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Carrie Litkowski, editor

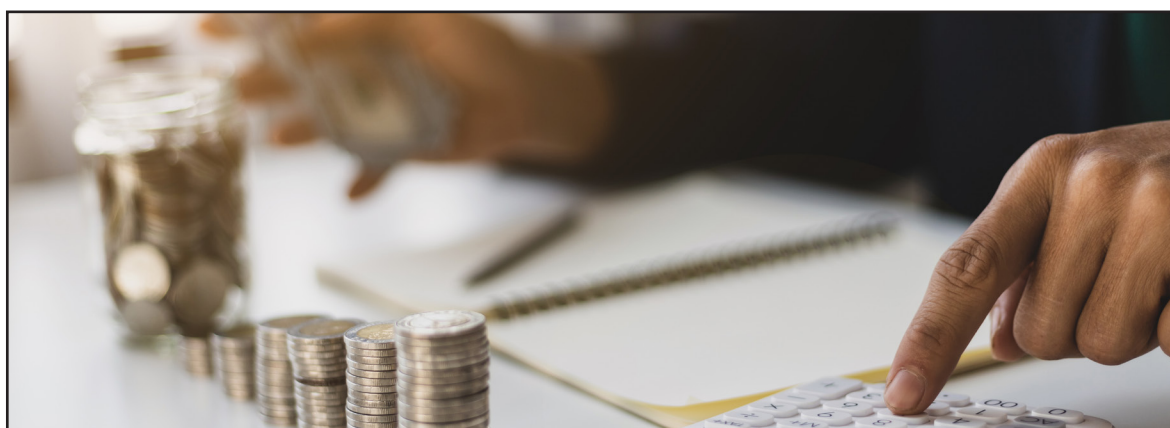




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Agricultural Income and Finance Situation and Outlook: 2021–23 Edition

Carrie Litkowski, editor

Abstract

This report evaluates the effects of higher prices between 2021 and 2023 on farm household income and consumption, analyzes the impacts of rising interest rates on farm financial stress, and reviews the performance of commercial agricultural banks during the 2023 banking crisis. Our analysis suggests that farm households, on average, had income increases that allowed them to maintain their consumption during the high inflation environment. Additionally, among farms with some debt, 3 percent of farm operations were in extreme financial distress in 2023 with a slightly higher share of mid-size farms in extreme financial stress. Following the collapse of three regional banks in 2023, the deposit flow into agricultural banks was minimally impacted with the typical agricultural bank being less susceptible to liquidity concerns than its larger and non-agricultural counterparts.

Keywords: inflation, farm households, farm debt, farm financial stress, agricultural banks

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About the Authors

Carrie Litkowski, Katherine Lim, Anil K. Giri, Noah Miller, Jonathan Law, Dipak Subedi, and Monika Ghimire are economists with USDA, ERS. Tia M. McDonald and Clayton Winters-Michaud were formerly with USDA, ERS.

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A report summary from the Economic Research Service

Agricultural Income and Finance Situation and Outlook: 2021–23 Edition

Carrie Litkowski, editor



Key Points

- Farm household income grew 20 percent between 2019 and 2023, exceeding the growth in both consumer prices (19 percent) and farm household expenditures (16 percent). Income and expenditures for U.S. households in general grew by 23 percent, exceeding consumer price increases and farm household income and expenditure growth.
- The Federal Reserve increased the short-term Federal funds rate to tame persistent inflation, which resulted in higher interest rates and subsequently higher interest expenses. Interest expenses were one of the fastest growing farm production expense categories in 2022 and 2023. In 2023, more than 3 percent of all farm operations were in extreme financial stress, defined as having a debt-to-asset ratio above 55 percent and a term debt coverage ratio of below 1.
- The agricultural banking sector was minimally affected by the regional banking crisis of 2023. Agricultural banks saw less than a 2 percent decrease in deposits held during the first quarter of 2023, on average, compared to more than 6 percent for the average non-agricultural regional bank.

Why Does This Matter?

This report presents three economic studies of the farm sector during the period of high inflation and interest rates starting in 2021, which had the potential to be detrimental to the financial health of farm operations and households. The inflation rate peaked in mid-2022 and then generally fell throughout 2023. This inflationary period was accompanied by higher consumer, farm input, asset, and agricultural commodity prices and higher interest rates. In 2023, higher interest rates and increased bank withdrawals by depositors (including agricultural depositors) precipitated the collapse of three regional banks, representing three of the four largest

bank collapses in U.S. history. The research evaluates the effects of higher prices on farm household income and consumption, analyzes the impacts of rising interest rates on farm financial stress, and reviews the performance of commercial agricultural banks during the 2023 banking crisis. The findings provide insight into the potential vulnerability of the farm and agricultural banking sectors while showing their resilience during this period.

A Few More Details

The first chapter studying farm household well-being used data from the U.S. Department of Agriculture's Agricultural Resource Management Survey (ARMS) to measure farm expenses, household income, and consumption expenditures over time. Information on farm input prices is from the Prices Paid Indices series from USDA, National Agricultural Statistics Service, and household spending information for U.S. households is from the Consumer Expenditure Survey from the U.S. Department of Commerce, Bureau of Labor Statistics. The study of farm financial risk in chapter 2 used data from ARMS to categorize farms and measure financial stress. In chapter 3 the study of agricultural banking during the 2023 regional banking crisis used the U.S. Federal Financial Institutions Examination Council's quarterly Reports on Condition and Income for all commercial banks registered in the United States. Banks were classified based on size (total assets), with agricultural banks being defined as those with at least 25 percent of their loans related to agriculture.

Additional findings from this report include:

Farm Income

- Farm input expenses grew between 2019 and 2023, but gross farm income grew by more, resulting in strong net farm income growth for farm operations.
- Together with increases in farm income, farm households saw rising off-farm income and asset values leading to higher levels of net worth.

Financial Stress

The rate of indebtedness and the share of farm operations in extreme financial stress varied by farm size.

- About three-fourths (75 percent) of all large farms and more than two-thirds (68 percent) of all midsize farms used some debt to fund their operations, compared to less than a quarter (23 percent) of all small farm operations. In aggregate, almost a quarter of all farms had some debt.
- Among borrowers, in 2023, 5 percent of midsize farms were in extreme financial stress, compared to 3 percent of small and large farm operations.
- Among farms with debt, the share in extreme financial stress fell from 2022 to 2023 in every farm size category.

Agricultural Banking

- Agricultural banks had a comparably high share of their assets held as liquid assets, making them more resilient than regional banks to potential deposit outflows.
- There was limited scope for the regional banking crisis to severely impact agricultural lending because only about 12 percent of the total commercial agricultural loan volume (in dollars) was held by regional banks.

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Agricultural Income and Finance Situation and Outlook: 2021–23 Edition

Introduction

Following the onset of the Coronavirus (COVID-19) pandemic, prices in the United States began to increase rapidly in April 2021. In March 2022, in response to inflation, the Federal Reserve began a series of increases in the Federal-funds rate. Annual inflation peaked in June 2022 at 9 percent and then generally fell throughout 2023. Annual 2022 inflation averaged 8 percent compared to 4 percent for 2023 as measured by the Consumer Price Index for All Urban Consumers (CPI-U). The inflationary period was accompanied by higher consumer, input, land, and commodity prices, and by higher interest rates. In 2023, higher interest rates and increased withdrawals by depositors precipitated the collapse of three regional banks, which represented three of the four largest bank collapses in U.S. history. This report presents three studies assessing the impacts of high inflation on the farm sector.

The first chapter evaluates the effects of higher prices on farm household income and consumption. Inflation affects farm households differently depending on their commodity specialization and how dependent they are on farm versus non-farm income. Although input prices and farm expenses rose during the inflationary period, net farm income also increased for most types of farms and across most commodity specializations. The chapter analyzes the extent to which increases in household income allowed farm households to maintain their consumption during the high inflation environment of 2021–23. To provide insight into farm household well-being during this period, the study evaluates how increases in farm household income and consumption expenditures compared to increase in consumer prices.

Farmers with new debt or variable interest rate loans are likely to face a greater increase in borrowing costs because of rising interest rates. Higher rates may affect farmers who are highly leveraged more—that is, those who have relatively high levels of debt compared to their asset values. To better understand how changes in interest rates affected the financial position and exposure of farm operations during the period of higher interest rates, the second chapter estimates the share of operations in financial stress as measured by their debt-to-asset ratio and total debt coverage ratio from 2019–23. The study compares indebtedness and financial stress for farms in different size categories.

The third chapter evaluates how commercial agricultural banks (defined as those banks in which at least 25 percent of total loan volume is for agricultural purposes) fared during the 2023 regional banking crisis. The resilience of the agricultural banking sector is important for the agricultural economy as agricultural banks are primary lenders of real estate and non-real estate credit to farms. The study compares several financial indicators for agricultural banks to those of non-agricultural community, regional, and national banks during a period spanning the banking crisis.

Chapter 1: Farm Household Well-being in the COVID-19 Pandemic Inflationary Period

Katherine Lim, Jonathan Law, and Tia M. McDonald

Introduction

The U.S. economy experienced supply and demand shocks during the years following the arrival of Coronavirus (COVID-19) pandemic that led to overall price increases. This chapter examines the distinct experience of farm households between 2019 and 2023 as business owners and consumers. As producers, farm households saw large increases in the prices of farm inputs and as consumers they faced increases in the prices of goods and services. The effect of these price increases on farm households' well-being depended on whether households were able to continue to afford household purchases through increases in net income.

Input price inflation exposure differed by farm type and commodity specialization based on input expenditures and input price increases between 2019 and 2023. Higher input prices did not correlate with lower levels of net farm income growth for farm operations at the farm type or specialization level, perhaps because other factors like output prices drove changes in net income levels. From the household perspective, we find that farm income grew more quickly than off-farm wage and salary income, and that total farm household income and net worth grew faster than consumer price increases between 2019 and 2023. In addition to income growth, a consumer's inflation experience depends on spending patterns, which for farm households may differ from other U.S. households. Finally, farm households increased spending on food, utilities, and vehicles by more than other U.S. households, but U.S. households saw larger increases in overall spending between 2019 and 2023. We generally find that spending increased by a smaller percentage than income for farm households in contrast to U.S. households overall, who had increases in total spending similar to income growth.

Prices Paid by Farm Businesses, 2019–23

Farm households' income depends, in part, on the performance of their farm business. Between 2019 and 2023, farm businesses faced increasing input prices and supply disruptions. This section uses data on changes in input prices across 12 different farm expense categories from the USDA, National Agricultural Statistics Service (NASS) Prices Paid survey alongside data on reported spending levels for individual farm operations from the USDA, NASS and USDA, Economic Research Service (ERS) Agricultural Resource Management Survey (ARMS) to assess the effects of input price changes on farm businesses. ARMS is a representative survey of farms and ranches across the 48 contiguous United States.

The overall price index for farm sector inputs developed by USDA, NASS increased by about 34 percent from 2019 to 2023. Among the 12 farm expense categories comprising total expenses, prices for purchased livestock increased the most of any category, about 49 percent. Fertilizer and chemical prices saw the second highest increase at 48 percent, followed by fuel and oil prices at about 41 percent.

Rising prices for different farm expense categories may impact farms differently, since the proportion of expenses spent in each category varies among farms. To explore these differences, we calculate an inflation exposure index for farms by USDA, ERS farm typology and commodity specialization, as shown in table 1.1. The index is a weighted average of input price gains from 2019 to 2023 using weights based on the farm type or specialization's input expenditure mix, observed in ARMS data from

2019. The index provides an indication of how much farms have hypothetically been exposed to price inflation under the assumption that their input mix remained unchanged between 2019 and 2023. The inflation exposure index is generally calculated using the following equation:

$$InflationExp = \sum_i PropExpenseCat_i * PPI_i$$

Where $PropExpenseCat_i$ represents the proportion of the farm type or specialization's expenditures accounted for by expense category i in 2019, and PPI_i represents percent growth in expense category i 's corresponding producer price index between 2019 and 2023.

Farms are divided into four different types based on their ownership and size (Hoppe & MacDonald, 2013). Family farms are those that are at least 50 percent owned by an operator and their relatives. These farms are divided into small family farms (those with less than \$350,000 of gross cash farm income (GCFI)), midsize family farms (those with between \$350,000 and \$999,999 of GCFI), and large-scale family farms (those with at least \$1 million of GCFI). Nonfamily farms are those where no one operator or their relatives have a majority ownership. In addition, farm commodity specialization is determined based on the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production.

The value of this index varies minimally across farm types. Small farms faced the lowest average increase in input prices between 2019 and 2023, at 28.8 percent, while large farms saw the largest price gains at 30.9 percent (if they did not change their inputs in response to prices). There is no obvious pattern between farm size and the level of the inflation exposure index.

Our inflation exposure index varies more across commodity specializations. Cattle farms were the most exposed to price inflation with an inflation exposure index of 34.4 percent, while specialty crop farms were the least exposed with an index of 27.6 percent. Our results suggest that farms experienced input price growth regardless of specialization, although the drivers differ by commodity. Purchased livestock price growth was the main contributor to the inflation exposure index for cattle farms, feed prices drove the index for dairy farms, and fertilizer and chemical price growth was the biggest driver of the index for field crop farms.

Table 1.1

Inflation exposure and changes in expenses and income by farm typology and commodity specialization, 2019–23

		Percent change 2019–23		
	Inflation exposure index	Expenses	Gross farm income	Net farm income
Farm typology				
Small family farms	28.8	4.7	7.3	30.2
Midsize family farms	30.2	1.3	4.7	16.1
Large-scale family farms	30.9	44.4	50.8	76.4
Nonfamily farms	30.3	57.2	49.4	17.5
Commodity specialization				
Field crops	30.3	36.5	37.1	37.2
Specialty crops	27.6	39.6	38.7	41.1
Cattle	34.4	21.3	39.0	277.2
Dairy	27.8	25.9	20.8	10.0
Other livestock	29.8	10.5	7.9	8.9
All farms	30.2	29.9	32.5	46.4

Note: The inflation exposure index is a composite change in input prices for each farm type/commodity specialization, weighted by each expense category's proportion of expenses for each type/specialization in 2019. Farms are classified into a typology developed by USDA, Economic Research Service and described in Hoppe and MacDonald (2013). Small farms include retirement farms, off-farm occupation farms, and all other family farms with gross cash farm income (GCFI) of less than \$350,000. Midsize farms include family farms with GCFI between \$350,000 and \$999,999. Large farms include family farms with GCFI of \$1 million or more. Nonfamily farms are those where no one operator and their relatives own at least half the business' assets. A farm's commodity specialization is determined by the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production. Specialty crops include farms specializing in fruit, vegetable, or nursery crops, and field crops category includes farms specializing in any other crop commodity. Gross farm income (GFI) is the total value of agricultural production after accounting for changes in inventories and home consumption, plus Government farm program payments. Net farm income (NFI) is equal to GFI less cash expenses and non-cash expenses, including capital consumption and implicit rent and expenses related to the farm operator's dwelling.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service 2019–23 Prices Paid Indices and 2019–23 Agricultural Resource Management Survey data.

We analyze changes in overall expenditures reported in ARMS to provide an indication of how farms have changed their use of inputs as prices rose between 2019 and 2023. As shown in table 1.1, overall expenses grew for all farm types, with small, midsize, and large farms seeing total expenditure growth of 4.7 percent, 1.3 percent, and 44.4 percent, respectively. Across most spending categories, small and midsize family farms saw smaller increases in expenditures than price increases, but large family farms often increased expenditures by more than price increases, including in expense categories such as fertilizer and chemicals, seeds and plants, other variable costs, and labor.¹

Nonfamily farm expenditures grew 57.2 percent during this period, the most of any family farm type. Across most expense categories, nonfamily farms also generally increased their expenditures by more than prices increased, including in such expense categories as machine hire and custom work, fertilizer and chemicals, seeds and plants, and labor. Similarly, all five commodity specializations saw growth in expenditures from 2019 to 2023. Overall expenses grew less than our inflation exposure index implied for small and midsize family farms and for cattle, dairy, and other livestock farms. Average growth in expenses across all farms was 29.9 percent during the time period, which falls just below our inflation exposure index and the sector level price growth estimate of 34 percent.

¹ Labor expenses only include hired labor excluding any wages paid to the principal operator or compensation for labor contained in the profits from the operation. As wages on- and off-farms rise, farm operator labor increases in value, but this is not reflected in the expenses reported in table 1.1.

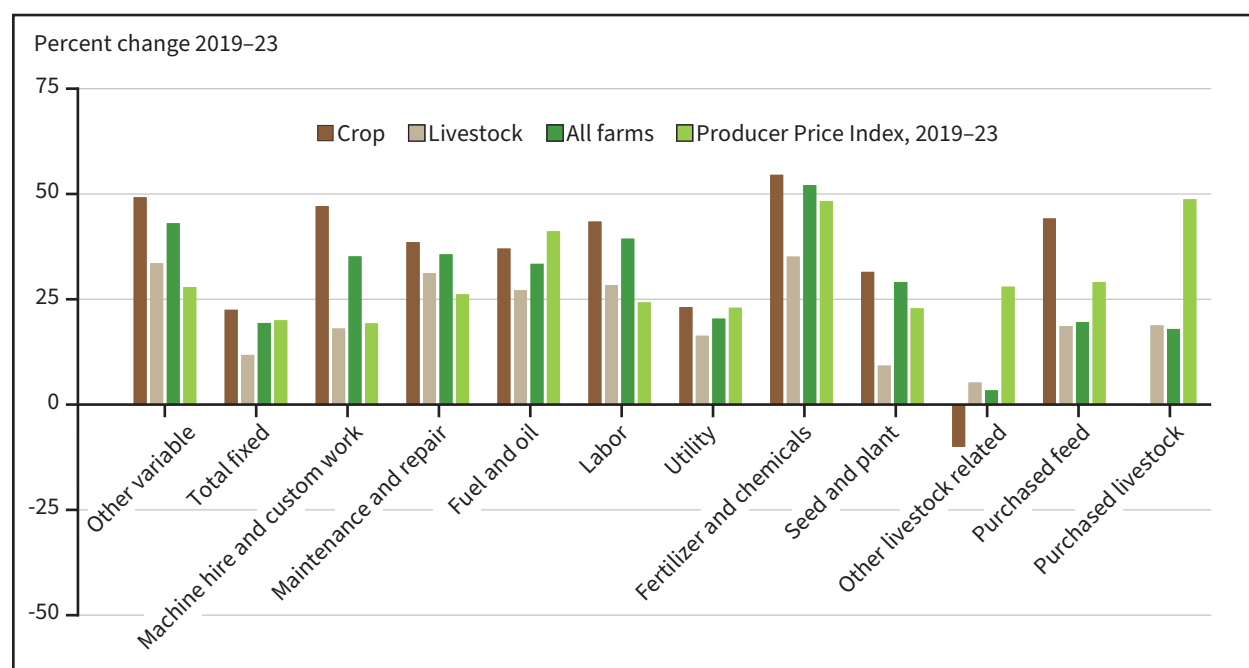
The change in expenditures between 2019 and 2023 can be attributed to changes in the quantity of crops or livestock produced, changes to the mix of inputs used to produce the same farming output, and changes in the crop or livestock production mix. We find some evidence that changes in expenditures were driven in part by changes in production. According to ARMS data, overall harvested acres for all farms grew 12 percent between 2019 and 2023 but changes in acres harvested differed by farm size. Small and medium farm operations saw declines in acres harvested between 2019 and 2023, but smaller declines in total acres operated indicating that these operations may have farmed less extensively in 2023 compared to 2019. Total acres harvested fell 20.7 percent for small farms and 23.6 percent for midsize farms while for large family farms acres harvested grew 36.8 percent. In addition, inventories and production of livestock fell across most livestock types for small farms and across some livestock types for midsize farms. Between 2019 and 2023, the total value of production shifted away from small farms and midsize farms towards large family farms and nonfamily farms, which increased their share of value of production by 4 and 3 percentage points, respectively. While we cannot directly observe changes in input mix because ARMS includes data on expenditures and not quantities of inputs, some farms may have mitigated price increases by using inputs (such as fertilizer or pesticides) less intensively as their prices increased.²

To provide additional context for the changes in overall expenses between 2019 and 2023, figure 1.1 shows the percent change in expenditures and prices for each expense category during this period for all farm operations and broken down by crop or livestock specialization. For crop farms, fertilizer and chemical expenditures increased by 54 percent.³ Fertilizer and chemicals represented 21 percent of crop farms' expenses in 2019. Purchased livestock expenditures rose 19 percent for livestock farms, which was less than the 49 percent price increase in purchased livestock between 2019 and 2023. Purchased livestock accounted for 17 percent of livestock farms' expenses in 2019. The third-largest price increase was in fuel and oil, which accounted for 5 percent of expenditures on average for farms in 2019. Both livestock and crop farms increased their fuel and oil expenditures—by 27 percent for livestock producers and 37 percent for crop farms. These increases, however, were smaller than the 41 percent increase in fuel and oil prices.

² See Paulson et al. (2024) for evidence of changes to inputs in corn and soybean production in response to price changes.

³ Fertilizer and chemical prices reached a peak in 2022, having risen 87 percent from 2019. In 2023, fertilizer and chemical prices fell somewhat from this peak but remained 48 percent above 2019 levels.

Figure 1.1

Percentage change in expenditures and prices, 2019–23

Note: Expense categories show the 12 categories farm operations report in the ARMS survey matched with their associated producer price index (PPI). Certain expense categories' PPIs depicted here are weighted averages of USDA, National Agricultural Statistics Service (NASS)-published PPIs, based on expenditure levels across all farms from 2019; PPIs for these categories are detailed in appendix A. A farm's commodity specialization is determined by the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production. Farm operations are categorized as crop if their specialization is a field or specialty crop and livestock if their specialization is cattle, dairy, or other livestock. Crop farms can have livestock operations and livestock farms can grow crops.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Prices Paid Indices and 2019–23 Agricultural Resource Management Survey data.

Despite rising input prices and expenditures, growth in gross farm income (GFI) outpaced growth in expenditures, resulting in broad-based growth in net farm income (NFI) between 2019 and 2023.⁴ All four farm typologies and all five commodity specializations saw NFI growth during this period. NFI growth is not negatively correlated with our inflation exposure measure or even with expenditure levels during this period. In particular, NFI for large family farms grew 76.4 percent during this period, even though these farms saw the second-largest rise in expenditures among farm types. Small and midsize family farms' NFI grew 30.2 percent and 16.1 percent, respectively. NFI growth for nonfamily farms was the second-lowest among farm typologies at 17.5 percent, as these farms increased expenditures more than any other farm type despite facing average price growth based on their input mix. Among commodity specializations, cattle farms saw strong growth in NFI at 277 percent, likely due to a 49-percent growth in cattle prices between 2019 and 2023 (and despite expenditure growth of 21.3 percent and the highest inflation exposure index value), while specialty crop farms saw the highest growth in overall expenditures at 39.6 percent but the second highest NFI growth at 41.1 percent. Conversely, dairy farms faced a below average inflation exposure index at 27.8 percent but their NFI grew 10.0 percent from 2019 to 2023. Average NFI for all farms increased 46.4 percent from 2019 to 2023, even as average expenditures increased 29.9 percent.

⁴ Gross farm income (GFI) is the total value of agricultural production, after accounting for changes in inventories and home consumption, plus Government farm program payments. Net farm income (NFI) is equal to GFI less cash expenses and non-cash expenses, including capital consumption and implicit rent and expenses related to the farm operator's dwelling.

Farm Household Income Growth

Between 2019 and 2023, net farm income grew for all farm types and commodity specializations examined despite rising input costs. In this section, we turn to income growth at the household level to examine farm households' experience. We focus on the household of the principal operator or the operator most responsible for farm operation decision making.⁵ While net farm income from the farm business contributes to household income, farm households receive income from a variety of sources, which may have experienced differential growth during this period.

Income growth relative to inflation can impact how much a household can continue to consume when prices rise. While consumer prices, as measured by the Consumer Price Index for all urban consumers (CPI-U), were 6.0 percent higher in 2021, 14.4 percent higher in 2022, and 19.2 percent higher in 2023 relative to 2019, average income for farm households grew by more than the consumer price index increase.⁶ From 2019 to 2021, average household income for farm households increased by 9.7 percent and from 2019 to 2022 average farm household income increased by 27.2 percent (figure 1.2). Between 2022 and 2023, average farm income fell so that it was only 19.7 percent higher than 2019 levels. Farm household income can come from farming but can also come from wages and salary earned off farm, in addition to income from nonfarm businesses and any passive income from dividends, interest, or capital gains. Income from farming is comprised of the household's share of net farm income as well as income from any other farm businesses, any wages paid to the household for farm labor, the value of any commodities received by the household, and agricultural payments from the Federal Government.⁷ Each of these sources of income may be impacted differently by inflation, but we focus on two of the largest contributors to farm household income: farm income and off-farm wage income. For farm income, it is possible for both input costs and output prices to be positively correlated with inflation, helping to offset the impact of increased prices. For wage income, inflation adjustments often occur on an annual basis and therefore can occur the year following an inflationary year. Additionally, the extent to which an individual's wages increase with inflation depends on the strength of the labor market and employer demands for their skills.

To assess the growth in farm household income, we examined changes in average farm income and wage income in 2021, 2022, and 2023 relative to 2019. Income from farm and off-farm sources depends on the amount of labor allocated to each endeavor so we also assess changes in hours worked both on and off farm for the principal operator and their spouse. We also examined changes in farm and off-farm net worth for farm households since household well-being and consumption patterns are influenced by yearly income streams as well as more permanent sources of income represented by assets.

For farm households, average farm income was 42 percent higher in 2021 compared to 2019 values, 53 percent higher in 2022, and 60 percent higher in 2023. In contrast, relative to 2019, average wage income was 4 percent lower in 2021 and 20 percent higher in 2022, which may reflect disruptions in employment due to COVID-19 and the lagged impact of inflation on wage income. The gains in wage income in 2022 seem to have eroded in 2023, where average wage income was only 4 percent higher in 2023 relative to 2019. The average number of hours worked on the farm by the principal producer and

⁵ Household-level farm income reflects the principal operator's share of the farm operation income. The operation-level income may be shared across multiple households.

⁶ As measured by the CPI-U, which is calculated for all urban consumers by the U.S. Department of Commerce, Bureau of Labor Statistics.

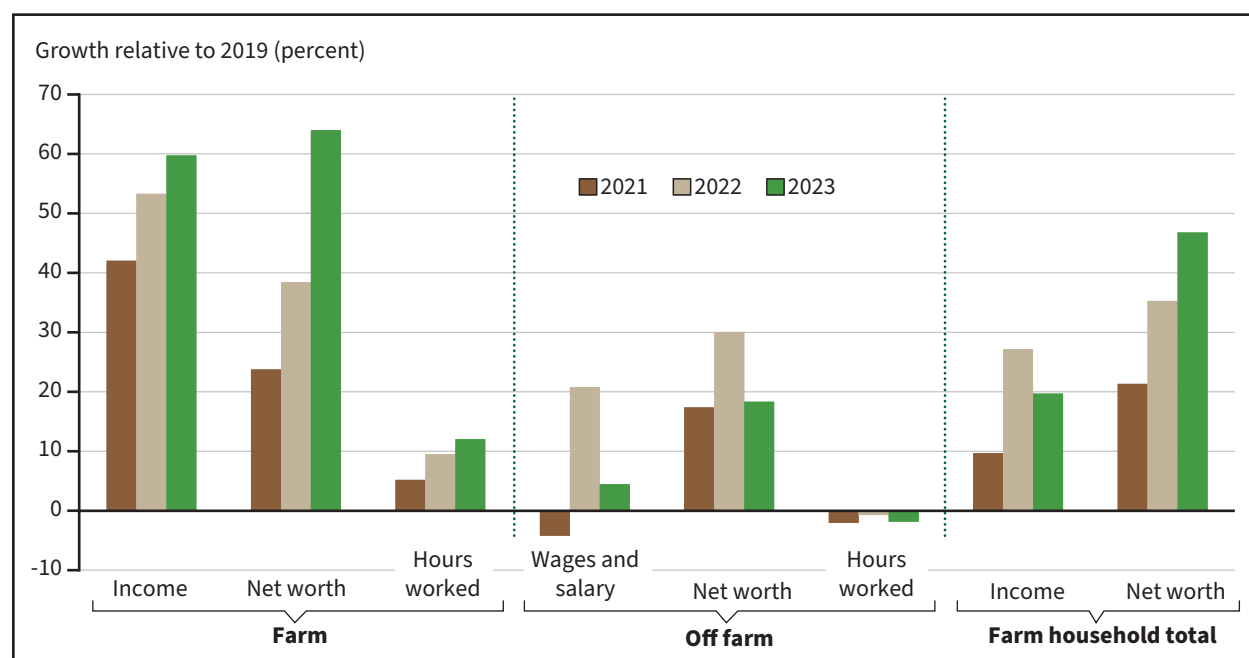
⁷ From 2019–23, the level and relative importance of Federal Government payments to farm households changed. In 2019, Government payments to farm households totaled \$22.5 billion and accounted for 27.4 percent of net farm income. In 2021, Government payments were equal to \$26.0 billion and accounted for 18 percent of net farm income. In 2022 and 2023, Government payments were \$15.6 billion and \$12.3 billion and accounted for 9 and 8 percent of net farm income, respectively (U.S. Department of Agriculture, 2024).

their spouse increased by 5 percent in 2021, 10 percent in 2022, and 12 percent in 2023 relative to 2019. Hours worked off farm were 2 percent lower in 2021, 1 percent lower in 2022, and 2 percent lower in 2023 relative to 2019. The decrease in hours worked off farm, particularly in 2022, coincides with an increase in average wage income for farm households, which suggests increased wages for 2022 in particular.

In 2021, 2022, and 2023, average assets also grew relative to liabilities for farm households. We measure the relative impact of assets and liability growth in terms of net worth which is calculated as total value of assets minus outstanding liabilities from loans. Farm net worth grew by more than off-farm net worth in 2021, 2022, and 2023 relative to 2019 values. In 2021, farm net worth grew by 24 percent compared with off-farm net worth, which grew by 17 percent relative to 2019. In 2022, farm net worth was 38 percent higher than in 2019, while off-farm net worth was 30 percent higher. In 2023, farm net worth was 64 percent higher than in 2019, while off-farm net worth was 18 percent higher than in 2019. Overall, average total household income was approximately \$148,000 in 2023, up from \$123,000 in 2019, and average household net worth was approximately \$2.5 million in 2023, up from \$1.7 million in 2019.

Figure 1.2

Growth in income, hours worked, and net worth for on-farm and off-farm sources



Note: Farm income represents the share of total farm income from the surveyed farm operation received by the principal operator's farm household, income from other farm businesses, wages paid to members of the household for farm labor, and the value of commodities received by the household. Farm net worth represents the total value of all farm assets minus farm debt. Off-farm wages and salary represent household income from wage or salaried labor not associated with the farm. Off-farm net worth represents total off-farm assets minus off-farm debts. Farm and off-farm hours worked include only those worked by the principal operator and spouse. Growth in income and net worth are calculated from nominal values.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019, 2021–23 Agricultural Resource Management Survey.

Farm Household Consumption Patterns

Farm households saw their total income and net worth grow faster than consumer price inflation between 2019 and 2023. In this section, we study farm households' expenditures on consumer goods over this period and compare them to U.S. households more generally.

We would expect that rising prices and rising real incomes would result in higher levels of spending for the average farm household. However, the overall effect of consumer price increases on farm households' well-being depends on the specific price inflation farm households experienced, which may vary based on their spending patterns. For example, a greater share of farm households live in rural areas compared to U.S. households as a whole, and previous research suggests that rural areas saw higher overall price inflation during 2020 and 2021.⁸ Existing work shows differences in the relative weighting of expenditures between rural and urban households, resulting in differential exposure to recent price increases. An analysis by Peters (2023) found that, in general, rural households were more exposed than urban households to fuel and gasoline price increases as they drive longer distances and these prices rose 34 percent between 2019 and 2023. Urban households were more exposed to rent and housing price increases, which also rose during 2021 and 2022.⁹

We assess differences in spending between farm households and U.S. households more generally to examine their responses to consumer price increases between 2019 and 2023.¹⁰ There are no measures of price increases specific to farm households so we use the measures of price changes for urban consumers to assess relative price increases across different categories of spending. Our analysis compares the levels and changes in average household expenditure categories between farm and U.S. households. We use data from ARMS, which asks about spending during the previous calendar year across 12 categories for the principal operator's household. We compare spending levels from ARMS to those from the U.S. Department of Commerce, Bureau of Labor Statistics (BLS) Consumer Expenditure Survey (CE), which includes detailed spending on all U.S. households gathered from both interviews and daily diaries. To compare spending across the datasets, we construct equivalent spending categories as described in detail in appendix A.

The reported total household expenditures varied across the datasets, which may be partially attributable to differences in data collection methods. ARMS data had lower average reported annual household expenditures at around \$35,000 in 2019 compared to \$63,000 in CE data. Average total household income was higher in the ARMS data compared to the CE data, which is consistent with median farm household income historically being higher than median U.S. household income.¹¹

Figure 1.3 shows the average dollar expenditure for selected categories of spending across the datasets for 2019–23. In each category, ARMS expenditures were generally smaller than those reported in the Consumer Expenditure Survey. Food expenditures were the largest category of spending for U.S. households and roughly tied for the largest category for farm households. Comparing the amount spent on utilities and household supplies we similarly observed smaller expenditures among farm households relative to U.S. households overall.

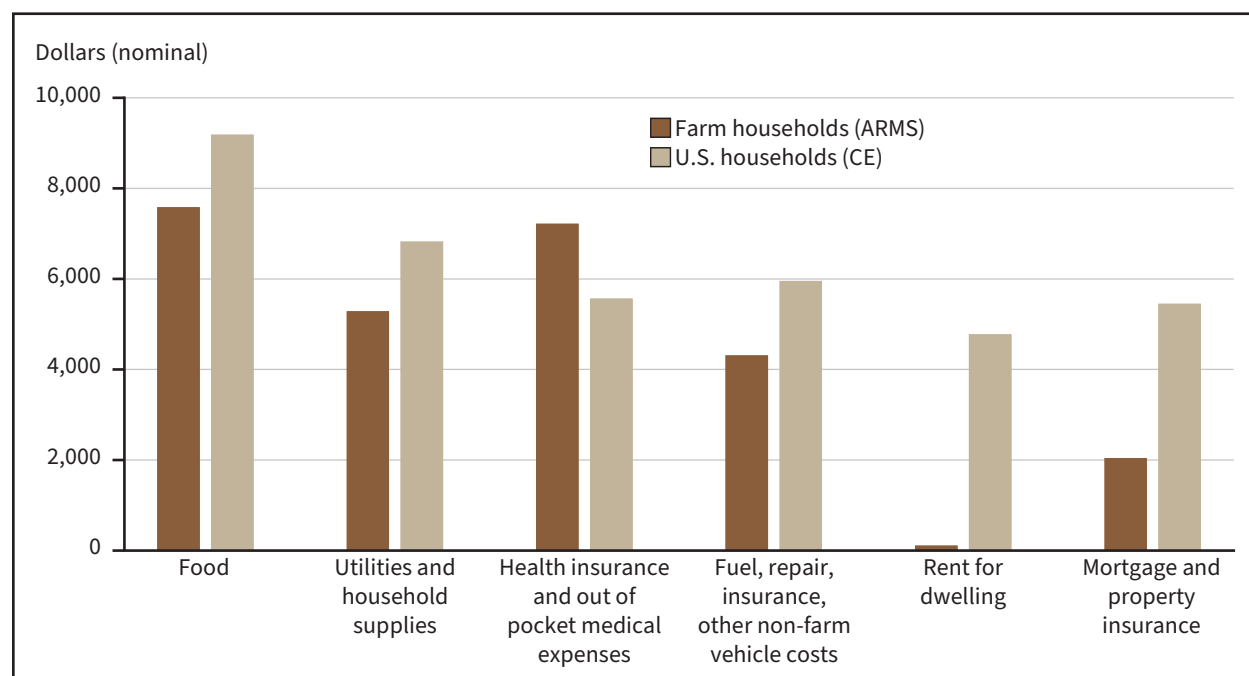
⁸ See Congressional Budget Office (2022) and George and O'Trakoun (2022) analysis, who find rural prices increased between 0.4 percentage points and 1.1 percentage points faster than urban inflation between 2019 quarter 4 and 2021 quarter 4.

⁹ Data measuring price increases for rural households do not exist so this research assumes rural households experienced the same price increases as urban households measured by the CPI-U.

¹⁰ We are unable to construct a consumer-focused inflation exposure index for farm households analogous to the one we constructed for farm expenses due to discrepancies between ARMS in the distribution of farm household spending, differences in the categories of expenditures reported across data sources, and the lack of price indices specific to farm households.

¹¹ See USDA, Economic Research Service (2023) "Farm Household Well-being: Income and Wealth in Context".

Figure 1.3

U.S. average spending in selected expenditure categories, 2019–23

Note: Figure shows average household spending from 2019 through 2023 on selected categories of expenses in nominal dollars. See appendix A for more details on category construction.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey; U.S. Department of Commerce, Bureau of Labor Statistics, 2019–23 Consumer Expenditure Survey.

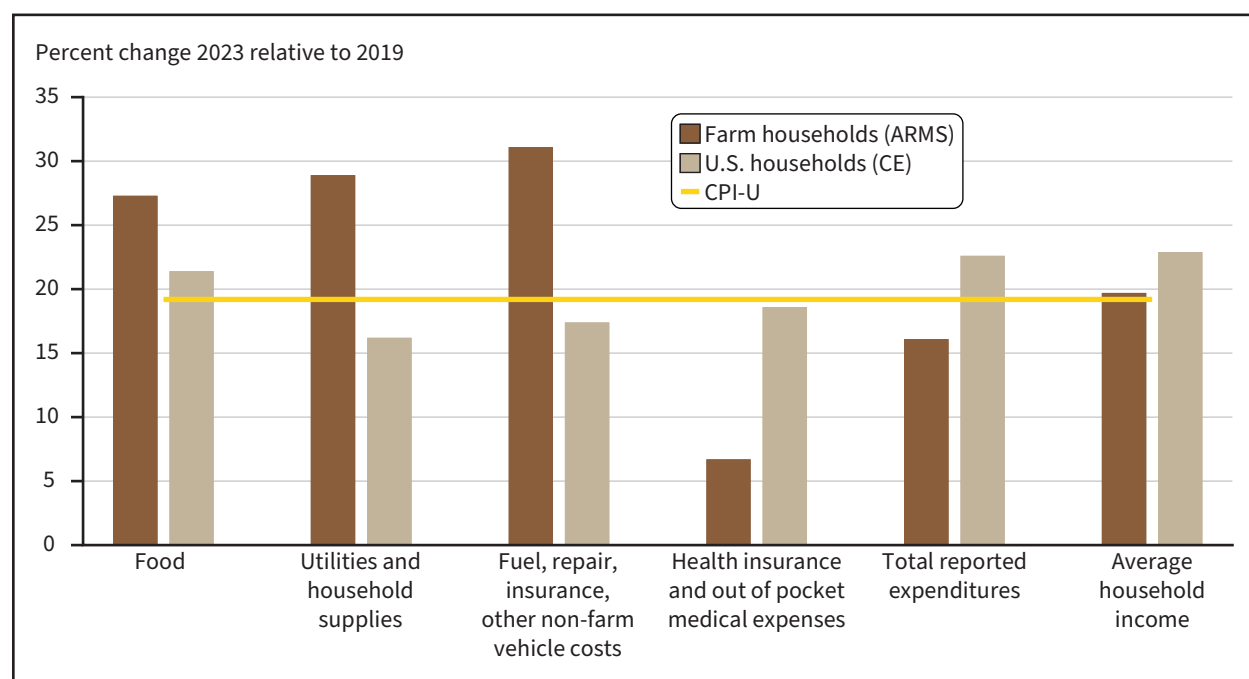
Health insurance and out of pocket medical costs were larger for farm households than for the average U.S. household. Although spending levels in the ARMS data were almost always below CE levels, that was not true for health insurance and medical expenses. The results suggest that farm households spent more on health care costs than U.S. households did generally. The older age of farm households may have contributed to higher health care spending. Additionally, farm households are more likely to be self-employed, potentially lacking employer-sponsored health insurance, which may also have increased both health insurance and out-of-pocket costs.

Farm households reported lower expenditures for vehicles and housing, which may be partially driven by the fact that they are business owners who categorize some of that spending as business expenses that are reflected in farm income data rather than consumption expenditure data. This may also explain why average household expenditures on fuel, repairs, and insurance for non-farm vehicles were smaller for ARMS households compared to U.S. households generally. Average payments for rental housing were negligible for farm households, reflecting the fact that very few farm households are renters. In contrast, among CE households, the average rent expenditure between 2019 and 2023 was \$4,777. Similarly, spending on mortgage interest and property taxes paid on dwellings owned by farm households was much lower than for U.S. households. This may suggest that farm households were more likely to own their homes without a mortgage and that farmers may pay lower property taxes because they benefit from valuing their property based on its use rather than its market value (Anderson et al., 2015). Additionally, for a little over half of farm households in ARMS, these expenses were categorized as business expenses and not household expenditures because the farm operator's dwelling is owned by the business.

Between 2019 and 2023, the overall CPI-U increased by 19 percent, but different categories of spending experienced different price increases. In figure 1.4, we examine the growth in expenditures across selected spending categories between 2019 and 2023. Farm households saw growth in average food expenditures of more than 27 percent between 2019 and 2023, compared to 21 percent for U.S. households in general. The rise in food expenditures for farm households exceeded the increase in food prices measured for urban consumers, which rose by 24 percent between 2019 and 2023, according to the BLS CPI-U data. Farm households may have experienced greater increases in food prices than urban households or changed their consumption patterns differently. The results are consistent with previous findings that rural households eat more at home, which may leave them with fewer options to substitute towards lower spending on food (Weiler & Conroy, 2023). Alternatively, farm households may have changed their food consumption patterns to consume more food away from home or buy more expensive grocery items.

Figure 1.4

Percentage growth in selected expenditure categories, 2019–23



Note: This figure shows the percentage growth in household spending between 2019 and 2023 for selected categories of expenses. See appendix A for more detail on category construction. The horizontal line represents the percentage change in the consumer price index for all urban consumers (CPI-U) between 2019 and 2023.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey; U.S. Department of Commerce, Bureau of Labor Statistics, 2019–23 Consumer Expenditure Survey.

ARMS data suggested large percentage increases in expenditures on utilities and household supplies, while CE data showed smaller increases. Expenditures on fuel, repairs, and insurance costs for non-farm vehicles increased by 31 percent for ARMS households and 17 percent for CE households. These categories saw large increases in prices between 2019 and 2023 with gasoline and motor fuel prices increasing by 34 percent, maintenance and repair costs increasing by 30 percent, and vehicle insurance increasing by 25 percent. Previous work found that rural households were more exposed to fuel and gasoline inflation than urban households (Peters, 2023).

Although farm households had higher average spending on health insurance and out of pocket medical costs, they saw slower growth in these expenditures compared to all U.S. households. Medical care prices generally increased by 10 percent between 2019 and 2023, based on the CPI-U. For U.S. households more generally, those expenditures increased by 19 percent while average health expenditures rose by 7 percent for farm households. The relatively slow growth in health care expenditures reported by farm households is consistent with slower health care price growth or a change in the composition of consumption of health care among farm households during the COVID-19 era. For example, expansions of telehealth options may have differentially affected health care consumption for urban and rural households.

For farm households, total reported household expenditures increased by 16 percent between 2019 and 2023 while U.S. households in the Consumer Expenditure Survey saw expenditures increase by 23 percent. U.S. households generally increased expenditures by more than the 19 percent increase in the overall CPI-U for all urban consumers during the same period, while farm households' expenditures increased by less than the CPI-U. Additionally, average household income between 2019 and 2023 rose by 20 percent for farm households, compared to 23 percent for U.S. households generally. Overall farm household income rose faster than both prices and expenditures from 2019 to 2023, meaning farmers may have been able to increase their assets and savings in recent years. Indeed, we find that farm households saw increasing net worth overall, possibly from increasing farm asset values, greater savings, or decreases in farm debt (figure 1.2).

Conclusion

Our analysis suggests that farm households, on average, had income increases that allowed them to maintain their consumption during the high inflation environment between 2021 and 2023. Although input prices and farm expenses rose during these years, net farm income increased for most types of farms and across most commodity specializations. At the household level, farm income increased faster than wage and salary income between 2019 and 2023 and total household income outpaced the increase in consumer prices over that period. Farm household net worth also increased by more than the rise in CPI-U between 2019 and 2023. If farm households faced similar price increases to those measured by CPI-U, then they may have experienced real income and wealth growth even after accounting for the increases in prices. Our examination of changes in farm household spending found a 16-percent increase in consumer spending that fell short of the 19-percent rise in the CPI-U. The spending and price increases were both smaller than the 20-percent increase in farm household income between 2019 and 2023. While farm households had increases on expenditures on categories like food, utilities, and vehicle costs that exceed 25 percent, their increases in other categories and overall were smaller than other U.S. households. Farm households may also have used strong income and asset value gains to increase their savings as income and wealth growth exceeded household expenditure increases.

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Chapter 2: An Analysis of Farm Financial Stress During High Inflation and Rising Interest Rates

Anil K. Giri, Dipak Subedi, Carrie Litkowski, Monika Ghimire, and Jonathan Law

Introduction

In 2022, a combination of record-high farm sector debt of \$496.2 billion and consecutive short-term Federal funds rate increases caused interest expenses to be one of the fastest growing production expense item for U.S. farm operations. In inflation adjusted dollars, the total farm-sector debt increased 87 percent from \$282.7 billion in 2000 to \$527.3 billion in 2022 (USDA, ERS, 2024a). In March 2022, the Federal Reserve started increasing the short-term Federal funds rate for the first time in 2 years after maintaining a record low short-term Federal funds rate. Recent USDA, Economic Research Service (ERS) studies have provided a comprehensive overview of the debt landscape from lenders and borrower perspective (Subedi & Giri, 2024), examined the financial position and performance of U.S. farms at the sector level (Giri & Subedi, 2024a) and debt-to-asset levels of different farms by specialization and producer's age (Giri & Subedi, 2024b). USDA, ERS releases Farm Income and Wealth Statistics data, which include metrics such as financial ratios related to the farm sector, to provide a sectoral overview of the financial condition. (The U.S. farm income and balance sheet data as of September 3, 2025, including 2025 calendar year forecasts, are presented in appendix B.) This chapter aims to add to those studies by understanding the exposure of farm operations to higher interest rates by analyzing the share of operations in financial stress from 2019–23.

The Federal Reserve initiated the policy of quantitative tightening (increasing the borrowing cost of credit by increasing the short-term Federal funds rate and decreasing total money supply in the economy) in 2022 to tame a high and increasing inflation rate. At the end of 2023, the short-term Federal funds target range was at a 22-year high of 5.25–5.50 percent (U.S. Federal Reserve Bank of St. Louis, 2023). Data from the Chicago Fed Ag Letter shows the average real estate interest rate increased to 7.4 percent in 2023 after decreasing in 2020 (U.S. Federal Reserve Bank of Chicago, 2024). Similarly, the average non-real estate interest rate increased to 8.3 percent in 2023 after decreasing in 2020.

This increase in interest rates can make it harder for farm operations that are already financially stressed to get access to credit and, consequently, an increase in interest expenses could also mean farms are more likely to default on their loan obligations. But, for producers who own land, the asset value of land has appreciated significantly since 2019 (USDA, ERS, 2024b). Additionally, based on the data from the Agricultural Resource Management Survey (ARMS), the average value of current assets¹² of farm households was \$84,953 in 2019. The amount increased to \$122,091 in 2023, providing producers with more loan collateral. Furthermore, farms with more liquid financial assets, such as bank deposits, benefit from higher interest rates as they earn more interest income.

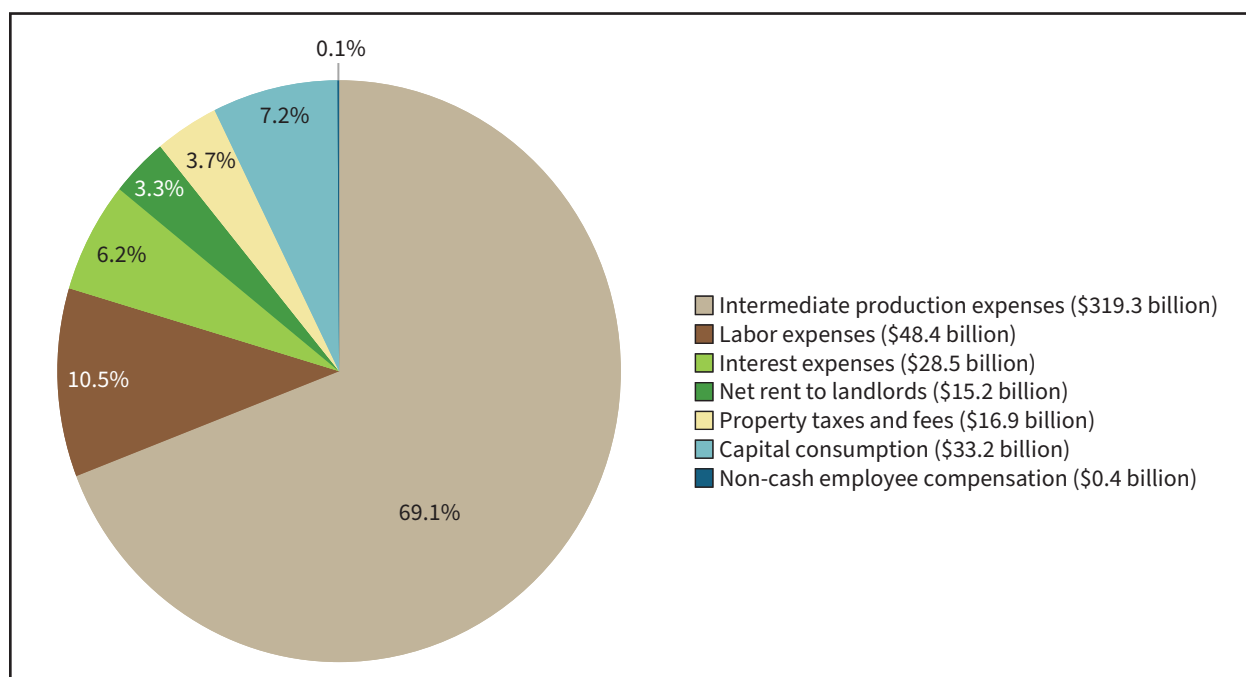
Higher interest rates will increase borrowing costs most for farm operations with variable interest rate loans and those that obtain new credit. Cowley et al. (2024) found that nearly half of the bankers responding to the Federal Reserve Bank of Kansas City's Survey of Agricultural Credit Conditions reported that more than 80 percent of farmland loans in their bank's portfolio had variable interest rates in 2023. Furthermore, the same study found that half of those loans with variable rates were scheduled to have their loan rates repriced within the next 6–18 months (Cowley et al., 2024).

¹² Current assets are assets that may be converted into cash, sold, or consumed within 1 year or less.

Based on 2022 ARMS data, 24 percent of all farms used some debt to fund their operations. About three-fourths (75 percent) of all large farms and more than two-thirds (68 percent) of all midsize farms used some debt to fund their operations, compared to less than a quarter (23 percent) of all small farm operations. Total interest expenses (including for operator dwellings) for the farm sector in 2023 were \$28.5 billion, or 6.2 percent of total production expenses (figure 2.1). Interest expenses were among the fastest growing production expenditures in 2022 and 2023. In 2022, interest expenses increased by 25.0 percent compared to 2021, and in 2023 they grew by 17.1 percent compared to 2022 (figure 2.2).

Figure 2.1

U.S. farm production expenses, 2023

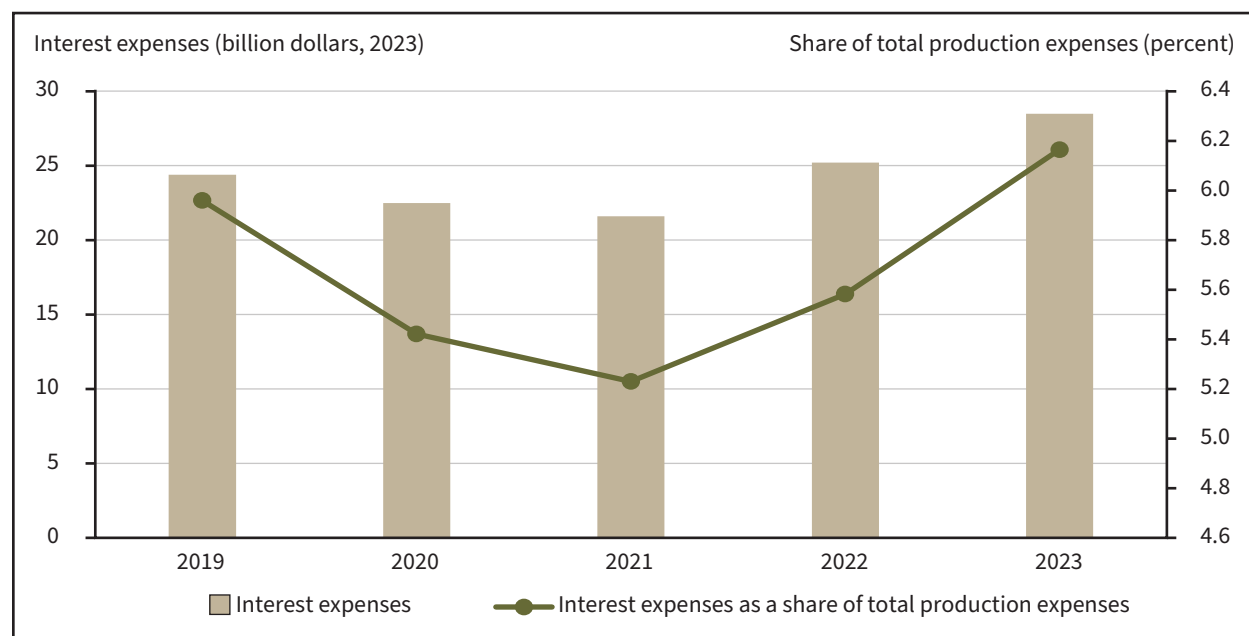


Note: Intermediate production expenses are the cost of inputs used in the production process and include farm-origin expenses (such as feed), manufactured expenses (such as pesticides), and other intermediate expenses. Capital consumption represents the loss in value (or depreciation) of farm-sector capital assets in a given year due to their use in the production process.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics, data as of September 5, 2024.

Figure 2.2

Interest expenses, including operator dwellings, and interest expenses as a share of total production expenses, 2019–23



Note: Values are adjusted for inflation using the U.S. Department of Commerce, Bureau of Economic Analysis, Gross Domestic Product Price Index (BEA API series code: A191RG), rebased to 2023.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics, as of September 5, 2024.

Data and Methods

We calculate and examine the share of financially stressed farm operations that held some debt using the same USDA, ERS farm classification and for the same years (2019 through 2023) as in chapter 1. Following Key et al. (2019), we employ the same three indicators of farm financial stress: (a) term debt coverage ratio (TDCR) less than one; (b) debt-to-asset ratio above 55 percent; and (c) both a and b.

A Financially Stressed Farm: A Term Debt Coverage Ratio (TDCR) Approach

Term debt coverage ratio (TDCR) is the capital debt repayment capacity divided by the total principal and interest on term debt (debt that has a set payment schedule). The capital debt repayment capacity is the income that a household has available to pay its debt, which includes the net farm income from the operation plus nonfarm income minus household living expenses plus interest on term debt.¹³ A larger ratio indicates a bigger margin to cover loan payments. A ratio of less than one indicates the farm household does not have sufficient income to meet its loan payments. Following Key et al. (2019), farms are considered financially stressed if they are in the TDCR red zone. TDCR red zone refers to farms with a TDCR of less than one.

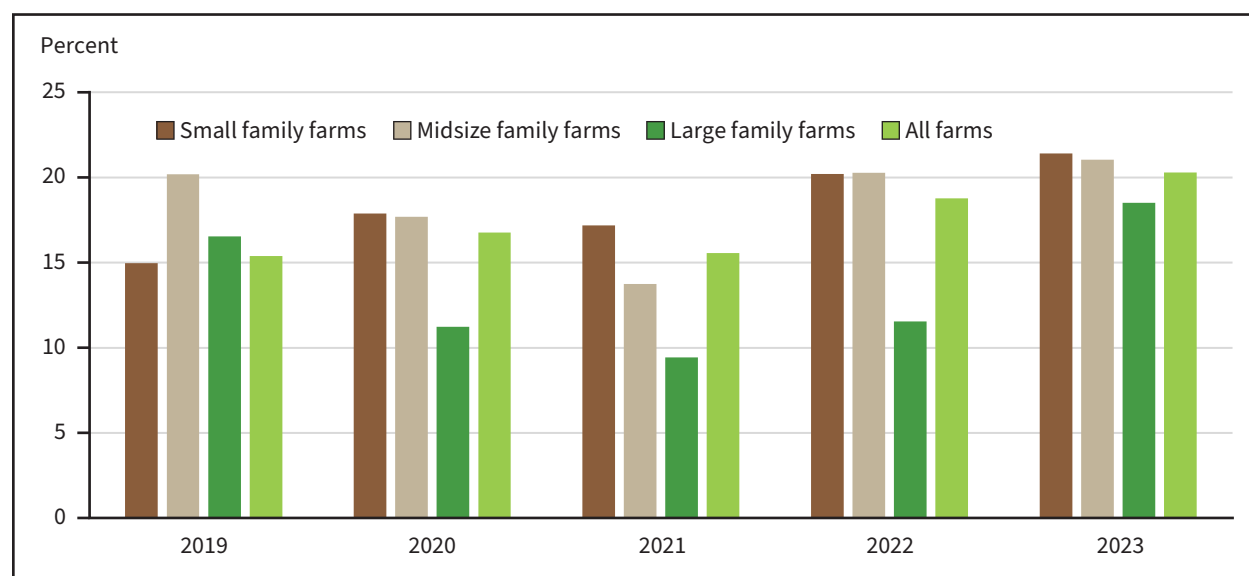
Figure 2.3 shows that for all farms, the share of operations in the TDCR red zone in 2023 increased 5 percentage points, from 15 percent in 2019 to 20 percent in 2023. In fact, for each farm class, the share of operations in the red zone increased in 2023 compared with 2019. Small family farms saw

¹³ Interest expenses are subtracted out in the calculation of net farm income, so they must be added back into the numerator to measure the income available to make loan payments. The Farm Financial Standards Council recommends that income tax expenditures be subtracted from income in the numerator (FFSC, 2014). However, these expenses are not observed in ARMS so they are not subtracted. The TDCR would be lower if tax expenditures were subtracted from income.

the largest growth in the share of farms in the TDCR red zone, increasing from 15 percent in 2019 to 21 percent in 2023. The lowest increase was among the midsize family farms, which saw the share of farms in the TDCR red zone increase 1 percentage point in 2023 (21 percent) compared with 2019. This increase in the share of all farms and farm operations in each class in the TDCR red zone followed a decrease for all farm types (except small farms) and farms in each class in 2021 compared with 2019. The decrease in 2021 coincides with the record low short-term Federal funds rates in 2020 and 2021. There were no nonfamily farms that had a term-debt coverage of less than one in the years 2019–23.

Figure 2.3

Share of farms by farm category that were financially stressed based on the term debt coverage measure (TDCR), 2019–23



Note: Farms are classified into a typology developed by USDA, Economic Research Service and described in Hoppe and MacDonald (2013). Small farms include retirement farms, nonfarm occupation farms, and all other family farms with gross cash farm income (GCFI) of less than \$350,000. Midsize farms include family farms with GCFI between \$350,000 and \$999,999. Large farms include family farms with GCFI of \$1 million or more. Nonfamily farms are those where no one operator and their relatives own at least half the business' assets. A farm's commodity specialization is determined by the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production. Gross farm income (GFI) is the total value of agricultural production, after accounting for changes in inventories and home consumption, plus Government farm program payments. Net farm income (NFI) is equal to GFI less cash expenses and non-cash expenses, including capital consumption and implicit rent and expenses related to the farm operator's dwelling. The share of farm operations for each category is calculated as the number of farms that used credit and had a TDCR value less of than one, divided by the total number of farms using credit within the calendar year. Farms that didn't use credit (had neither any term debt nor an operating loan within the year) are excluded from the analysis. Nonfamily farms are not shown in the chart as none of them had a TDCR of less than one in any of the years.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey (ARMS).

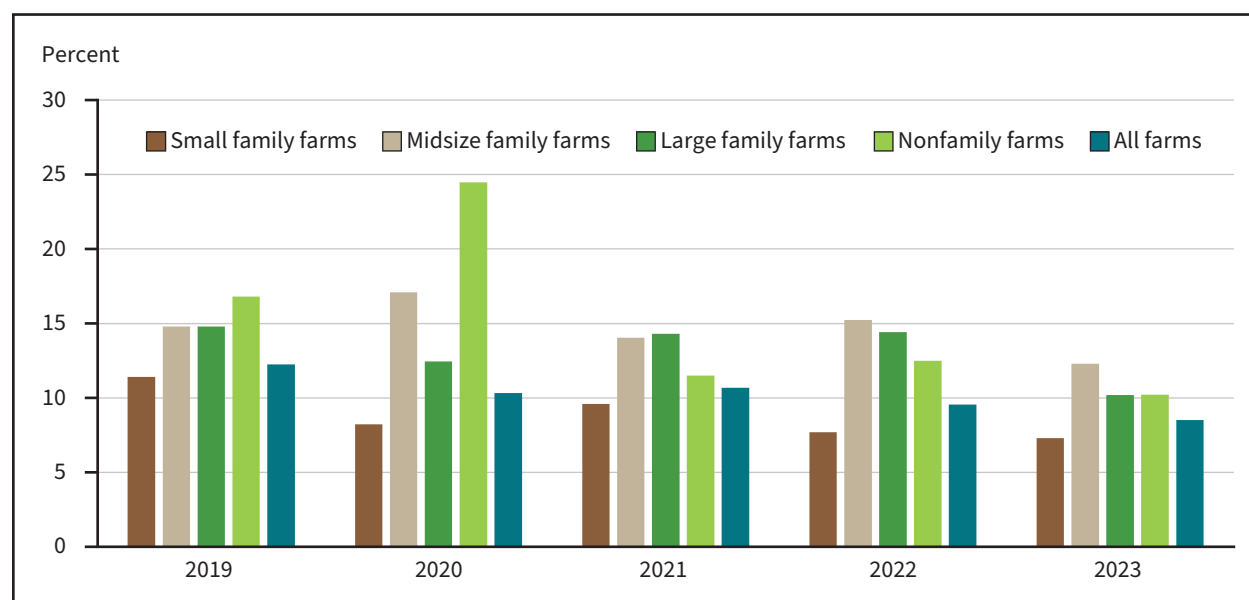
A Financially Stressed Farm: A Debt-to-Asset Ratio Approach

The debt-to-asset ratio is a commonly used measure of solvency that indicates a business's ability to cover its financial liabilities through the sale of assets. The debt-to-asset ratio—total farm debt divided by total farm assets—is a measure of a farm business's leverage and is used by lenders as an indicator of bankruptcy risk. Farms with a high debt-to-asset ratio have less ability to cover potential financial liabilities through the sale of assets, leading to a greater risk of default. Following Key et al. (2019), Kohl and Wilson (1997), and Ahrendsen and Katchova (2012), we use 55 percent as the critical debt-to-asset threshold above which farms are in a solvency red zone.

Figure 2.4 shows the share of farm operations in the solvency red zone (measured using debt-to-asset ratio) was lower in 2023 than in 2019 for all farm sizes and across all farm types, with nonfamily farms showing the largest decline. This is most likely because the value of the assets (especially land) increased significantly beginning in 2021, boosted by record low interest rates which increased the demand for land. In 2023, 9 percent of all farm operations with some debt were in the solvency red zone. The largest share of farms in the solvency red zone were midsize family farms (12 percent) and the smallest share were small family farms (7 percent).

Figure 2.4

Share of farms by farm category that were financially stressed, based on a debt-to-asset ratio exceeding 55 percent, 2019–23



Note: Farms are classified into a typology developed by USDA, Economic Research Service and described in Hoppe and MacDonald (2013). Small farms include retirement farms, nonfarm occupation farms, and all other family farms with gross cash farm income (GCFI) of less than \$350,000. Midsize farms include family farms with GCFI between \$350,000 and \$999,999. Large farms include family farms with GCFI of \$1 million or more. Nonfamily farms are those where no one operator and their relatives own at least half the business' assets. A farm's commodity specialization is determined by the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production. Gross farm income (GFI) is the total value of agricultural production, after accounting for changes in inventories and home consumption, plus Government farm program payments. Net farm income (NFI) is equal to GFI less cash expenses and non-cash expenses, including capital consumption and implicit rent and expenses related to the farm operator's dwelling. The share of farm operations for each category is calculated as the number of farms that used credit and had a TDCR value less of than one, divided by the total number of farms using credit within the calendar year. Farms that didn't use credit (had neither any term debt nor an operating loan within the year) are excluded from the analysis. Nonfamily farms are not shown in the chart as none of them had a TDCR of less than one in any of the years.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey (ARMS).

Extremely Financially Stressed Farms

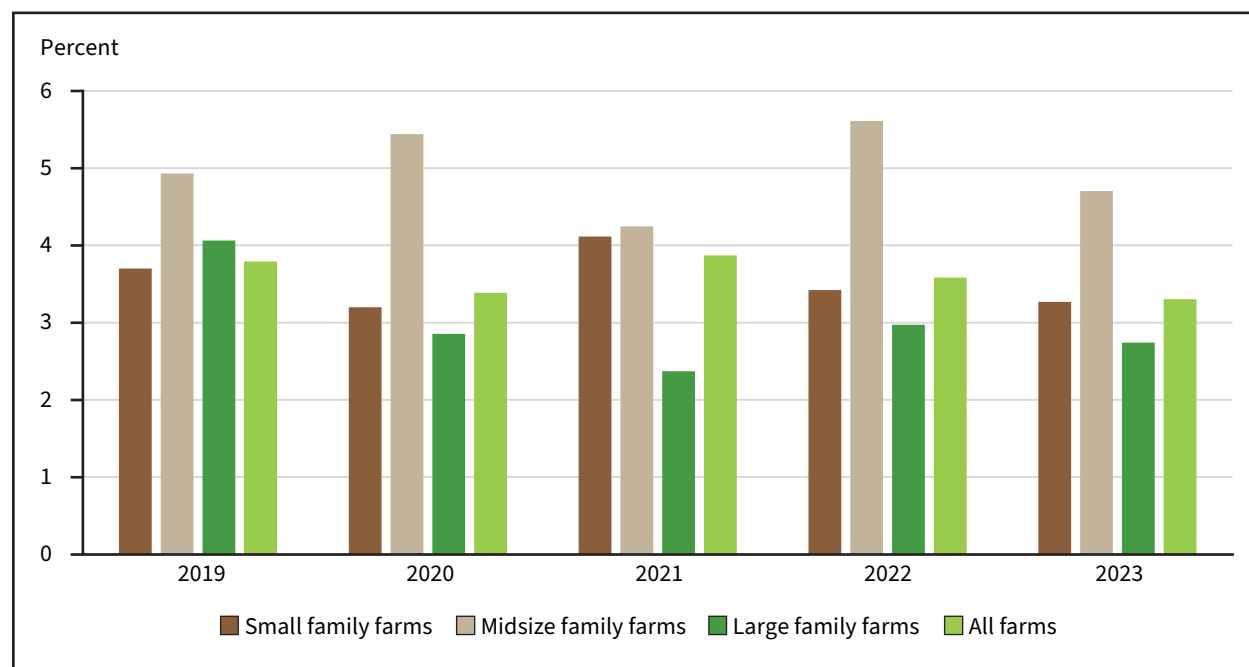
Farm operations that are in a red zone for both measures (a TDCR less than one and a debt-to-asset ratio greater than 55 percent) are considered in extreme financial stress. Farm operations in extreme financial stress would not have enough household income to meet their principal and interest payments and would be heavily leveraged and therefore unlikely to be able to obtain new loans.

Figure 2.5 shows the share of farm operations in each category that are classified as being in extreme financial stress. Because farm operations have to meet both previous metrics (TDCR less than one and debt to asset ratio above 55 percent), the share of farm operations considered to be in extreme

financial stress is lower than for the first two metrics. In fact, 4 percent or less of all farm operations with some debt were extremely financially stressed in any year from 2019–23. A slightly higher share of midsize farms were in extreme financial stress every year of the study period compared to other farm types. This was true for 2023 as well, when 3 percent of all other farm types (small and large) were in extreme financial stress but, a higher share of midsize farms (5 percent) were in extreme stress. Since none of the nonfamily farms had TDCR of less than one, none meet both metrics.

Figure 2.5

Farms in extreme financial stress, 2019–23



Note: Farms are classified into a typology developed by USDA, Economic Research Service and described in Hoppe and MacDonald (2013). Small farms include retirement farms, nonfarm occupation farms, and all other family farms with gross cash farm income (GCFI) of less than \$350,000. Midsize farms include family farms with GCFI between \$350,000 and \$999,999. Large farms include family farms with GCFI of \$1 million or more. Nonfamily farms are those where no one operator and their relatives own at least half the business' assets. A farm's commodity specialization is determined by the one commodity or related groups of commodities that make up at least 50 percent of the farm's total value of production. Gross farm income (GFI) is the total value of agricultural production, after accounting for changes in inventories and home consumption, plus Government farm program payments. Net farm income (NFI) is equal to GFI less cash expenses and non-cash expenses, including capital consumption and implicit rent and expenses related to the farm operator's dwelling. The share of farm operations for each category is calculated as the number of farms that used credit and had a TDCR value less of than one, divided by the total number of farms using credit within the calendar year. Farms that didn't use credit (had neither any term debt nor an operating loan within the year) are excluded from the analysis. Nonfamily farms are not shown in the chart as none of them had a TDCR of less than one in any of the years.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey (ARMS).

Conclusion

This chapter aims to better understand how farms with debt fared during the period of high inflation and interest rates from 2019–23. We found that about one-fourth of all farm operations fund their farm operations with some debt. Among these indebted operations, we estimated the share most likely to face financial challenges using two metrics: (a) TDCR of less than one and (b) debt to asset ratio above 55 percent. Farms that meet both criteria were defined as facing extreme financial stress. Of the farms with some debt, 3 percent of farm operations were in extreme financial distress in 2023. However, the share of farm operations in extreme financial stress varied among different farm types. For instance,

none of the nonfamily farms were in extreme financial stress whereas consistently a higher share of midsize family farms were in extreme financial stress. In general, the metrics did not show an increase in financial stress in 2023 compared to previous years for all farms and farms in different categories.

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Chapter 3: A Comparison of Agricultural and Non-Agricultural Bank Performance Surrounding the Regional Banking System Crisis of Early 2023

Clayton Winters-Michaud and Noah Miller

Introduction

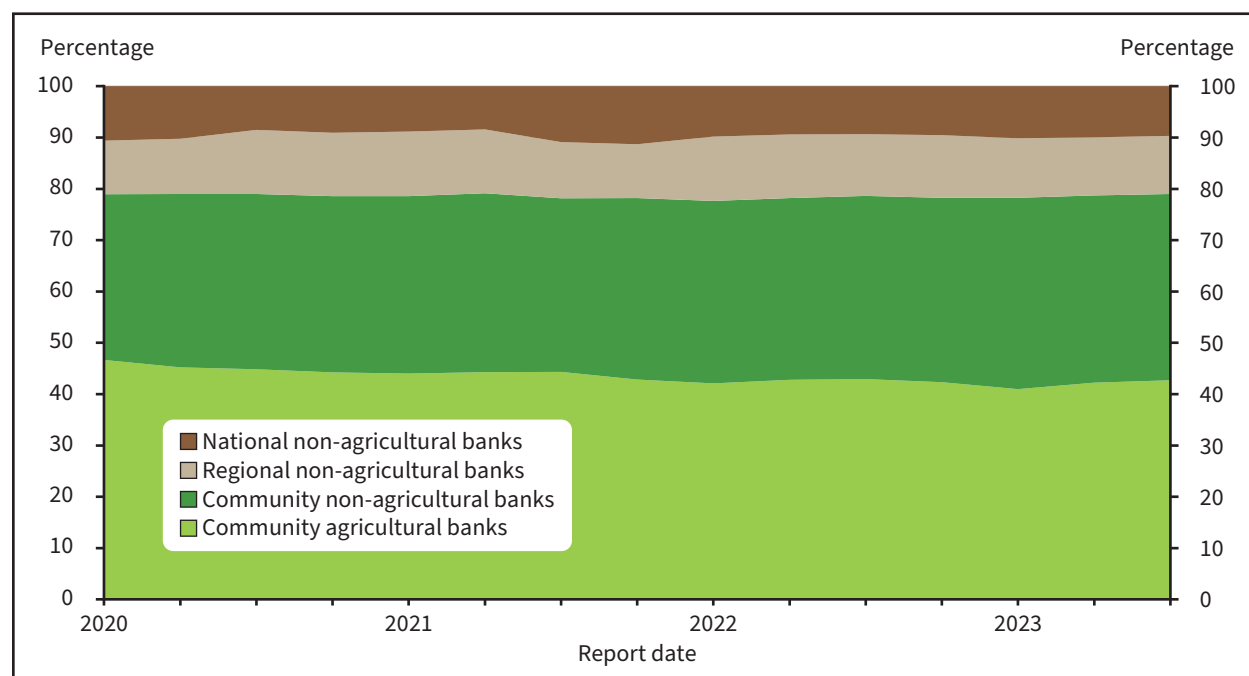
A combination of interest rate hikes by the Federal Reserve and withdrawals by depositors precipitated the collapse of three regional banks in 2023—Silicon Valley Bank and Signature Bank in mid-March and First Republic Bank in May—representing three of the four largest bank collapses in U.S. history (Gupta et al., 2023). This period has come to be known as the 2023 regional banking crisis. This study examines how agricultural banks (using the Federal Reserve’s definition as those banks in which at least 25 percent of total loan volume is for agricultural purposes) fared during the 2023 regional banking crisis. The resilience of the agricultural banking sector has important implications for the agricultural economy, as agricultural banks are primary lenders of real estate and non-real estate credit to farms and ranches. Agricultural banks hold more than 40 percent of all agricultural loans held by commercial banks despite accounting for only 1 percent of total assets within the larger banking system. Understanding the regional banking crisis is also important for agricultural stakeholders as regional banks often provide essential credit to farmers and other agricultural businesses and the health of the regional banking sector is closely tied to the economic stability of the rural economy. Understanding past crises can also help in the development of better risk management strategies.

In this chapter, we provide a brief examination of the performance of the agricultural banking sector during the regional banking crisis by comparing financial indicators for agricultural banks to those of non-agricultural community, regional, and national banks during that time. Using definitions provided by the Federal Reserve, community banks are those with less than \$10 billion in total assets, regional banks are those with between \$10 and \$100 billion in total assets, and national banks are those with more than \$100 billion in total assets (Federal Reserve, 2021). According to these definitions, there are no regional or national agricultural banks, as the largest agricultural bank holds \$5.3 billion in total assets. Thus, our analysis consists of comparing agricultural banks to non-agriculture community banks, as well as regional and national banks.

Our analysis finds that the deposit flow into agricultural banks was minimally impacted during the crisis. Unlike regional banks, which saw deposits decline by more than 6 percent on average during the first quarter of 2023, agricultural banks saw less than a 2-percent decline in deposits on average during this same time. Non-agricultural community banks saw a similar but more modest deposit flight during this time, while national banks saw increased deposits. Analysis of their composition of assets, including the amount of cash and amount of assets that could easily be converted to cash, also suggests that the agricultural banking sector was relatively well-positioned to handle potential deposit outflows as compared to regional and non-agricultural community banks.

We find that agricultural lending more generally was also in a resilient position going into the regional banking crisis, with roughly 12 percent of agricultural loans held by regional banks. Together, agricultural and non-agricultural community banks held roughly 80 percent of all agricultural loans, a share that remained steady across 2020–23 (figure 3.1).

Figure 3.1

Share of agricultural loans by different bank types

Note: Agricultural banks are defined as banks in which 25 percent of the total loan volume is for agricultural purposes. Community banks are defined as having less than \$10 billion in total assets, regional banks as having between \$10 billion and \$100 billion in total assets, and national banks as those with more than \$100 billion in total assets. According to these definitions, there are no regional or national agricultural banks.

Source: USDA, Economic Research Service estimates based on Federal Financial Institutions Examination Council's quarterly call report data.

Methods

Using quarterly call report data for all commercial banks registered in the United States (detailed in the next section), we create several basic financial measures at both the bank and sector level. We begin by calculating the distribution of total assets for each sector as of December 31, 2022—the quarter before Silicon Valley Bank collapsed. The composition of total assets leading to the crisis can provide a basic understanding of the health of the banking sector, particularly in terms of cash on hand and other liquid assets that may need to be sold in the case of a bank run. We then look specifically at deposit flight during the crisis by comparing the average amount of deposits held by each bank type in each quarter, from the fourth quarter of 2022 to the third quarter of 2023. This allows us to see whether agricultural banks experienced the same deposit flight that regional banks were reported to experience. We next perform a similar analysis by looking at the share of total assets that are liquid assets and can therefore be easily sold to ensure all deposits can be honored. We do this at both the sector level (total liquid assets divided by total assets) and at the bank level, using both the median share of liquid assets for each bank type as well as the bottom 10th percentile. This analysis provides an indication of which types of banks would be most susceptible to liquidity issues in the case of a bank run. Lastly, we examine the distribution of agricultural loans across the four bank types by calculating the share of all agricultural loans held by each bank type from the first quarter of 2020 to the third quarter of 2023. We do this to both examine trends in agricultural lending more broadly before and after the crisis, as well as to get a sense of how much agricultural lending is carried out by regional banks.

Data

We use the Federal Financial Institutions Examination Council's (FFIEC) quarterly Reports on Condition and Income for all commercial banks registered in the United States. In the fourth quarter of 2022, there were 4,756 banks listed in the dataset. We are specifically interested in responses to questions regarding bank balance sheets, including information on assets, liabilities, and equity capital. These data were cleaned following the methods used by den Haan et al. (2002) and Key et al. (2019). Specifically, consolidated domestic and foreign totals were used to approximate domestic totals for banks that do not report domestic totals.

We use loan and asset variables to classify bank types, based on the previously discussed definitions. Banks are classified based on their assets and agricultural loans in each quarter, allowing banks to move between bank types over time. According to these definitions, there were no regional or national agricultural banks, despite substantial amounts (in absolute terms) of agricultural debt being held by large banks. Summary statistics across our four bank types are shown in table 3.1.

Table 3.1

Summary statistics by bank type as of December 31, 2022

Bank type	Statistic	Assets					Liabilities	
		Total assets	Liquid assets	Cash	Ag loan volume	Share of loans in agriculture	Total liabilities	Deposits
		Thousand U.S. dollars					Thousand U.S. dollars	
Community agricultural banks (N=1,064)	Mean	283,596	91,681	16,513	75,516	48	259,131	244,879
	Median	161,616	56,080	9,588	43,998	45	144,992	139,996
	Total	301,745,931	97,549,073	17,570,149	80,348,854		275,715,278	260,550,724
Community non-agricultural banks (N=3,534)	Mean	887,133	246,157	56,723	19,293	5	798,984	742,391
	Median	373,979	105,869	20,190	3,357	2	337,216	319,221
	Total	3,135,128,729	869,917,071	200,460,001	68,181,427		2,823,607,689	2,623,610,147
Regional non-agricultural banks (N=124)	Mean	28,912,480	7,835,584	1,630,020	186,990	1	25,989,500	23,206,250
	Median	20,610,570	5,464,330	733,501	24,768	0	18,466,980	17,058,150
	Total	3,585,147,520	971,612,416	202,122,480	23,186,723		3,222,698,000	2,877,575,000
National non-agricultural banks (N=34)	Mean	488,032,800	192,098,500	63,684,750	532,860	0	443,394,600	351,871,400
	Median	207,657,600	71,545,500	23,393,230	100,189	0	190,189,000	167,647,700
	Total	16,593,115,200	6,531,349,000	2,165,281,500	18,117,240		15,075,416,400	11,963,627,600
All banks (N=4,756)	Mean	4,965,336	1,780,998	543,615	39,915	15	4,499,041	3,726,948
	Median	321,507	92,997	17,018	7,418	5	290,842	276,350
	Total	23,615,138,016	8,470,426,488	2,585,433,891	189,834,218	NA	21,397,438,996	17,725,364,688

Note: Using definitions provided by the Federal Reserve, agricultural banks are defined as banks in which 25 percent of total loan volume is for agricultural purposes. Community banks are defined as having less than \$10 billion in total assets, regional banks as having between \$10 billion and \$100 billion in total assets, and national banks as those with more than \$100 billion in total assets. According to these definitions, there are no regional or national agricultural banks. The heading “Ag share of total loans” refers to the share of agricultural loans to total loans.

Source: USDA, Economic Research Service estimates based on Federal Financial Institutions Examination Council's quarterly call report data.

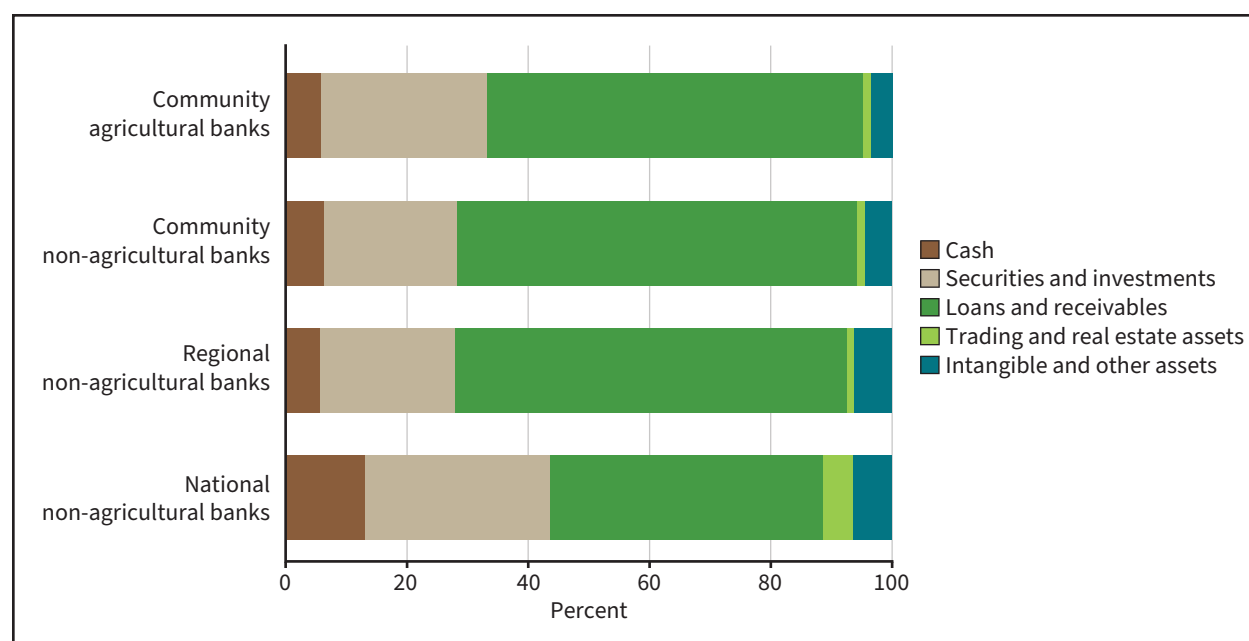
The typical (community) agricultural bank holds just under half of its loans as agricultural loans, with agricultural loans totaling roughly \$80 billion (42 percent) nationally as of December 31, 2022; however, these banks only account for 1 percent of total assets held by all banks. In contrast, despite accounting for 85 percent of total assets, regional and national banks only account for a combined 22 percent of agricultural loans, with 78 percent coming from either agricultural or non-agricultural community banks. The average (community) agricultural bank is roughly a third of the size of the average non-agricultural community bank (based on total assets) and, in total, agricultural banks hold only a tenth of the total assets that non-agricultural community banks do. This table makes clear that the roughly 1,000 small agricultural banks account for a disproportionate share of agricultural lending.

Before the Banking Crisis: December 31, 2022

Assets are reported in Schedule RC in the call reports. Assets can be broken down into five broad categories: (1) loans and lease financing receivables, (2) cash (including balances due from depository institutions), (3) securities, Federal funds sold, and securities purchased under agreements to resell, (4) trading assets, premises and fixed assets, other real estate owned property, investments in unconsolidated subsidiaries and associated companies, and direct and indirect investments in real estate ventures, and (5), intangible and other assets.

Figure 3.2

Composition of total assets by bank type, December 31, 2022



Note: Agricultural banks are defined as banks in which 25 percent or more of the total loan volume is for agricultural purposes. Community banks are defined as having less than \$10 billion in total assets, regional banks as having between \$10 billion and \$100 billion in total assets, and national banks as those with more than \$100 billion in total assets. According to these definitions, there are no regional or national agricultural banks.

Source: USDA, Economic Research Service estimates based on Federal Financial Institutions Examination Council's quarterly call report data.

Figure 3.2 reports this breakdown at the sector level by the different bank types in the fourth quarter of 2022. Across all bank types, on average 50.9 percent of assets are in loans and lease financing receivables and 28.2 percent of total assets are securities or Federal funds investments. Cash holdings represent a smaller share of total assets—between 5.6 percent and 13.0 percent of total assets—with regional banks

having the lowest share and national banks having the highest. Comparing agricultural banks to community non-agricultural banks, we see agricultural banks have a lower share of assets that are in loans and lease financing receivables and a higher share are in securities and Federal funds investments. Securities are a large class of tradeable assets that include corporate bonds, stocks, and derivatives.

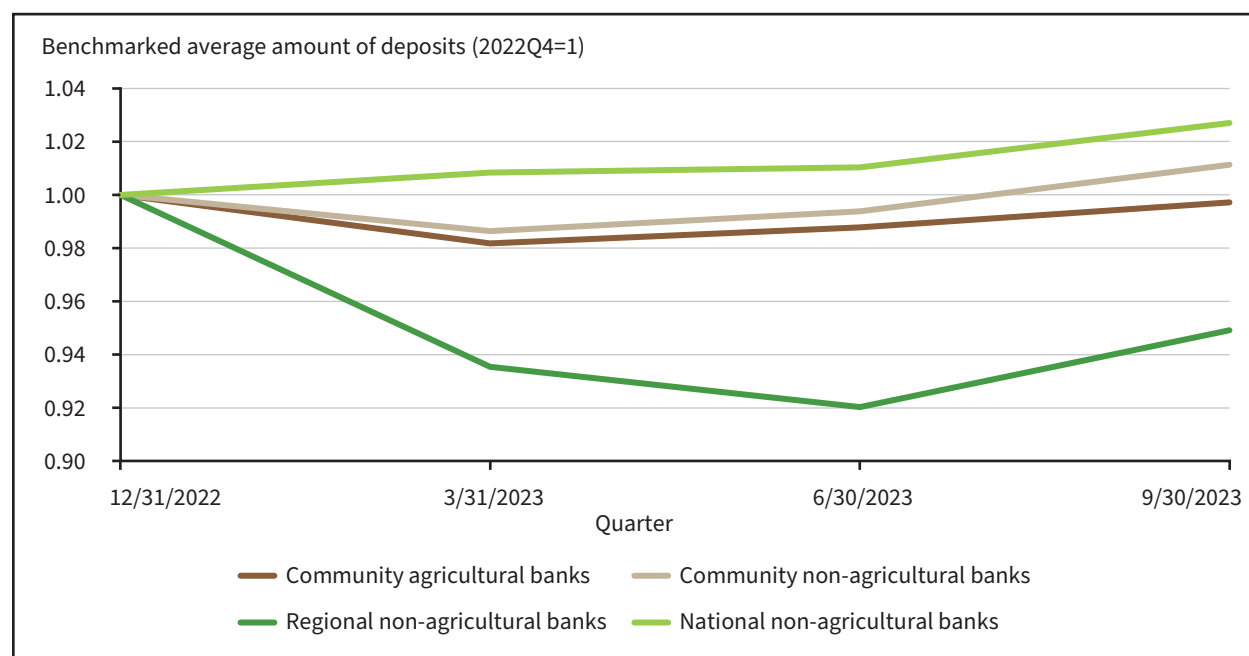
The fact that agricultural banks have a larger share of assets in securities may indicate their preference to rely more heavily on asset classes other than loans during a period of rising interest rates. Agricultural land is the largest collateral class underpinning farm loans and a slowing or reversal of land appreciation in response to rising interest rates make a bank vulnerable to interest rate risk. Therefore, agricultural banks may be more like regional or national non-agricultural banks in their need to diversify through investment in securities, primarily interest rate derivatives (Drabenstott & McDonley, 1982).

Deposit Flight During the Banking Crisis

Deposit flight was a key component of the regional banking crisis, leading to the collapse of Silicon Valley Bank and the Government takeover of Signature Bank, resulting in a crisis of confidence that led to further outflows of deposits among institutions that were considered less safe. Here we examine trends in deposits held across all four bank types to examine the extent to which agricultural banks may have also experienced outflows (or inflows) of deposits. Figure 3.3 shows the average deposits held by each bank type from December 31, 2022–September 30, 2023, indexed based on their December 31, 2022, values for easier comparison.

Figure 3.3

Average deposits held by bank type: December 31, 2022–September 30, 2023



Note: Agricultural banks are defined as banks in which 25 percent or more of total loan volume is for agricultural purposes. Community banks are defined as having less than \$10 billion in total assets, regional banks as having between \$10 billion and \$100 billion in total assets, and national banks as those with more than \$100 billion in total assets. According to these definitions, there are no regional or national agricultural banks.

Source: USDA, Economic Research Service estimates based on Federal Financial Institutions Examination Council's quarterly call report data.

Focusing on regional and national banks to start, we see that customers withdrew deposits from regional banks and increased deposits to national banks during the first quarter of 2023 (the quarter Silicon Valley Bank and Signature Bank collapsed), with the average regional bank losing 6.5 percent of the deposits held at the end of the previous quarter. Because of their inherently larger size, the average national bank experienced under a 1-percent increase in deposits held.

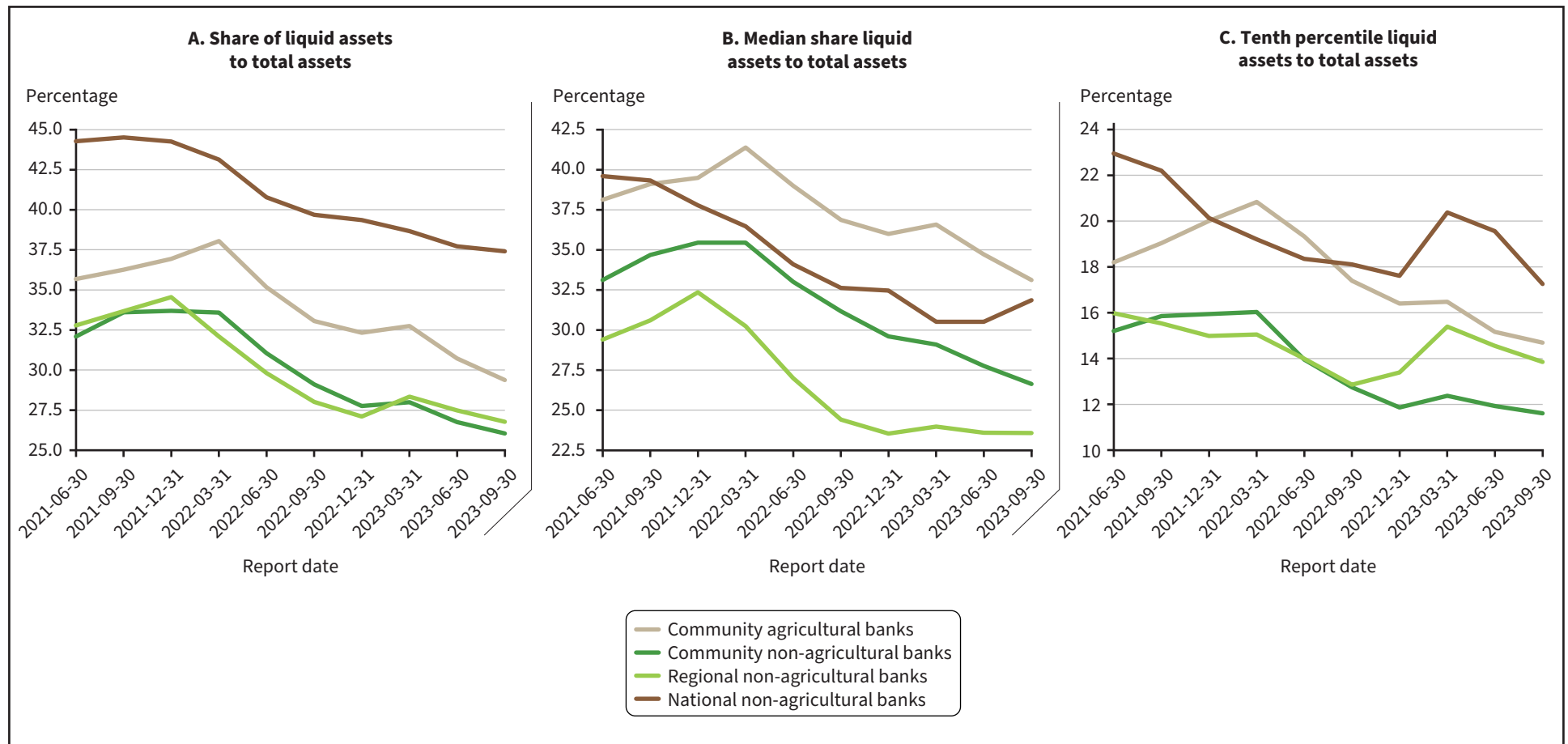
Community banks were not immune to deposit flight, but it was much more muted than what was observed with regional banks, with community agricultural banks losing 1.8 percent and community non-agricultural banks losing 1.3 percent of deposits during the period. By the end of the third quarter of 2023, deposits at community agricultural banks had returned to 99.7 percent of the level they had been on December 31, 2022.

Though our data does not allow us to track the path of individual deposits, our findings regarding simultaneous outflows at regional banks and inflows to national banks is in line with what should be expected in a time of uncertainty for regional banks, with depositors moving money from what they considered a risky option to a safer one. The case regarding agricultural banks (all of which are also community banks) is more nuanced. A primary research question of this study was to determine whether or to what extent agricultural banks experienced the same deposit outflows that threatened the regional banking system. It would appear there was some spillover effect, with some deposits leaving agricultural and non-agricultural community banks for a short time. Given the confusing nature of the period, it is not surprising that some depositors would prefer to move their money to larger banks, as larger banks are generally considered safer than smaller banks as larger banks tend to have a larger percent of their assets in cash and other liquid assets (figure 3.2). However, one reason that we may not have observed agricultural and non-agricultural community banks experiencing the inflow of deposits that national banks saw may be that regional depositors already held other bank accounts with national banks but did not hold accounts with community banks, such that it was easier to shift deposits into these existing accounts rather than to open new accounts, especially if the crisis was expected to be short lived. While community agricultural banks did see slightly larger outflows than non-agricultural community banks (1.8 percent compared to 1.3 percent), we do not suspect this implies that depositors found agricultural community banks to be any riskier than their non-agricultural counterparts.

Liquidity During the Banking Crisis

Liquidity issues come about when a bank does not have enough cash or other liquid assets to cover its liabilities. In the case of the Silicon Valley Bank, the Federal Deposit Insurance Corporation (FDIC) took over the bank to protect depositors, since it was unable to generate enough cash to cover their withdrawals. Following the 2008 financial crisis, national banks were required to have more liquidity which is one of the reasons why they were considered safer than smaller banks during the crisis. Figure 3.4 compares the share of total assets classified as liquid assets across each bank type.

Figure 3.4

Share of liquid assets to total assets

Note: Agricultural banks are defined as banks in which 25 percent or more of total loan volume is for agricultural purposes. Community banks are defined as having less than \$10 billion in total assets, regional banks as having between \$10 billion and \$100 billion in total assets, and national banks as those with more than \$100 billion in total assets. According to these definitions, there are no regional or national agricultural banks.

Source: USDA, Economic Research Service estimates based on Federal Financial Institutions Examination Council's quarterly call report data.

Figure 3.4a depicts the share of liquid assets to total assets across the four sectors as a whole. The national bank sector has the largest share of liquid assets to total assets, followed by the community agricultural banking sector, with the community non-agricultural banks and regional banks roughly tied for the lowest share. However, the story is a bit different when we look at the median share of liquid assets across banks within those sectors (figure 3.4b). Medians are often preferred to averages as they better represent a typical bank from each of our four sectors. While national banks had higher shares of liquid assets in 2020 and into 2021 (not shown in figure 3.4), community agricultural banks had the largest share of liquid assets by the end of 2021 and remained above the other three bank types through the third quarter of 2023.

While totals can explain the sector and medians can explain the typical bank, it is the tail end of the distribution (those with the lowest shares of liquid assets) that are likely to be most informative, as these banks may be viewed as the most vulnerable. Figure 3.4c shows the bottom decile (the bottom 10th percentile) of the share of liquid assets across each bank type. Here, we see that even among the banks at the bottom end of the share of liquid assets distribution, the community agricultural banks still have higher shares of liquid assets than either community non-agricultural banks or regional banks.

Across all three specifications we see that community agricultural banks were less susceptible to liquidity issues than both regional banks and non-agricultural community banks. Additionally, we find that the typical agricultural bank, as represented by median values, had a greater share of liquid to total assets than all other bank types for all of 2022 and 2023.

Conclusion

Agricultural banks faced the regional banking crisis of 2023 on solid footing, with the typical agricultural bank being less susceptible to liquidity concerns than its larger and non-agricultural counterparts. While agricultural banks experienced a small decrease in deposits during the first quarter of 2023, deposits remained above 98 percent of what they were on December 31, 2022. Agricultural loans more broadly were less susceptible to the impacts of the regional banking crisis as only roughly 12 percent of agricultural loans were held by regional banks at the beginning of the crisis.

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Appendix A: Input Prices, Hours Worked, and Household Spending

Farm Operation Input Prices

The 12 farm expense categories for which data are shown in chapter 1 comprise total expenses for each farm. Producer-price indices are also shown for each expense category for 2019 and 2023. Published USDA, National Agricultural Statistics Service (NASS) producer price index (PPI) indices directly correspond to 9 of the 12 expense categories, but 3 of the categories—fixed costs, other variable costs, and livestock-related costs—do not have a single corresponding PPI index. Instead, a weighted average PPI index was constructed for each of these categories by matching published PPI indices to each subcomponent of the expense category and weighting each PPI index based on the subcomponent's total proportion of the category's expenses for all farms in 2019. The PPI index used for each subcomponent, and each subcomponent's proportion of its category's expenses, are shown in table A.1.

Table A.1

Subcomponents of the producer price index (PPI)

Subcomponent	PPI index	Proportion
<i>Fixed costs</i>		
Interest	Interest	0.1959
Rent	Rent	0.4676
Insurance	Ag services—other	0.1684
Property taxes	Taxes	0.1682
<i>Other variable costs</i>		
Bedding and litter	Supplies	0.0682
Farm supplies, containers, hand tools, shop equipment	Supplies	0.4953
General business expenses	Farm sector	0.4288
<i>Livestock related costs</i>		
Contractors' livestock expenses	Farm sector	0.3048
Livestock leasing	Animal totals	0.0781
Medical supplies, veterinary supplies, custom services	Ag services	0.6171

Note: Proportions represent that subcomponent's share of the broader category of expenses for all farms in 2019. For example, interest expenses represented 0.1959 of total fixed-cost expenses. Proportions are derived from USDA, Economic Research Service 2019 Agricultural Resource Management Survey (ARMS) data.

Source: USDA, Economic Research Service and USDA, National Agricultural Statistics Service.

Hours Worked

In the USDA's Agricultural Resource Management Survey (ARMS) instrument, respondents are asked to record average hours worked on- and off-farm per week in each of the following time frames within each year: January–March, April–June, July–September, and October–December. Using these responses for the principal operator and the spouse of the principal operator (if married), we averaged the hours worked per week for each laborer. For on-farm and off-farm labor separately, we then added the principal operator average hours worked per week to the spouse average hours worked per week (if married) to create farm average household hours worked. From these variables, we were able to assess the percentage change in average household hours worked on- and off-farm in 2021, 2022, and 2023 compared to 2019.

Household Spending

To compare farm household spending to U.S. household spending more generally, we use information from a number of data sources to examine levels of spending across categories and changes between 2019 and 2023. We start with reported household expenditures in ARMS. The survey asks for the amount of annual expenditures across 12 distinct categories of spending. Responses are not actual dollar amounts but rather value codes corresponding to ranges of dollars spent. We convert these ranges to dollar values using the midpoint of each range. Next, we calculate the mean across all farm households for each category and use sample weights to calculate the population mean. Many respondents do not report household expenditures and those who report no expenditures are not included in our analysis. The mean levels of spending in a category exclude those that do not answer the question. When we discuss total reported household spending, we only include those who responded to all categories.

Next, we create a crosswalk between the 12 ARMS spending categories and the more detailed CE Survey categories. While many categories lined up very closely, two areas of spending in the CE Survey are either not included in the ARMS survey or categorized differently. The first is housing, where ARMS asks only about household spending on rent for unowned dwellings, mortgage interest for dwellings owned by the household, and property taxes for dwellings owned by the household. The CE Survey also includes rent, but for owner-occupied housing the expenses include all owner-occupied housing since most households would not have a dwelling owned by a business. Additionally, a large spending category for homeowners is on repairs and maintenance, which ARMS does not ask explicitly about so it may not be included when considering “All other family living expenses,” especially if the dwelling is owned by the farm business. The second category is transportation, where ARMS does not ask about vehicle purchases while the CE Survey does.

Table A.2 shows the categories for each data source and how they map to the 12 ARMS spending categories.

Table A.2

Categories of spending in the USDA’s Agricultural Resource Management Survey (ARMS) and the Consumer Expenditure Survey

ARMS	
A1	Food, including food away from home
A2	Rent payments for principal producer’s dwelling, if not owned by the household or farm business
A3	Utilities and household supplies
	Non-farm transportation for the:
A4	Renting or leasing of vehicles for household use, public transportation expenses, etc.
A5	Fuel, maintenance and repairs, vehicle insurance, parking and license fees for non-farm share of vehicles
	Health and medical expenses of:
A6	Health and/or dental insurance costs? (costs not covered by the farm operation or an off-farm employer)
A7	Out of pocket expenses for health and medical needs? (Include co-payments, co-insurance, deductibles, etc.)
A8	Contributions to personal insurance (including life, disability, and liability insurance but not including health, homeowner or vehicle insurance) and retirement plans including pensions and Social Security
A9	Contributions to individuals outside of the household, including alimony, child support, gifts (not including bequests) and charitable contributions
A10	Mortgage interest for producers who live in a dwelling owned by the household and not the operation (Exclude any parts of mortgage principal)
A11	Property taxes for producers who live in a dwelling owned by the household and not the operation

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ARMS	
A12	All other family living expenses, such as non-farm household insurance payments, clothing and personal care products and services; house furnishings and equipment, education and child (or adult) care, entertainment (hobbies, recreation, and vacations)
CE	
	<i>Food</i>
C1	at home
C2	away from home
	<i>Alcoholic beverages</i>
C3	alcoholic beverages at home
C4	away from home
	<i>Housing</i>
C5	shelter (rented, owned, other)
C6	utilities, fuel and public services
C7	household operation
C8	housekeeping supplies
C9	household furnishings and equipment
	<i>Apparel and services</i>
C10	men and boys
C11	women and girls
C12	children under 2
C13	footwear
C14	other apparel products and services
	<i>Transportation</i>
C15	vehicle purchases (net outlay)
C16	gasoline, other fuels and motor oils
C17	electric vehicle charging
C18	other vehicle expenses
C19	public and other transportation
	<i>Health care</i>
C20	health insurance
C21	medical services
C22	drugs
C23	medical supplies
	<i>Entertainment</i>
C24	fees and admission
C25	audio and visual equipment and services
C26	pets, toys, hobbies, and playground equipment
C27	other entertainment supplies, equipment and services
	<i>Personal care products and services</i>
C28	personal care products
C29	personal care services
	<i>Reading</i>
C30	newspapers, magazines and other books

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ARMS	
	<i>Education</i>
C31	tuition, student loans, text preparation and tutoring, supplies
C32	Tobacco products and smoking supplies
C33	Miscellaneous
C34	Cash contributions
	<i>Personal insurance and pensions</i>
C35	life and other personal insurance
C36	pensions and social security

Source: USDA, Economic Research Service (ERS) construction using USDA, ERS and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey; U.S. Department of Commerce, Bureau of Labor Statistics, 2019–23 Consumer Expenditure Survey.

Table A.3

Crosswalk of spending in the USDA's Agricultural Resource Management Survey (ARMS) and the Consumer Expenditure Survey

ARMS	CE
A1	C1+C2+C3+C4
A2	Break out rented from shelter C5
A3	C6+C7+C8
A4	C19
A5	C16+C17+C18
A6	C20
A7	C21+C22+C23
A8	C35+C36
A9	C34
A10	Break out owner mortgage interest from shelter C5
A11	Break out owner property tax from shelter C5
A12	C9+C10+C11+C12+C13+C14+C24+C25+C26+C27+C28+C29+C30+C31+C32+C33+other from shelter C5+owner maintenance, repairs, insurance from shelter C5
	C15

Source: USDA, Economic Research Service (ERS) construction using USDA, ERS and USDA, National Agricultural Statistics Service, 2019–23 Agricultural Resource Management Survey; U.S. Department of Commerce, Bureau of Labor Statistics, 2019–23 Consumer Expenditure Survey.

In this report, we combine certain categories after completing the detailed cross walk to match the Consumer Expenditure Survey data with corresponding ARMS categories. Specifically, we combine renting or leasing of a vehicle with fuel, maintenance, and repairs, vehicle insurance, and licenses into one category. We also combine health and dental insurance costs with out-of-pocket expenses for health and medical needs.

Our analysis suggests that ARMS may understate total household spending relative to the Consumer Expenditure Survey. In 2023, average household expenditures were 28 percent of total income in ARMS compared to 76 percent in the Consumer Expenditure Survey. The Consumer Expenditure Survey is the standard of data collection on expenditures as it asks about many detailed categories and for difficult to recall items it is based on diary entries of daily spending. ARMS asks respondents to recall their spending from the prior calendar year during the interview that occurs in the early spring following the reference year. ARMS also has fewer categories, leading more spending to get placed in “Other.” Additionally, the responses are given in ranges of spending, which are less precise.

Appendix B: Farm Sector Income Statement and Balance Sheet Forecasts for 2025

USDA, Economic Research Service (ERS) releases Farm Income and Wealth Statistics three times a year, usually in February, late August/early September, and late November/early December. Tables B.1 and B.2 provide data as published on September 3, 2025, including 2025 calendar year forecasts for the farm income statement and balance sheet. Tables and files with the most recent income and wealth estimates and forecasts, along with a discussion of the most recent forecast, can be found on the USDA, ERS website by searching the website for the following terms: data products, farm income and wealth, farm economy, farm sector, farm income, and farm finances.

Table B.1

U.S. farm sector cash income statement, 2020–25F

	2020	2021	2022	2023	2024	2025F	2015–24 Average	Change 2023–24 Percent	2024–25F Percent
	Billion dollars (2025)								
Gross cash income	545.2	583.6	663.6	612.3	584.3	623.9	564.7	-4.6	6.8
All commodity receipts	447.9	515.7	590.3	543.0	524.3	535.2	498.7	-3.4	2.1
Crop receipts	246.8	286.8	307.6	280.3	248.9	236.6	261.0	-11.2	-4.9
Animals and products receipts	201.1	228.9	282.7	262.7	275.5	298.6	237.7	4.9	8.4
Cash farm-related income	41.8	37.6	56.4	56.4	49.6	48.1	44.3	-12.1	-3.0
Forest products sold	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.0
Machine hire and customwork	4.7	5.4	5.7	6.0	5.8	6.0	5.4	-2.9	2.8
Other farm income	36.3	31.4	49.8	49.6	43.0	41.3	38.0	-13.4	-3.8
Direct Government payments	55.6	30.3	16.9	12.9	10.4	40.5	21.7	-19.6	291.3
Cash expenses 1/	397.9	402.6	435.1	447.6	440.1	443.2	412.1	-1.7	0.7
Interest 1/	22.9	22.1	25.8	29.0	31.5	32.5	24.4	8.4	3.4
Non-real estate	8.3	7.3	8.7	11.0	11.6	11.7	9.2	5.7	1.0
Real estate 1/	14.6	14.8	17.1	18.0	19.9	20.8	15.2	10.1	4.7
Labor expenses	44.6	42.8	45.3	50.8	52.8	53.7	45.4	3.9	1.7
Property taxes and fees 1/	17.1	17.1	17.0	16.8	17.4	17.8	16.6	3.2	2.5
Farm origin	132.7	137.8	156.2	158.0	153.7	155.7	141.5	-2.7	1.3
Feed purchased	69.3	76.1	91.0	84.1	75.0	68.6	75.7	-10.8	-8.6
Livestock and poultry	35.4	35.8	38.0	45.2	50.6	59.9	38.1	12.0	18.5
Seed	28.1	26.0	27.2	28.7	28.1	27.2	27.7	-2.0	-3.3
Manufactured inputs	71.8	78.9	90.2	86.3	81.8	78.1	77.6	-5.1	-4.6
Electricity	7.3	7.4	7.0	7.4	8.0	8.1	7.4	7.8	1.4
Fertilizer and lime	29.8	34.4	39.9	37.6	34.7	33.5	32.6	-7.8	-3.3

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	2020	2021	2022	2023	2024	2025F	2015–24 Average	Change	
	Billion dollars (2025)							2023–24 Percent	2024–25F Percent
Fuel and oil	14.6	16.2	20.1	18.5	16.9	15.8	16.9	-8.8	-6.1
Pesticides	20.1	20.8	23.3	22.7	22.3	20.6	20.7	-1.9	-7.5
Other intermediate expenses 1/	85.3	81.2	84.9	89.2	87.1	89.4	84.5	-2.3	2.6
Net rent to landlords 2/	23.4	22.8	15.6	17.5	15.8	15.9	22.0	-10.1	1.1
Net cash income	147.3	180.9	228.5	164.6	144.1	180.7	152.6	-12.4	25.3

Note: Values are adjusted for inflation using U.S. Department of Commerce, Bureau of Economic Analysis gross domestic product price index rebased to 2025 by USDA, ERS, 2025 = 100. F = forecast. Components may not sum to totals due to rounding.

1/ Excluding expenses associated with operator dwellings.

2/ Excluding landlord capital consumption.

Source: USDA, Economic Research Service (ERS), Farm Income and Wealth Statistics. Data as of September 3, 2025.

Table B.2

U.S. farm sector balance sheet, 2020–25F

	2020	2021	2022	2023	2024	2025F	Change	
	Billion dollars (2025)						2023–24 Percent	2024–25F Percent
Farm sector assets	3,815.2	3,991.6	4,121.8	4,216.5	4,326.0	4,417.3	2.6	2.1
Investments and other financial assets	112.1	131.4	128.3	128.1	148.2	162.0	15.7	9.3
Investment in cooperatives	6.3	8.0	6.2	5.9	8.5	8.7	43.4	2.4
Financial assets and net accounts receivable	105.9	123.4	122.1	122.1	139.7	153.3	14.4	9.7
Inventories	198.5	210.5	219.9	225.0	240.3	258.0	6.8	7.4
Crops	61.6	67.8	78.6	69.8	68.5	67.6	-2.0	-1.3
Animals and animal products	119.8	121.4	118.2	134.0	150.7	168.8	12.5	12.0
Breeding animals	80.3	79.1	77.5	84.0	98.4	109.8	17.2	11.6
Non-breeding animals	39.5	42.3	40.8	50.0	52.3	59.0	4.6	12.9
Purchased inputs	17.1	21.4	23.1	21.2	21.1	21.6	-0.6	2.3
Cash invested in growing crops	4.3	5.7	5.4	4.1	5.7	NA	37.5	NA
Prepaid production expenses	9.9	12.6	14.5	13.8	12.1	NA	-12.3	NA
Prepaid insurance	2.8	3.0	3.2	3.3	3.3	NA	0.4	NA

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	2020	2021	2022	2023	2024	2025F	Change	
	Billion dollars (2025)						2023–24	2024–25F
							Percent	Percent
Real estate	3,164.8	3,290.2	3,434.1	3,507.0	3,577.8	3,628.8	2.0	1.4
Machinery and vehicles	339.8	359.4	339.5	356.4	359.7	368.5	0.9	2.4
Farm sector debt	537.8	552.9	539.8	545.5	577.9	591.8	5.9	2.4
Real estate	351.8	378.2	363.8	362.3	376.7	386.4	4.0	2.6
Commercial banks	118.0	117.5	116.4	114.4	116.0	NA	1.5	NA
Farm Credit System	171.2	184.3	179.1	176.5	186.7	NA	5.8	NA
Farm Service Agency	11.3	12.4	12.4	13.1	14.5	NA	10.9	NA
Farmer Mac	10.6	11.1	10.9	10.6	11.6	NA	9.3	NA
Individuals and others	16.1	26.8	19.2	22.3	22.2	NA	-0.2	NA
Storage facility loans	1.2	1.3	1.3	1.4	1.5	NA	3.4	NA
Life insurance companies	23.4	24.8	24.5	24.1	24.2	NA	0.4	NA
Nonreal estate	186.0	174.7	176.0	183.1	201.2	205.4	9.8	2.1
Commercial banks	76.9	75.9	74.5	76.0	79.9	NA	5.1	NA
Farm Credit System	67.4	66.0	67.4	73.3	78.5	NA	7.1	NA
Farm Service Agency	4.5	3.9	2.9	2.6	2.6	NA	-0.4	NA
Individuals and others	37.2	28.9	31.2	31.2	40.1	NA	28.7	NA
Farm sector equity	3,277.5	3,438.7	3,582.0	3,671.1	3,748.1	3,825.5	2.1	2.1
Ratios	Percent							
Debt/asset ratio	14.10	13.85	13.10	12.94	13.36	13.40	NA	NA
Debt/equity ratio	16.41	16.08	15.07	14.86	15.42	15.47	NA	NA
Equity/asset ratio	85.90	86.15	86.90	87.06	86.64	86.60	NA	NA

Notes: Values are adjusted for inflation using U.S. Department of Commerce, Bureau of Economic Analysis gross domestic product price index rebased to 2025 by USDA, ERS, 2025 = 100. F = forecast. Components may not sum to totals due to rounding.

Source: USDA, Economic Research Service (ERS), Farm Income and Wealth Statistics. Data as of September 3, 2025.