to 2021). The debt-to-asset ratio was computed for different farm businesses, using the average amount of assets and debt, to compare the ratio with the sector's debt-to-asset ratio. USDA, ARMS data were used to examine two factors regarding lenders: (1) the types of lenders for different types of farm businesses and (2) the types of lenders used by borrowers with different debt levels. Data in the USDA, Farm Income and Wealth Statistics report as of December 1, 2022, were used to analyze the sector-level debt, both by type and lender. Interest rate data on operating loans, feeder cattle loans, and farm real estate loans were used to understand the relationship between farm debt and interest rates.

Debt Use by U.S. Farm Businesses, 2012–2021

Introduction

Farm operators obtain loans to run their farms, ease financial constraints, or expand their operations (McDonald et al., 2021). Farm debt can significantly affect the overall welfare of farm households and the financial health of farm operations. High debt levels relative to income hinder growth and can result in farm bankruptcy. In 2022, the U.S. Federal Reserve began quantitative financial tightening and increasing the short-term Federal funds rate. These policy shifts toward higher rates can impact longer term farm debt and reduce profitability for many farm operations highlighting the need to understand the farm debt landscape.

The most recent USDA, Economic Research Service (ERS) report that examined farm business debt was *Debt Use by U.S. Farm Businesses, 1992–2011* (Ifft et al., 2014), which used USDA's Agricultural Resource Management Survey (ARMS) data from 1992 to 2011. Key findings of the report were: (1) dairy and poultry operations acquired more loans relative to assets; (2) large-scale farm operators held the largest share of total farm debt; and (3) older farm operators held fewer loans and were of smaller size than operators under the age of 45. The lending landscape and economic conditions in the United States that affect farm producers and lenders have changed considerably since 2011, and this report provides updated information. Researchers examined farm debt by loan type (real estate and non-real estate), farm type, and by difference in producers/farm businesses, focusing on how these factors affect debt portfolios.

Loan utilization and demand for different types of loans by different farms are heterogeneous.[1] For example, operating loans are used to cover day-to-day expenses. Demand for and the timing of loans can signal financial strength and the willingness to take financial risk (Ifft et al., 2014). Farm operators take loans based on when they expand operations—especially operators with higher incomes—and when they perceive good financial conditions for their output. Katchova (2005) found that farms with higher gross incomes were more likely to have higher debt and more loans compared with other farms.

Interest rates also influence producers' demand for loans. Higher interest rates increase loan service obligations and increase uncertainty for farmers with variable interest rate loans. Farmers who invested substantially in land when commodity and land prices were high could face a drop in liquidity and elevated risks of financial insolvency if farm income were to fall (Key et al., 2019). Generally, very low interest rates spur demand for credit to finance new debt, including real estate debt, and vice-versa. Lower interest rates can put upward pressure on the price of assets, especially farm real estate. Conversely, higher interest rates can slow asset price increases.

The policy of the Federal Reserve to boost the economy during the Coronavirus (COVID-19) pandemic resulted in record-low interest rates (Grasselli, 2022). Lower rates mean lower interest payments, allowing producers to service debt more easily. Low rates can also sometimes make it beneficial to refinance previous loans. Since March 2022, the Federal Reserve has been increasing short-term Federal funds rates, which influence other rates directly or indirectly, including mortgage and prime rates, and has implemented quantitative tightening policies that reduce the Federal balance sheet since March 2022. Higher interest rates and

[1] Short-term production loans have a total term of 12 months or less, while long-term loans have a term of more than a year.

lower cash flows can increase loan service obligations for farmers, especially for those with variable interest rate loans.

Producers obtain loans from different sources; however, not all sources are equally available to all producers. Typically, lenders can be categorized into two groups: traditional and nontraditional lenders. Traditional lenders include the USDA, Farm Service Agency (FSA), commercial banks, and Farm Credit System (FCS). Nontraditional lenders are life insurance companies, input suppliers, implement dealers, contractors, and cooperatives (McDonald et al., 2022). Brewer et al. (2019) found that most financially secure Kansas producers with lower debt levels and higher assets used the FCS, whereas highly leveraged Kansas producers used commercial lenders. Lenders use different financial characteristics to assess the probability of default while making lending decisions. Katchova and Barry (2005) found predictors of loan default to be farm size, debt-to-asset ratio, the value of assets, age and the experience of the operator, and institutional relationship. Featherstone et al. (2006) found other factors associated with default to be working capital, lower repayment capacity, and lower equity. Katchova (2005) found that risk-averse operators had lower loan amounts and fewer loans.

Total farm sector debt in relation to cash receipts increased significantly in 2021 compared with 2012 based on the USDA, ERS Farm Income and Wealth Statistics data as of December 1, 2022. Total farm debt was 74 percent of cash receipts in 2012. Since 2016, the total debt has exceeded total cash receipts, and for 2021, total sector debt was 109 percent of cash receipts. Government payments, a source of significant income for farm operations, decreased in 2021 to $27.5 billion after record-level payments of $50.6 billion in 2020. To understand the implications of these changes on different types of farm businesses in light of expected increases in interest rates, this study examined the loan landscape from both lender and borrower perspectives. It also built on the USDA, ERS report *Debt Use by U.S. Farm Businesses, 1992–2011*.

Data and Methods

This report used data for 2012 through 2021 from three sources: (1) USDA, Farm Income and Wealth Statistics, (2) USDA, Agriculture Research Management Survey (ARMS), and (3) U.S. Federal Reserve Bank of Chicago's 2022 AgLetter on Seventh District credit conditions. The USDA, ERS Farm Income and Wealth Statistics document provides data on farm sector debt (real estate and non-real estate) by lender source. The data are collected from different sources, including Reports of Condition and Income (from the Call Report) for commercial banks, the FCS, and USDA, FSA. Data from these sources were used to examine the total/aggregate sector-level debt volume, along with cash receipts data from the Farm Income and Wealth Statistics report. However, this data source does not provide individual farm operation loan information, which is required to analyze loan usage by farm typology. The authors analyzed farm operations using the USDA, ERS farm typology based on USDA, ARMS data. The data provide individual farm operation-level information on loan utilization, as well as other farm financial characteristics.

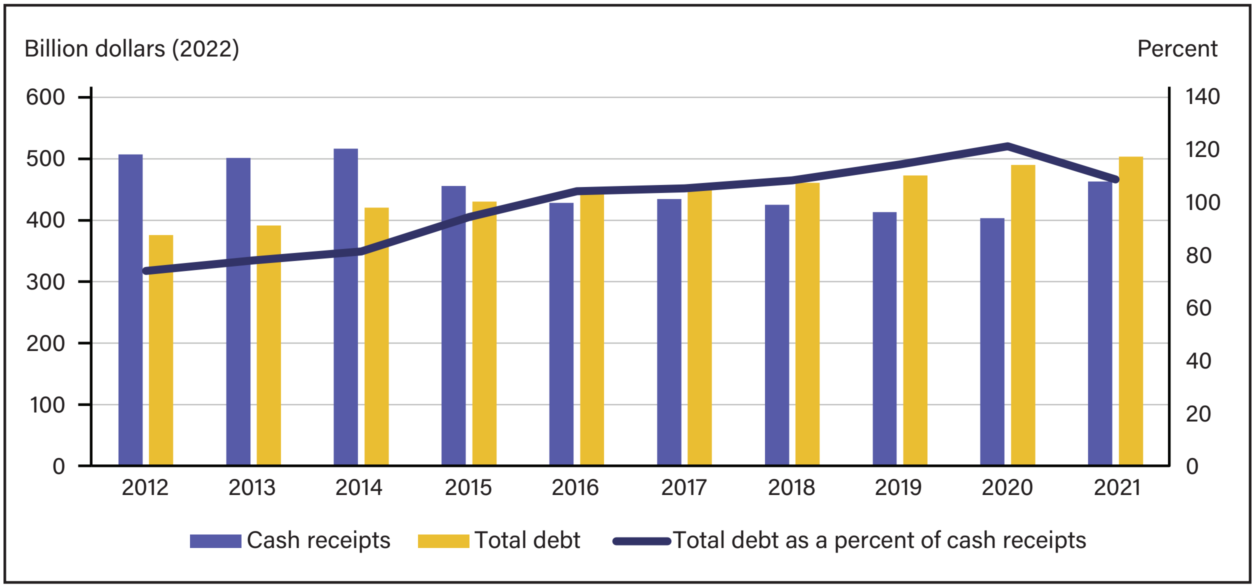
USDA, ARMS is the primary source of financial information on farm operations, production practices, resource use, and the economic well-being of U.S. farms and ranches. However, because USDA, ARMS is a survey, the aggregate loan data from the Farm Income and Wealth Statistics report and USDA, ARMS do not match. Therefore, the authors used USDA, ARMS data to examine the changes in averages and relative measures (e.g., percentage/share of total reported loans) and not total debt by farm types and lenders over time. Debt throughout this report was measured as the balance owed on loans on December 31 of a given year. For interest rate comparisons to the debt, interest rates were derived from the U.S. Federal Reserve Bank of Chicago's 2022 AgLetter on Seventh District credit conditions.

Total Farm Sector Debt

The total farm sector debt in 2021 was $503.7 billion. This was $127.8 billion or 34 percent higher than 2012 when total farm sector debt was $375.9 billion in real 2022 dollars. Figure 1 shows that total farm sector debt in real 2022 dollars increased every year from 2012 to 2021. The average annual increase was $14.2 billion, a 3.3-percent compound annual growth rate. However, the increase in cash receipts was not consistent (figure 1). Only 3 years showed an increase in cash receipts compared with the previous year, while other years saw a year-over-year decrease. Cash receipts in 2021 were $463 billion, a decrease of $44 billion or 8.7 percent, compared with $507 billion in 2012. Total farm sector debt as a share of farm cash receipts has been increasing. Total debt as a percent of total cash receipts increased from 74 percent in 2012 to 109 percent in 2021. Farm debt kept rising regardless of the decrease in cash receipts and has been higher than cash receipts consistently since 2016.

Additionally, after the Great Recession (December 2007 through June 2009), quantitative easing policies (which are intended to increase the supply of money), including the lower short-term Federal funds rate and target fund rate, could also have contributed to a higher level of debt. Giri and Subedi (2023) showed a record low short-term Federal funds rate of 0.65 percent on March 1, 2020. Starting in 2017, the Federal Reserve started increasing rates; however, the rate never reached the 3.0 percent level. Rates dropped to record low levels after the pandemic onset in 2020 and remained low until 2022.

Figure 1
Total farm sector debt as a share of cash receipts, 2012–2021

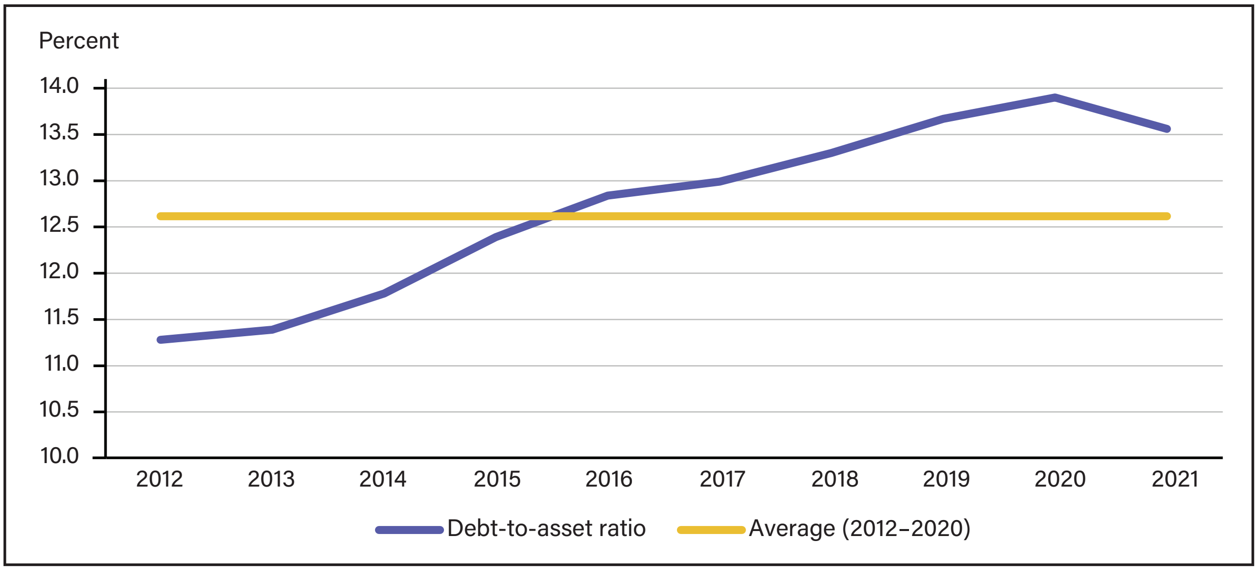


Note: Values are adjusted for inflation using U.S. Department of Commerce, Bureau of Economic Analysis gross domestic product price index, rebased to 2022 dollars by USDA, Economic Research Service.

Source: USDA, Economic Research Service calculations using data from the USDA, Farm Income and Wealth Statistics data, December 1, 2022.

The debt-to-asset ratio is a solvency measure that examines the proportion of assets owed to creditors to cover outstanding debt obligations. The debt-to-asset ratio for the sector as a whole has increased annually (except in 2021) since 2012 (figure 2). The debt-to-asset ratio in 2012 was 11.28 percent and increased every year through 2020, albeit marginally. In general, a lower debt-to-asset ratio is financially better than a higher ratio (Giri et al., 2022). The debt-to-asset ratio for 2021 was 13.56 percent, which is relatively low and indicates sound financial risk exposure at the sector level. However, it is important to note that there are farm operations that own assets without any debt, and those are included in the assets. The average debt-to-asset ratio between 2012 and 2020 was 12.62.

Figure 2
The debt-to-asset ratio from 2012 through 2021

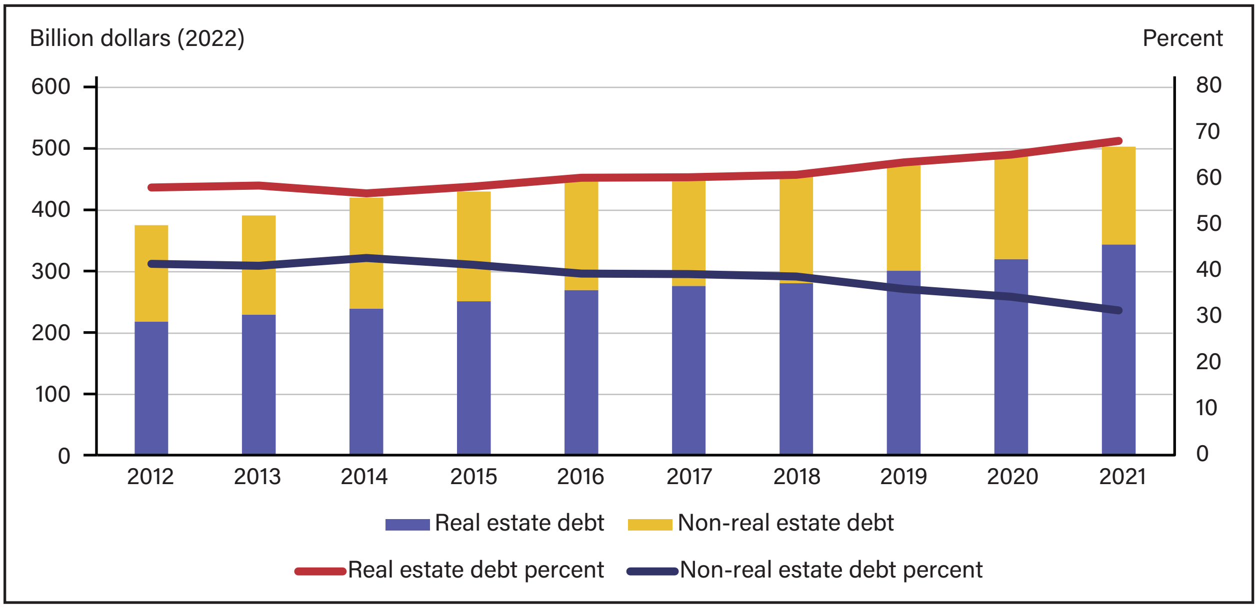


Source: USDA, Economic Research Service calculations using the USDA, Farm Income and Wealth Statistics data, December 1, 2022.

Farm Debt by Type

Farm debt data in the sector balance sheet are broadly classified into two types: real estate and non-real estate. Most farm real estate debt comprises loans used to purchase real estate (secured with a lien on farm real estate) or refinance real estate debt. Real estate debt is secured by farmland and buildings (Key et al., 2019). Non-real estate debt finances purchases other than real estate and includes operating loans. Based on the USDA, ERS Farm Income and Wealth Statistics data, more than two-thirds (68 percent) of the total farm sector debt for 2021 was real estate debt, with the remaining almost one-third (32 percent) non-real estate debt. Figure 3 shows farm real estate debt and non-real estate debt from 2012 to 2021 in 2022 real dollars. Both real estate and non-real estate debt increased in 2021 compared with 2012. Farm real estate debt increased more than non-real estate debt every year since 2013. Farm real estate debt was highest at $344.5 billion in 2021 and increased by $125.4 billion (57.3 percent) from $219.0 billion in 2012. Non-real estate debt increased $2.3 billion (1.5 percent) from $156.9 billion in 2012 to $159.2 billion in 2021. Non-real estate debt was highest in 2014 at $180.9 billion. It is important to note that while the percentage of non-real estate debt is falling, it has not decreased much in financial terms. Rather, the percentage decline is from a relatively large increase in farm real estate debt.

Figure 3
Farm real estate debt versus non-real estate debt, 2012–2021



Note: Values are adjusted for inflation using U.S. Department of Commerce, Bureau of Economic Analysis gross domestic product price index, rebased to 2022 dollars by USDA, Economic Research Service.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service calculations using data from the USDA, Farm Income and Wealth Statistics data product, December 1, 2022.

Farm real estate debt has been increasing as a share of total debt. Farm real estate debt was higher at 68 percent of total debt in 2021 compared with 58 percent of total debt in 2012. Thus, almost all the increases in total debt from 2012 levels can be attributed to real estate debt. This debt increase was likely due to the rising value of land and low interest rates.

Farm Businesses With Real Estate Loans

Since farm real estate debt comprised the largest share of total debt, the authors examined farm businesses with at least some real estate debt. Table 1 shows that as the number of acres owned increased, so did the share of farm businesses with some real estate debt. Among all farm businesses, 19 percent had some real estate debt. Twelve percent of farm businesses with less than 100 acres of owned land had some real estate debt compared with 37 percent of farm businesses with 2,000 or more acres owned. More than one-third of farm businesses that owned 1,000 or more acres but less than 2,000 acres had some real estate debt.

Table 1
Share of farm businesses with some real estate debt in 2021

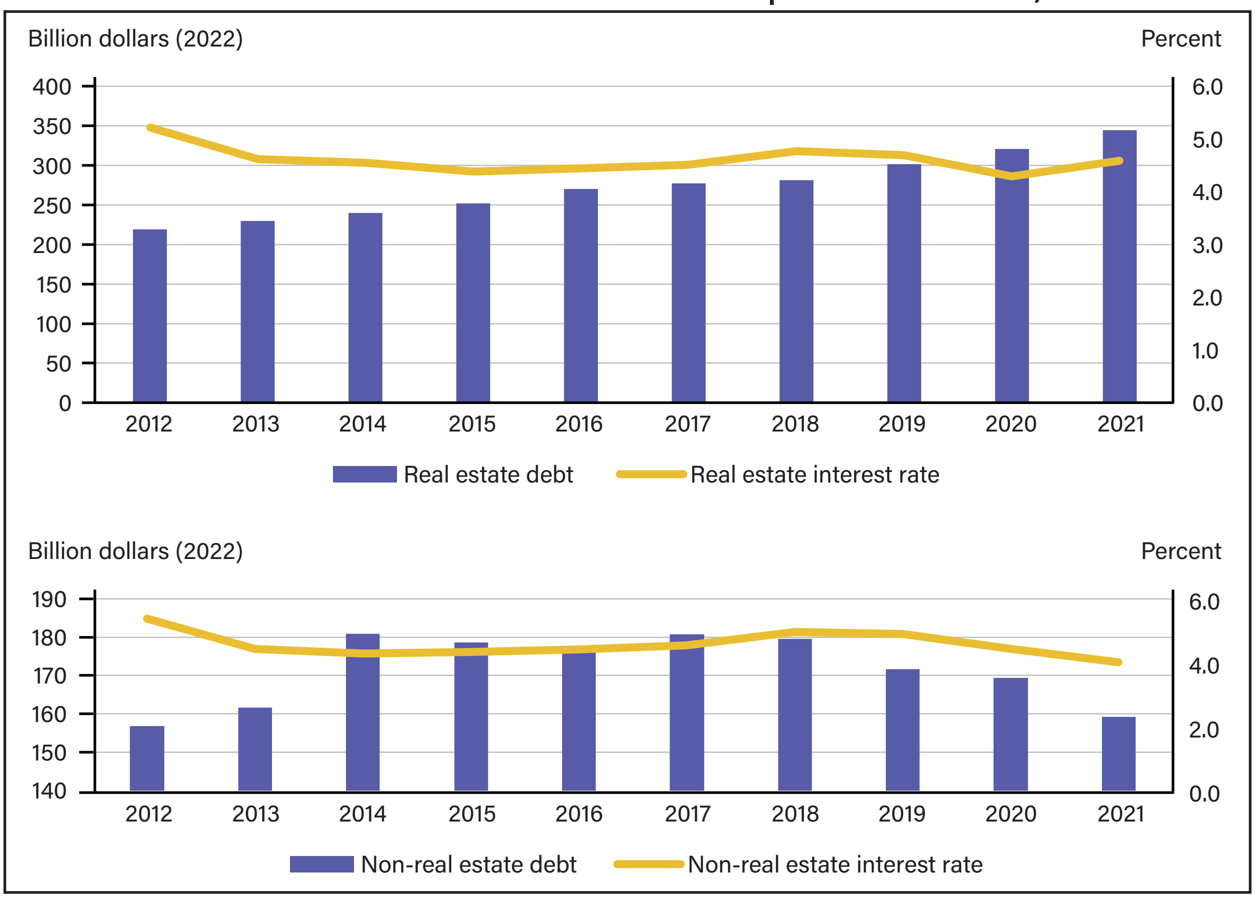
Farm types	Percent of farm operations with some real estate debt
All farm businesses	19
Farm businesses by size	
1 to 99 acres	12
100 to 499 acres	24
500 to 999 acres	31
1,000 to 1,999 acres	36
2,000 acres or more	37

Source: USDA, Economic Research Service analysis of data from the USDA, 2021 Agricultural Resource Management Survey.

Interest Rates and Agricultural Sector Debt

Both farm real estate and non-real estate debt tend to rise when interest rates fall, and this effect is stronger for farm real estate debt. Figure 4 based on data from Ag Letter shows real estate interest rates have been mostly decreasing since 2012. The real estate interest rate was 5.2 percent in 2012 but decreased to 4.6 percent in 2021 (lower by 0.6 percentage points compared with 2012). Correspondingly, farm real estate debt has been increasing for all years on a year-to-year basis. Farm real estate debt in 2021 was more than 57.3 percent higher than in 2012. The non-real estate interest rate in 2021 (4.0 percent) was lower compared with 2012 (5.4 percent). Correspondingly, non-real estate debt increased by 1.5 percent.

Figure 4
Total farm sector real estate and non-real estate debt and respective interest rates, 2012–2021



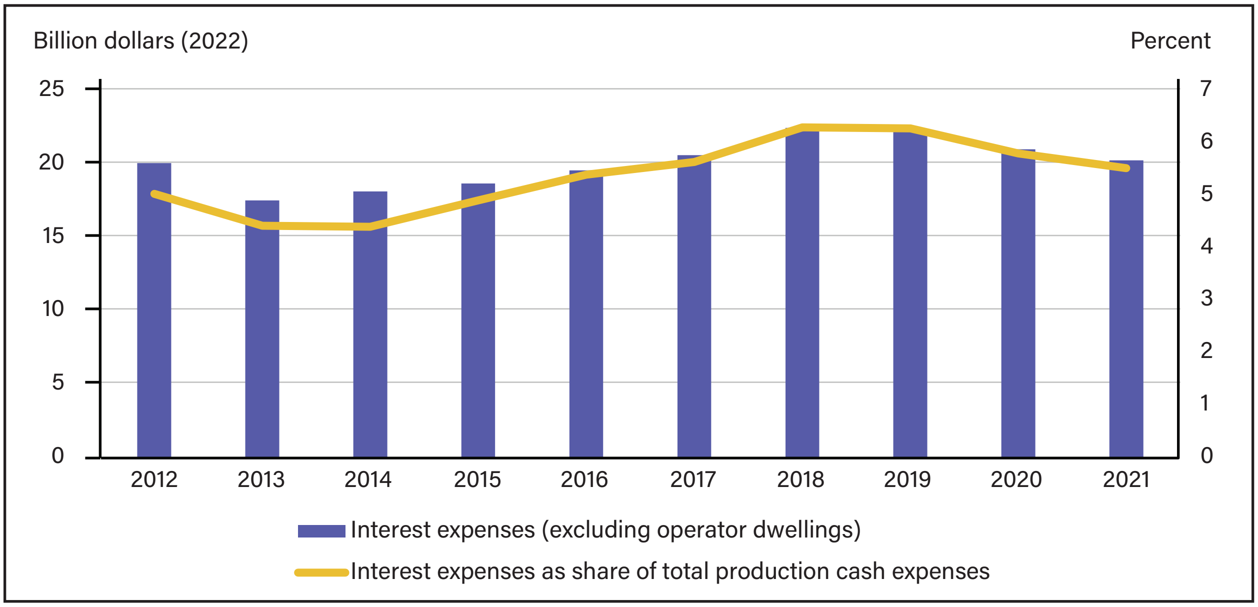
Source: USDA, Economic Research Service calculations using data from the USDA, Farm Income and Wealth Statistics data product, December 1, 2022 and the 2022 AgLetter, Seventh District credit conditions from the U.S. Federal Reserve Bank of Chicago.

Interest Expenses

Figure 5 shows real (inflation-adjusted) total (combined) interest expenses for farm real estate (excluding operator dwellings) and non-real estate debt as a share of total production cash expenses. Total interest expense increased slightly from $19.95 billion in 2012 to $20.15 billion in 2021, just 1 percent. Interest expense fell in 2013, rose rapidly until 2018, and decreased slightly until 2021. Interest expenses as a share of total production cash expenses remained almost within a percentage difference of 5.5 percent over the decade, with 5 percent in 2012 and higher by 0.5 percent in 2021. Total production cash expense (excluding operator dwellings) in 2021 was $366.97 billion, a $32.34 billion (8 percent) decrease from the 2012 level of $399.31 billion. Non-real estate interest expenses were 2 percent of total production cash expenses in 2012 and stayed the same through 2021. Farm real estate interest expenses were 3 percent of total production cash expenses from 2012 through 2017.

Figure 5

Farm interest expenses and total cash expenses



Note: Values are adjusted for inflation using U.S. Department of Commerce, Bureau of Economic Analysis gross domestic product price index, rebased to 2022 dollars by USDA, Economic Research Service.

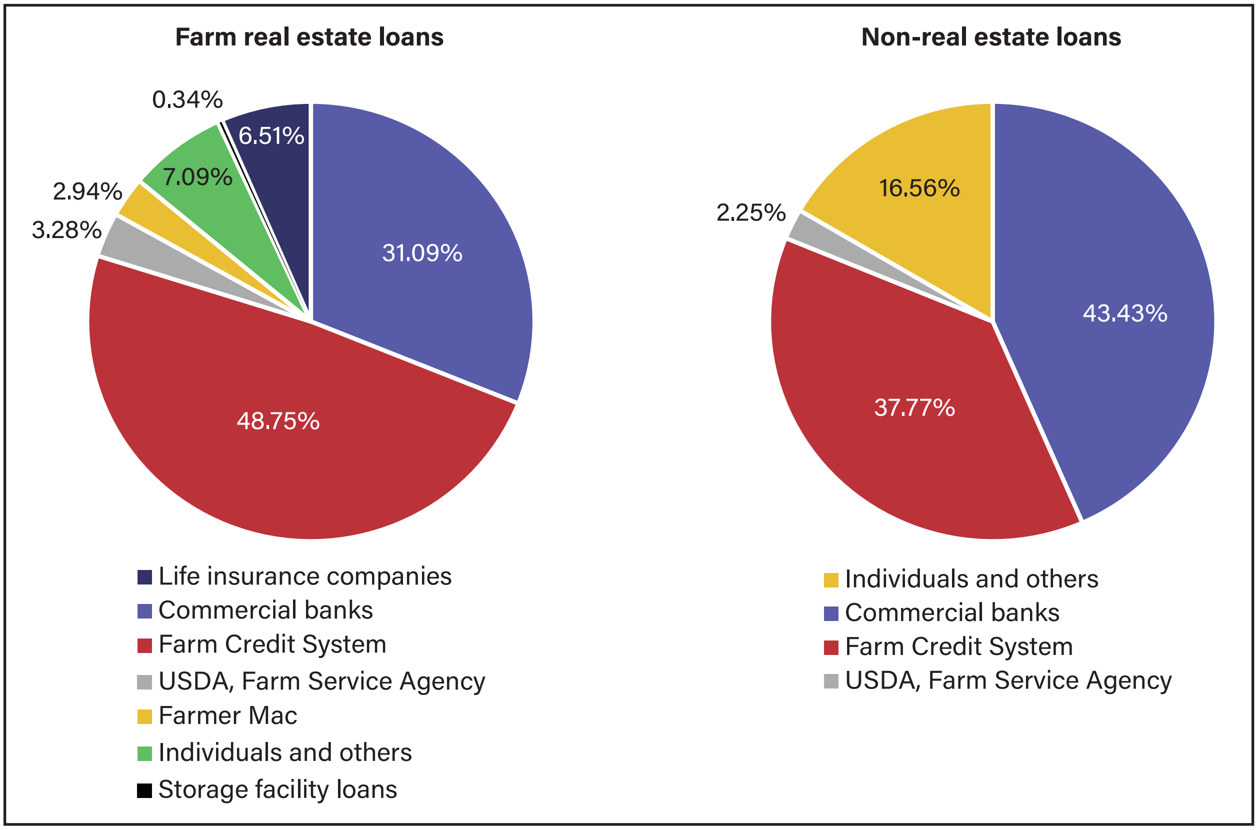
Source: USDA, Economic Research Service calculations using data from the USDA, Farm Income and Wealth Statistics data product, December 1, 2022.

Farm Debt by Lender

The debt portion of the USDA, ERS Farm Income and Wealth Statistics data also provides balance sheet information on lenders. Figure 6 shows the breakdown of farm real estate and non-real estate debt by lender for 2021. Farm Credit System (FCS), commercial banks, and USDA's Farm Service Agency (FSA) combined provided 83.22 cents of every outstanding dollar in loans in 2021. The total outstanding debt for 2021 was $503.7 billion. In 2021, the same three loan sources combined provided 83.12 percent and 83.44 percent of total farm real estate and non-real estate loans, respectively.

Commercial banks provided more non-real estate loans at 43.43 percent or $69.15 billion of the total $159.2 billion when compared with other sources. However, the FCS had the largest share of farm real estate loan volume at 48.75 percent of total real estate loans ($167.94 billion) of the total $344.48 billion. USDA, FSA provided 2.25 percent of non-real estate loans ($3.57 billion) and was the lender for 3.28 percent of total farm real estate loans ($11.29 billion). Farm operators relied more on individuals (typically friends and family members) and other sources (such as credit cards) for non-real estate loans compared with real estate loans. This was most likely because individual farm real estate loans are significantly larger and require institutional (e.g., commercial banks, USDA, FSA and FCS) lending. Farm real estate loans are also secured by collateral (the property) and hence provide greater security against default, making these loans more attractive to commercial lenders. The USDA, FSA storage facility loans were less than 1 percent of total farm real estate loans ($1.17 billion).

Figure 6
Share of farm real estate loans and non-real estate loans by source, 2021



Note: Due to rounding, totals might not add up to 100.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service calculations using data from the USDA, Farm Income and Wealth Statistics data product, December 1, 2022.

The examination of credit sources for farm real estate and non-real estate debt shows a minor change in the share of credit provided by different lenders over time, with some exceptions (figures 7a and 7b). For 2020 and 2021, the share of total farm real estate debt from commercial banks decreased 3 percent from 37 percent in 2019 to 34 percent in 2020 and 31 percent in 2021, which were also the lowest for the 2012–2021 period. The share of total real estate debt from the FCS in both 2020 and 2021 was 49 percent, an increase of 2 percent from 47 percent in 2019, and this was the highest share for the period. The share of non-real estate debt from commercial banks also decreased in 2020 to 41 percent, the lowest for the period, and increased 2 percent to 43 percent in 2021. The share of total non-real estate debt from individuals and others increased by 4 percent in 2020 to 20 percent, the highest for the period. The total farm real estate debt increased, but the share of the total provided by commercial banks decreased in 2020 and 2021. In contrast, total non-real estate debt decreased annually since 2018.

Figure 7a
Share of farm real estate debt by type of lender, 2012–2021

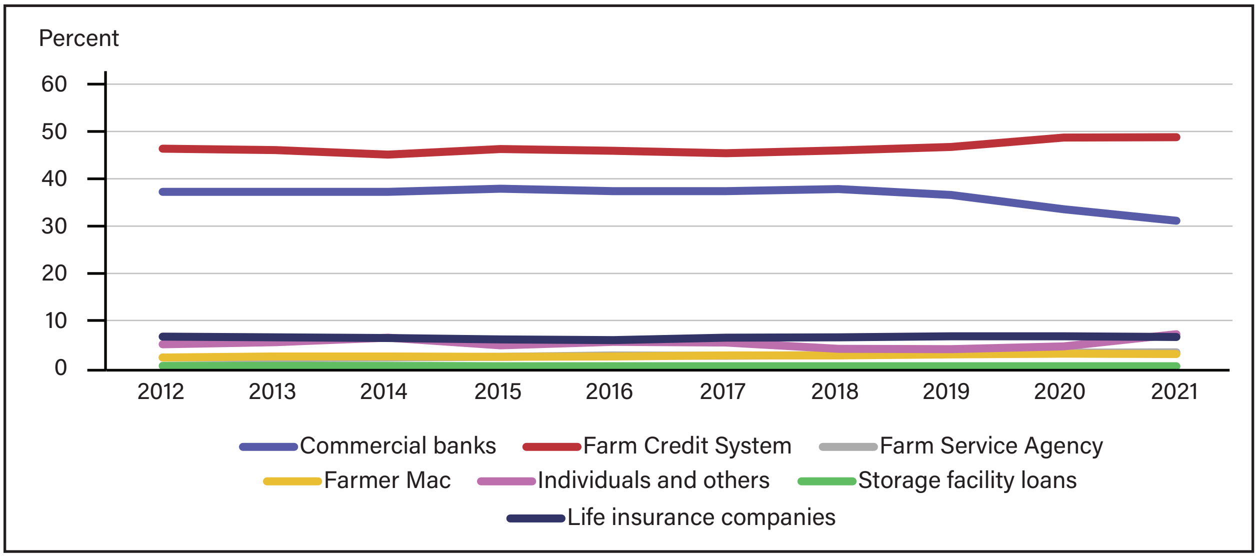
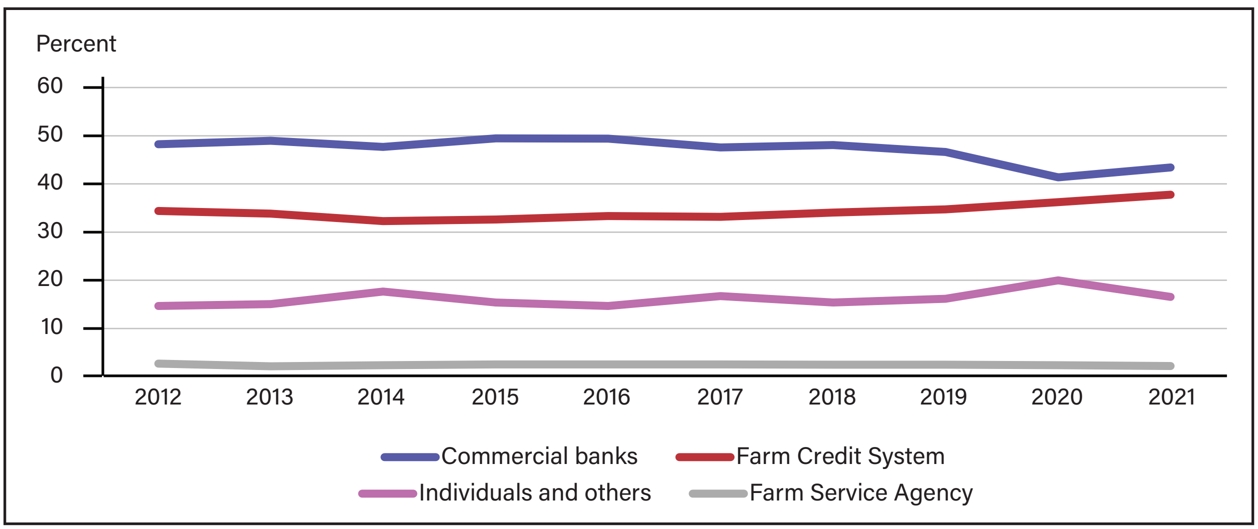


Figure 7b
Share of non-real estate debt by type of lender, 2012–2021



Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service calculations using data from the USDA, Farm Income and Wealth Statistics data product, December 1, 2022.

Debt by Farm Business Types

Table 2 shows that larger farm businesses (measured by gross cash farm income (GCFI)) were more likely to have some debt. GCFI is a measure of the farm's revenue (before deducting expenses) that includes sales of crops and livestock, payments made under Federal agricultural programs, and other farm-related cash income, including fees from production contracts. This was most likely because very large farm businesses (GCFI of $5 million or more) need operating loans to cover day-to-day expenses. Because low-sales farm businesses have lower revenue, they are unlikely to use operating loans to cover day-to-day expenses. Furthermore, large-scale farm businesses might have on-farm storage funded through a loan, as the economies of scale would make it feasible for these farms to store crops on the farm compared to low-sales farm businesses.

More than 70 percent of all large-scale farm businesses (GCFI of $1 million or more) had some debt, whereas only 18 percent of low-sales farm businesses (small farms whose principal operators report farming as their primary occupation and with a GCFI less than $350,000) had some debt. Less than one-third of all farm businesses (GCFI of more than $350,000 or smaller operations where farming is reported as the operator's primary occupation) had debt in 2021. Slightly less than one-third of nonfamily farms (farms where an operator and persons related to the operator do not own a majority of the business) had some debt.

Table 2

As farm business size increased, the share of farm business with loans and average loan size (2022 real dollars) increased in 2021

Farm business size	Subcategory	Share (percent) of farm businesses with debt	Share (percent) of total debt held	Average debt for farm businesses with debt	Average real estate debt for farm businesses with debt	Average non-real estate debt for farm businesses with debt	Median debt for farm businesses with debt
Small							
	Low sales	18	11	$173,613	$173,492	$86,786	$91,685
	Moderate sales	51	12	$455,662	$417,595	$210,493	$307,988
Midsize		65	27	$717,460	$585,853	$365,348	$500,388
Large-scale							
	Large	71	31	$1,482,322	$1,286,719	$694,075	$1,044,121
	Very large	83	10	$3,845,634	$2,888,533	$1,772,502	$2,709,531
Nonfamily		32	10	$1,408,406	$1,461,533	$607,645	$593,985
All farm businesses		30	100	$635,304	$561,614	$305,943	$241,744

Note: All dollar figures are rebased to 2022 dollars. For farms whose principal operators report farming as their primary occupation: Low-sales farms are farms with a gross cash farm income (GCFI) of less than $150,000; moderate-sales farms are those with a GCFI of between $150,000 and $349,999; midsize farms are those with a GCFI of between $350,000 and $999,999; large farms are those with a GCFI of between $1 million and $4,999,999; very large farms are those with a GCFI of $5 million or more; and nonfamily farms are those where an operator and persons related to the operator do not own a majority of the business.

Source: USDA, Economic Research Service analysis of data from the USDA, 2021 Agricultural Resource Management Survey.

Average farm debt increased as the farm's size (based on GCFI) increased for farm businesses that had some debt. The increase in farm size (based on GCFI) was correlated with an increase in average debt. Presumably, as farm size increases, so do the operating expenses and the real estate holdings. Very large farm businesses with some debt had the highest average debt of $3.8 million, followed by large farms (GCFI between $1 million and $499,999,999), with average farm debt of $1.5 million. Both types of farm businesses had higher average real estate debt than average non-real estate debt. The average real estate debt for large farm businesses was $1.3 million, almost double the average non-real estate debt of $0.7 million. For very large farm businesses, the average real estate loan of $2.9 million was substantially higher than the average non-real estate loan of $1.8 million. The average of farm real estate and non-real estate debt does not sum up to the average total debt and, in some cases, is higher than average total debt because the reported average real estate and non-real estate debt is for farm businesses that had some real estate debt or non-real estate debt. Some farm businesses with one debt type might not have the other, which results in the average of each type not adding up to the total.

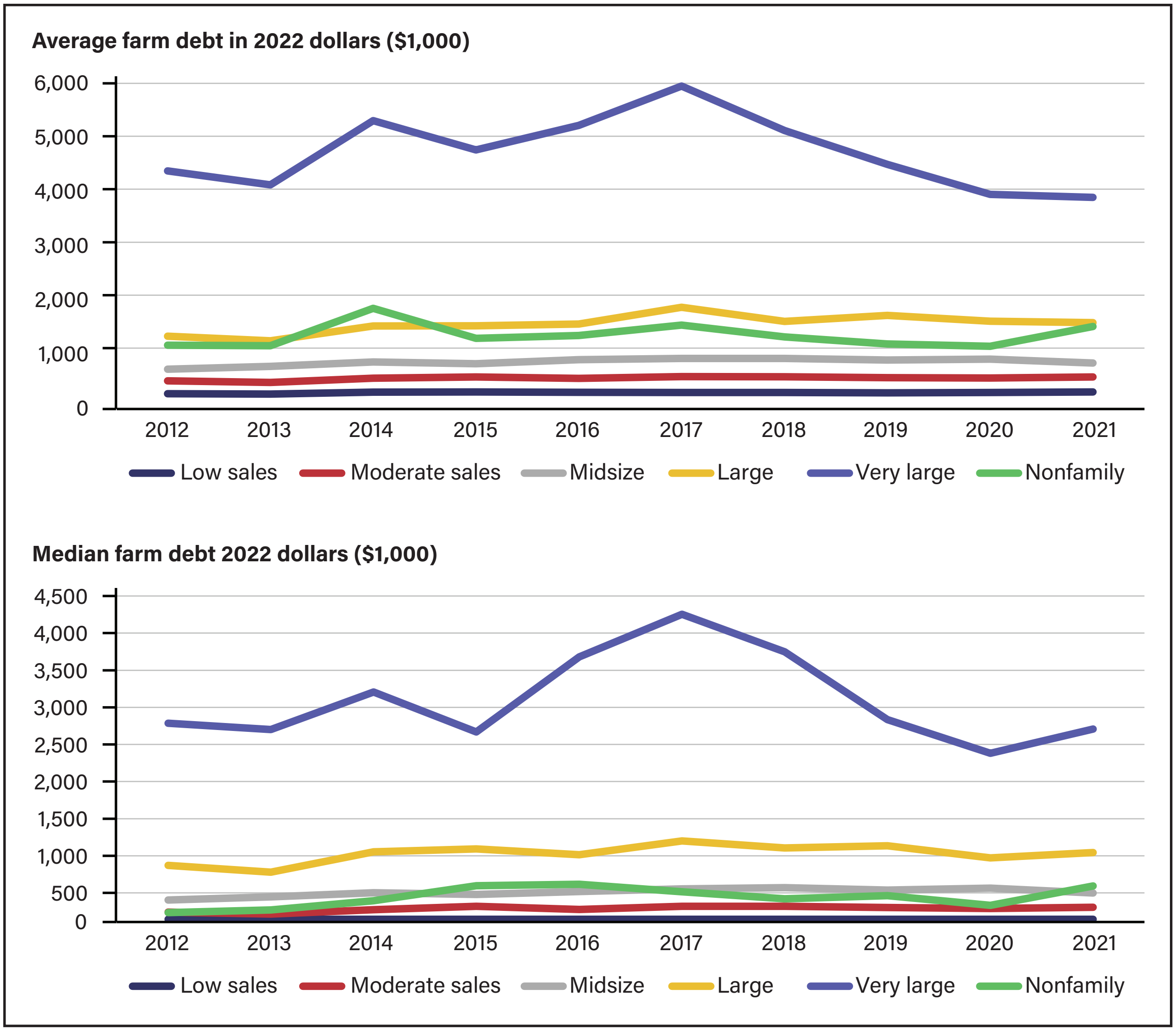
Midsize (GCFI between $350,000 and $999,999), moderate (GCFI between $150,000 and $349,999), and low (GCFI of less than $150,000) sales farm businesses had an average debt of $0.72 million, $0.46 million, and $0.17 million, respectively. As with large farm businesses, midsize, moderate, and low sales farm businesses also had higher real estate debt compared with non-real estate debt. The average real estate and non-real estate debt for midsize farm businesses was $0.59 million and $0.37 million, respectively. The average real estate and non-real estate debt for moderate farm businesses was $0.42 million and $0.21 million, respectively. For low sales farm businesses, the average real estate debt was $0.17 million, more than double the average non-real estate debt at $0.09 million. This was most likely because low sales farms have lower revenues and would require lower loan volumes.

Table 2 shows that the median debt for all types of farm businesses was lower than the average debt. For low-sales and nonfamily farm businesses, the mean was more than twice the median. This suggests that a few farms hold exceedingly high debt. Table 1 also shows that the share of total debt farm businesses held increased by farm size, albeit not substantially. Large-scale farm businesses held more than one-third of the total debt. Midsize farm businesses held 27 percent of total debt, and small farm businesses held 23 percent of total debt. Nonfamily farms held the remaining 10 percent of the total debt.

Average and Median Farm Debt by Farm Business Type

Figure 8 shows the average and median debt of farm businesses from 2012 to 2021. As was the case for 2021 (table 2), the median debt was lower than the average debt for all years, which indicates the skewness (i.e., asymmetry) of distribution has been consistent from 2012 to 2021. The average and median farm debt were higher in 2021 compared with 2012, with significant fluctuation within the study period, especially for very large farms. Average and median debt for all farm businesses increased in 2021 (a pandemic year) from 2019, the last nonpandemic year.

Figure 8
As farm business size increased (in 2022 dollars), average and median loan size increased from 2012 to 2021

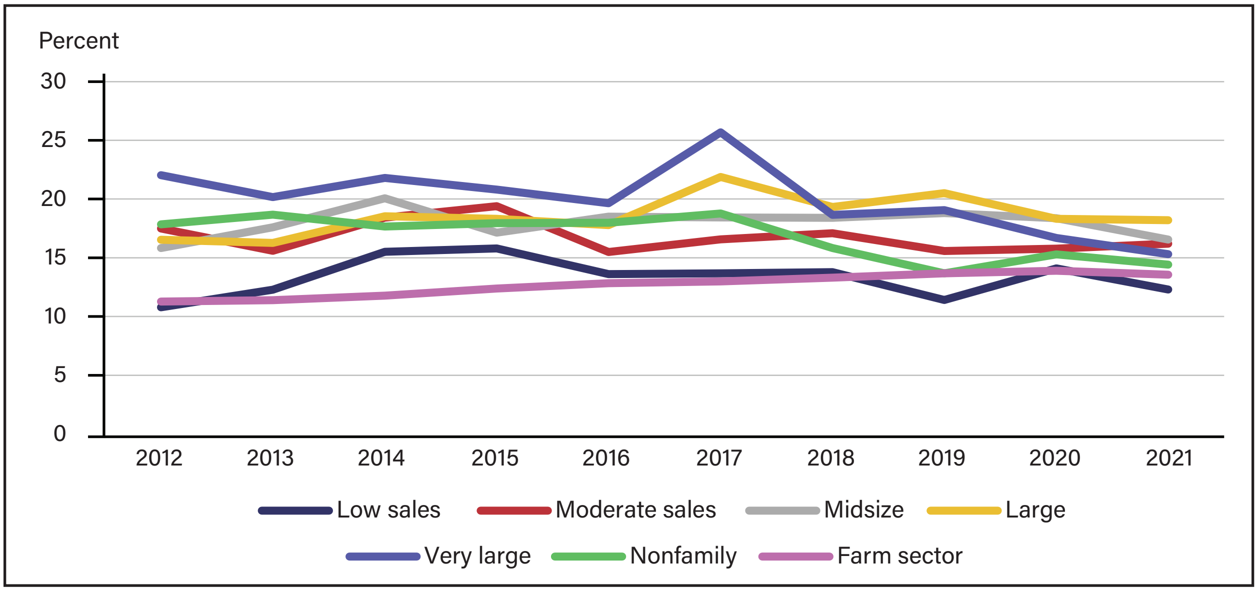


Source: USDA, Economic Research Service analysis of data from 2012 to 2021 USDA, Agricultural Resource Management Surveys.

Figure 9 shows the debt-to-asset ratio calculated using the average debt and average asset values for different types of farm businesses that had at least some debt and for the sector using ARMS data. All types of farm businesses had debt-to-asset ratios higher than or equal to the sector's debt-to-asset ratio for 2012 through 2021, except for low-sales farms in 2019. From 2012 to 2021, these types of farm businesses had average debt-to-asset ratios higher than the overall sector's average ratio by these percentages: low sales, 0.6 percent; moderate sales, 4.1 percent; midsize, 5.3 percent; large, 5.9 percent; very large, 7.3 percent; and nonfamily farm businesses, 4.1 percent. This finding is not surprising because the sector's debt-to-asset ratio includes assets from farms without debt, which would lower the value of the ratio. However, this also means that all farm businesses with at least some debt had more debt than the sector relative to their farm assets.

Figure 9

Farm businesses with debt had a debt-to-asset ratio higher or equal to the sector's debt-to-asset ratio, except for low-sales farms in 2019



Note: Farm sector debt-to-asset ratio calculation includes assets from farm operations with and without debt.

Source: USDA, Economic Research Service analysis of data from 2012 to 2021 USDA, Agricultural Resource Management Surveys.

Farm Business Debt by Lenders

The primary lenders of farm debt are commercial banks, FCS, and USDA's FSA, whose Direct and Guaranteed Farm Loan Programs assist family farmers and ranchers in obtaining commercial credit to start, purchase, or expand their farming operations. Direct loans are provided and administered through FSA offices and included in the category of "USDA, FSA." Guaranteed loans are obtained from USDA-approved lenders (including commercial banks, FCS, and others) and allow family farmers and ranchers to obtain commercial loans at reasonable terms, which can include lower interest rates, to buy farmland or finance agricultural production (USDA, FSA, 2022). USDA, FSA provided guaranteed farm loans through commercial lenders totaling $3.5 billion in 2021 (USDA, FSA, 2022). The total unpaid principal amount of USDA, FSA guaranteed loans was $17.7 billion in 2021. Guaranteed loans are not included in USDA's FSA category but in the commercial banks, FCS, or other categories. Table 3 shows the composition of total debt by lenders for real estate and non-real estate debt from 2021 for different types of farm businesses. The category "other" includes nontraditional lenders.

Table 3

Commercial banks provided the most real estate and non-real estate loans to all farm businesses in 2021 except very large farm businesses

Farm business type	Category	Commercial banks	Farm credit system	Farm Service Agency	Other sources
Small - low sales	Percentage of total real estate loans	43.10	31.89	4.54	20.47
	Percentage of total non-real estate sales	53.48	21.22	3.20	22.10
Small - moderate sales	Percentage of total real estate loans	35.10	31.39	13.96	19.55
	Percentage of total non-real estate sales	46.63	20.64	2.29	30.45
Midsize	Percentage of total real estate loans	38.85	36.09	4.57	20.49
	Percentage of total non-real estate sales	47.48	22.36	4.33	25.84
Large	Percentage of total real estate loans	46.97	34.57	1.73	16.73
	Percentage of total non-real estate sales	52.10	24.15	3.29	20.46
Very large	Percentage of total real estate loans	28.31	49.48	0.85	21.36
	Percentage of total non-real estate sales	43.07	44.63	0.66	11.64

Note: USDA, Farm Service Agency (FSA) loans only include direct loans made by USDA, FSA to the farmer.

Source: USDA, Economic Research Service analysis of data from the 2021 USDA, Agricultural Resource Management Survey. Types of farms are those reporting loans.

Table 3 shows that commercial banks provided more than 43 percent of real estate debt to low-sales farm businesses in 2021. This was almost the same for the entire 2012–2021 period. The FCS provided almost one-third of farm real estate debt to low-sales farms in 2021, which was also consistent across the years. USDA's FSA direct loans provided 4.5 percent of total farm real estate debt. In 2021, commercial banks provided the highest share (53.48 percent) of total non-real estate loans to low-sales farm businesses. The second highest share for real estate loans to low-sales farms was other sources, which included nontraditional lenders and family and friends. Other lenders provided more than 22 percent of non-real estate loans to low-sales farms. FCS and USDA's FSA direct loans provided a lower share of non-real estate loans than real estate loans to low-sales farms. These shares were almost the same through the 2012–2021 period.

Commercial banks provided almost half of real estate and non-real estate loans to moderate sales farm businesses in 2021. FCS provided 31 percent of farm real estate and 21 percent of non-real estate loan volumes. USDA, FSA directly provided 14 percent of farm real estate and 2 percent of non-real estate loan volumes. For low-sales farm businesses, other creditors provided 20 percent of real estate loans and 22 percent of non-real estate loans in 2021.

Like low-sales and moderate-sales farm businesses, midsize farm businesses' largest real estate creditors were commercial banks (almost 39 percent of all farm real estate debt), followed by the FCS (36 percent). USDA, FSA direct loans provided a lower share of total real estate loans to midsize farm businesses compared with moderate-sales farm businesses. Other creditors provided 26 percent of non-real estate debt (at least 26 cents of every dollar) to midsize farms in 2021. Commercial banks provided 47 cents of every dollar in non-real estate loans in 2021 to midsize farm businesses.

Commercial banks provided the largest share of real estate (47 percent of the total) and non-real estate loans (52 percent of the total) to large farm businesses. FCS also held a high share of total real estate and non-real estate debt for large farm businesses. USDA's FSA direct loans held 2 percent of total farm real estate and 3 percent of non-real estate debt. Other creditors provided 17 percent and 21 percent of real estate and non-real estate debt, respectively, to large farm businesses in 2021.

The share of total real estate debt provided to very large farm businesses held by commercial banks (28 percent of the total) was lower than the share owed to FCS (50 percent of the total). This is different than all other farm business types. FCS provided the largest share (45 percent) of non-real estate loans to very large sales farm businesses. This is consistent with all other farm business types. The real estate and non-real estate debt owed to USDA's FSA was less than 1 percent. Other creditors provided 12 percent and 21 percent of non-real estate debt and real estate debt of the respective totals.

Conclusions

Credit is essential for farm businesses to expand operations and survive an economic downturn. Total farm debt, primarily driven by real estate debt, has increased relative to cash receipts over the years. Farm businesses rely on different lenders to meet their credit requirements. Traditionally, commercial banks have provided more non-real estate credit to all farm business types, and this was true for the study period of 2012–2021. Commercial banks were also the largest source of real estate loans for all farm businesses except for very large ones. FCS provided more (as a share of the total) in real estate credit as the farm size increased. As the number of acres owned increased, so did the share of farm businesses with real estate loans. Of all farm businesses that owned some farmland, 19 percent had real estate debt. As the size of farm businesses increased, so did the average, median, and share of total debt. A few farm businesses within each farm business category held very large loans, which resulted in a lower median loan than the average loan.

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