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U.S. Farm Income Outlook for 2016

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Summary

According to USDA's Economic Research Service (ERS), national net farm income—a key indicator of U.S. farm well-being—is forecast at \$54.8 billion in 2016, down 3% from last year. The 2016 forecast represents the third consecutive year of decline and would be the lowest since 2002 in both nominal and inflation-adjusted dollars. Net farm income is calculated on an accrual basis. Net cash income (calculated on a cash-flow basis) is also projected lower in 2016, down 2.5% to \$90.9 billion.

The forecast for lower net farm income and net cash income is the result of the outlook for lower crop and livestock receipts—down a combined 2.5% (\$9.6 billion). The fall in cash receipts reflects continued declines in prices for most commodities compared with the period of 2011-2013, when prices for many major commodities experienced record or near-record highs.

Partially offsetting the decline in farm revenues is a mild decline of about 3% in farm cash expenses. In addition, government payments are projected up by 31% to \$13.9 billion. The 2014 farm bill (Agricultural Act of 2014; P.L. 113-79) eliminated direct payments of nearly \$5 billion per year and replaced them with a new suite of revenue support programs. In particular, the new Price Loss Coverage (PLC) and Agricultural Risk Coverage (ARC) programs are expected to trigger payments in excess of \$9 billion in 2016.

U.S. farm income experienced a golden period during 2011 through 2014, driven largely by strong commodity prices and agricultural exports. In particular, U.S. agricultural exports are projected to account for over 30% of earnings in 2016. However, agricultural exports are forecast lower in 2016, down 6% from 2015's total and well below 2014's record \$152.5 billion—due largely to a strengthening U.S. dollar coupled with a weakening economic outlook in several major foreign importing countries.

In addition to the outlook for lower farm income in 2016, farm wealth is projected to decline for a second consecutive year (down about 2% from 2015) to \$2,815 billion. Farm asset values reflect farm investors' and lenders' expectations about long-term profitability of farm sector investments. The outlook for lower commodity prices and the expected decline from the past four years' strong outlook for the general farm economy have slowed the previously rapid growth of farmland values. Because they comprise such a significant portion of the U.S. farm sector's asset base, change in farmland values is a critical barometer of the farm sector's financial performance.

At the farm-household level, average farm household incomes have surged ahead of average U.S. household incomes since the late 1990s. In 2014 (the last year for which comparable data were available), the average farm household income (including off-farm income sources) of \$131,754 was about 74% higher than the average U.S. household income of \$75,738.

The outlook for a third year of lower net farm income, coupled with a second year of lower farm wealth, suggests a mixed financial picture heading into 2016 for the agricultural sector as a whole, with substantial regional variation. Declining prices for most major program crops signal tougher times ahead. Falling prices are expected to trigger substantial payments under the new safety net programs of the 2014 farm bill; however, eventual 2016 agricultural economic well-being will hinge on crop prospects and prices, as well as both domestic and international macroeconomic factors, including economic growth and consumer demand.

This report is updated to include USDA's February 9, 2016, farm income update, the December 2, 2015, U.S. agricultural trade outlook update, and the December 15, 2015, early release of long-term baseline projections.

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Introduction

The U.S. farm sector is vast and varied. It encompasses production activities related to traditional field crops (such as corn, soybeans, wheat, and cotton) and livestock and poultry products (including meat, dairy, and eggs), as well as fruits, tree nuts, and vegetables. In addition, U.S. agricultural output includes greenhouse and nursery products, forest products, custom work, machine hire, and other farm-related activities. The intensity and economic importance of each of these activities, as well as their underlying market structure and production processes, vary regionally based on the agro-climatic setting, market conditions, and other factors. As a result, farm income and rural economic conditions may vary substantially across the United States.¹ However, this report focuses singularly on aggregate national net farm income and the status of the farm debt-to-asset ratio as reported by the U.S. Department of Agriculture (USDA).²

Annual U.S. net farm income is the single most watched indicator of farm sector well-being, as it captures and reflects the entirety of economic activity across the range of production processes, input expenses, and marketing conditions that have persisted during a specific time period. When national net farm income is reported together with a measure of the national farm debt-to-asset ratio, the two summary statistics provide a quick indicator of the economic well-being of the national farm economy.

Measuring Farm Profitability

Two different indicators measure farm profitability: net cash income and net farm income.

Net cash income compares cash receipts to cash expenses. As such, it is a cash flow measure representing the funds that are available to farm operators to meet family living expenses and make debt payments. For example, crops that are produced and harvested but kept in on-farm storage are not counted in net cash income. Farm output must be sold before it is counted as part of the household's cash flow.

Net farm income is a value of production measure, indicating the farm operator's share of the net value added to the national economy within a calendar year, independent of whether it is received in cash or noncash form. As a result, net farm income includes the value of home consumption, changes in inventories, capital replacement, and implicit rent and expenses related to the farm operator's dwelling that are not reflected in cash transactions. Thus, once a crop is grown and harvested it is included in the farm's net income calculation, even if it remains in on-farm storage.

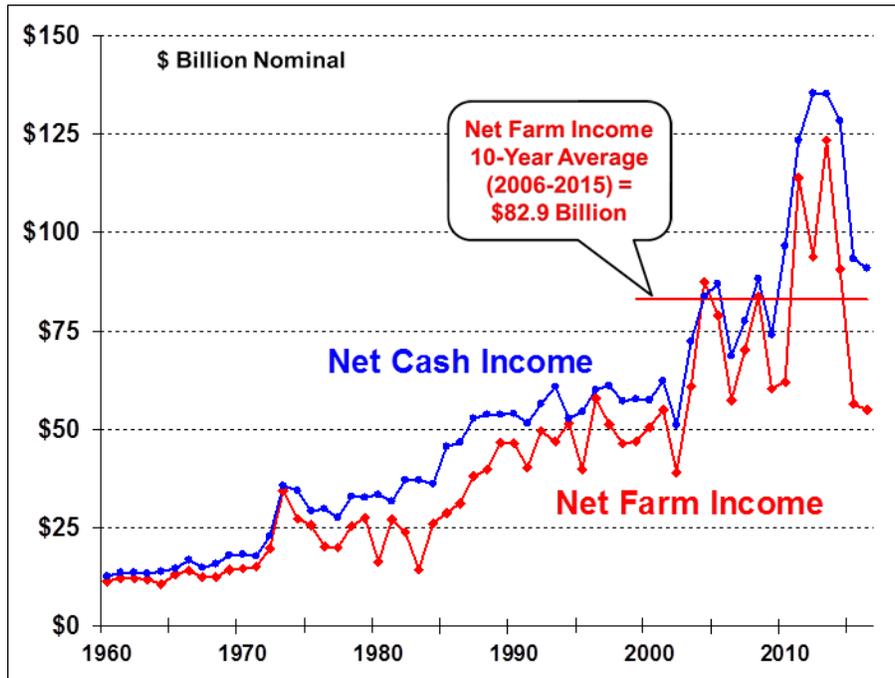
Key Concepts

- Net cash income is generally less variable than net farm income. Farmers can manage the timing of crop and livestock sales and of purchase of inputs to stabilize the variability in their net cash income. For example, farmers can hold crops from large harvests to sell in the forthcoming year, when output may be lower and prices higher.
- Off-farm income and crop insurance subsidies, both of which have increased in importance in recent years, are not included in the calculation of aggregate farm income.
- Off-farm income is included in the discussion of farm income at the household level at the end of this report.

¹ For information on state-level farm income, see "U.S. and State Farm Income and Wealth Statistics," available as part of the Farm Income and Wealth Statistics, Farm Income and Costs, Farm Economy Topics, Economic Research Service (ERS), USDA, at <http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx>.

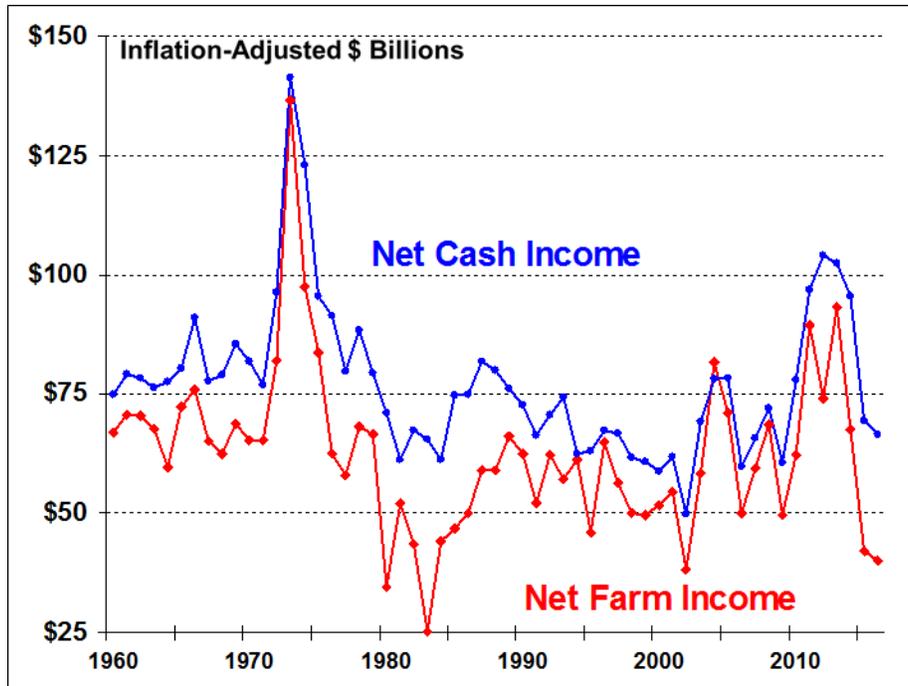
² For a more detailed discussion of the issues in this report, see "Farm Income and Costs: 2015 Farm Sector Income Forecast," ERS, USDA, at <http://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/2015-farm-sector-income-forecast.aspx>.

Figure 1. Annual U.S. Farm Sector Nominal Income, 1960 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Figure 2. Annual U.S. Farm Sector Inflation-Adjusted Income, 1960 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are adjusted for inflation using the Bureau of Labor Statistics (BLS), Consumer Price Index (CPI), where 2002-2003=100. 2016 is forecast.

USDA's 2016 Farm Income Forecast

According to USDA's Economic Research Service (ERS), both net farm income and net cash income are forecast lower in 2016, for a third consecutive year of decline. The lower farm income forecast is primarily a result of lower crop (-1%) and livestock (-4%) receipts, while production expenses are projected down slightly (-3%).³ U.S. agricultural exports are also forecast lower for the sector in 2016 as a stronger U.S. dollar is expected to combine with struggling international economies to slow growth in demand for U.S. agricultural products. Total farm asset values are forecast down slightly in 2016—a second consecutive year of decline, while the debt-to-asset ratio is expected to rise to 13.2%, the highest level since 2003.⁴

These forecasts are preliminary and will depend on both final crop harvests as well as market developments. The ongoing drought in California remains of particular concern since nearly half of U.S. fruit, vegetable, and tree nut production occurs there. Also, the new safety net programs of the 2014 farm bill are expected to make substantial payments as a result of relatively lower commodity prices in 2015 and 2016.

Selected Highlights

- U.S. net farm income is forecast at \$54.8 billion in 2016, a drop of nearly \$2 billion (-3%) from 2015's level (**Figure 1** and **Table 1**). This represents the lowest net farm income forecast since 2002 in both nominal and inflation-adjusted dollars (**Figure 1** and **Figure 2**).
- Measured in cash terms, net cash income in 2016 is also projected lower at \$90.9 billion, down \$2.3 billion (-2%) from the previous year.
- Farm prices for most feedstuffs—feed grains (corn, sorghum, barley, and oats), hay, and protein meals—as well as soybeans and wheat declined during 2015 and are projected to continue lower in 2016 as U.S. and global grain and oilseed stocks rebuild (**Table 4** and **Figure 21** to **Figure 24**).
- Cattle prices have also turned downward from their record highs in 2014, while dairy, poultry, and hog prices have turned sharply lower (**Figure 25** to **Figure 30**). Prices for all four protein sources are projected lower in 2016 (**Table 4**).
- Government payments in 2016 are projected up sharply (31%) to \$13.9 billion, the highest level since 2006 (**Figure 8**). Lower commodity prices are expected to trigger payments of over \$9 billion under the price-contingent PLC and ARC programs, up sharply from the \$5 billion in payments under these same two programs in 2015.
- Total production expenses, at \$376.5 billion, are projected down about 1% in 2016, held in check by lower costs for replacement animals (-6.5%), feed (-5%), fertilizer (-5%), and fuel (-15%).
- Global demand for U.S. agricultural product exports is expected to turn downward (-6%) in 2016, for a second year of decline after setting a record of \$152.3 billion in 2014.

³ The material presented in the report is drawn primarily from the 2016 Farm Sector Income Forecast of ERS, USDA, at <http://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/2016-farm-sector-income-forecast.aspx>.

⁴ See discussion later in the report in the section "Farm Asset Values and Debt."

- Farm asset values are also expected to decline a second straight year to \$2,815 billion (down 2%) in 2016, driven by weaker land values. Increases in farm debt (\$372.5 billion, up 2%) are expected to result in a rise in the debt-to-asset ratio to 13.2%, the highest since 2003.

Wrap Up of U.S. Agriculture for 2015

Normal weather conditions prevailed in most major growing regions around the world in 2015. As a result 2015 saw continued building of global grain and oilseed stocks that began with the large harvests of 2013. Abundant stocks are expected to moderate crop prices in U.S. and international markets (**Figure 21** through **Figure 24**) in 2016. The changing conditions for the livestock sector are evidenced by tracking the evolution of the ratios of livestock output prices to feed costs (**Figure 29** and **Figure 30**), which rose steadily through 2013 before turning downward in late 2014. The ratios declined through 2015, with the exception of the milk-to-feed margin, which recovered slightly in 2015.⁵ The U.S. livestock sectors—cattle, dairy, broilers, and hogs—are all projected to experience declines in market prices heading into 2016. This suggests lower profitability and perhaps financial difficulties for marginal producers.

A key uncertainty for the hog sector in 2014 was the rapid outbreak and spread of the porcine epidemic diarrhea virus (PEDv), which caused market worries related to U.S. pork production. The incidence of PEDv since last winter (2014/2015) has declined, and initial market fears have subsided. However, a new disease-related uncertainty emerged during spring 2015, when the U.S. poultry industry experienced a severe outbreak of highly-pathogenic avian influenza (HPAI).⁶ With the start of summer, the finding of new cases slowed. The last reported new case was in Iowa on June 17, 2015. More than 48 million chickens, turkeys, and other poultry were euthanized to stem the spread of the disease. Turkey and egg-laying hen farms in Minnesota and Iowa were the hardest hit. Commercial broiler farms have not been affected to date. USDA estimates that 2015 egg production declined over 5% in 2015, and egg prices were up 28% in 2015. In 2016, egg prices are projected to decline 20% as supply concerns subside.

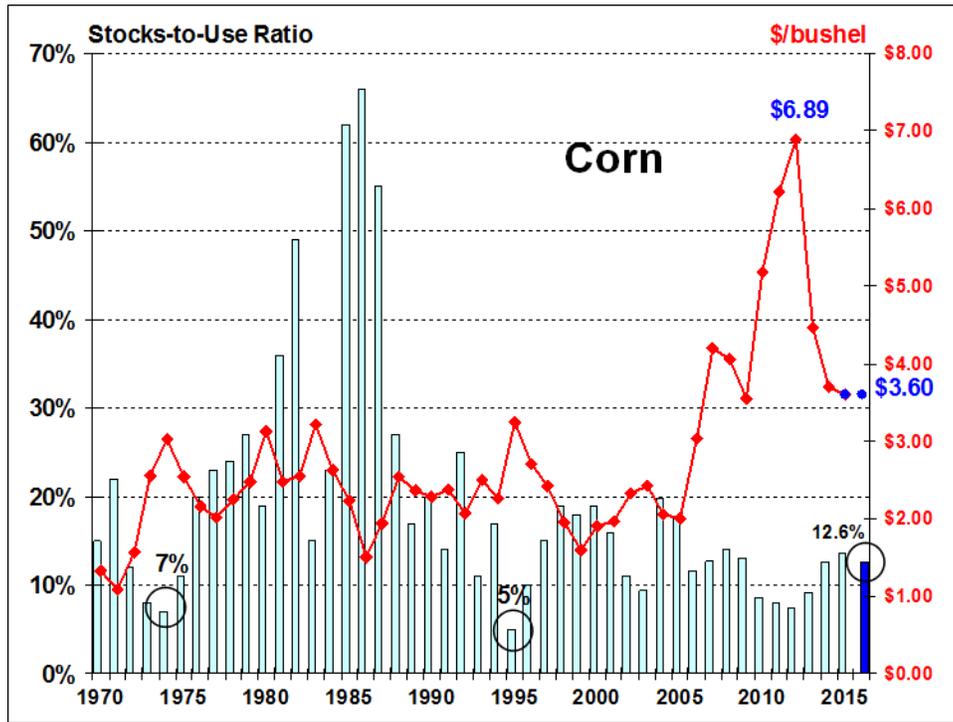
The two largest U.S. commercial crops—in terms of both value and quantity—are corn and soybeans. Both corn and soybeans experienced record harvests in 2014 followed by above-average harvests in 2015. Both crops are expected to have bountiful harvests again in 2016, thus helping to maintain stocks and pressure prices lower (**Figure 3** and **Figure 4**). The eventual outcome will likely depend on growing conditions and international markets.

These two crops provide important inputs for domestic livestock, poultry, and biofuels sectors. In addition, the United States has traditionally been one of the world's leading exporters of corn, soybeans, and soybean products—vegetable oil and meal. As a result, the outlook for these two crops is critical to both farm sector profitability and regional economic activity across large swaths of the United States, as well as in international markets.

⁵ Feed costs are generally the largest cost component in livestock operations, ranging from 30% to 80% of variable costs. A historical comparison of livestock output prices to feed costs provides an indicator of sector profitability—rising output prices relative to feed costs suggest improving profitability.

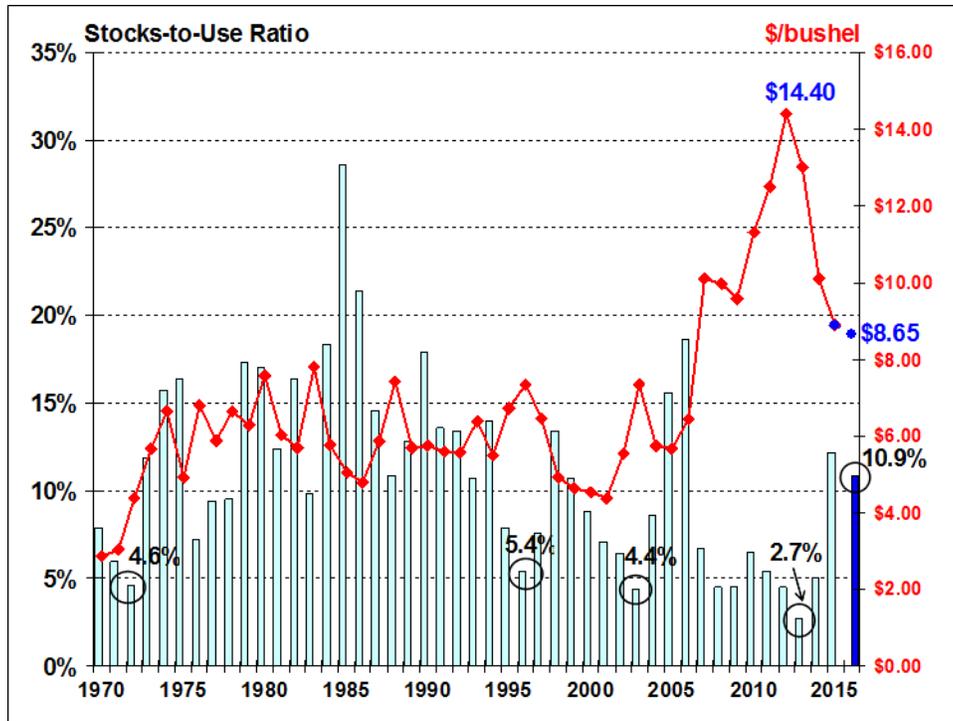
⁶ CRS Report R44114, *Update on the Highly-Pathogenic Avian Influenza Outbreak of 2014-2015*, by (name redacted)

Figure 3. U.S. Corn Stocks-to-Use Share Down, Prices Level in 2016



Source: See Source and Notes for Figure 4.

Figure 4. U.S. Soybean Stocks Relatively Abundant, Prices Lower in 2016



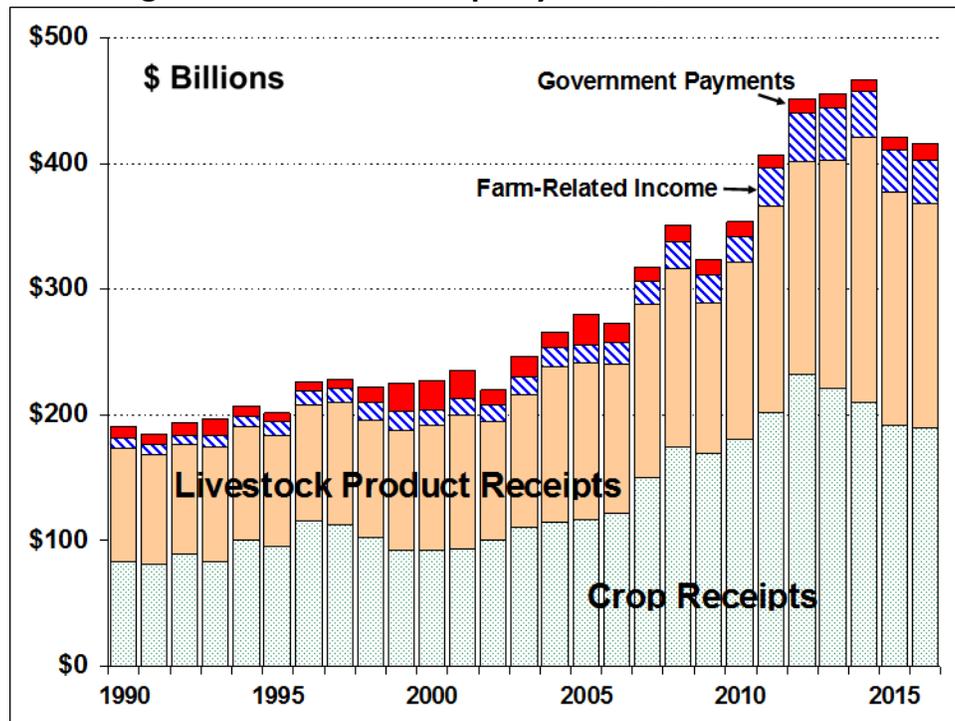
Source: World Agricultural Outlook Board, USDA, World Agricultural Supply and Demand Estimates (WASDE), February 9, 2016.

Notes: Stocks-to-Use equals the ratio of season-ending stocks relative to the season's total usage.

Cash Receipt Highlights

- Total farm sector gross cash receipts for 2016 are projected down 1.4% to \$415.7 billion for a second year of decline from 2014's record \$467 billion (**Figure 5**), driven by lower cash receipts for both crop (-1%) and livestock products (-4%).
- Farm sector revenue sources and shares include crop revenues (46% of sector revenues); livestock receipts (43%); government payments (3%); and other farm-related income, including crop insurance indemnities, machine hire, and custom work (8%).

Figure 5. Farm Cash Receipts by Source, 1990 to 2016F



Source: USDA, ERS, "2016 Farm Income Forecast," February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Notes: Receipts from crop and livestock product sales, and government payments, are described in more detail below. Farm-related income includes income from custom work, machine hire, agri-tourism, forest product sales, insurance indemnities, and cooperative patronage dividend fees.

Crop Receipts

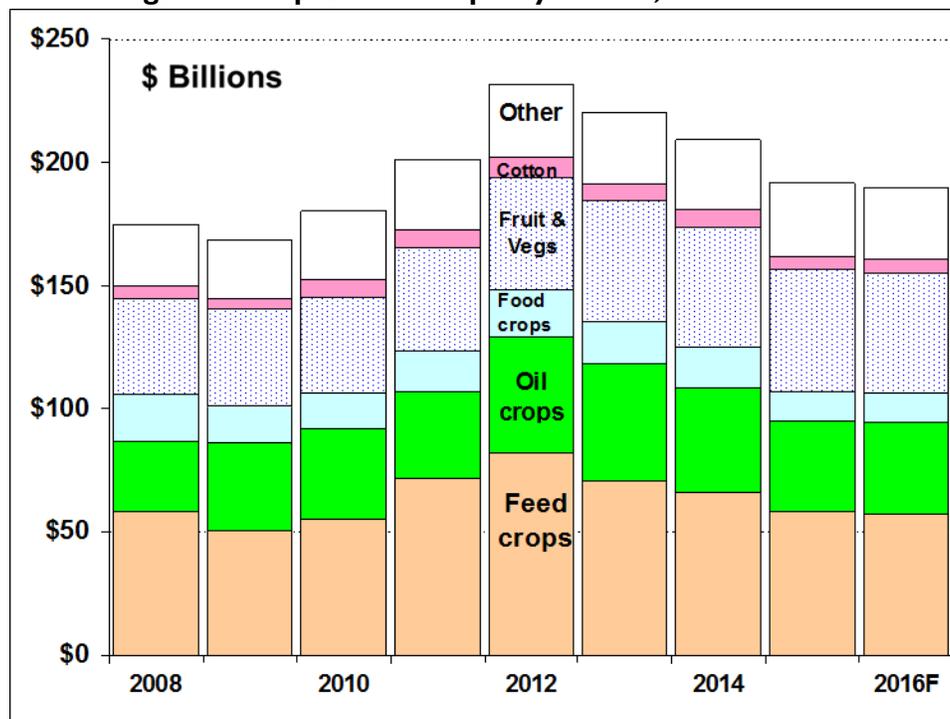
Total crop sales peaked in 2012 at a record \$231.6 billion when a nationwide drought pushed commodity prices to record or near-record levels. In 2016, crop sales are projected down slightly (-1%) from 2015, at \$189.7 billion (**Figure 5**). The crop sector includes 2016 projections (and percentage changes from 2015) for:

- feed crops—corn, barley, oats, sorghum, and hay—of \$57.2 billion (-1.4%);
- oil crops—soybeans, peanuts, and other minor oilseeds—of \$37.3 billion (+1%);
- food grains—wheat and rice—of \$12.3 billion (+1.3%);
- fruits and nuts of \$30.6 billion (+0.2%);

- vegetables, and melons of \$17.9 billion (-7.2%);
- cotton of \$5.4 billion (+6.6%); and
- all other crops—including tobacco, sugar, greenhouse, and nursery crops—of a record \$29.2 billion (-1.3%).

The length and severity of the California drought (which has eased only slightly with winter rains in 2015/16) has important national implications for retail food prices—California accounts for about one-third of U.S. vegetable production, almost two-thirds of U.S. fruit and nut production, about 20% of U.S. milk, and a substantial portion of wine production.⁷

Figure 6. Crop Cash Receipts by Source, 2008 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Livestock Receipts

The livestock sector, broadly defined, includes cattle, hogs, sheep, poultry and eggs, dairy, and other minor activities. Cash receipts for the livestock sector grew steadily from the severe downturn of 2009 through 2014, when they peaked at a record \$212.2 billion. However, the sector turned downward in 2015 (-12.5%) and is projected to do so again in 2016 (-4.3%) to \$177.8 billion—driven largely by projected year-over-year declines across all major livestock categories in 2016.

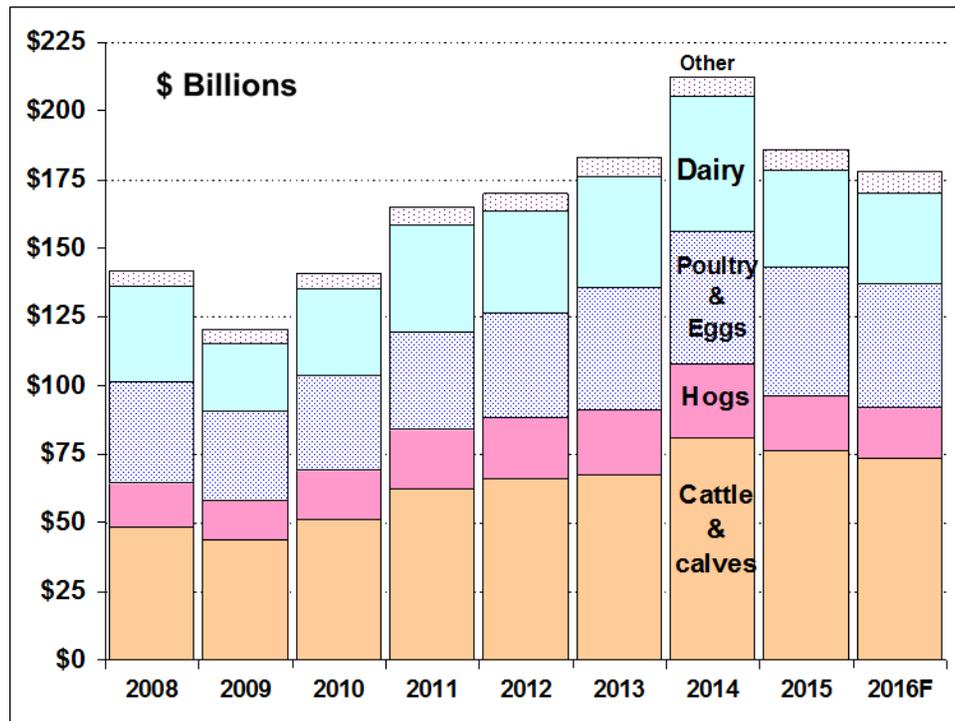
Highlights for individual activities include 2016 projections for:

- cattle and calf sales of over \$73.6 billion, down 4% from 2015;

⁷ CRS Report R44093, *California Agricultural Production and Irrigated Water Use*, by (name redacted) and (name redacted)

- hog sales of \$18.5 billion, also down 5% from 2015;
- poultry and egg sales of \$45 billion, down 4% from 2015 (**Table 4**); and
- dairy sales, valued at \$33.2 billion, down 6.4% from 2015 on the outlook for slightly lower milk prices.

Figure 7. U.S. Livestock Product Cash Receipts by Source, 2008 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Government Payments

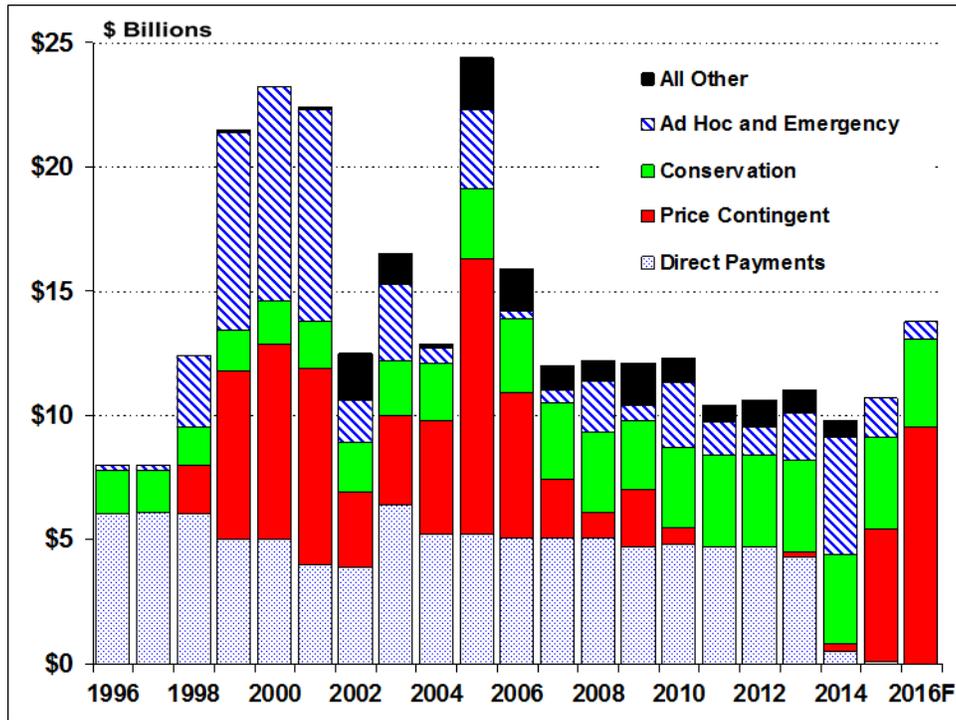
Government payments in 2016 are projected up by 31.4% from 2015 as plunging farm prices are expected to trigger substantial payments under the price-contingent programs—the Price Loss Coverage (PLC) and the Agricultural Risk Coverage (ARC) programs. The 2014 farm bill (Agricultural Act of 2014; P.L. 113-79) eliminated direct payments of nearly \$5 billion per year and replaced them with a new suite of revenue support programs. In particular, the PLC program replaced the previous Counter-Cyclical Price (CCP) program, but with a set of reference prices based on substantially higher support levels for most program crops. ARC relies on a five-year moving average price trigger in its payment calculation but also adopts the PLC reference price as the minimum guarantee in years when market prices fall below it. These higher relative support levels are expected to trigger payments of over \$9 billion in 2016, up from \$5 billion in 2015 (**Figure 8**).

- Government payments of \$13.9 billion are expected to represent a relatively small share (3%) of projected gross cash income of \$415.7 billion in 2016 (**Figure 5**).
- In contrast, government payments are expected to represent 25% of net farm income of \$54.8 billion in 2016 (**Table 1**); however, the importance of

government payments as a percent of net farm income varies nationally by crop and livestock sector and region.

- Farm fixed direct payments, whose payment rates were fixed in previous legislation, were eliminated by the 2014 farm bill.⁸

Figure 8. U.S. Government Farm Support, Direct Outlays, 1996 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Notes: Data are on a fiscal year basis and may not correspond exactly with the crop or calendar year. “Direct Payments” include production flexibility contract payments enacted under the 1996 farm bill and fixed direct payments of the 2002 and 2008 farm bills; “Price-Contingent” outlays include loan deficiency payments, marketing loan gains, counter-cyclical payments, and ACRE payments; “Conservation” outlays include Conservation Reserve Program payments along with other conservation program outlays; “Ad Hoc and Emergency” includes emergency supplemental crop and livestock disaster payments and market loss assistance payments for relief of low commodity prices; and “All Other” outlays include peanut quota buyout payments, milk income loss payments, tobacco transition payments, and other miscellaneous expenditures.

- Payments under the price-contingent marketing loan benefit are forecast at \$330 million in 2015 and \$400 million in 2016, as program crop prices are expected to remain above most program loan rates—the exception being rice and peanuts (Table 4).
- The new dairy Milk Margin Protection program (MPP) is actually expected to earn savings as producer premiums paid exceed federal payouts by \$74 million in 2015 and \$25 million in 2016.
- Conservation programs include all conservation programs operated by USDA’s Farm Service Agency (FSA) and the Natural Resources Conservation Service

⁸ For details see CRS Report R43076, *The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side*.

- (NRCS) that provide direct payments to producers. Estimated conservation payments of \$3.6 billion are forecast for 2016, down slightly (-0.7%) from 2015.
- Supplemental and ad-hoc disaster assistance payments are forecast at \$746 million in 2016, a 53% decline from \$1.6 billion in 2015. The decline is largely due to an expected decline in payouts under the Livestock Forage Program (LFP).⁹

Production Expenses

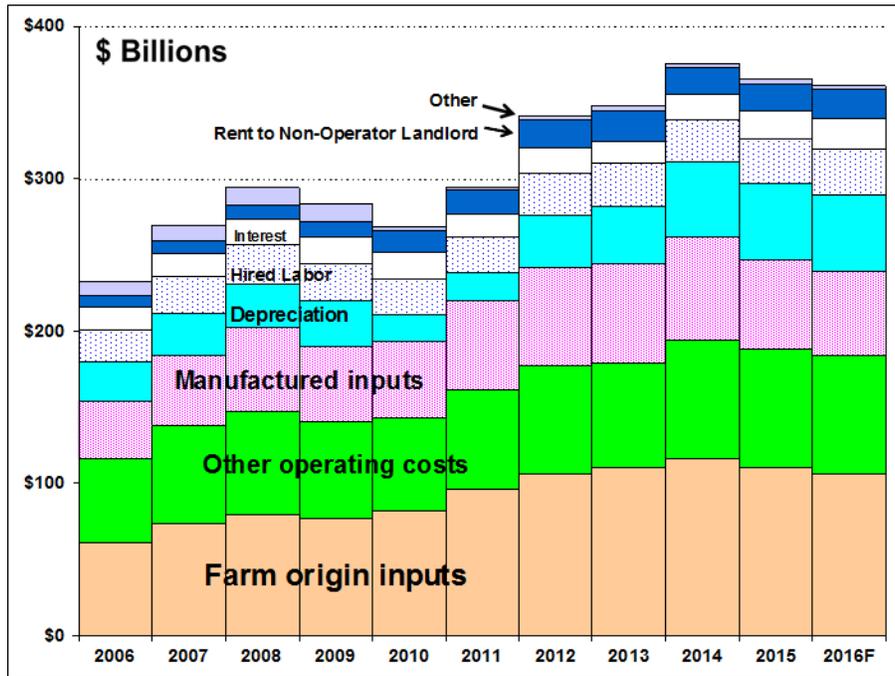
Production expenses for 2016 for the U.S. agricultural sector are projected down (-1%) at \$376.5 billion (**Figure 9**) for a second consecutive year of decline. Multi-year reductions in farm production expenses are relatively rare—it happened last from 1984 to 1986. Changes in input prices (i.e., expenses) typically lag commodity price changes. Commodity prices, in general, are in their third year of relative decline from record highs achieved in the 2012/13 period. Production expenses will affect crop and livestock farms differently.

- The principal expenses for livestock farms—that is, feed and feeder animals and poultry—are both projected lower in 2016, as feed costs decline by about 5% while replacement animal costs decline by nearly 7%. In the net, the principal livestock expenses are forecast down 6% from 2015 at \$83.9 billion.
- The principal crop expenses—including, fertilizer, pesticides, and fuel—are forecast down by about 4%, to \$98.4 billion. Miscellaneous operating expenses, which are projected unchanged at \$36.5 billion, include crop insurance premiums and thus directly impact crop production.

Cash rental rates—which were set the preceding fall of 2015 or in early spring of 2016—still reflect the high prices and large net returns of the preceding several years (especially the 2011 to 2014 period) and have yet to decline substantially (**Figure 10**). USDA projects that total net rent to non-operator landlords will be up slightly (3%) at \$18.4 billion in 2016. However, continued high per-acre cash rental rates into 2016 may cause a pinch in cash flow for some farm operations, particularly if livestock product prices for hogs, poultry, eggs, and dairy continue to decline into 2016.

⁹ See CRS Report RS21212, *Agricultural Disaster Assistance*, for more information on available farm disaster programs.

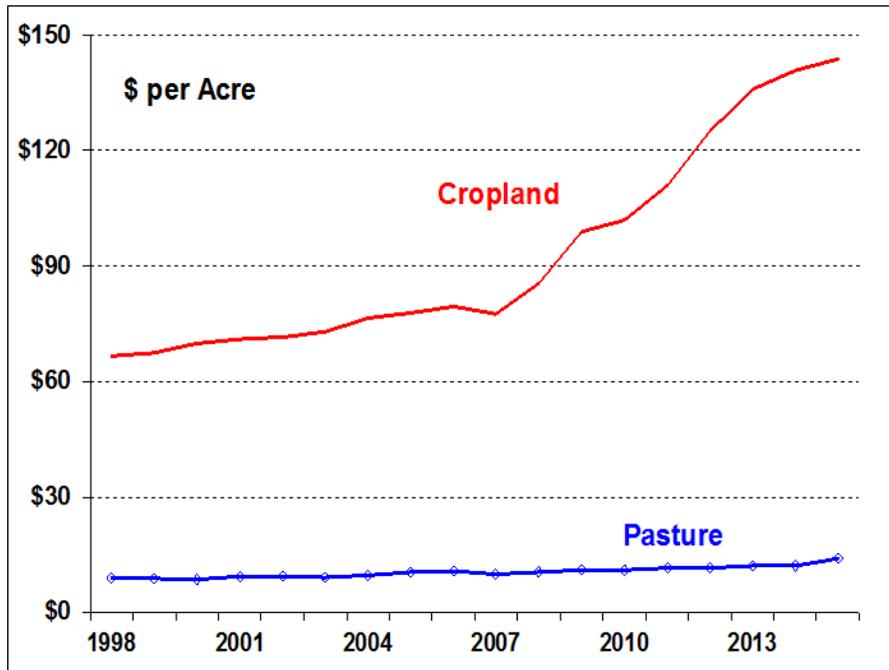
Figure 9. Farm Production Expenses by Source, 2006 to 2016F



Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

Notes: “Other operating costs” includes crop insurance premiums, contract labor, machine hire and custom work, marketing, storage, transportation, and repair and maintenance. “Other” includes property taxes, noncash labor perquisites, and miscellaneous cost items.

Figure 10. U.S. Average Farm Land Cash Rental Rates Since 1998



Source: USDA, NASS, “Quick Stats,” downloaded February 10, 2016.

Agricultural Trade Outlook

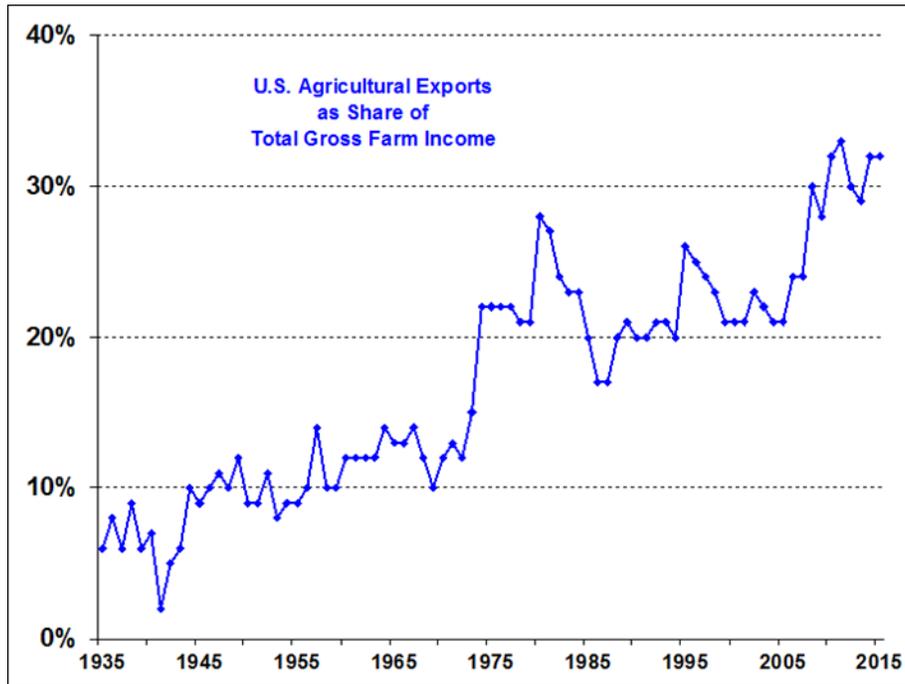
A major catalyst behind the strong farm income of recent years has been the strength of U.S. agricultural exports, which have shown remarkable growth since 2000—nearly tripling in absolute value and accounting for over 30% of gross cash farm income.

However, in its preliminary projections for 2016, USDA projects U.S. agricultural exports lower in 2016 to \$131.5 billion, down 6% from 2015's total and well below 2014's record \$152.5 billion—due largely to a strengthening U.S. dollar coupled with a weakening economic outlook in several major foreign importing countries (**Figure 12**). In contrast, USDA projects that U.S. agricultural imports will rise by 7% to \$122 billion, thus reducing the agricultural trade surplus to \$9.5 billion—the lowest level since 2006.

- As a share of total gross farm receipts, U.S. agricultural exports are projected to account for 30% of earnings in 2016, down from a 32% share in 2015 (**Figure 11**).
- The top three markets for U.S. agricultural exports are China, Canada, and Mexico, in that order. Together these three countries are expected to account for 47% of total U.S. agricultural exports in FY2016 (**Figure 13**).
- A substantial portion of the increase in U.S. agricultural exports since 2010 has also been due to higher-priced grain and feed shipments, plus record oilseed exports to China and growing animal product exports to East Asia.¹⁰
- The fourth- and fifth-largest U.S. export markets are the European Union (EU) and Japan, which are projected to account for a combined 17% of U.S. agricultural exports in FY2016. These two markets have shown relatively limited growth when compared with the rest of the world.
- The “Rest of World” component of U.S. trade—i.e., Middle East, Africa, and Southeast Asia—has shown dramatic import growth of U.S. agricultural products in recent years. ROW is expected to account for 36% of U.S. agricultural exports in 2016.
- Over the past four decades, steady growth in high-valued export products (**Figure 14**) has helped to push U.S. agricultural export value to ever higher totals. As grain and oilseed prices decline, so will the bulk value share of U.S. exports.
- Bulk commodity shipments (primarily wheat, rice, feed grains, soybeans, cotton, and unmanufactured tobacco) are forecast at a record low 30% share of total U.S. agricultural exports in 2016, at \$38.9 billion.
- In contrast, high-valued export products—including horticultural, livestock, poultry, and dairy—are forecast at \$93.7 billion, for a 70.4% share of U.S. agricultural exports in 2016.

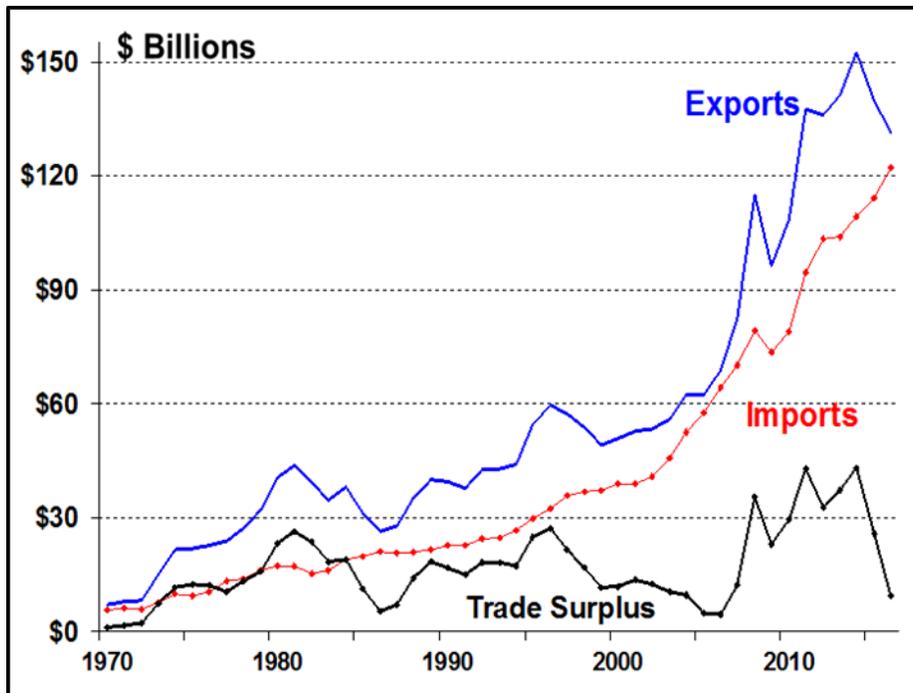
¹⁰ USDA, ERS, *Outlook for U.S. Agricultural Trade*, AES-89, August 27, 2015.

Figure 11. U.S. Agricultural Export Value as Share of Gross Cash Income



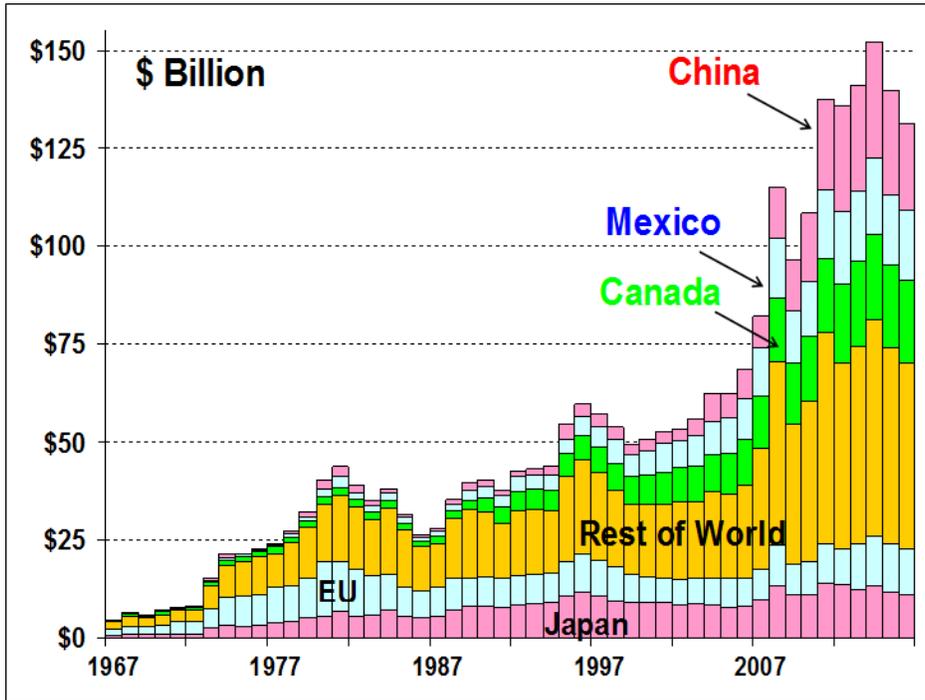
Source: USDA, ERS, Outlook for U.S. Agricultural Trade, AES-90, December 1, 2015; 2015 is an estimate; 2016 is a projection.

Figure 12. U.S. Agricultural Trade Since 1970



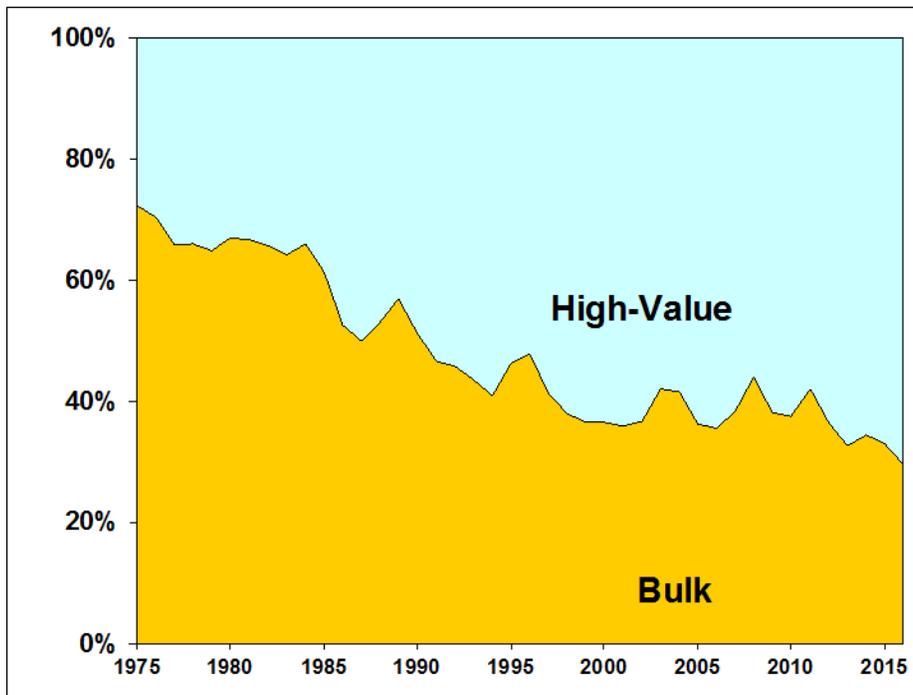
Source: See source for Figure 11.

Figure 13. U.S. Agricultural Exports Have Surged Higher Since 2006, Driven by China, NAFTA Partners (Canada and Mexico), and Developing Countries



Source: See source for Figure 14.

Figure 14. U.S. Agricultural Trade: Bulk vs. High-Value Shares



Source: USDA, ERS, Outlook for U.S. Agricultural Trade, AES-90, December 1, 2015; 2015 is an estimate; 2016 is a projection.

Farm Asset Values and Debt

The U.S. farm income and asset-value situation and outlook suggest some weakening in the financial position heading into 2016 for the agriculture sector as a whole, but with considerable uncertainty regarding the downward outlook for prices and market conditions for the sector.

Measuring Farm Wealth

A useful measure of the farm sector's financial wherewithal is farm sector net worth as measured by farm assets minus farm debt. A summary statistic that captures this relationship is the debt-to-asset ratio.

Farm Assets include both physical and financial farm assets. **Physical Assets** include land and buildings, farm equipment, on-farm inventories of crops and livestock, and other miscellaneous farm assets. **Financial Assets** include cash, bank accounts, and investments such as stocks and bonds.

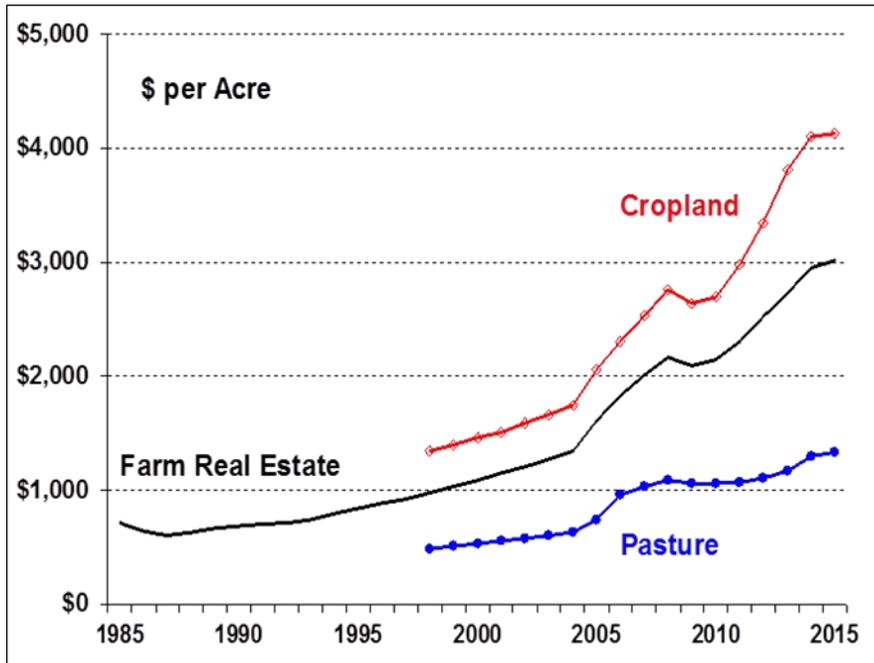
Farm Debt includes both business and consumer debt linked to real estate and non-real estate assets (e.g., financial assets, inventories of agricultural products, and the value of machinery and motor vehicles) of the farm sector.

The **Debt-to-Asset Ratio** compares the farm sector's outstanding debt related to farm operations relative to the value of the sector's aggregate assets. Change in the debt-to-asset ratio is a critical barometer of the farm sector's financial performance with lower values indicating greater financial resiliency. A smaller debt-to-asset ratio suggests that the sector is better able to withstand short-term increases in debt related to interest rate fluctuations or changes in the revenue stream related to lower output prices, higher input prices, or production shortfalls.

The largest single component in a typical farmer's investment portfolio is farmland. As a result, real estate values affect the financial well-being of agricultural producers and serve as the principal source of collateral for farm loans.

- Farm asset values—which reflect farm investors' and lenders' expectations about long-term profitability of farm sector investments—are projected down (1.6%) in 2016 to \$2,815 billion, reflecting a second consecutive year of decline and some erosion of the outlook for the general farm economy (**Table 3**).
- Weaker farm asset values (-1.6%) are expected due to weakness in both real estate (-1.2%) and non-real estate (-3.4%) values (**Figure 15** and **Figure 16**). Real estate traditionally accounts for the bulk of total value of farm sector assets—nearly an 81% share.
- Land values are closely linked to commodity prices and are expected to continue to recede if the forecasts for lower commodity prices and the prospect for continued global stock recovery for grains and oilseeds are realized in 2016 and beyond.
- Meanwhile, total farm debt is forecast to rise to \$372.5 billion in 2016 (up 2.3%).
- Farm equity (or net worth, defined as asset value minus debt) is projected to be down a second consecutive year (-2.2%) at \$2,442.6 billion in 2016.
- The farm debt-to-asset ratio is forecast higher at 13.2% in 2016, highest since 2003 (**Figure 17**).

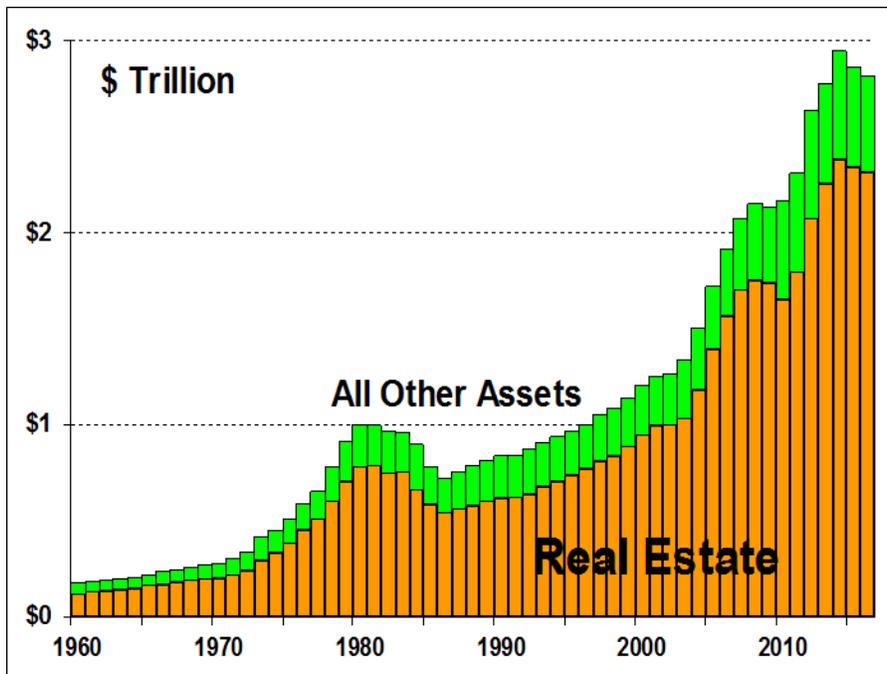
Figure 15. U.S. Average Farm Land Values, 1985 to 2015F



Source: USDA, NASS, *Land Values 2015 Summary*, August 2015.

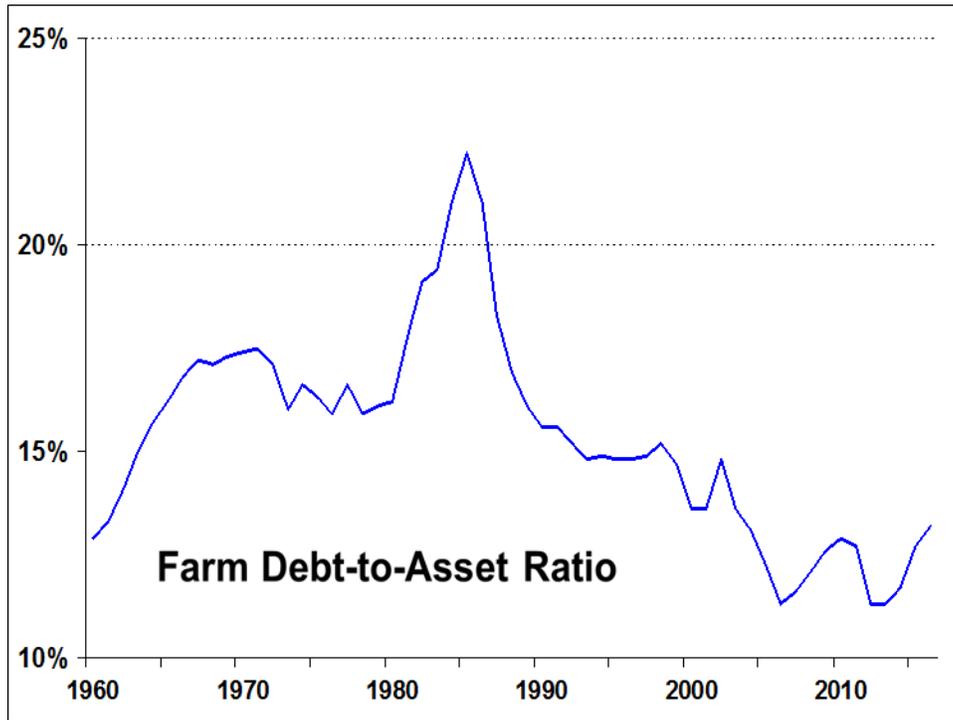
Notes: Farm real estate value measures the value of all land and buildings on farms. Cropland and pasture values are only available since 1998.

Figure 16. Real Estate Assets Comprise 81% of Total Farm Sector Assets in 2016



Source: See source for **Figure 17**.

Notes: Non-real estate assets include financial assets, inventories of agricultural products, and the value of machinery and motor vehicles.

Figure 17. U.S. Farm Debt-to-Asset Ratio Since 1960

Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

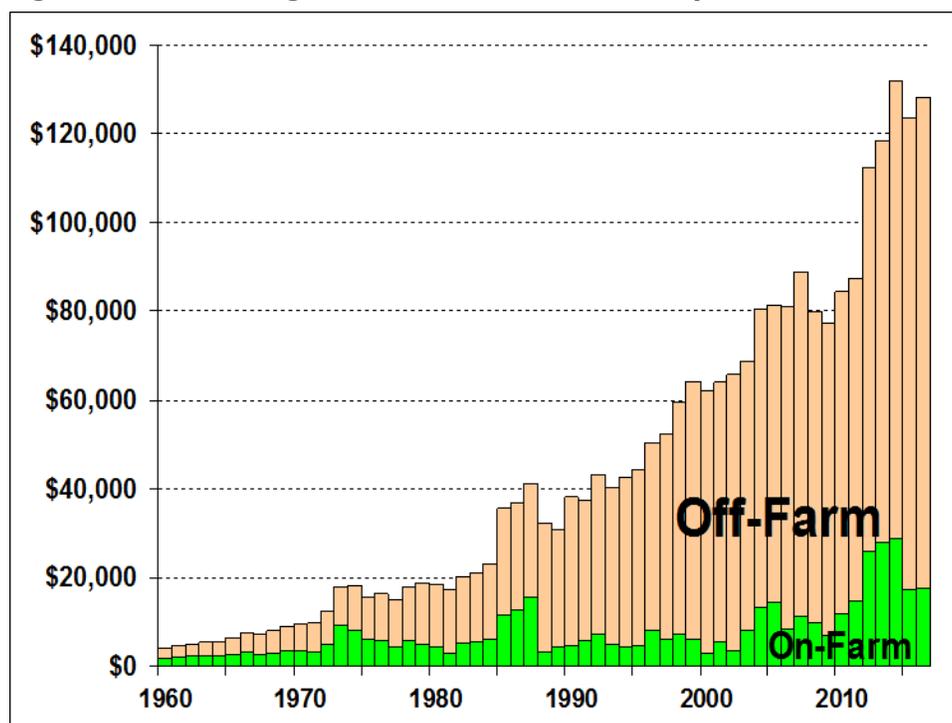
Average Farm Household Income

Farm household wealth is derived from a variety of sources.¹¹ A farm can have both an on-farm and an off-farm component to its balance sheet of assets and debt. Thus, the well-being of farm operator households is not equivalent to the financial performance of the farm sector or of farm businesses because there are other stakeholders in farming, such as landlords and contractors, and because farm operator households often have nonfarm investments, jobs, and other links to the nonfarm economy.

On-Farm vs. Off-Farm Income Shares

- Average farm household income (sum of on- and off-farm income) is projected at \$128,237 in 2016 (**Table 2**), up 3.8% from 2015 but still below the record \$131,754 of 2014.
- About 14% (\$17,769) of total household income is from the farm, and the remaining 86% (\$110,468) is earned off the farm (including financial investments). The share of farm income derived from off-farm sources had increased steadily for decades but peaked at about 95% in 2002 (**Figure 18**).

¹¹ USDA, ERS, “Farm Household Well-Being,” available at <http://www.ers.usda.gov/topics/farm-economy/farm-household-well-being.aspx>.

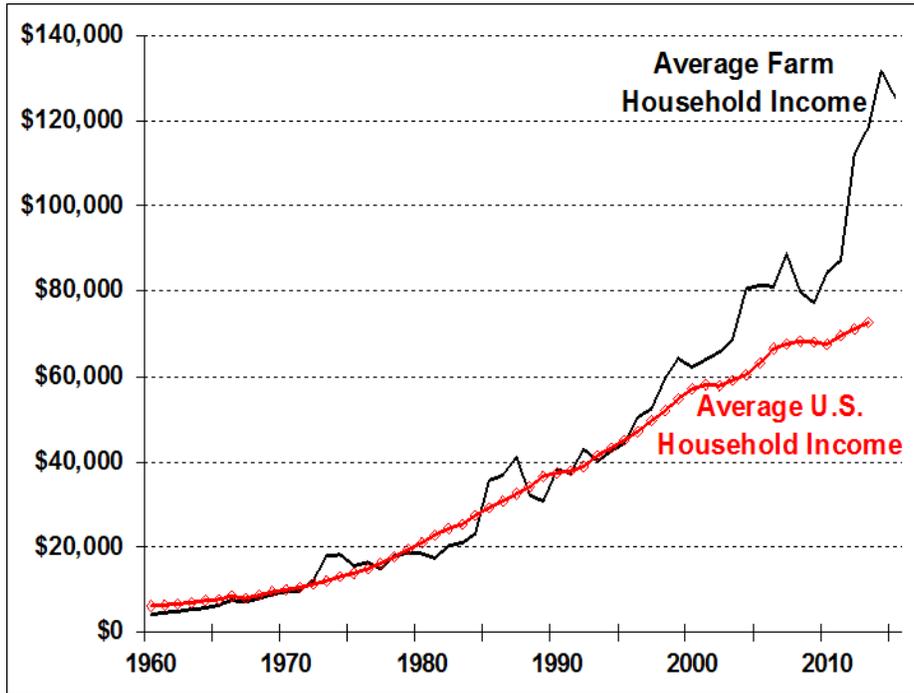
Figure 18. U.S. Average Farm Household Income, by Source, Since 1960

Source: USDA, ERS, “2016 Farm Income Forecast,” February 9, 2016. All values are nominal, that is, not adjusted for inflation. 2016 is forecast.

U.S. Total vs. Farm Household Average Income

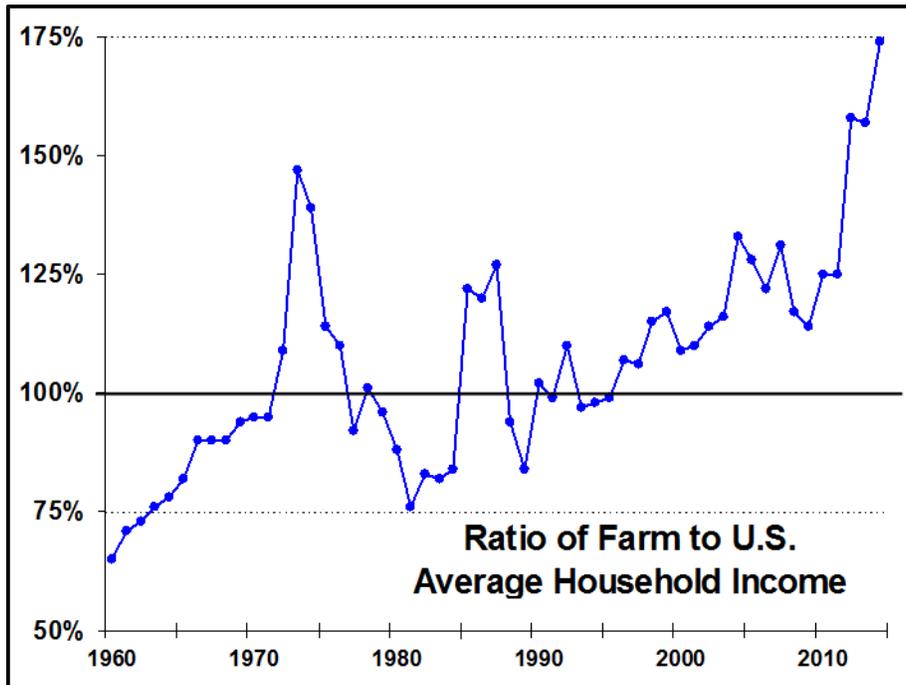
- Since the late 1990s, farm household incomes have surged ahead of average U.S. household incomes (**Figure 19** and **Figure 20**).
- In 2014 (the last year for which comparable data were available), the average farm household income of \$131,543 was about 74% higher than the average U.S. household income of \$75,738 (**Table 2**).

Figure 19. U.S. Farm Household Incomes Have Surged Well Above Average Household Income Since 1996



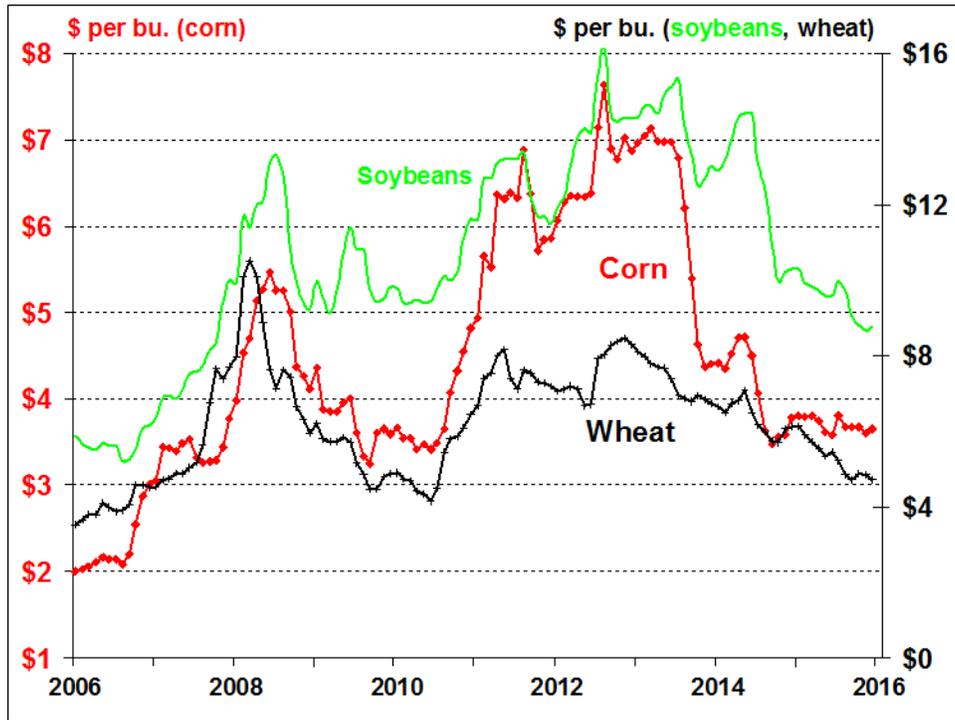
Source: USDA, ERS, "2015 Farm Income Forecast," November 24, 2015. All values are in nominal terms, that is, not adjusted for inflation. 2015 is forecast.

Figure 20. U.S. Farm vs. Average Household Incomes Expressed as a Ratio



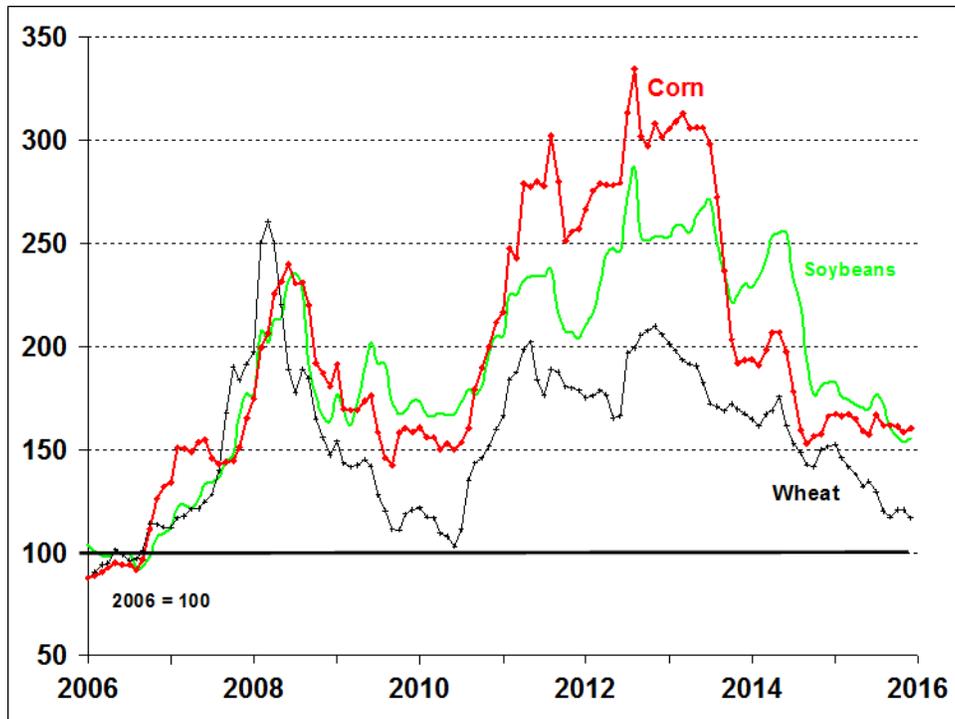
Source: See above source note. 2014 is the last year with comparable data.

Figure 21. Monthly Farm Prices for Corn, Soybeans, and Wheat, Nominal Dollars



Source: USDA, National Agricultural Statistics Service (NASS), *Agricultural Prices*, January 29, 2016.

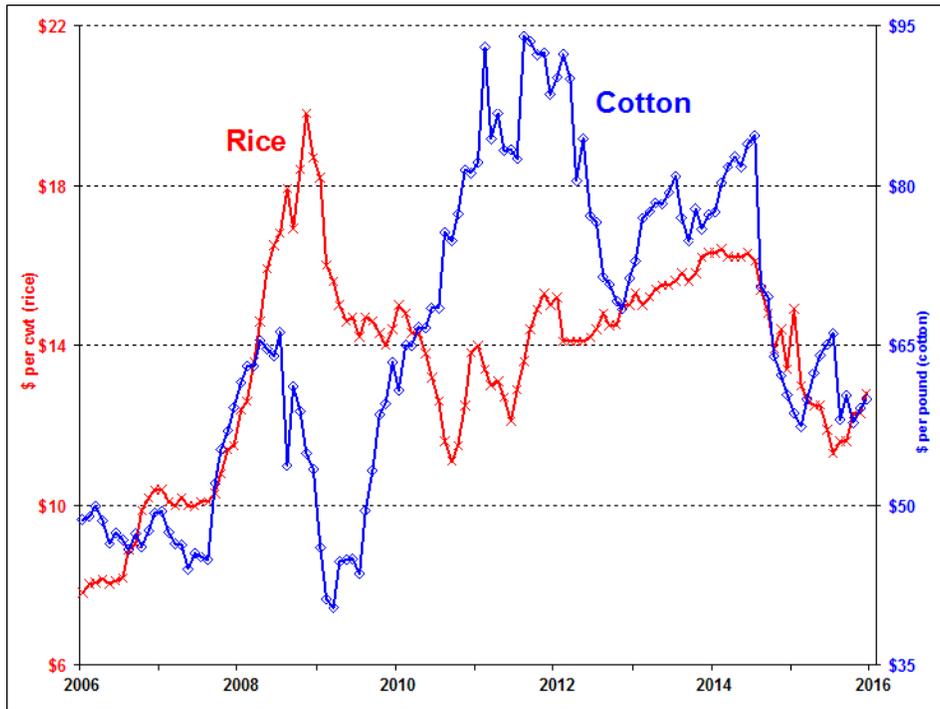
Figure 22. Monthly Farm Prices for Corn, Soybeans, and Wheat, Indexed Dollars



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016; calculations by CRS.

Notes: Prices are indexed to 2006 = 100 to permit relative comparisons.

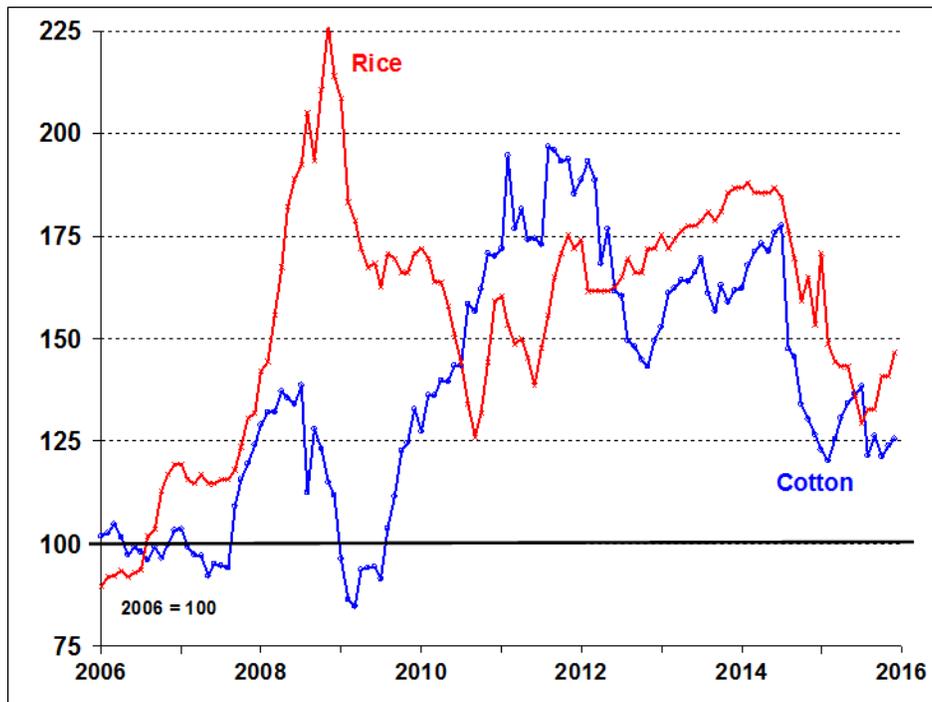
Figure 23. Monthly Farm Prices for Cotton and Rice, Nominal Dollars



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016.

Notes: cwt = hundredweight or units of 100 lbs.

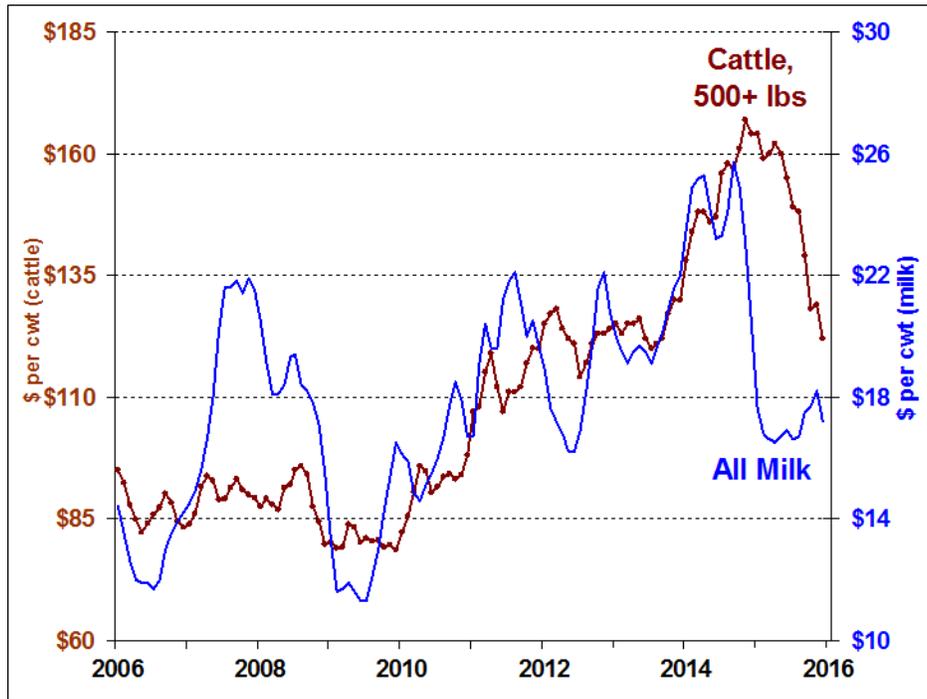
Figure 24. Monthly Farm Prices for Cotton and Rice, Indexed Dollars



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016; calculations by CRS.

Notes: Prices are indexed to 2006 = 100 to permit relative comparisons.

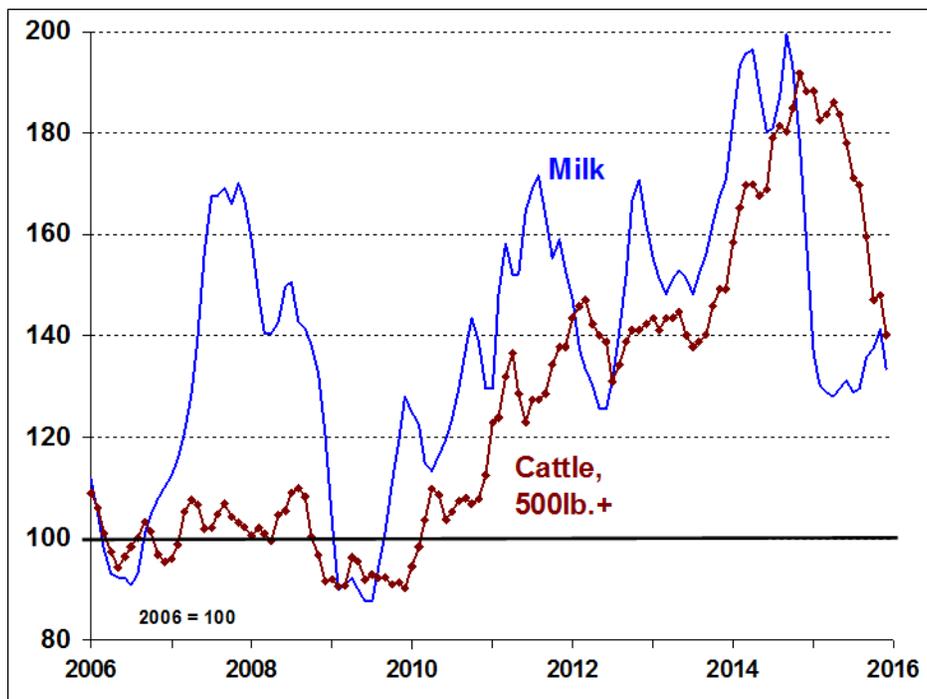
Figure 25. Monthly Farm Prices for All-Milk and Cattle (500+ lbs), Nominal Dollars



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016.

Notes: cwt = hundredweight or units of 100 lbs; All-Milk averages prices across all classes of milk.

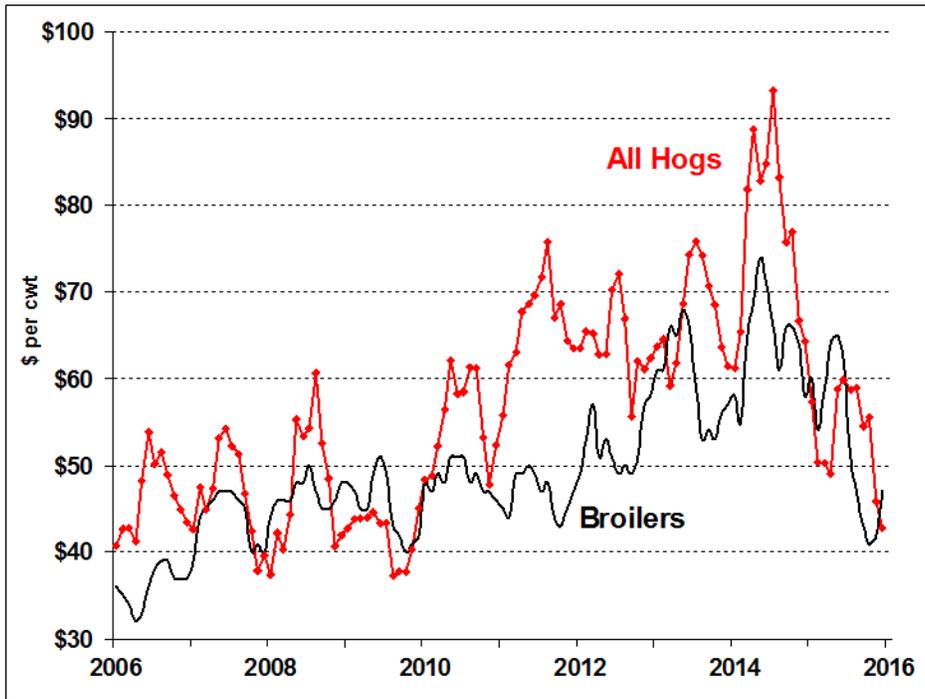
Figure 26. Monthly Farm Prices for All-Milk and Cattle (500+ lbs), Indexed Dollars



Source: USDA, NASS, *Agricultural Prices* January 29, 2016; calculations by CRS.

Notes: Prices are indexed to 2006 = 100 to permit relative comparisons.

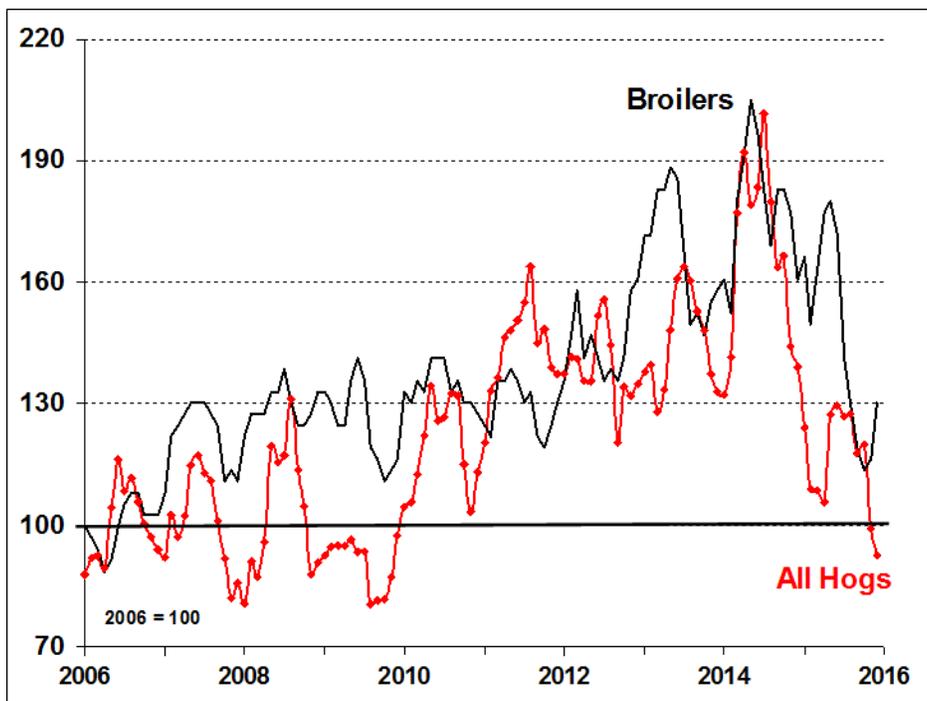
Figure 27. Monthly Farm Prices for All Hogs and Broilers, Nominal Dollars



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016.

Notes: cwt = hundredweight or units of 100 lbs.

Figure 28. Monthly Farm Prices for All Hogs and Broilers, Indexed Dollars

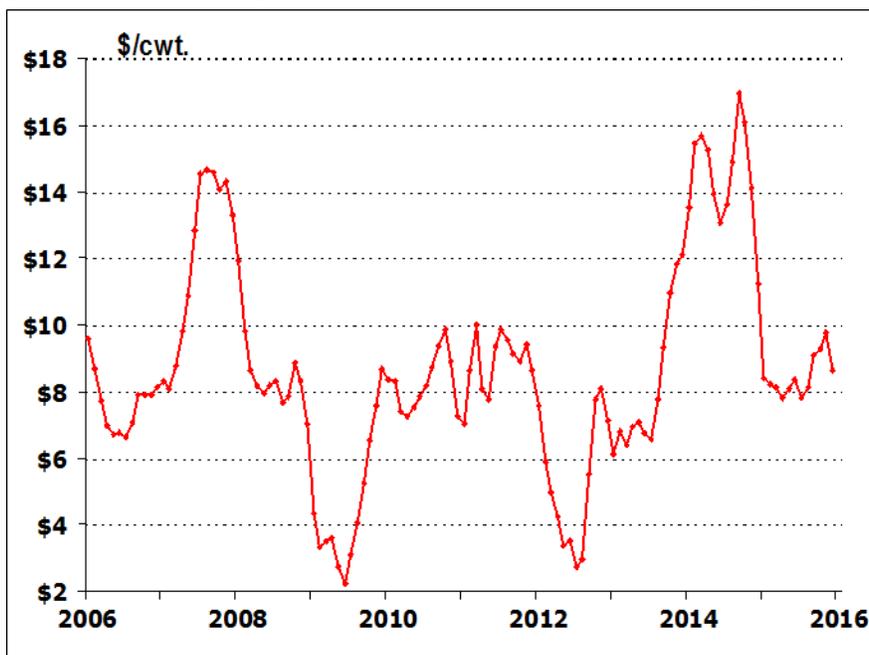


Source: USDA, NASS, *Agricultural Prices*, January 29, 2016; calculations by CRS.

Notes: Prices are indexed to 2006 = 100 to permit relative comparisons.

Figure 29. The Milk-to-Feed Margin Projected Below \$9/cwt. in 2016

(National average farm-price received of milk less average feed costs per 100 lbs)

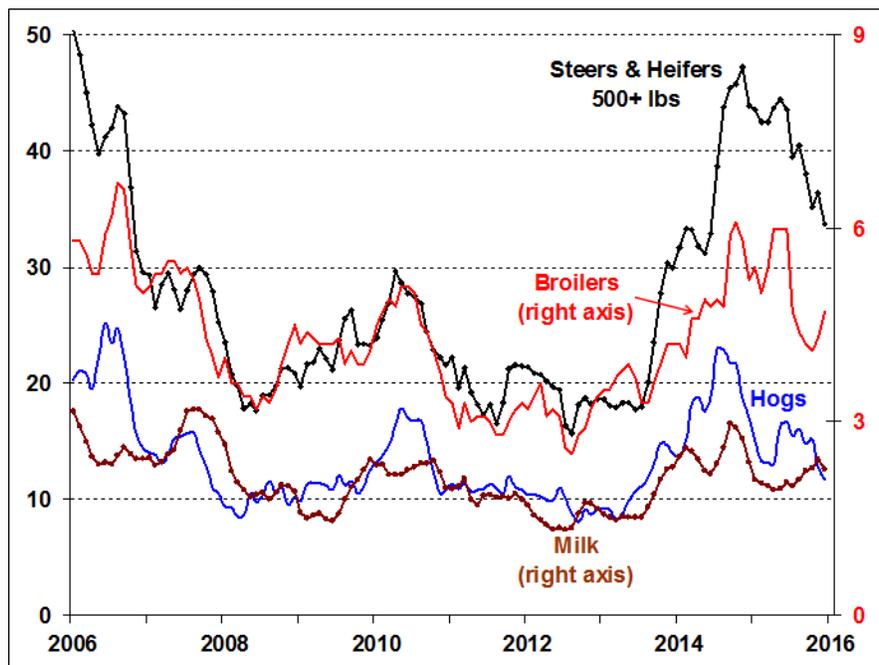


Source: USDA, NASS, *Agricultural Prices*, January 29, 2016; calculations by CRS.

Note: For pricing dairy feed, USDA uses 51% corn, 8% soybeans, and 41% alfalfa.

Figure 30. The Farm-Price-to-Feed Ratios to Fall for Hogs, Milk, and Cattle in 2016

(Ratio of national average farm-price received per 100 lbs of meat to per-unit feed cost)



Source: USDA, NASS, *Agricultural Prices*, January 29, 2016.

Notes: Cattle and hog feed cost is 100% corn; broilers feed cost is 58% corn, 42% soybeans.

Table I. Annual U.S. Farm Income Since 2009
(\$ billions)

Item	2009	2010	2011	2012	2013	2014	2015	2016 ^a	Change (%)
1. Cash receipts	289.1	321.2	365.8	401.4	403.0	421.5	377.0	367.5	-2.5%
Crops ^b	168.9	180.4	201.1	231.6	220.4	209.3	191.3	189.7	-0.9%
Livestock	120.3	140.8	164.8	169.8	182.6	212.2	185.7	177.8	-4.3%
2. Government payments^c	12.2	12.4	10.4	10.6	11.0	9.8	10.6	13.9	31.4%
Fixed direct payments ^d	4.7	4.8	4.7	4.7	4.3	0.5	0.1	0.0	-100.0%
CCP-PLC-ARC ^e	1.2	0.2	0.0	0.0	0.0	0.0	5.0	9.1	83.2%
Marketing loan benefits ^f	1.1	0.1	0.0	0.0	0.0	0.1	0.3	0.4	21.2%
Conservation	2.8	3.2	3.7	3.7	3.7	3.6	3.7	3.6	-0.7%
Ad hoc and emergency ^g	0.6	3.1	1.3	1.1	2.1	5.0	1.6	0.7	-53.2%
All other ^h	1.7	1.0	0.7	1.1	0.9	0.7	-0.1	-0.0	—
3. Farm-related incomeⁱ	22.0	20.0	30.7	39.2	41.0	35.4	33.8	34.3	1.4%
4. Gross cash income (1+2+3)	323.3	353.6	407.0	451.3	455.0	466.7	421.4	415.7	-1.4%
5. Cash expenses ^j	249.3	257.3	283.6	316.0	320.0	338.5	328.3	324.8	-1.1%
6. NET CASH INCOME	73.9	96.3	123.4	135.3	135.1	128.1	93.2	90.9	-2.5%
7. Total gross revenues ^k	343.2	356.5	420.4	449.8	483.3	480.9	436.7	431.2	-1.3%
8. Total production expenses ^l	283.0	279.4	306.5	353.3	360.0	390.3	380.3	376.5	-1.0%
9. NET FARM INCOME	60.3	77.1	113.9	96.5	123.3	90.5	56.4	54.8	-3.0%

Source: USDA, ERS, *Farm Income and Wealth Statistics*; U.S. and State Farm Income and Wealth Statistics, updated as of February 9, 2016.

- a. Data for 2016 are USDA forecasts. Change represents year-to-year projected change between 2016 and 2015.
- b. Includes Commodity Credit Corporation loans under the farm commodity support program.
- c. Government payments reflect payments made directly to all recipients in the farm sector, including landlords. The non-operator landlords' share is offset by its inclusion in rental expenses paid to these landlords and thus is not reflected in net farm income or net cash income.
- d. Direct payments include production flexibility payments of the 1996 Farm Act through 2001, and fixed direct payments under the 2002 Farm Act since 2002.
- e. CCP = counter-cyclical payments; PLC = Price Loss Coverage; and ARC = Agricultural Risk Coverage.
- f. Includes loan deficiency payments (LDP); marketing loan gains (MLG); and commodity certificate exchange gains.
- g. Includes payments made under the ACRE program which was eliminated by the 2014 farm bill (P.L. 113-79).
- h. Peanut quota buyout, milk income loss payments, and other miscellaneous program payments.
- i. Income from custom work, machine hire, agri-tourism, forest product sales, and other farm sources.
- j. Excludes depreciation and perquisites to hired labor.
- k. Gross cash income plus inventory adjustments, the value of home consumption, and the imputed rental value of operator dwellings.
- l. Cash expenses plus depreciation and perquisites to hired labor.

Table 2. Average Annual Income per U.S. Household, Farm Versus All, 2009-2016F

(\$ per household)

	2009	2010	2011	2012	2013	2014	2015	2016F
Average U.S. Farm Income by Source								
On-farm income	\$6,866	\$11,788	\$14,625	\$25,038	\$27,897	\$28,687	\$17,279	\$17,769
Off-farm income	\$70,302	\$72,671	\$72,665	\$86,486	\$90,476	\$103,067	\$106,316	\$110,468
Total farm income	\$77,169	\$84,459	\$87,290	\$112,447	\$118,373	\$131,754	\$123,595	\$128,237
Average U.S. Household Income	\$67,976	\$67,530	\$69,677	\$71,274	\$75,195	\$75,738	na	
Farm Household Income as Share of U.S. Avg. Household Income (%)	114%	125%	125%	158%	157%	174%	na	

Source: USDA, ERS, *Farm Household Income and Characteristics*, principal farm operator household finances, data set updated as of February 9, 2016; at <http://www.ers.usda.gov/data-products/farm-household-income-and-characteristics.aspx>.

Note: Data for 2016 are USDA forecasts.

Table 3. Average Annual Farm Sector Debt-to-Asset Ratio, 2009-2016F

(\$ billions)

	2009	2010	2011	2012	2013	2014	2015	2016F
Farm Assets	2,131.5	2,161.4	2,310.6	2,637.9	2,777.8	2,944.3	2,861.8	2,815.1
Farm Debt	268.3	278.9	294.5	297.0	315.0	345.7	364.3	372.5
Farm Equity	1,863.1	1,882.4	2,016.2	2,340.7	2,462.8	2,598.6	2,497.6	2,442.6
Debt-to-Asset Ratio (%)	12.6%	12.9%	12.7%	11.3%	11.3%	11.7%	12.7%	13.2%

Source: USDA, ERS, *Farm Income and Wealth Statistics*; U.S. and State Farm Income and Wealth Statistics, updated as of February 9, 2016; available at <http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx>.

Note: Data for 2016 are USDA forecasts.

Table 4. U.S. Prices and Support Rates for Selected Farm Commodities Since 2009/10 Marketing Year

Commodity ^a	Unit	Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 ^{Fb}	% Change from 2014/15 ^c	2016/17 ^{Pb}	% Change from 2015/16 ^d	2015 Loan Rate ^e	2015 Reference Price
Wheat	\$/bu	Jun-May	5.70	7.24	7.77	6.87	5.99	4.90-5.10	-16.5%	—	—	2.94	5.50
Corn	\$/bu	Sep-Aug	5.18	6.22	6.89	4.46	3.70	3.35-3.85	-2.7%	—	—	1.95	3.70
Sorghum	\$/bu	Sep-Aug	5.02	5.99	6.33	4.28	4.03	3.10-3.50	-18.1%	—	—	1.95	3.95
Barley	\$/bu	Jun-May	3.86	5.35	6.43	6.06	5.30	5.30-5.70	3.8%	—	—	1.95	4.95
Oats	\$/bu	Jun-May	2.52	3.49	3.89	3.75	3.21	2.10-2.30	-31.5%	—	—	1.39	2.40
Rice	\$/cwt	Aug-Jul	12.70	14.50	15.10	16.30	13.30	12.50-13.30	-3.0%	—	—	6.50	14.00
Soybeans	\$/bu	Sep-Aug	11.30	12.50	14.40	13.00	10.10	8.05-9.55	-12.9%	—	—	5.00	8.40
Soybean Oil	¢/lb	Oct-Sep	53.20	51.90	47.13	38.23	31.60	28.50-31.50	-5.1%	—	—	—	—
Soybean Meal	\$/st	Oct-Sep	345.52	393.53	468.11	489.94	368.49	270-310	-21.3%	—	—	—	—
Cotton, Upland	¢/lb	Aug-Jul	81.50	88.3	72.5	77.9	61.3	58-61	-2.9%	—	—	45-52	none
Choice Steers	\$/cwt	Jan-Dec	95.38	114.73	122.86	125.89	154.6	148.12	-4.2%	133-142	-7.2%	—	—
Barrows/Gilts	\$/cwt	Jan-Dec	55.06	66.11	60.88	64.05	76.0	50.23	-52.0%	46-49	30.1%	—	—
Broilers	¢/lb	Jan-Dec	82.90	79.9	86.6	99.7	104.90	90.5	-13.7%	85-90	-3.3%	—	—
Eggs	¢/doz	Jan-Dec	106.30	115.3	117.4	124.7	142.3	181.8	-7.7%	141-150	10.7%	—	—
Milk	\$/cwt	Jan-Dec	16.26	20.14	18.53	20.05	23.97	17.08	-28.7%	15.30-16.00	-8.4%	—	—

Source: Various USDA agency sources as described in the notes below.

- Season average farm price for grains and oilseeds are from USDA, National Agricultural Statistical Service, *Agricultural Prices*. Calendar year data are for the first year, for example, 2000/2001 = 2000; F = forecast and P = projection from *World Agricultural Supply and Demand Estimates (WASDE)* February 9, 2016; — = no value; and USDA's out-year 2016/2017 crop price forecasts will first appear in the May 2016 WASDE report. Soybean and livestock product prices are from USDA, Agricultural Marketing Service (AMS): soybean oil—Decatur, IL, cash price, simple average crude; soybean meal—Decatur, IL, cash price, simple average 48% protein; choice steers—Nebraska, direct 1100-1300 lbs; barrows/gilts—national base, live equivalent 51%-52% lean; broilers—wholesale, 12-city average; eggs—Grade A, New York, volume buyers; and milk—simple average of prices received by farmers for all milk.
- Data for 2015/2016 are USDA forecasts; 2016/2017 data are USDA projections.
- Percent change from 2014/2015, calculated using the difference from the midpoint of the range for 2015/2016 with the estimate for 2014/2015.
- Percent change from 2015/2016, calculated using the difference from the midpoint of the range for 2016/2017 with the estimate for 2015/2016.
- Loan rate and reference prices are for the 2015/2016 crop year. See CRS Report R43076, *The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side*.

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