



# ANALYSIS AND COMMENTS

Livestock Marketing Information Center

State Extension Services in Cooperation with USDA

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## **CORN: A LOOK AT PRICE SEASONALITY WHEN PROJECTED STOCKS ARE TIGHT (Like This Year)**

Corn prices have surged due to ethanol demand and forecasts suggest that ending-stocks will not rebuild, and may continue to shrink, in the next two crop years. So, what do historical seasonal corn price patterns indicate under similar circumstances. Looking at seasonal price patterns in short crop years (often drought as indicated by national yield well below trend) versus average years and more importantly “normal” yield years has in the past supported the saying “shot crops have a long tail”. But, short crop years are often followed by improved yields in the subsequent year. The situation this year is a little different and is essentially driven by surging demand versus a supply shortfall (short crop). Of course, higher corn prices still cause a price response in acreage planted next year. Still, the current situation may be more parallel to years where export sales caused tightening ending stocks (e.g. early 1970’s).

In this analysis a simple but useful seasonal analysis is conducted. Seasonal crop-year price patterns in average and “normal” years will be compared to years with tight ending stocks of which 2006-07 is one of those years and that situation will likely persist at least throughout 2007-08. The implications are especially important to feed grain users and for farmers making crop marketing plans. This analysis shows that corn season price patterns are clearly different between years with tight ending stocks and “normal” years.

### **Background**

Price seasonality is common or average price patterns that occur within a year for a particular market (e.g. corn, feeder cattle, cull cow). In the grains market, price seasonality is often a result of new crop harvest, old crop supplies, subsequent new crop planting and growing conditions, and demand developments. As with any crop, price is impacted by a variety of factors, which can cause prices in a given year to react differently than average or historical seasonal patterns.

The corn market this year has been impacted by a number of production and demand related factors, which have dramatically impacted market prices. On the production end, higher input costs reduced the number of acres planted compared to the prior year, while drier than normal conditions resulted in a further decline in harvested acres and limited yields, thus the 2006-07 corn crop was down considerably from 2005’s. Still, 2006 crop production does not represent the typical short crop given U.S. production was the third highest ever. Booming demand for corn from the ethanol industry has emerged with little slippage in export shipments, dramatically pulling down year-end carryover projections. As a result, corn prices skyrocketed during harvest and in October surpassed \$3.00 per bushel and generally continued upwards in November.

The smaller 2006-07 corn crop combined with the spillover from the ethanol market provides an interesting case in terms of analyzing market price responses. Particularly, by utilizing a seasonal analysis where analogue crop years compared to non-analogue years, what does history tell us about how cash corn prices may behave in coming months?

### **Calculation Process**

In this analysis, monthly seasonal price indexes of average and “normal” years were compared to years identified as having tight ending stocks. For grains, seasonal patterns are based on a crop year unlike livestock, which are based on a calendar year. Thus, the crop year for corn begins in September and ends the month of August.

To calculate seasonal indexes, a centered moving average approach was utilized. Monthly average corn prices were used as reported by USDA’s National Agricultural Statistics Service<sup>1</sup>. In order to gather a good picture of normal years versus years with tight ending stocks, the analysis utilized price data back to 1961, which resulted in a sample of 43 crop years (1962-2005) to compare normal and tight stock years crop years. The monthly prices are calculated as an index, which represent an average price level or percentage at a given time relative to the annual average price. Thus, the annual average price is indexed at 1 or 100 and each monthly index value corresponds to the difference from the annual average price level.

A crop year with a year-ending carryover of eight weeks or less was considered to be year with tight ending corn stocks. Dating back to 1962<sup>2</sup>, a total of 13 years had a carryover supply of eight weeks or the less – 1970, 1972-1975, 1983, 1991, 1993, 1995-1997, and 2002-2003. To determine whether or not price seasonality differed between normal corn years and those years with tight ending stocks, three scenarios were focused on in the analysis: 1) all years, 2) only those years with tight ending stocks, and 3) only those years with normal (non-tight) ending stocks. To determine the difference in price seasonality between normal years and years with tight ending stocks, the average price indices for each of the three scenarios were compared.

### **Results and Discussion**

In comparing the seasonal price patterns of the three scenarios, it is obvious that the amount of year-end carryover influences how corn prices behave during the crop year. This section summarizes the analysis, including general observations and accompanying graphics.

#### **General Patterns**

The first scenario (Case 1) is the seasonal price pattern for all years (average of 43 years) included in this analysis. On average, corn prices start the season in September below the annual average price, then weaken through the middle of harvest, falling to a seasonal low in November. Corn prices then seasonally rally during the first and second quarters, before peaking in June at an average 4 percent above the annual average price. The significant price decline from September to November is not unusual given this reflects harvest pressuring prices. The average up-tick in corn prices leading up to May is reasonable reflecting costs of storage. As the new crop develops during the summer months, prices are typically under pressure in July and August. Overall, on a long-term average basis, from the seasonal low in November to the seasonal high in June, cash corn prices increased about 10 percent.

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<sup>1</sup> We realize that USDA-NASS weights those monthly prices based on marketings when publishing final estimates. Still, the basic price seasonality is maintained though it may be muted some. The advantages of those data include accessibility, consistency and national scope (not impacted by regional drought, etc.).

<sup>2</sup> Beginning year of crop-year (i.e. 1962 is the 1962-63 crop marketing year).

The second scenario (Case 2) includes only those selected years with carry over of less than eight weeks (13 years or about 30 percent of the years). Corn prices still have some seasonality in this scenario, however, compared to other cases prices exhibited less seasonality between September and July. Between November and June, the average seasonal price increase was about 4 percent. A key point gained from this scenario is that prices averaged below the annual crop-year average from January through May. In addition, another point is that between July and August the index increased about 5 percent. On the graphics with this article, the maximum and minimum monthly indexes are interesting and show a rather wide range in November, then a narrow range in January and February and then a wider range, again. Also note that at the end of the crop-year, the maximum indexes are large (e.g. 30 percent over the annual average in August).

In the third scenario (Case 3), the price pattern of "normal" years or only those years with a year-end carryover of eight weeks or more is presented. As expected, the price pattern in this scenario closely resembles the seasonal trend exhibited in Case 1 (average of all years). However, prices tended to be more seasonal than in other cases. That is, corn prices were lower at harvest and higher in June than in other scenarios --- the November to June seasonal price increase averaged about 13 percent in "normal" years. Also, the rate of decline in prices during July and August was the most severe (around 5 percent) of any case in this analysis.

### **Multiple Low Stock Years**

After completing the above scenarios, the less than 8 weeks carryover years (Case 2) scenario was further evaluated. Since forecasts for the next crop-year (2007-2008) also suggest tight carryover stocks will continue, this comparison attempts to give some insight into historical seasonal price patterns when multiple short carryover years occurred. Only three times in the 43-year data set were there sequential (multiple) low stock years. During the selected time period utilized in this analysis, subsequent to the initial short carryover year there were six years with short ending stocks: 1972-73, 1973-74, 1974-75, 1995-96, 1996-97 and 2002-03. So those years represented 14 percent of all the years evaluated (43 years).

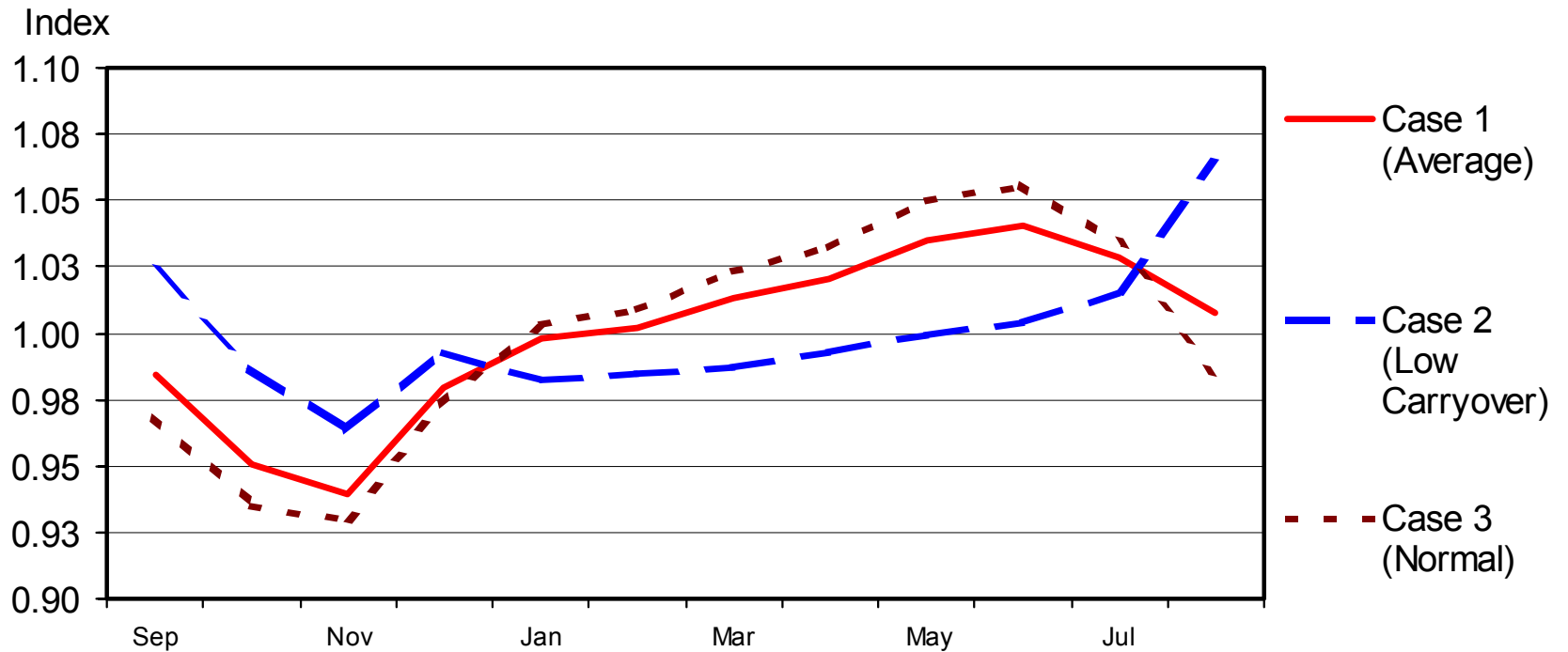
Those multiple short carryover years generally had a similar seasonal price pattern as in Case 2. However, especially in August, the seasonal pattern was more pronounced for the multiple short crop years. In August, Case 2 had an index about 6 percent above the annual average where the multiple short crop years averaged about 12 percent over the annual average price. In the attached graphic of Case 2 with maximum and minimum indexes shown, the maximum indexes late in the crop-year (e.g. August) were the result of multiple short carryover years.

### **Concluding Comments**

Based on the historical analysis of seasonality presented in this analysis, monthly corn price increases for the balance of this year would be expected to be less than seasonal. The next surprise may be late in the crop-year, as there has been a pattern of well above annual average prices in August. Corn prices in December may be near the annual average and then could be relatively unchanged through planting (May 2007).

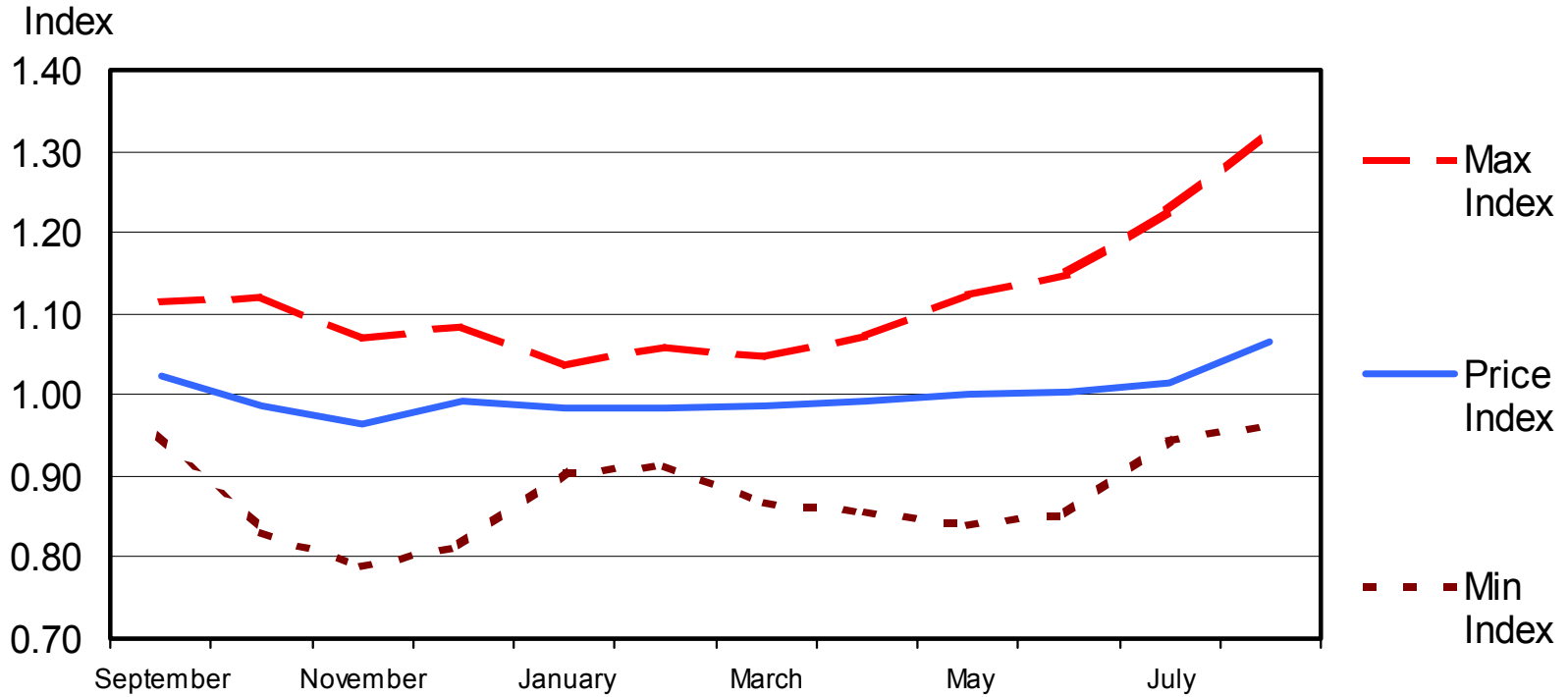
# SEASONAL PRICE INDEX -- CORN

Case Comparison, 1962-2005



# SEASONAL PRICE INDEX -- CORN (CASE 2)

Selected Years with Carryover below 8 weeks. 1962-2005



# SEASONAL PRICE INDEX -- CORN

Case 2 vs. Multiple Short Carryover Year Comparison,  
1962-2005

