Agriculture By the Numbers

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NDSU Extension Agribusiness and Applied Economics

Cattle Futures Market Volatility and the CME Feeder Cattle Index Price

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CME Group live cattle and feeder cattle futures market prices have been quite volatile lately. Futures markets are supposed to anticipate what the cash market may be in the future.

Cattle cash and futures prices have been trading at record high levels in 2024 due to lower cattle and beef supplies and relatively strong demand. When futures prices are record high, volatility is also usually high because there are many fundamental supply and demand factors that can affect the market in the future.

Cattle and beef supply factors have been well documented, with 2024 likely being the sixth straight year of drought-forced beef cow liquidation causing smaller calf crops and potentially declining beef production. Lower supplies are supportive to prices, but beef production this year has been bolstered to near the same quantity as last year by higher fed steer and heifer carcass weights.

Continued on page 2.

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Cattle Futures Market Volatility and the CME Feeder Cattle Index Price — continued from page 1

Beef demand has been stronger than some market analysts expected, but looking to the future there are beef demand factors that are causing enough uncertainty to trigger futures market jitters, particularly to the downside.

Some factors causing futures market uncertainty include record high retail beef prices, high consumer credit card debt, inflation, elevated interest rates, foreign and U.S. stock market volatility, Russia-Ukraine and Middle East wars, other geopolitical issues, U.S. Presidential and Congressional election uncertainties, managed money funds entering or exiting cattle futures markets, moderating competing meat prices, beef export market headwinds, and weather that impacts forage and feed grain production and prices.

That being said, arbitrage causes futures and cash markets to be nearly the same at futures market contract maturity.

There are many weights, quality grades and other market factors that cause wide price ranges for calves and feeder cattle marketed at many markets throughout the U.S. So, what is the cash market that the feeder cattle futures market is attempting to anticipate?

The answer is the CME Feeder Cattle Index (Index).

Since CME Group feeder cattle futures contracts are cash settled rather than by actual delivery of cattle to a physical site, all open contracts after termination of trading on the last Thursday of the contract month are settled with the Index.

The September feeder cattle futures contract matured on Sep. 26 at $245.40/hundredweight (cwt.), and the Index price was $244.20/cwt.

The Index is based on feeder cattle auction, direct trade, video sale and internet sale transactions in the 12-state region of Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming for which the number of cattle, weighted average price and weighted average weight are reported by the USDA Agricultural Marketing Service (AMS).

Individual market reports are available on the AMS website at www.ams.usda.gov/market-news/livestock-poultry-grain#cattle.

The three North Dakota markets reported by AMS and included in the Index are Kist Livestock Auction in Mandan, Napoleon Livestock in Napoleon and Stockmen's Livestock Exchange in Dickinson.

The feeder cattle weights and USDA grades included in the Index are 700- to 899-pound Medium and Large Frame #1 feeder steers, and 700- to 899-pound Medium and Large Frame #1to #2 feeder steers.

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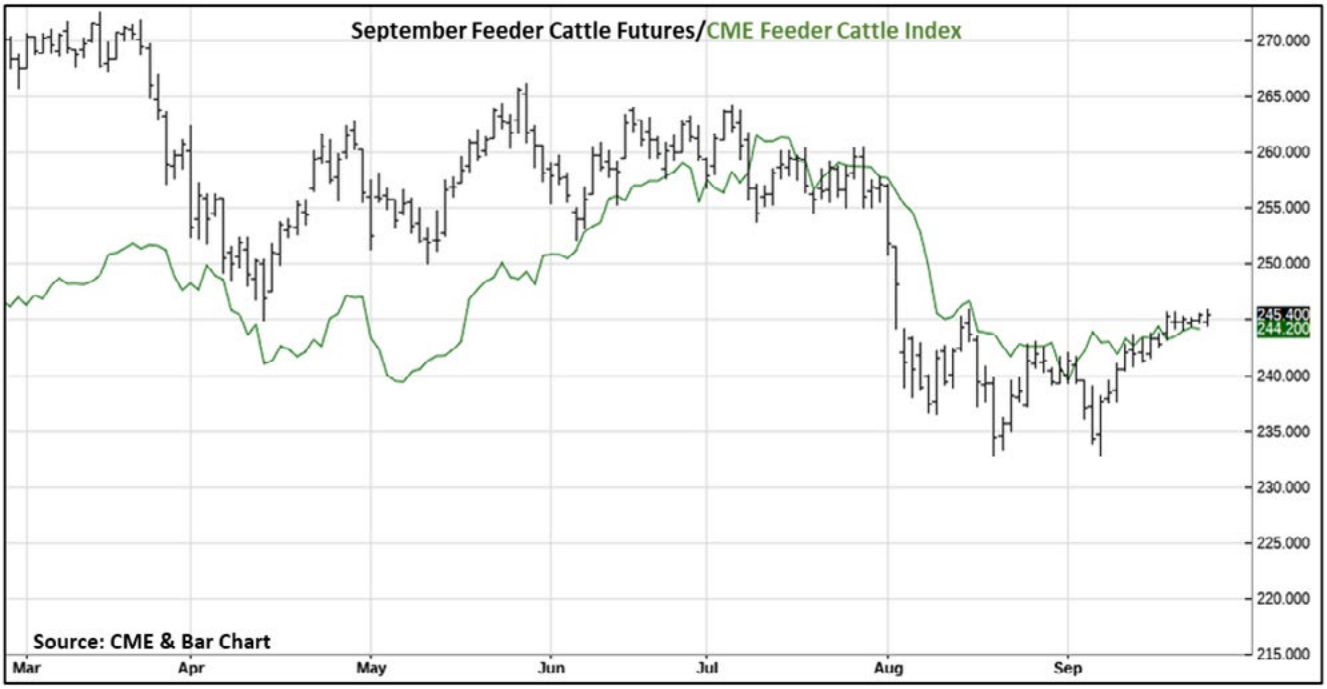

Cattle Futures Market Volatility and the CME Feeder Cattle Index Price — continued from page 2

Feeder cattle identified as having predominantly dairy, exotic or Brahma breeding and cattle from an origin outside the U.S. are excluded.

A detailed description of the Index specifications is in the CME feeder cattle rulebook at www.cmegroup.com/rulebook/CME.

The Index is a seven-day weighted average defined as the total dollars sold divided by the total pounds of eligible feeder steers sold.

The CME posts a daily spreadsheet that shows the prices for eligible feeder steers at each market reported that day, with the Index daily average price and the seven-day average price at www.cmegroup.com/market-data/reports/cash-settled-commodity-index-prices.html.

Due to the high-quality feeder cattle raised in the northern Plains, North Dakota markets tend to have higher average prices than the Index. The Sep. 12 Index spreadsheet shows Stockmen's Livestock in Dickinson had an average price of $255.52/cwt. for eligible feeder cattle, compared to the daily total of $251.52/cwt. and the seven-day computed Index price of $243.32/cwt.

The Index is also important for calf and feeder cattle producers who use USDA Risk Management Agency Livestock Risk Protection (LRP) insurance. USDA uses the Index price to determine the Actual End Value for calf and feeder cattle LRP insurance policies.

The 600- to 1000-lbs. feeder steer and 100- to 599-lbs. heifer calf LRP contract actual ending values are the Index price. The 100- to 599-lbs. steer contracts receive a 10% premium, and the 600- to 1,000-lbs. heifer contracts receive a 10% discount. So, the Index affects all calf and feeder cattle LRP contract actual ending values.

CME Feeder Cattle Index - 9/12/2024

Location	TTL Head	TTL Weight	WTD Avg. Weight	TTL Price	WTD Avg. Price
Billings	39	33,020	847	7,691,800.00	232.94
Butler	60	46,826	780	11,676,887.50	249.37
Woodward	400	314,809.001	787	75,366,197.70	239.40
Apache	61	43,905	720	10,376,532.58	236.34
Valentine	1,360	1,093,326	804	289,069,387.31	264.39
Pratt	138	111,477	808	26,571,934.32	238.36
Salina	957	793,788.005	829	193,104,066.55	243.27
Dalhart	547	447,514.99	818	107,180,450.14	239.50
Tulia	285	216,031	758	51,935,272.38	240.41
San Angelo	27	19,278	714	4,458,808.62	231.29
Dickinson	1,114	905,752.001	813	231,436,776.82	255.52
Clarinda	931	745,219.99	800	190,527,668.66	255.67
Brush	5	3,975	795	882,450.00	222.00
MID Missouri Stockyards	32	25,875	809	5,935,936.20	229.41
Cattle Country Video (NC)	775	631,925	815	161,835,782.50	256.10
Clovis	61	47,651	781	10,349,522.77	217.19
Daily Totals	6,792	5,480,372.99	807	1,378,399,474.04	251.52
Seven-Day Totals	28,698	23,117,509	806	5,624,896,928.02	243.32

Source: CME Group

Watch Crop Export Announcements for Short-term Price Direction

Frayne Olson, Crop Economist/
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As corn and soybean harvest begins in the U.S., the futures markets are shifting their focus to South American planting conditions and watching for signals of shifting U.S. export levels. While U.S. corn and soybean yields still need to be confirmed by harvest reports, strong yield expectations have already been bid into futures market prices.

Even though annual domestic use of U.S. crops is larger than export amounts, export levels are much more difficult to forecast and as a result can create price volatility. Figures 1 through 3 show the historic usage for U.S. corn, soybean and wheat. Notice the domestic use categories tend to be relatively stable from year to year. Because domestic use is primarily processing or livestock feed based, the usage levels also tend to be relatively stable from month to month and week to week.

In contrast, weekly and monthly export levels are very difficult to predict. No one knows when an international company will purchase more U.S. grains, how much they will purchase or when they have requested delivery. There are many factors that can impact these purchases, including competing bids from other exporting countries, transportation costs, the risk of supply chain disruptions, expectations about future global supply levels, potential changes in trade relationships and currency exchange rates.

Data from UDSA's Sept. 19, 2024, Export Sales report shows that current corn and wheat export commitments are above last year's levels, while soybean export commitments are at about the same level. Export commitments represent the amount of grain sold under contract for a given time period. In contrast, export inspections represent the amount of grain that has been inspected as it leaves the U.S. for final delivery.

Continued on page 5.

Figure 1 – Historic U.S. Corn Usage by Category

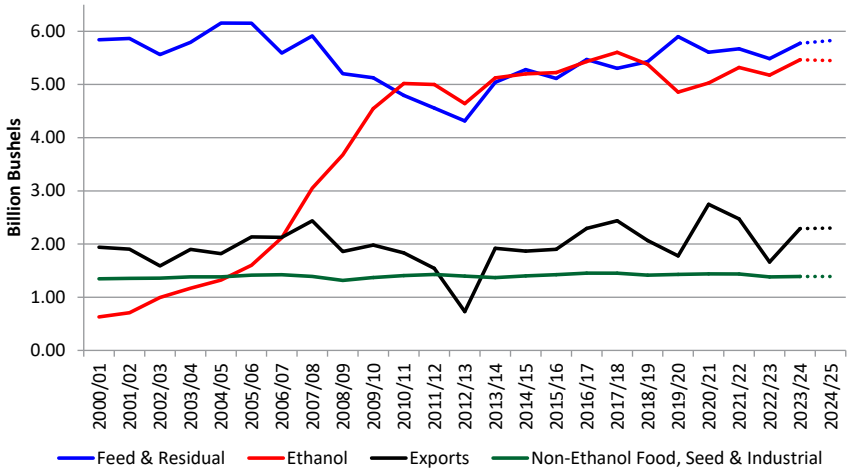


Figure 2 – Historic U.S. Soybean Usage by Category

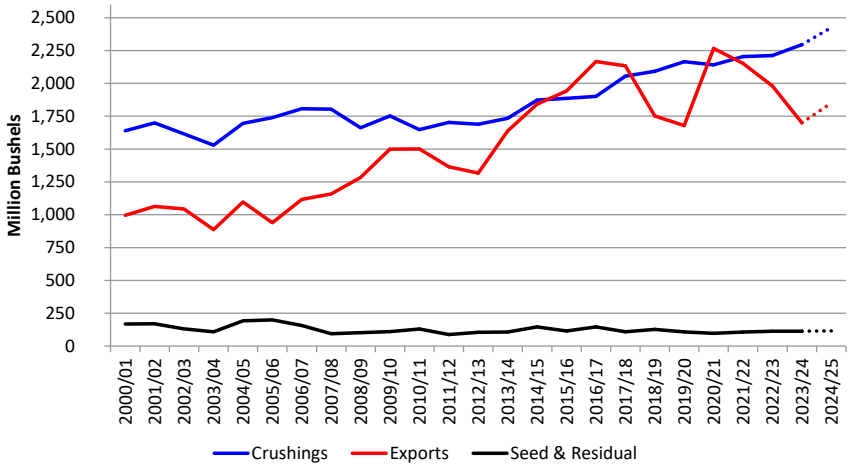
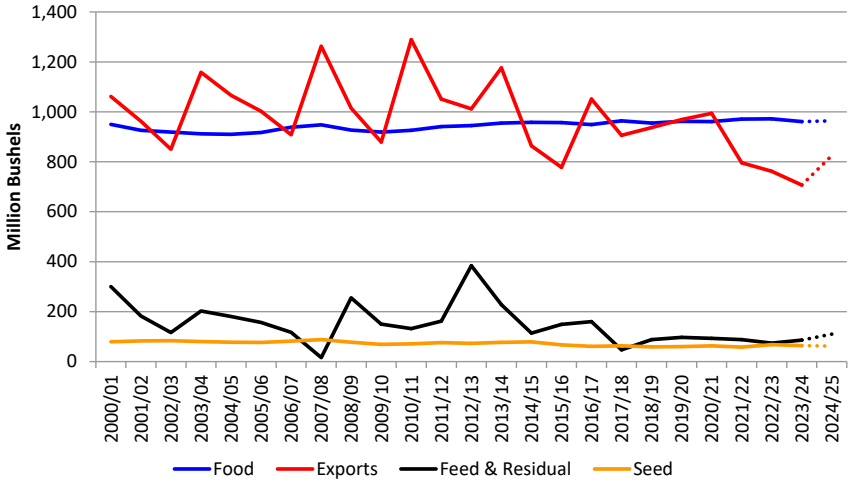


Figure 3 – Historic U.S. Wheat Usage by Category



USDA Production, Supply and Distribution (PSD) On-line and September 2024, World Agricultural Supply and Demand Estimates (WASDE)

Watch Crop Export Announcements for Short-term Price Direction – continued from page 4

Total corn export commitments are 17% above last year's levels for the same week in the marketing year. Mexico is the largest buyer of U.S. corn and has purchased 13% more corn this year relative to last year's record import amounts. Japan, the second-largest buyer, has purchased 11% more than last year, and Colombia, the third-largest buyer, has bought 47% more than last year at this time. Even though initial purchase levels are small at the beginning of the marketing year, this is a positive start to the 2024/25 marketing year exports.

Total soybean export commitments are down 0.5% from this time last year. China, the largest buyer of U.S. soybeans, is 9% lower than last year. This continues a trend that began last year. During the 2023/24 marketing year, U.S. soybean exports to China were 22% lower than the 2022/23 marketing year. Mexico, the second-largest buyer, has purchased 24% fewer soybeans than last year, while Indonesia, the third-largest buyer, is 46% higher than last year. These figures indicate that the U.S. soybean export market may be becoming more diversified and countries that typically don't purchase many U.S. soybeans are changing their buying habits.

Year-to-date wheat exports are 22% higher than last year. Sales to Mexico, the largest U.S. wheat buyer, are up 15% from last year. Export sales to Philippines, the second-largest buyer, are 14% higher, while sales to Japan, the third-largest buyer, are down 9%. These increased sales suggest that U.S. wheat prices are competitive in the world markets.

Even though the 2024/25 marketing year is just beginning, export sales are off to a good start. Once again, many factors can impact U.S export sales. In my view, there are two key factors that can significantly impact U.S. export sales. The first is expectations for corn and soybean production in Brazil, and the second is the potential for supply chain disruptions.

Both Brazil and Argentina are major corn and soybean export competitors, but Brazil produces and exports larger amounts. Weather and supply chain issues in Argentina can have an impact on U.S. prices, but problems in Brazil will have a larger price response.

The U.S. has a reputation for a very efficient and reliable grain supply chain. Any shifts in either U.S. or global supply chains can change grain trading patterns, especially for companies or countries that have a difficulty with long-term grain storage and/or unreliable domestic supply chains. Low water levels that impact grain shipments along the Mississippi River in the U.S. or Parana River in Argentina, high risk shipping in the Black Sea and Suez Canal due to wars, and labor strikes at key ports can all create anxiety for grain traders. High anxiety about product availability often leads to additional buying to build reserve inventories, resulting in higher prices. These price increases should be viewed as selling opportunities for farm managers.



Commentary on USDA's September 2024 Net Farm Income Report

Bryon Parman, Agricultural Finance Specialist

On Sept. 5, 2024, the USDA released its updated net farm income forecasts for 2024 and an update for 2023. The previous forecasts for those years were released on Feb. 7, 2024. Updates to previous years' forecasts occur due to having to project not only what prices and yields will be in the future, but also due to having to survey, sample and estimate at what price stored grain has been agreed upon. With respect to the estimates from February vs. September, the latest 2023 report was revised downward from approximately $160 billion to nearly $146.5 billion. This came off of a record high year in 2022 where net farm incomes hit $182 billion. The drop from 2022 to 2023 was 19.5% and was mostly due to lower crop commodity prices.[1]

On the other hand, net farm income estimates for 2024 were revised upward from the February forecast. The February forecast for 2024 net farm incomes was $116.1 billion while the updated September forecast for 2024 was moved up to $140 billion. This would indicate a drop of around $6.5 billion from the previous year or approximately 4.4%. However, the USDA notes that even though there is expected to be a 27.6% decline in net farm incomes from 2022 to 2024, the 2024 net farm income estimate would still be nearly 15% above the 20-year average.

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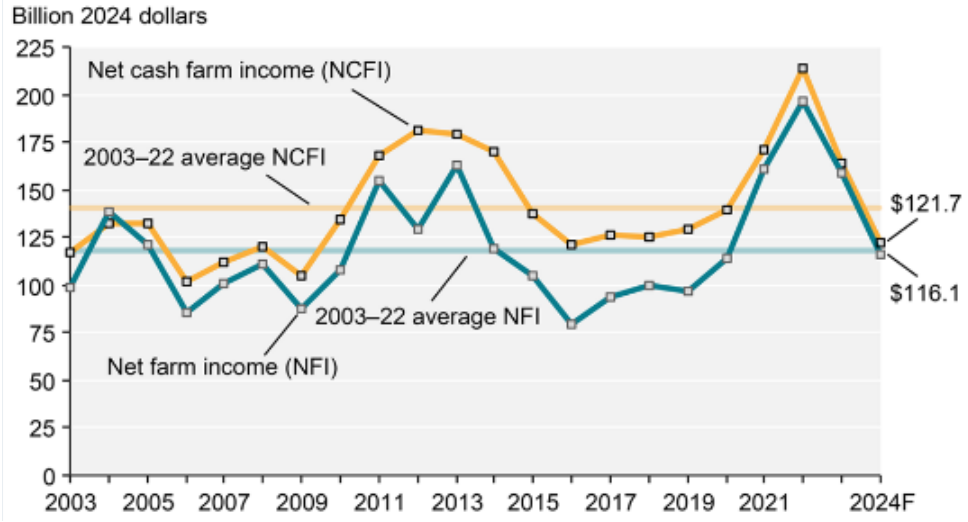
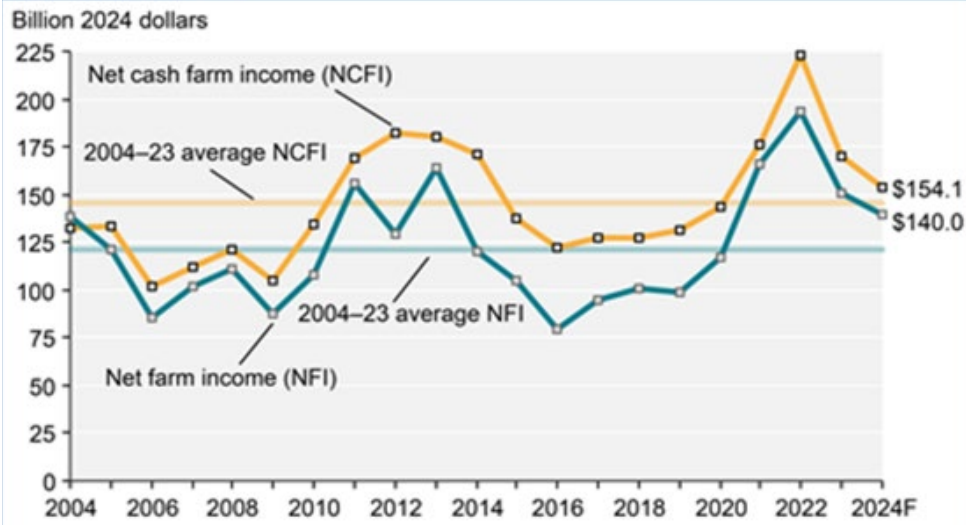
U.S. net farm income and net cash farm income, inflation adjusted, 2003–24F



Note: F = forecast; data for 2023 and 2024 are forecasts. 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 2024 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of February 7, 2024.

U.S. net farm income and net cash farm income, inflation adjusted, 2004–24F



Note: F = forecast. 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 2024 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of September 5, 2024.

[1] U.S. Department of Agriculture, Economic Research Service. (2024, September 5). *Farm Sector Income & Finances: Highlights from the Farm Income Forecast.*

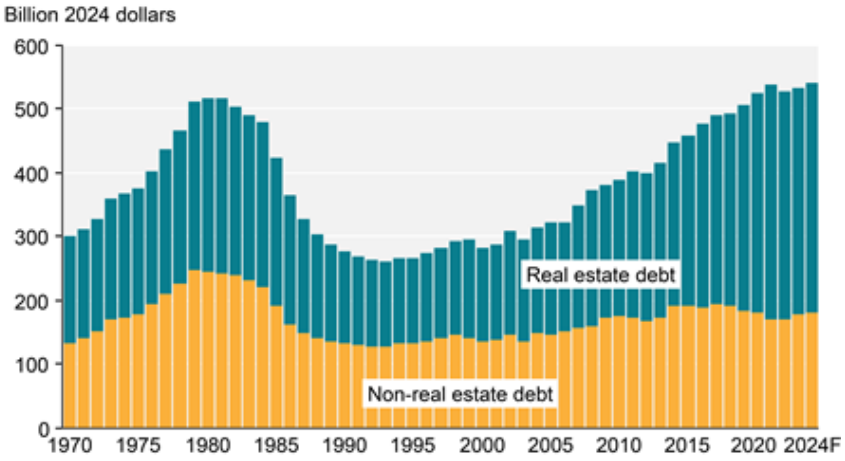
Commentary on USDA's September 2024 Net Farm Income Report — continued from page 6

Despite the dramatic fall in net farm incomes, overall farm equity has continued to increase. The increase is mainly due to farm asset appreciation, which is mostly being driven by farm land prices. The increase in equity comes despite an increase in farm sector debt of 4.2% from 2023 to 2024. Farm real estate comprises around 83% of all farm assets, and thus any increase or decrease in farm real estate values has an outsized impact on overall farm wealth[2]. Additionally, the USDA reports that the largest debt holder for farm real estate is the Farm Credit System with the next largest being commercial banks.

However, while appreciating asset values is improving financial solvency despite rising debt, the dramatic drop in net farm incomes and net cash farm incomes has caused working capital and associated cash flow ratios to worsen. Working capital in the farm sector has fallen from a (non-inflation adjusted) $133 billion in 2022 to $ 127 billion in 2024. This has also pushed the rate of return on farm assets down from 14.2% in 2022 to 7.7% in 2024. However, from 2015 to 2020, the rate of return on farm assets ranged between about 0% and 4.5%, which is generally recognized as a weak economic period in U.S. agriculture.

Overall, while net farm incomes and net cash incomes have declined, they have not approached the much lower levels experienced from 2015 through 2019. Yet, given the rapid rise in production expenses from 2021 to 2023, the per-acre investment during each growing season requires a much higher income level to cash flow than the previous economic low period. Now more than ever, revenue protection programs, crop insurance and marketing programs are critical risk mitigation tools. Also, farm wealth and solvency right now is heavily dependent on land values. Current reports suggest that the land market has cooled. If it is indeed the case that land at the very least stops appreciating as rapidly and net farm incomes continue to decline into 2025, farm debt and solvency data may show a much weaker farm economy over the next couple years.

U.S. farm sector debt, inflation adjusted, 1970–2024F



Note: F = forecast. 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 2024 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of September 5, 2024.

Real estate debt by lender, 2023

Note: 2023 debt by lender is the latest available statistic. Underlying values are rounded to the nearest thousand dollars. Real values are adjusted for inflation using the U.S. Bureau of Economic Analysis Gross Domestic Product Price Index (BEA API series code: A191RG) rebased to 2024 by USDA, Economic Research Service. K=thousand, M=million, B=billion, T=trillion. Beginning with 2012 estimates, farm sector debt held by savings associations is reported with the commercial bank lender group instead of the individuals and others grouping. Data source: https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/ as of September 5, 2024.

[2] U.S. Department of Agriculture, Economic Research Service. (2024, September 5). *Farm Sector Income & Finances: Assets, Debt, and Wealth.*