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U.S. Field Crop Income – Return to Normalcy

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The economic state of U.S. crop farming has drawn considerable attention in recent years. This article uses U.S. Department of Agriculture (USDA) cost of production data to compare the ratio of gross revenue per acre from the market to total cost of production per acre for 9 crops over 3 recent periods: 2003-2006, 2008-2013, and 2015-2016. Also compared are farm safety net payments. The 3 periods are distinct price and income periods. Prices and income were lower in 2003-2006 than in the 2008-2013 farm prosperity period of higher prices and incomes. The 2015-2016 period is associated with lower crop prices and incomes. Both 2007 and 2014 are treated as transition years. Data note 1 contains further discussion of the cost of production data and time periods. Data note 2 contains further discussion of the farm safety net payment data.

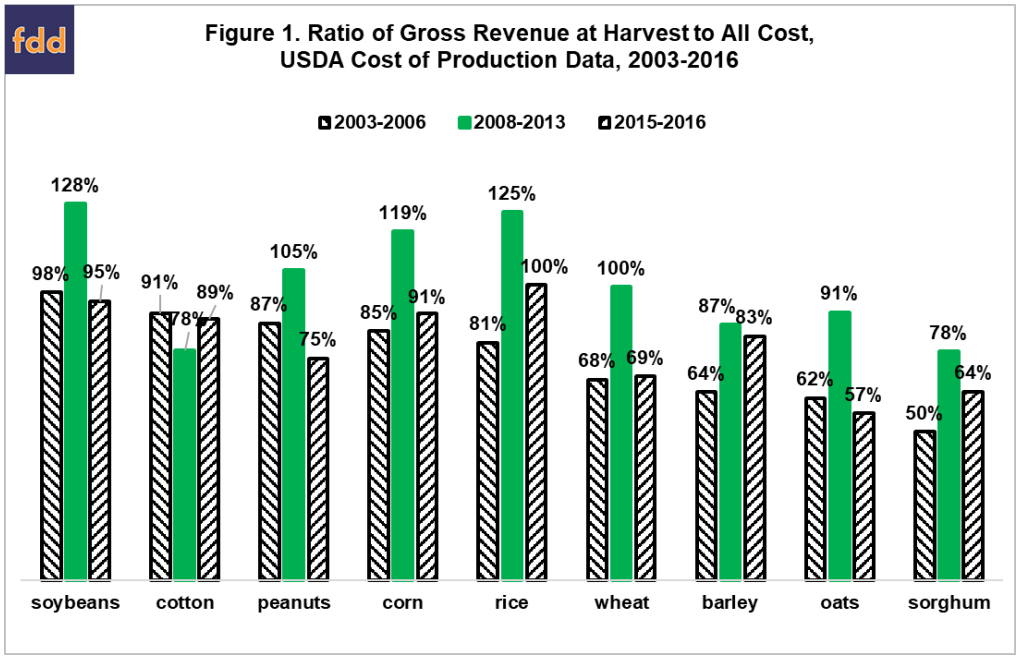
Market Return – 2003-2006 vs. 2008-2013

Ratio of gross revenue/acre at harvest from the market to total cost of production/acre was higher for 8 of the 9 crops during 2008-2013 than during 2003-2006 (see Figure 1). Only the ratio for cotton was lower in 2008-2013. For the other 8 crops, the ratio averaged 31 percentage points higher in 2008-2013. Gross revenue/acre covered all costs/acre (ratio of 100% or more) for 5 crops during 2008-2013 (soybeans, peanuts, corn, rice, wheat) but for no crop during 2003-2006.

Return to Normal Market Return

Despite the widely noted large decline in crop prices since 2012, ratio of gross revenue/acre from the market to total cost of production/acre is fairly similar by crop before and after the period of farm prosperity (see Figure 1). The ratio is higher in 2015-2016 than 2003-2006 for 4 crops (corn, rice, barley, sorghum), lower for 3 crops (soybeans, peanuts, oats), and nearly identical for 2 crops (cotton, wheat).

All ratios during 2003-2006 and 2015-2016 are less than 100% except for rice in 2015-2016. A common finding throughout the long history of studying returns to farming is that farms as a group generally do not cover all costs on an annual basis, except occasionally and during relatively short periods of prosperity. Various reasons have been offered to explain this apparently economically irrational finding. Farmers love to farm and thus may willingly accept lower returns, especially for the opportunity cost of their and their family's labor and management. Farmers may also trade off lower immediate flow returns for the appreciation in land values that have occurred over time. This argument is reflected in the phrase, "farmers are cash poor, but land rich." Most studies find that over the long term, returns on farm assets are competitive with returns on other assets after adjusting for risk. An implication is that on owned land farmers are better off than cost of production accounting suggest.

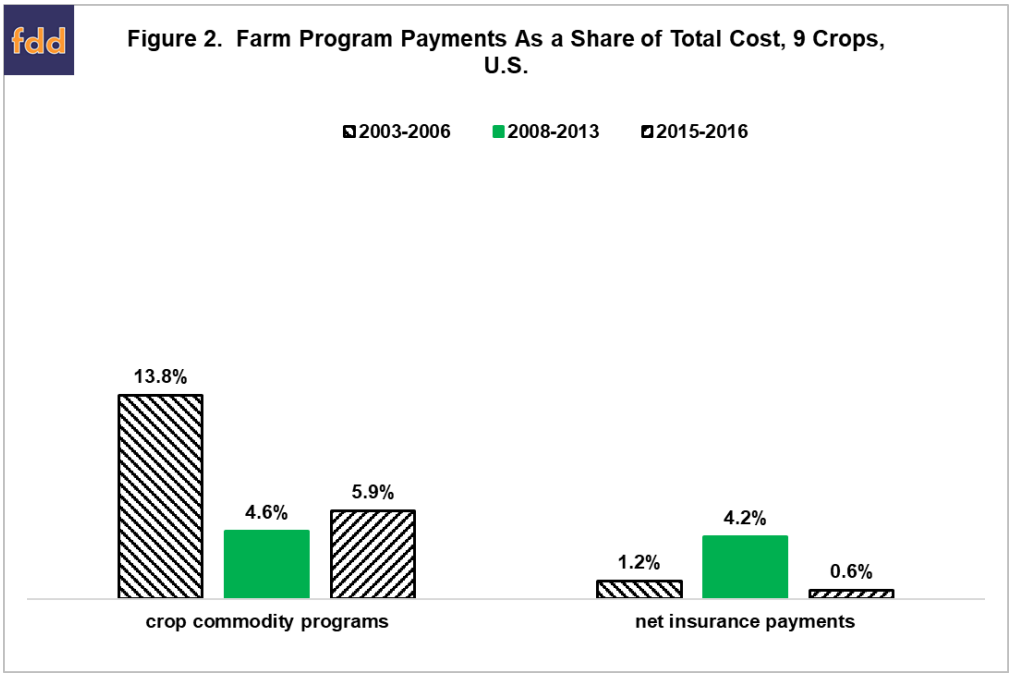


As an additional point of historical perspective for this assessment, the ratio of gross revenue/acre to total cost/acre averaged 13 percentage points higher in 2003-2006 than in the 4 prior years (1999-2002) for corn, cotton, peanuts, sorghum, soybeans, and wheat. The same cost-of-production methodology has been used for these 6 crops since at least 1999 (see data note 1).

Farm Safety Net Payments

Commodity program payments to crops averaged $10.4 billion/year in 2003-2006 vs. $5.2 and $7.7 billion/year in 2008-2013 and 2015-2016, respectively. Net crop insurance payments averaged $0.9, $5.2, and $0.7 billion/year in 2003-2006, 2008-2013, and 2015-2016, respectively. Even if the 2012 drought year is removed, net insurance payments averaged $3.7 billion/year in 2008-2013. Lower than normal yields were the norm during 2008-2013. Total acres planted to the 9 crops averaged 248, 253, and 254 million acres/year for 2003-2006, 2008-2013, and 2015-2016, respectively. Given similar acres/year, expressing payments on a planted acre basis does not change the relative order across periods and programs.

Combined farm safety net payments per year are smallest in 2015-2016. Their smaller role in 2015-2016 than 2003-2006 is even more pronounced when expressed relative to total cost of production (see Figure 2 and Data Note 2). High yields led to smaller net insurance payments in 2015-2016 but to higher commodity program payments. It is thus unclear if a return to more normal yields will change the finding that farm safety net payments are lower after than before the period of farm prosperity, especially when expressed relative to crop expenses.



Summary Observations

- Despite the large decline in crop prices since 2012, the ratio of gross return/acre from the market to total cost of production/acre in 2015-2016 is similar to this ratio for the 2003-2006 period immediately preceding the period of farm prosperity.
- At the time, 2003-2006 was considered fairly normal and certainly not a period of farm stress. Discussion of farm stress was more common during the prior 4 years (1999-2003) when market returns at harvest were notably lower relative to all production costs. Discussion of stress during 1999-2003, however, was much less than during the 1980s farm crisis.
- Taken together, the preceding 2 points raise the important question, "What is the appropriate historical comparison for current U.S. field crop agriculture?"
- This assessment suggests it is 2003-2006, not the period of farm prosperity.
- Moreover, this assessment implies the U.S. field crop sector should currently be considered closer to market normalcy than market stress.
- Farm program payments averaged less in 2015-2016 than 2003-2006 and even 2008-2013. The 2014 farm bill eliminated direct payments under political pressure because many non-farm policy actors viewed as unfair that farms received the same payments when crop income was record high.
- A key question worth watching in the current farm bill debate is whether society and Congress will increase farm safety net payments when farm returns from the market have declined relative to a period of farm prosperity but are roughly on par with the period preceding it. Underscoring this question is the authorization of a seed cotton program and enhancements to the dairy program in the recent disaster assistance act (*farmdoc daily*, February 14, 2018).
- Last, even during the period of prosperity, market gross revenue/acre was less than total cost/acre for barley, cotton, oats, and sorghum. Acres planted to barley, cotton, and oats declined 22%, 34%, and 31%, respectively, between 2003-2006 and 2015-2016. Planted acres increased for sorghum, but only by 1%. These points highlight that periods of prosperity are rarely uniform across crops and rarely stop long term trends, in this case long term decline in U.S. acres planted to a crop.

Data Note 1: USDA, Economic Research Service has compiled cost of production data for barley, corn, cotton, oats, peanuts, rice, sorghum, soybeans, and wheat since 1975. The last available year is 2016. Total cost equals operating cost (seed, fertilizer, chemicals, etc.) plus allocated overhead (hired labor, unpaid labor opportunity cost, capital recovery cost, land rent, etc.). Gross revenue is the market value of primary and secondary products at harvest; it does not include commodity program or net insurance payments. Major changes in methodology were phased in starting with 1995 peanuts and sorghum and ending with 2005 oats. They included a decision to value the opportunity cost of land as a composite of cash and share rent. Given the changes in methodology, this analysis began with 2003, the year the new methods were implemented for the next to last crop, barley. All crops except oats have 4 years of data prior to the period of farm prosperity. At harvest in 2007, it was unclear if a new price range was emerging or if the post-1974 price range would hold. Harvest price in 2007 was within the historic range for some crops but higher than this range for other crops. Thus, 2007 was treated as a transition year. Also treated as a transition year was 2014; this time because the decline in price varied across crops.

Data Note 2: Commodity program payments include price countercyclical payments, revenue program payments, loan deficiency payments, marketing loan gains, and direct payments. Net crop insurance payments are insurance payments to farms minus premiums paid by farms. Sources for these 2 types of payments are the Commodity Credit Corporation, Congressional Budget Office, Farm Service Agency, and Risk Management Agency. Commodity program payments are made on base acres, not planted acres. It is questionable to compare them by crop since, with a few exceptions, any crop can be planted on a base acre. To create a measure similar to the ratio used for market return, per acre total cost of production for a crop was multiplied by the total acres planted to the crop in a year, as reported in *QuickStats*. These annual values by crop were summed to derive total cost to produce the 9 crops as a group during a period. Commodity program payments for a given period for the 9 crops were divided by the total cost to produce the 9 crops for the same period. Crop insurance payments are specific to production of a crop, but the same ratio is computed for net insurance payments to maintain consistency with commodity program payments. The resulting ratios are in Figure 2.

Data Sources

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