



## Post-Harvest Grain Marketing: Comparing Observed Prices and Marketing Outcomes

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January 12, 2024

*farmdoc daily* (14): 9

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Recommended citation format: Janzen, J. "[Post-Harvest Grain Marketing: Comparing Observed Prices and Marketing Outcomes.](#)" *farmdoc daily* (14): 9, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 12, 2024.

Permalink: <https://farmdocdaily.illinois.edu/2024/1/post-harvest-grain-marketing-comparing-observed-prices-and-marketing-outcomes.html>

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For farmers to profit from post-harvest grain marketing, the price they receive after harvest must exceed the price they could have earned for harvest-time delivery by more than the cost of storage. Evaluating these marketing gains is complicated. Because farms can forward sell grain for delivery at almost any future date, the price received is not necessarily the cash price on the day delivery occurs. In this article, I examine the post-harvest marketing performance for corn and soybeans using farm-level data on realized grain sales from Illinois Farm Business Farm Management (FBFM). I consider the distribution of marketing gains by comparing the price a farm receives post-harvest to the price received for near-to-harvest sales by the same farm in the same marketing year. This is a measure of the realized gross returns to post-harvest grain marketing.

In a previous article (*farmdoc daily* [January 5, 2024](#)), I presented a summary measure of the distribution of gross returns to post-harvest grain marketing across farms over a 17-year period. Farms realize gross returns that are on average roughly consistent with post-harvest seasonal price appreciation, but the range of possible marketing gains is wide, and farms often realize negative gross returns.

In this article, I unpack this aggregated result by comparing year-by-year marketing performance to concurrent within-year price changes. The range of marketing outcomes is wide, and some proportion of farms realize post-harvest grain marketing losses in all years. Gross returns to post-harvest marketing are correlated with observed seasonal cash price changes. This implies the use of forward contracting is limited, particularly for post-harvest grain marketing. Note this analysis ignores storage costs inherent in post-harvest grain marketing which are significant relative to observed returns. Since storage costs are not zero, the net returns from post-harvest grain marketing must be lower than the gross returns.

My results suggest farms should actively consider marketing grain before harvest, both to avoid storage costs and realize higher average prices. In addition, farms may be able to capture post-harvest marketing gains that reduce price risk using forward contracted sales for post-harvest delivery. Forward sales, both pre- and post-harvest, are useful tools in the farm's price risk management toolbox. However, the range of observed results also suggests it is unrealistic to expect a given marketing strategy to outperform in all market conditions.

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## Measuring Post-Harvest Grain Marketing Returns

To assess marketing performance and evaluate the range of possible marketing gains, I consider realized sales prices in both the near-to-harvest and post-harvest periods. Rather than measure marketing performance against an assumed marketing strategy, such as comparing actual sales prices to observed prices for cash sales at harvest, I consider realized marketing performance by comparing the realized price for post-harvest sales to the price received for sales realized near-to-harvest. This comparison is farm-specific and so it adjusts for the possible influence of location, marketing skill, and other farm-specific factors that affect marketing performance but do not vary over time.

I assemble data on annual inventory and production quantities for corn and soybeans for roughly 16,000 farm-year observations from FBFM grain farms between 2003 and 2020. Observing calendar year sales quantity and value alone would be insufficient to evaluate post-harvest marketing performance because the average sales price includes sales of both old-crop inventory and new-crop production. However, Illinois FBFM also records the quantity and value of what it calls old-crop and new-crop sales. New-crop sales are sales of current calendar year production realized prior to the end of the calendar year. I call these near-to-harvest sales. Near-to-harvest sales are realized in the sense that delivery is made and revenues received before January 1. Commodities held in on-farm storage and unsold, those delivered into commercial storage where ownership is retained, and those held in any location but forward contracted for delivery and transfer of ownership on or after January 1 are old-crop sales for the next calendar year. I refer to these old-crop sales as deferred sales.

I measure the gross return to post-harvest marketing as the percentage difference between deferred and near-to-harvest sales. This is a gross return in that it excludes any costs associated with post-harvest marketing, including the physical and opportunity/interest costs of holding inventories. Considering percentage differences permits comparisons across marketing years with different price levels.

### Realized Returns by Marketing Year

I summarize farmer post-harvest grain marketing performance using the distribution of gross returns to post-harvest grain sales shown in Figure 1. These figures show the proportion of farmers realizing gross return levels that range between -40% and 50% across the sixteen marketing years shown in the figure. As noted in a previous article, the average gross return across all years is about 7% for corn and 6% for soybeans. Both the average and range of returns varies across marketing years. Small vertical lines in Figure 1 indicate the average gross return for each commodity. These vary from -10 to +25%. Distributions in some years are quite 'peaked', suggesting returns were mostly the same for all farms. In other years the range of the distribution is quite wide.

**Figure 1. Distribution of Gross Returns to Post-Harvest Grain Marketing by Commodity and Marketing Year, 2004/05-2019/20**



Source: Illinois FBFM and author's calculations

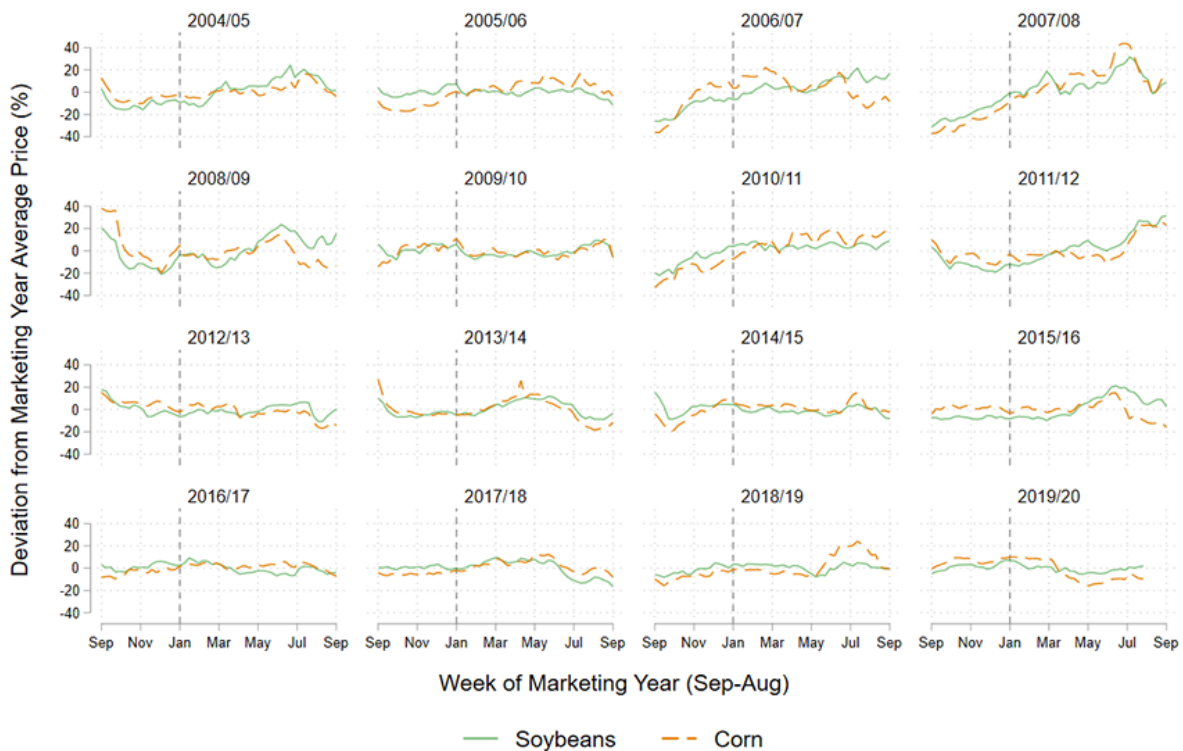
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Some marketing years feature gross returns substantially higher than the long-run average. The marketing years 2006/07, 2007/08 and 2010/11 all feature average gross returns of approximately 20%. In those years, many farms realize gross returns above that level. However, it is instructive to note that even in years where post-harvest marketing was extremely profitable, a small proportion of farms did realize negative net returns.

### Comparison to Seasonal Price Appreciation

To understand variation over time in the level and range of gross returns to post-harvest grain marketing across farms, I plot the seasonal variation in cash prices for corn and soybeans in Central Illinois in Figure 2. While these price levels do not completely describe the prices available for near-to-harvest and post-harvest delivery because of the possibility of forward contracting, they provide a useful indication of available prices. In Figure 2, vertical lines in each subfigure indicate the January 1 date that divides the near-to-harvest and post-harvest periods defined in FBFM data. Note that high but declining cash prices early in the marketing year (on the left edge of each subfigure) likely indicate higher prices in the previous marketing year. This is usually an indicator of higher pre-harvest forward contract prices for delivery at or after harvest.

**Figure 2. Seasonal Variation in Central Illinois Cash Grain Prices by Commodity and Marketing Year, 2004/05-2019/20**



Source: USDA Agricultural Marketing Service

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Comparison of figures 1 and 2 suggests the greatest post-harvest marketing success occurs in years where cash prices consistently rose throughout the marketing year. Years like 2006/07, 2007/08, and 2010/11 were years where cash prices hit seasonal lows at the very beginning of the marketing year and reached seasonal highs only by the summer. Poor post-harvest marketing performance occurred when average cash prices were lower than the previous marketing year so that cash prices declined in September leading into the main harvest period. These are years like 2004/05, 2008/09, and 2014/15.

While the correspondence between figures 1 and 2 is not perfect, it indicates grain farms in Illinois who market some portion of their crop after January 1 realize returns correlated with changes in cash prices after January 1. This suggests farms are holding some portion of their post-harvest grain inventories unpriced and speculating on seasonal cash price appreciation. When this typical seasonal price increase does not occur, as was the case for instance for soybeans in 2018/19, post-harvest market returns are quite poor.

### Implications

This analysis suggests farmers should carefully weigh the risks of deferring grain sales until later in the marketing year, especially sales that are unhedged or otherwise unpriced. Although farmers do realize profits from selling later in aggregate and on average, the wide variety of outcomes from deferred sales shows the downside risk of losing money on stored grain is substantial. Farmers can manage this risk by actively marketing grain before harvest and secure gains from deferred, post-harvest sales through forward contracting (i.e., selling the 'carry' present in futures and forward bids). However, the correlation between returns and observed cash price changes suggests many farms are holding unpriced inventory after January 1 each year.

I recognize this analysis benefits from hindsight; all measures of marketing 'success' are after-the-fact evaluations of decisions that were made in the presence of uncertainty about the profitability of different marketing strategies. However, the range of outcomes observed among these farms suggests grain

marketing is a major challenge for all farms and farmers should not expect a given marketing strategy to outperform in all market conditions.

### **Acknowledgment**

The author would like to acknowledge that data used in this study comes from the Illinois Farm Business Farm Management (FBFM) Association. Without Illinois FBFM, information as comprehensive and accurate as this would not be available for educational purposes. FBFM, which consists of 5,000+ farmers and 70 professional field staff, is a not-for-profit organization available to all farm operators in Illinois. FBFM field staff provide on-farm counsel along with recordkeeping, farm financial management, business entity planning and income tax management. For more information, please contact the FBFM office located on the campus of the University of Illinois in the Department of Agricultural and Consumer Economics at 217-333-8346 or visit the FBFM website at [www.fbfm.org](http://www.fbfm.org).

### **References**

Janzen, J. "[Post-harvest Grain Marketing: Do Farmers Reap the Benefits?](#)" *farmdoc daily* (14):4, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 5, 2024.