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Comparing Input Price Changes during Multiple Year Declines: Rent as an Outlier in the Current Decline

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Introduction

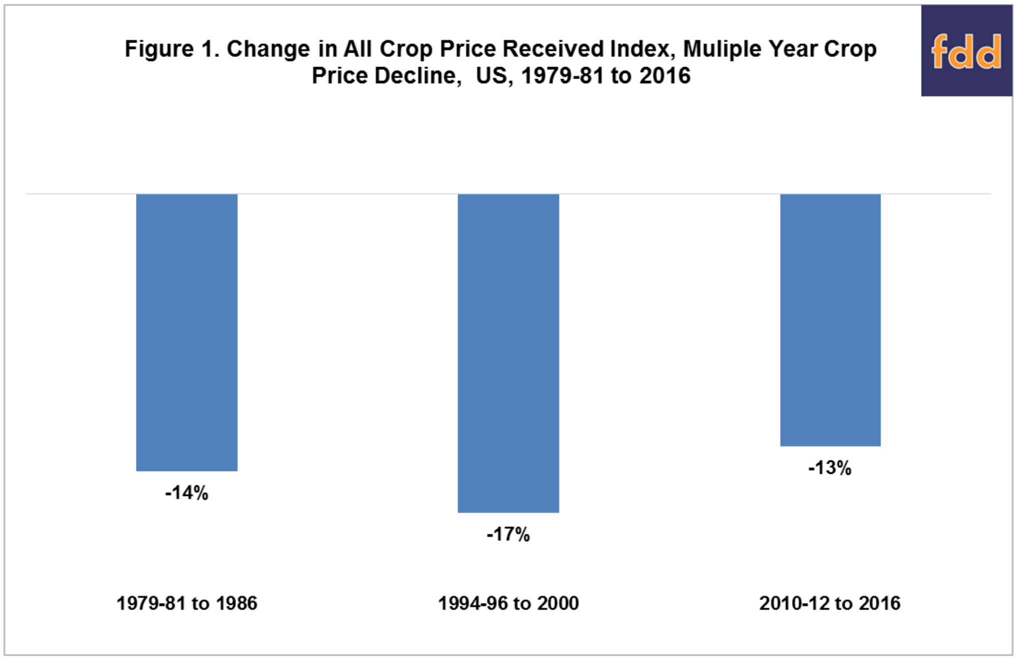
Crop input prices are a topic of considerable discussion. Numerous *farmdoc daily* articles have addressed the topic; most recently September 20, 2016 (Schnitkey). This article provides another perspective by comparing changes in input prices during the 3 multiple year price decline periods that have occurred since 1970. The current period has notably larger declines in fuel and fertilizer prices; similar changes in seed, chemical, and machinery prices; and a notably larger increase in rent. The latter underscores the need to renegotiate rents. It also raises a question, "If farmers, by not aggressively negotiating lower rents, are indicating financial stress is less than it appears?"

Data and Procedures

Three multiple year declines in crop revenue and price have occurred since 1970. The index of prices received by US farms for all crops peaked in calendar years 1981, 1996, and 2012 before declining for multiple years. The index bottomed in 1986 and 2000. Calendar year 2016 may or may not be the bottom of the current decline (see data notes 1 and 2). The crop price index is used because no similar index exists for revenue. Also used in this study is the index of prices paid by US farms for 6 input categories - ag services and rents, chemicals, fertilizer, fuels, machinery, and seed. Percent change in these indices is calculated relative to the average value for the 3 years ending in the peak year. A 3 year average smooths the influence of individual years and reflects that changes in input prices generally lag changes in output prices. For a discussion of the lag process for crops and its implications for farm management and policy, see the *farmdoc daily* article, "Have U.S. Farm Input Prices Followed U.S. Crop Prices" (Zulauf and Rettig, September 17, 2015), The price data are from *QuickStats* (US Department of Agriculture, National Agricultural Statistics Service).

Crop Prices

The index of all crop prices received has declined in each of the 3 periods by 13% to 17% (see Figure 1). Thus, the current decline is not abnormally large or small relative to prior multiple year declines, although this observation could change as more time passes.



Input Prices

Price behavior of the 6 individual input categories differs across the decline periods (see Figure 2). Price of fuels varies the most. It increased 38% from 1994-96 to 2000 but has dropped 41% in the current period. This variation reflects that the crop sector is a relatively small component of the demand for fuels. Price of fertilizer decreased in each period, but its decline is notably larger in the current period. In contrast, chemical, seed, and machinery prices increased in each period, with the percent increases similar for the two most recent periods. The ag services and rent price index is up 20% in the current period compared with a 5% increase from 1979-81 to 1986 and a 1% decline from 1994-96 to 2000. A price index for rent alone is available since 1990. It declined by 6% from 1994-96 to 2000, but has increased 24% since 2010-12. Because price change varies by input category, behavior of a composite index of crop sector inputs was also examined. Such an index is also first available for 1990. Despite the variation among the individual inputs, the composite index has increased by a similar 8% and 9% for 1994-96 to 2000 and 2010-12 to 2016, respectively.

Comparison with a Stable Crop Price Period

In assessing Figure 2, a question arises of how input prices have changed during a stable period of crop prices. This period was identified by starting with the 2005 calendar year, which predates the price increases that began during the 2006 crop year. The earliest year with the same all crop price received index is 1984. Compared with the 1984-2005 period, the only input whose price is increasing faster during the current period is ag services and rent (see Figure 3). This observation implies that, as a group, input prices are increasing less rapidly during the current period of crop price decline than during a stable period of crop prices. However, it is also consistent with the previous discussion of larger increases in rent during the current decline period.

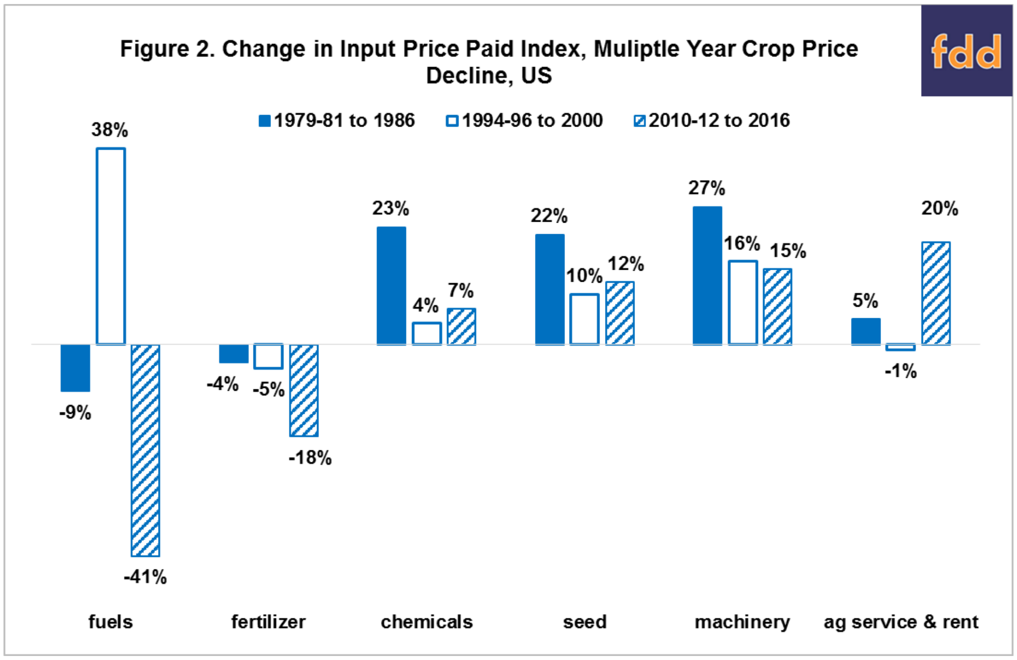


Figure 2. Change in Input Price Paid Index, Muliptle Year Crop Price Decline, US

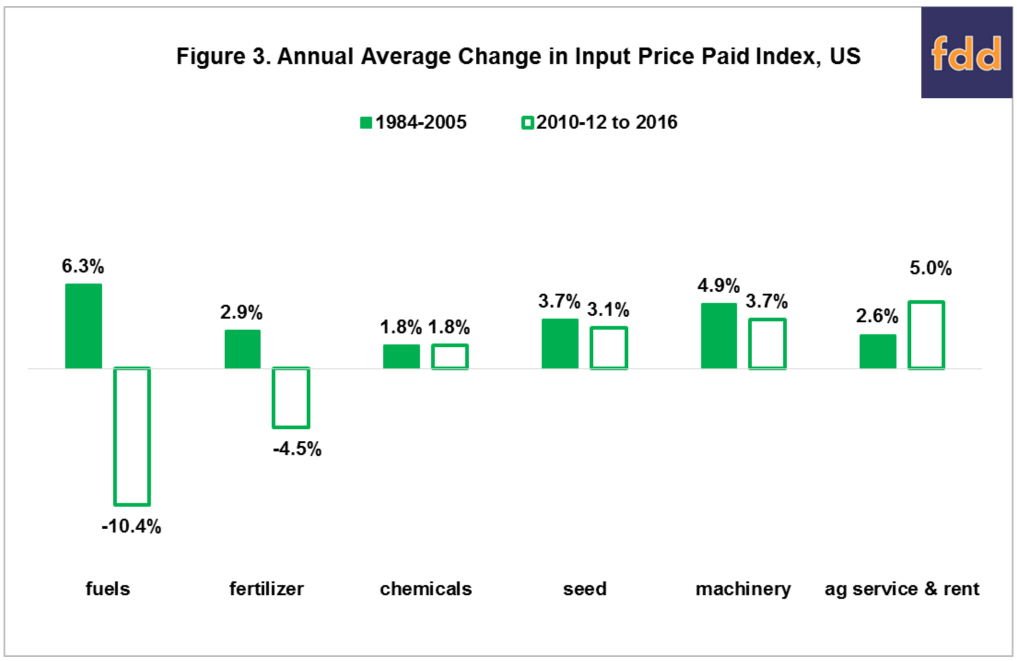


Figure 3. Annual Average Change in Input Price Paid Index, US

Summary Observations

- The current multiple-year decline period is characterized by a notably larger decline in fuel and fertilizer prices than during the multiple year declines of the early 1980s and late 1990s.
- Fertilizer is the input that most consistently adjusts downward with declines in crop prices. Zulauf and Rettig (September 17, 2015) reached the same conclusion. As they note, this feature works to the advantage of corn since it is the most fertilizer intensive US field crop.
- Chemical, seed, and machinery prices are behaving similar to earlier multiple year decline periods.
- Rental rates have increased notably more during the current period than during the earlier periods.

- This finding lifts up the need to understand why rental rates have behaved differently in the current period of crop revenue and price declines. For example, have farmers used the relatively large savings from lower fuel and fertilizer prices to maintain land rental rates?

- This finding underscores the need to understand how financial stress varies by share of farm land rented?

- This finding nevertheless underscores the need to focus on rental rates in future cost adjustments.

- Since farmers negotiate rent, rental rates raise a question of whether financial stress among farmers is less than it appears to be?

- Critics would rephrase the last question more pointedly as, "Since farmers negotiate rent, rental rates raise a question of how much financial stress are farm land renters inflicting on themselves?"

- A managerial lesson from the current period of crop price declines is the need to create and adopt crop leases that are more responsive to market conditions and thus share farm gains and losses more appropriately between farmers and farm land owners.

- The answers to these questions are important for policy deliberations. In particular, should society intervene with additional assistance beyond that already being provided, if, as is the common storyline, that the purpose of farm programs is to largely benefit farmers not owners of land?

References and Data Sources

Schnitkey, G. "Working Capital Buffers Gone at End of 2016." *farmdoc daily* (6):178, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 20, 2016.

US Department of Agriculture, National Agricultural Statistics Service. *QuickStats*. http://quickstats.nass.usda.gov/. Accessed September 29, 2016.

Zulauf, C., J. Coppess, G. Schnitkey, and N. Paulson. "Comparing Revenue and Price Declines during Recent Multiple Year Declines." *farmdoc daily* (6):179, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 21, 2016.

Zulauf, C., and N. Rettig. "Have U.S. Farm Input Prices Followed U.S. Crop Prices?" *farmdoc daily* (5):171, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 17, 2015.

Data Notes

1. These periods differ from those used in the September 21, 2016 f*armdoc daily* article, "Comparing Revenue and Price Declines during Recent Multiple Year Declines." This article uses calendar, not crop, years and includes the early 1980s. The earlier article focused on the individual years of the decline period. This article's focus is on prices during the period's first and last years.

2. Values for the 2016 calendar year are averages of monthly values for January through July.