



Field to Market®

Economic Sustainability

Trends in Farm Financial Well-Being





Foreword



AMERICAN FARM BUREAU FEDERATION®

American farmers are committed to sustainability and want to leave the land better than when it was first entrusted to their care, playing a leading role in promoting soil health, conserving water, enhancing wildlife, and efficiently using resources. At the same time, economic sustainability is core to agricultural sustainability and a necessary part of farmer decision making.

Given the volatility associated with commodity prices and farm income detailed in this report, the entire supply chain must assist in making the upfront investment associated with implementing the climate-smart technologies needed to achieve our sustainability goals and outcomes.

John Newton
Chief Economist
American Farm Bureau Federation



**National
Farmers
Union**

Agriculture has never been an easy profession, but today's family farmers and ranchers are facing some of their steepest economic and environmental obstacles in many decades. Not only are they coping with low commodity prices, high inputs costs, and uncertain markets due to trade disputes and the pandemic, but with every passing year, they're also confronting the increasingly severe effects of climate change, including greater weather extremes, more variability in precipitation patterns, and a scarcity of natural resources.

To adapt to and mitigate these ever-alarming threats, farmers are implementing new practices and systems – but they come at a financial and temporal cost. Food and agricultural companies must keep these expenses in mind as they work to reduce the environmental footprint of their supply chains.

Rob Larew
President
National Farmers Union



Introduction

Field to Market: The Alliance for Sustainable Agriculture brings together a diverse group of grower organizations; agribusinesses; food, beverage, apparel, restaurant and retail companies; conservation groups; universities; and public sector partners to define, measure and advance the sustainability of food, feed, fiber and fuel production in the United States.

With global population estimated to exceed 9 billion by 2050, the challenge of producing enough food, feed, fiber and fuel while conserving our planet's natural resources has become increasingly complex. From climate change to water quality to biodiversity, society is increasingly looking to farmers to help deliver improved environmental outcomes while ensuring a safe, affordable and abundant food supply.

However, a prolonged period of low commodity prices has created significant financial pressures and placed many farming operations in jeopardy. These conditions have been exacerbated in the past two years by trade disputes, more frequent extreme weather events and the COVID-19 pandemic, which upended traditional supply chains leaving many farmers without a market.

The government's farm safety net has provided support to farmers during these difficult times. Crop insurance and other farm bill programs, as well as direct payments to farmers in response to trade disputes and the pandemic have offered a temporary increase in farm income. However, these programs are not guaranteed to continue.

The challenging economic outlook means that in many cases U.S. farmers lack the resources needed to address environmental sustainability concerns. While certain agronomic practices simultaneously deliver environmental benefits, operational efficiencies and cost savings, others require investments that farmers may not currently be able to shoulder.

This report details a set of indicators to evaluate the current state of farm economic well-being, which can be used by the agricultural supply chain to inform sustainability strategies. The findings in this report generally focus on crops included in Field to Market's sustainability programs: alfalfa, barley, corn, cotton peanuts, potatoes, rice, soybeans, sorghum, sugar beets and wheat.

Farm Economy Background

Crop prices are an important factor in farm income and a driving component in the value of crop production. The farm level prices¹ for food grains, feed grains, and oil-bearing crops have followed a similar trajectory over the past two decades. As shown in Figure 1, three periods of farm prices can be identified. A considerable increase in prices for farm commodities, beginning in 2006 and particularly notable through 2007 and 2008, was the beginning point of a new, higher level of prices that lasted through 2013. Since then, prices have declined to a lower plateau, although still higher than the period before 2006.

Individually, most Field to Market crops follow a similar price pattern, although some vary based on a unique set of factors. Generally, acreage decisions made by farmers

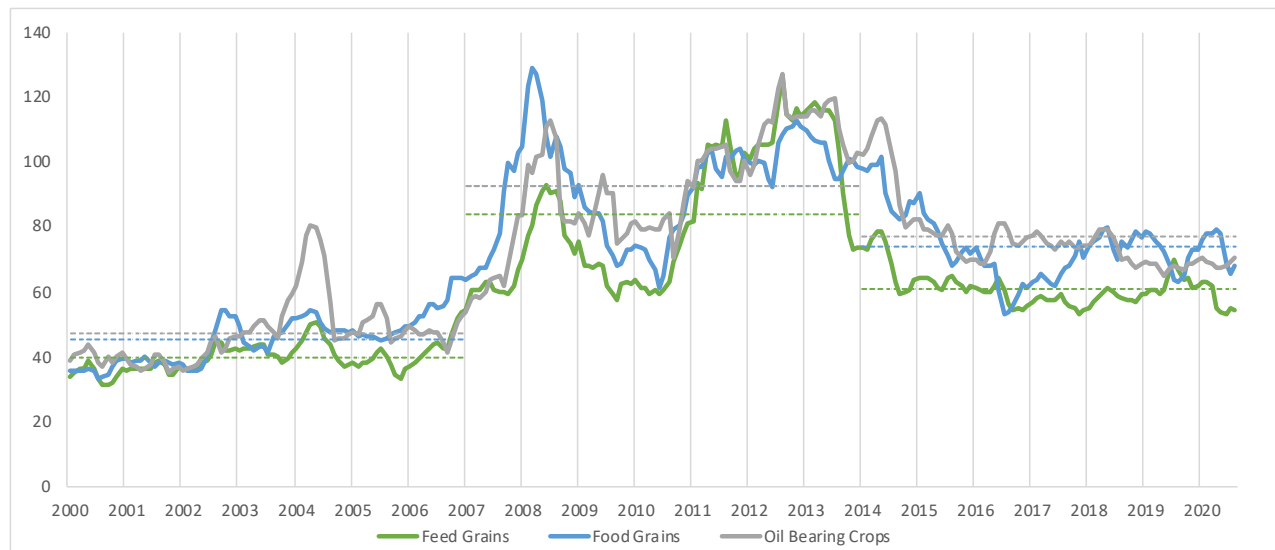
are inter-related as an increase in acreage of one crop causes a decrease in another crop. Depending on end use for the crop, some crops can be substitutes for others. As a result, prices are positively correlated and tend to move together. The 2006–2013 period of higher farm prices was largely driven by increases in use of corn in ethanol, as well as increased export demand for soybeans, and continuing use in wheat. Since 2000, the three crops have collectively accounted for 62% to 70%² of field crop acres in the United States, and price changes in most crops follow a similar trajectory to those crops.

The current status of farm well-being is placed into context by providing relevant background on supply and demand for these three crops, both throughout the period of higher prices

and in the more recent period of lower prices. The major demand drivers for corn are feed, ethanol, and exports. As ethanol production grew rapidly after the first Renewable Fuels Standard (RFS) was established in 2005, corn used for ethanol production grew from 1.6 billion bushels in 2005/06 to 5.1 billion bushels in 2013/14³. Supply did not increase as rapidly as demand in that period with below trend yields leading to lower production levels in several years, with the drought year of 2012 standing out. The growing domestic demand for corn in ethanol production paired with tight supply resulted in lower corn exports and made corn less desirable for use in livestock feed as price increased. In response, demand grew for substitutes like wheat and other feed grains. Wheat use in feed and exports grew 21% from 2005/06 to 2013/14⁴.

Figure 1. Farm Level Price Received: Food Grains, Feed Grains, and Oil-Bearing Crops (Price Index 2011=100)

The farm level prices for food grains, feed grains, and oil-bearing crops have followed a similar trajectory over the past two decades, with three identifiable periods of farm prices. As one of the drivers in value of farm production, crop prices are important factors in farm income.



¹ Prices from USDA NASS Survey data in QuickStats Database, price index to 2011=100

² Calculated using data from USDA NASS Survey data in QuickStats Database

³ USDA Feed Grains Data, <https://www.ers.usda.gov/data-products/feed-grains-database/feed-grains-yearbook-tables/>

⁴ USDA PSD Database

In the same period, soybean exports grew 74%, part of a longer period of steady growth in soybean exports, largely driven by growth in demand from China. Together these trends spurred the period of higher crop prices and have influenced how price has changed since then.

As ethanol production reached a plateau level in 2013/14, growth in demand for corn also plateaued resulting in an abrupt drop in feed grains price from 2013 to 2014. Less expensive corn became more competitive with wheat and other feed grains for use in livestock feed. Soybean exports continued to grow for a few additional years, before suddenly dropping from 2.1 billion bushels in 2017/18 to 1.7 billion bushels in 2018/19. The major factors leading to this decline were 1) African Swine Fever drastically reducing the size of the Chinese swine herd, lowering the quantity of soybeans needed for feed, and 2) trade disputes that resulted in China imposing additional tariffs on U.S. soybeans. Along with these impacts, the

coronavirus pandemic hit at a time in which demand for farm crops was already strained.

Market demand influences crop production to an extent, but several extenuating factors also come into play. Although yields for most crops have trended upward over time, total national production varies based on planted acres and yields, with yields being impacted by weather events during a growing season. Farmers making crop planting decisions on an annual basis will consider market signals but must also consider agronomic and environmental factors to try to make the best planting selections for their farms. Even when a farmer tries to follow market signals, change during a growing season can have positive or negative impacts on yields and prices.

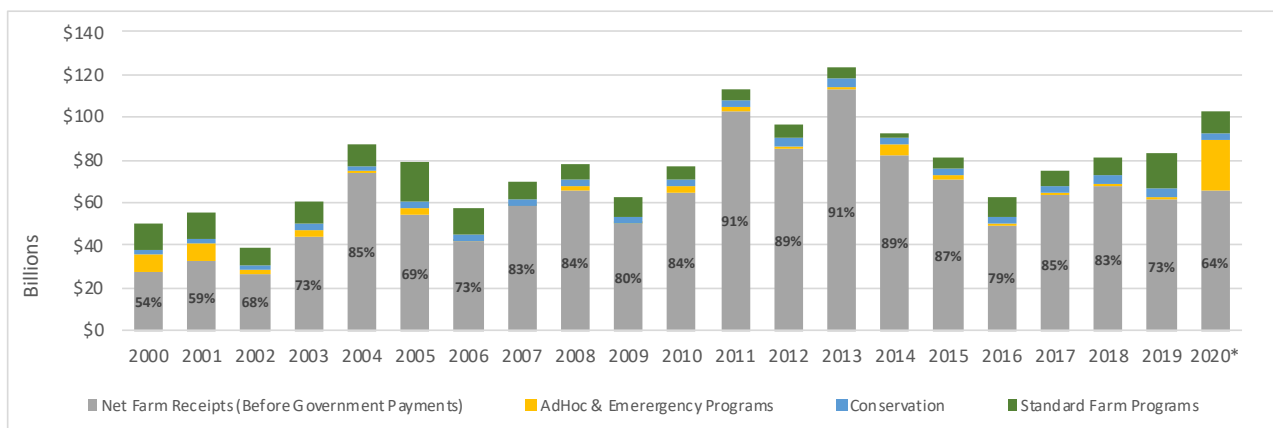
Crop farming is inherently a financially risky business due to uncertainties in price and production and high capital costs. There are tools farmers can use to manage these risks. Federal commodity

programs mandated through periodic legislation commonly known as the farm bill and crop insurance products provide a farm safety net. In addition to these programs, the Trump administration has responded to the trade disputes and coronavirus pandemic by providing additional, separate payments to farmers through ad hoc programs called the Market Facilitation Program (MFP) and Coronavirus Food Assistance Program (CFAP) and has expanded natural disaster relief programs.

With these additional government payments, net farm receipts are expected to be \$102.7 billion in 2020, up from \$83.7 billion in 2019 (Figure 3)⁵. Together traditional farm program payments, conservation payments, and ad hoc and emergency payments are expected to be \$37.2 billion, or 36% of total net farm receipts. Importantly, crop insurance indemnity payments are not included in the government payments value. Federal crop insurance premiums are partially subsidized as legislatively mandated, but as a product a farmer

Figure 2. United States Net Farm Receipts Before & After Government Payments

In 2020, government payments are expected to be 36% of total net farm receipts, the largest share since 2001. And ad hoc programs, not guaranteed to continue, make up a historically large share of net receipts in 2020.





must purchase to receive a payment, it is captured as part of receipts differently than other government farm programs. Although federal assistance has added to farm receipts in a relatively consistent manner over the last two decades, the amount expected in 2020 is a larger share of net farm receipts than any year since 2001. Another notable aspect of 2020 farm receipts is the historically large share of government payments coming from ad hoc programs, which are not guaranteed to continue in

the future. Without the ad hoc and emergency portion, valued at \$23.4 billion, 2020 net farm receipts would be \$79.3 billion.

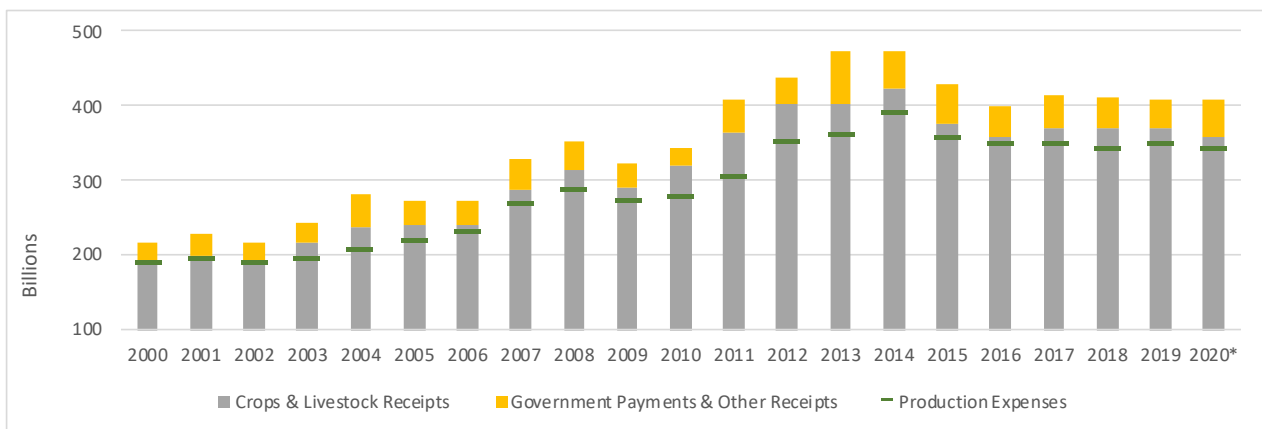
Farm expenses typically adjust at a slower pace than changes on the revenue side. Although farm receipts were much higher from 2012 through 2014 as compared to years since 2014, production expenses have been fairly stable since 2012 as shown in Figure 3. From 2015 through 2020, the margin between production expenses and

cash receipts for crops and livestock is narrow. This underscores the importance of government payments and other farm receipts in farm profitability.

Looking ahead, the slow adjustments on the expense side are particularly concerning if ad hoc programs do not continue and receipts for farm products remain near the same level as in recent years.

Figure 3. United States Gross Farm Receipts & Production Expenses

Incomes were higher from 2012 through 2014 than years since, but production costs have been fairly stable since 2012. From 2015 through 2020, the margin between cash receipts for crops and livestock and production expenses is narrow.



Farm Well-Being Analysis

In this report, three sets of economic indicators are considered: 1) Farm Financial Health, 2) Farm Profitability, and 3) Farm Financial Efficiency. For each indicator, two or three specific measures are used as shown in Table 1. Financial indicators first presented in the *2012 Field to Market* report⁶ and utilized again in the *2016 Field to Market* report⁷ are expanded, to provide a more comprehensive evaluation of farmer well-being.

For all seven measures, annual data are available through the United States Department of Agriculture (USDA) Economic Research Service (ERS). The Agricultural Resource Management Survey (ARMS) database is used as a primary source. ARMS

data are collected for farms and are categorized based on the percentage of receipts derived from production of different crop or livestock categories. The ARMS data are narrowed to those reporting at least 50 percent or more receipts from one of the five following classifications: 1) corn; 2) soybeans; 3) wheat; 4) tobacco, cotton, and peanuts; and 5) general cash grains which may include barley, corn, rice, sorghum, soybeans, wheat, oats, and other grains where no single account exists for majority of production.

Financial ratios included in this report are calculated as a weighted average of the data from these five classifications based on the number of farms reporting from each group

and will be collectively referred to as “crop farm” data. Although not an exact match for crops in the Field to Market program, it provides a useful representation for assessing trends of Field to Market crops over time. The limitation is that 2018 is the most recent year available.

As more timely data is necessary, the ARMS projections for 2019 and 2020 are calculated using data from another ERS database: the Farm Income and Wealth Statistics (FIWS). FIWS were recently updated in September 2020 to include actual data estimates for 2019 and forecasts for 2020 for all farms. Based on relative changes in the FIWS data, the ARMS data was projected for 2019 and 2020.

Table 1. Farmer Well-Being Indicators

Indicator Name	Measure	Ratio
Farm Financial Health	<i>Liquidity Measure</i>	Current Ratio
	<i>Capacity Measure</i>	Debt Service Ratio
	<i>Solvency Measure</i>	Debt to Asset Ratio
Farm Profitability	<i>Asset Returns Measure</i>	Rate of Return on Assets Ratio
	<i>Marginal Measure</i>	Operating Profit Margin Ratio
Farm Financial Efficiency	<i>Investment Measure</i>	Asset Turnover Ratio
	<i>Interest Measure</i>	Interest Expense Ratio

⁶ Field to Market, 2012. Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States (Version 2). December 2012. Available from: www.fieldtomarket.org.

⁷ Field to Market, 2016. Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States (Version 3). December 2016. Available from: www.fieldtomarket.org.

Farm Financial Health Indicator

The three Farm Financial Health Indicator measures are related to the price trends shown in Figure 1. The measures generally reflect increases in financial health through the high price period from 2006 to 2013. Then, there was financial health erosion from 2013 on as commodity prices reached lower levels.

Current Ratio: The current ratio measures liquidity. Specifically, it evaluates if the liquidation of all current asset would cover all current liabilities. Severe problems occur when current ratios are below 1.0. Many view a current ratio near 2.0, the level where twice as many current

assets exist to cover current liabilities, as an acceptable standard of safety. As the ratio increases above 2.0, an additional layer of safety exists.

The current ratio reached high and strong levels in the 2006 through 2013 period, particularly 2007 and 2008 and 2010 through 2012 in which the current ratio exceeded 3.5 for crop farms as shown in Figure 4. The ratio has been moving down since 2013, with crop farms at 1.9 in 2018. The projections suggest that current ratios have remained stable in 2019 and 2020. The current ratio of 1.9 for 2020 is below 2.0, but still indicates that there is some safety in many farms

current position. Still, the downward trend is worrisome. Actual farm liquidity will vary greatly from farm to farm depending on how cash received is utilized.

Debt Service Ratio: The debt service ratio measures capacity to make debt payments. A higher debt servicing ratio implies a larger share of production value is needed to make debt payments. Lower values are desired.

The debt service ratio increased after 2013 and has stayed at an elevated level as shown in Figure 5. The debt service ratio for crop farms went from

Figure 4. The Farm Financial Health Indicator Liquidity Measure: Current Ratio

The current ratio, measuring liquidity, reached high and strong levels in the 2006 through 2013 period and has since moved downward. The 1.9 current ratio projected for 2020 is below the 2.0 acceptable standard of safety, but still indicates some safety in many farms current position.

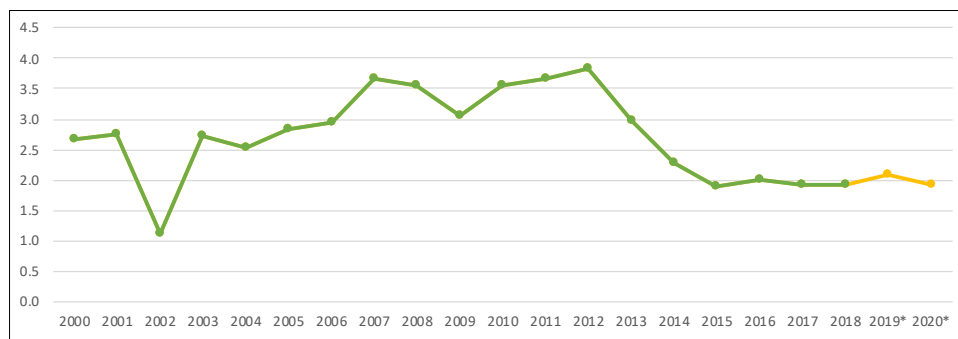
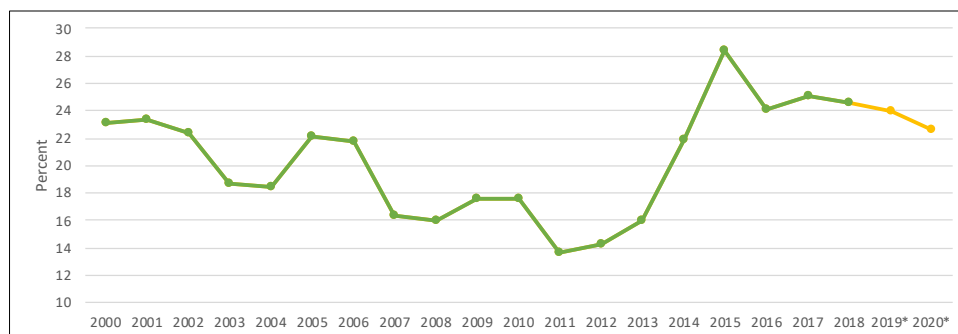


Figure 5. The Farm Financial Health Indicator Capacity Measure: Debt Service Ratio

The debt service ratio, measuring capacity to remake debt payments, increased after 2013 and has stayed at an elevated level with some improvement projected for 2019 and 2020. Both components, debt plus interest payments and the value of farm production, drive change in the ratio over time.





16.0% in 2013, to a high of 28.5% in 2015, and then declined to 24.0% in 2016. In 2018, the debt service ratio was 24.6%. Projections indicate stability with some improvement in 2019 and 2020.

Both components of the calculation — debt and interest payments and the value of farm production — drive changes in the ratio over time and are factors in the changes in recent years. Although debt levels have experienced slight declines in some years, overall farm liabilities have been climbing since 2013. During the same time, value of farm production has mostly trended lower, resulting in a lower number in the denominator of the ratio.

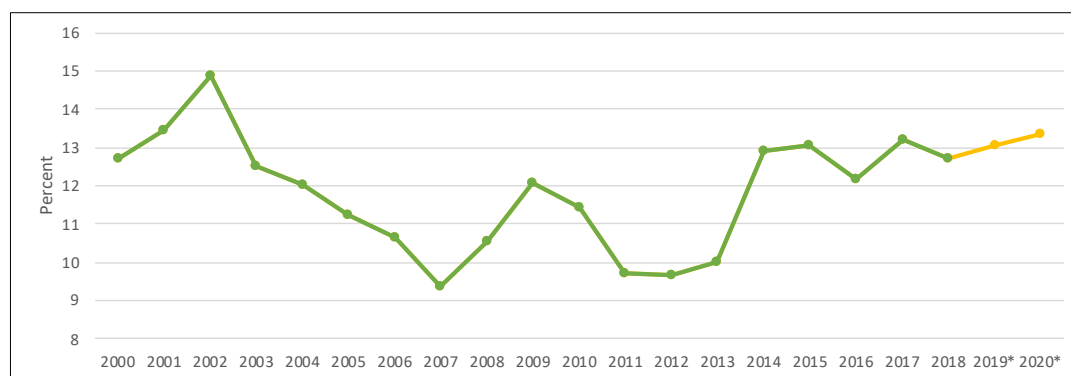
Debt-to-Asset Ratio: The debt-to-asset ratio is a measure of solvency in the proportion of assets owed under outstanding debt obligations. A higher debt-to-asset ratio indicates a larger portion of assets financed by debt, as opposed to being owned without debt. Excessively high of debt-to-asset ratios indicate high levels of financial risk.

The debt-to-asset ratio for crop farms reached low points at or below 10% from 2011 through 2013. The ratio then increased from 10.0% in 2013 to 12.9% in 2014. Debt-to-asset ratios then remained in a small range, ending at 12.7% in 2018. Debt-to-asset ratios are projected to increase in 2019 and 2020.

Generally, the debt-to-asset ratios shown in Figure 6 would be viewed as very low, at least compared to levels reached during the financial crisis during the 1980s. Still, the upward trend is not a positive sign. Overall, the farm sector is increasing debt levels, but stable to slight increases in asset levels are limiting growth in the debt-to-asset ratio, keeping it at relatively low levels.

Figure 6. The Farm Financial Health Indicator Solvency Measure: Debt-To-Asset Ratio

The debt-to-asset ratio measures solvency in the share of assets under debt. After rising 2014, the ratio has fluctuated in a narrow range. Increases are projected for 2019 and 2020. Overall, farm sector debt is rising but slight increases in asset levels are limiting growth in the debt-to-asset ratio.



Farm Profitability Indicator

As one would expect, The Farm Profitability Indicators reflect higher profits from 2010 to 2013, then a decline in profitability.

Rate of Return on Assets: Rate of return on assets is a measure of returns to farm sector assets from current farms. A higher rate of return on farm assets in the form of revenue signals increased profitability.

The return on assets levels for crop farms were above 3.0% from 2010 to 2013. Profitability then declined significantly, dropping to 1.5% in 2014 and a low of 0.6% in 2015. In 2018, the crop farm return on assets was 2.0% in 2018 as shown in Figure 7. The forecasts suggest stability with slight improvement in 2019 and 2020.

Returns on assets for crop farms are dominated by the fact that land is a large proportion of total assets. Because of this, crop farms typically have lower returns to asset compared to livestock and other farms with less land.

Operating Profit Margin Ratio:

Operating profit margin ratio measures profitability relative to the value of production generated. The farm sector can increase this measure by increasing production value or increasing the per unit profit margin.

While value of production is dependent on price and units produced, operating profits are also dependent on cost management capabilities relative to production. Although based on net revenue, the operating profit variable does not account for interest expense and includes an adjustment expense

for unpaid labor. The operating profit variable also includes government payments which are generally not tied to actual production, although recent ad hoc programs have been. For this reason, profitability and the operating profit margin may be strong even in years where price and value of production are low. The operating profit margin for crop farms was near 30% from 2016 to 2018 as shown in Figure 8, which is quite a bit higher than the same ratio when all farms are considered, as opposed to only crop farms. This is a reflection on prices and production of individual commodities, but also that crops are the heaviest beneficiary of government support. The operating profit margin ratio is forecast to increase slightly in 2020, driven by the expectation for large government payments raising operating profitability relative to the value of production.

Figure 7. The Farm Profitability Indicator Asset Returns Measure: Rate of Return on Assets

Rate of return on assets has improved from a 2015 low point. Forecasts suggest slightly higher levels for 2019 and 2020, signaling increased profitability.

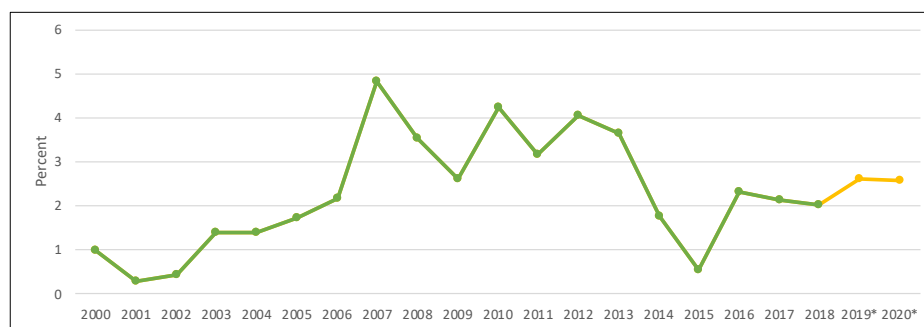
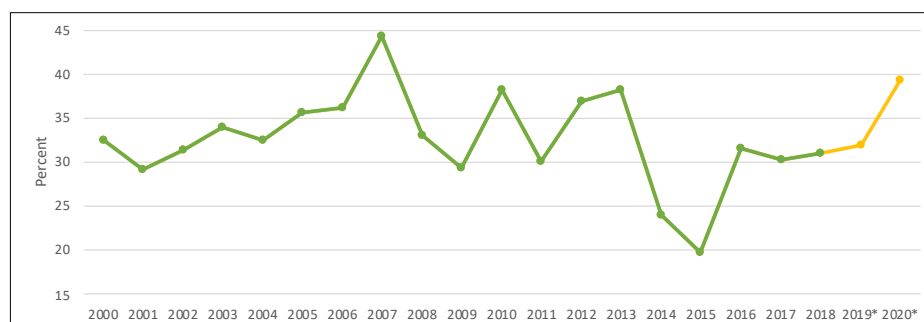


Figure 8. The Farm Profitability Indicator Marginal Measure: Operating Profit Margin Ratio

The operating project margin measures operating profits, which include government payments, relative to the value of production. The increase in the margin in 2020 is driven by the expectation for large government payments raising operating profitability relative to value of production.



Farm Financial Efficiency Indicator

The Farm Financial Efficiency Indicator measures show the farm sector has managed to maintain financial efficiency despite lower revenues since 2013. Lower interest rates, growth in assets, and the farm safety net have collectively helped keep financial efficiency at a steady level.

Asset Turnover Ratio: The asset turnover ratio is a measure of capital investment efficiency. It equals value of farm production divided by total assets considering the level in which farm assets are used to generate production. As the ratio increases, the farm sector's assets are used to generate production more efficiently.

The asset turnover ratio was higher from 2008 to 2014 and has been at much lower levels since 2015 as shown in Figure 9. For crop farms, asset turnover was 20.7% in 2008 and stayed higher until 2014 when the ratio was 17.3%. The asset turnover ratio fell in 2015 to 13.9%. The ratio has remained near 14% through 2018. Value of production has been depressed during this period, but stable levels of assets have kept the asset turnover ratio at a flat, although lower level than 2007 through 2013. Forecasts for 2019 and 2020 suggest stability around the same level.

Interest Expense Ratio: The interest expense ratio is a measure of interest expenses representing the proportion of production used to make interest payments on debt. It equals interest expense divided by value of production. Higher levels of the ratio suggest a high interest payment burden relative to production.

The interest expense ratio for crop farms has increased from 2.3% in 2012 to 3.6% in 2018 as shown in Figure 10. Projections for 2019 and 2020 suggest the interest expense ratio will move down in 2020. Lower interest rates are causing the decline.

Figure 9. The Farm Financial Efficiency Indicator Investment Measure: Asset Turnover Ratio

The asset turnover ratio measures the level in which farm assets are used to generate production. Value of production has been depressed since 2015 but stable asset levels have kept the asset turnover ratio at a flat, although lower, level than 2007 through 2013.

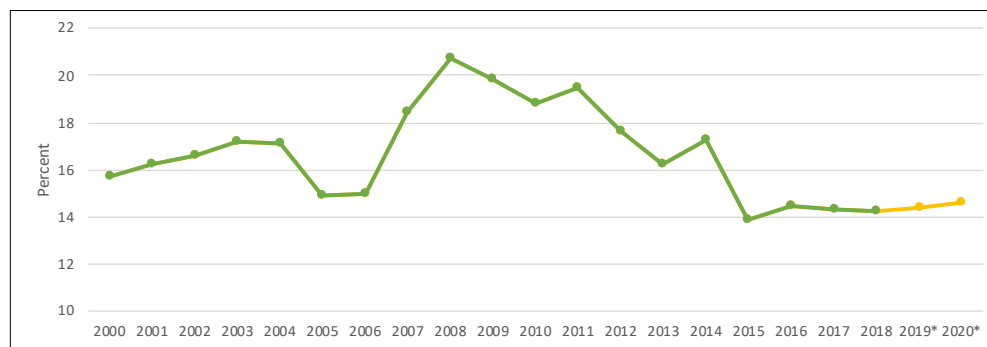
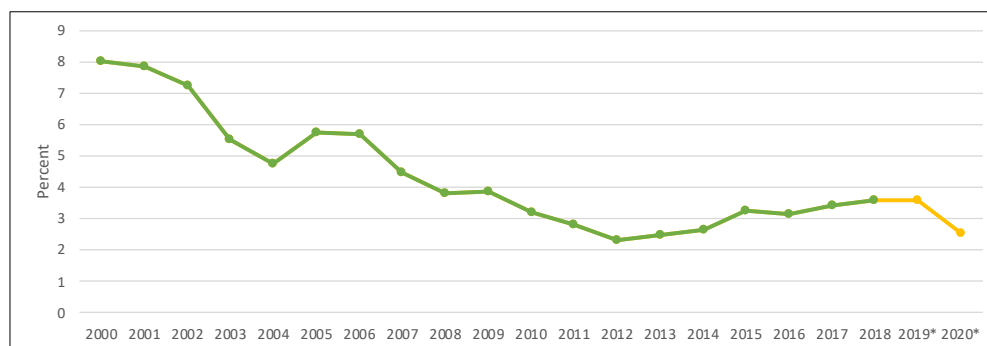


Figure 10. The Farm Financial Efficiency Indicator Interest Measure: Interest Expense Ratio

The interest expense ratio represents the proportion of production value used to make interest payments on debt. Although interest expense ratio has increased since 2012, it's relatively low. Projections suggest the ratio will drop in 2020, a move occurring because of lower interest rates.





Impact on Farmer Decision Making and Sustainability Outcomes

Overall, the financial well-being of farms has decreased from 2013, largely because commodity prices have declined. As a result, farm financial health has declined, profitability has declined, and financial efficiency has declined. While overall financial health has not reached crisis levels like that of the 1980s, downward trends are a sign for caution, particularly given the extent to which the Federal government has supported farm receipts in recent years with programs that are not guaranteed to continue.

Farm revenues are projected to be higher for 2020, due largely to government payments, boosting overall farm financial well-being. Although the farm financial health indicator measures reflect a weaker position through recent lower revenue years, those measures, particularly liquidity and capacity, are responsive to higher revenues projected for 2020. The farm profitability indicator and farm financial efficiency indicator have remained steady, a trend that is expected to continue. In recent years farmers have been able to maintain profitability and financial efficiency despite low values of production due to government support and cost reduction efforts. Low interest rates and growth in assets are also contributing factors.

This financial situation will have a significant influence on the types of sustainability practices farms will undertake. Any management decisions that have immediate positive

profit implications are likely to have priority. For example, practices that come with measurable cost savings, such as reduced tillage, will be more readily adopted.

On the other hand, practices that reduce immediate profitability are less likely to be adopted, particularly if those practices negatively impact yields or come with investment expense. For example, while research has shown that cover crops have many environmental benefits, they have upfront costs and potential returns that may be delayed into the future. As a result, cover crops have a lower chance of being adopted than a sustainability option with immediate positive profit implications.⁸

From these standpoints, this is a financially challenging time to make adaptations while also an opportunity to pursue innovations that build operational efficiency and resiliency. Farmers are in a unique position to deliver broader environmental benefits to society based on their management decisions; however, they are not currently in a position where they can bear the full cost of this effort. Opportunities for farmers to achieve these societal goals are more likely to be pursued when there are programs to offset added expenses or lost revenues due to practice changes. Now more than ever, the supply chain should consider creative mechanisms that support farmers in transitioning to practices that will deliver more sustainable outcomes.

⁸ Note: This report is not intended to be an analysis of the economic impacts of any particular sustainability practice. For examples of such analysis, please see [SARE: Economics of Cover Crops](#) and [NACD and Datu: Soil Health Research](#).



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Acknowledgments

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Special thanks to Field to Market's Board *Farmer Livelihood Task Force* for commissioning this report.

How to Cite This Report

Citation: Field to Market: The Alliance for Sustainable Agriculture. 2020. Economic Sustainability | Trends in Farm Financial Well-Being. 14 pp.



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