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Persistence of Low and High Prices for U.S. Row Crops: Implications for Managing Risk and Farm Policy

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Overview

This article examines the occurrence of multiple years of low prices and multiple years of high prices over the period from 1974 through 2006 for the farm program crops of barley, corn, rice, sorghum, soybeans, upland cotton, and wheat. Understanding the occurrence of persistent low prices and persistent high prices is important to managing risk as well as designing policy.

Analysis

The specific price examined is the average U.S. price for the crop marketing year. The marketing years selected for examination are 1974 through 2006. Prices were stable over this period, with no long-term price trends. This characteristic allows a simple definition of low and high price to be used. Specifically, a low price is a price that is below the average price for the entire period. Analogously, a high price is a price that is above the average price for the entire period. The persistence of low or high prices is then measured as the number of consecutive years that price remains below the average price or the number of consecutive years that price remains above the average price. While many definitions of low and high price and their persistence exist, this simple approach provides useful insights.

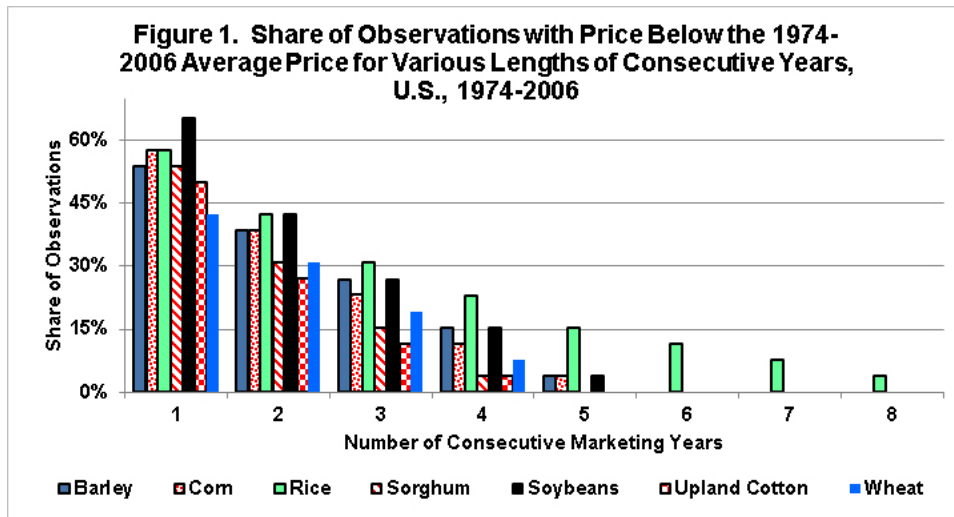
The longest observed period of consecutive years with prices below the 1974-2006 average price is 8 years for rice. There were also 8 consecutive years in which rice price was above the average price. Given that the analysis starts with the 1974 crop year, the first 8-year period ends with the 1981 crop year. Thus, the measurement of price persistence starts with 1981 in order to create the same number of observations for the different length of consecutive years. Specifically, 26 observations exist for periods of 1, 2, 3, 4, 5, 6, 7, and 8 consecutive years.

Persistence of Low Price

Figure 1 presents, by crop, the share of observations in which price is below the 1974-2006 average price for the various lengths of consecutive years. While differences exist among the crops, the general trend is similar among the crops. As expected from common sense, the existence of persistent low prices declines as the number of consecutive years increase. For example, each of the 7 crops has at least 3 of

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26 observations, or 12% of the observations, in which price was below the average price for 3 consecutive years. In comparison, each of the 7 crops only has at least 1 observation, or 4% of observations, in which price was below the average price for 4 consecutive years. Only 4 crops (barley, corn, rice and soybeans) had at least 1 observation in which price was below the average price for 5 consecutive years. Rice is the only crop with periods of low price that persist for 6 (and more) years.

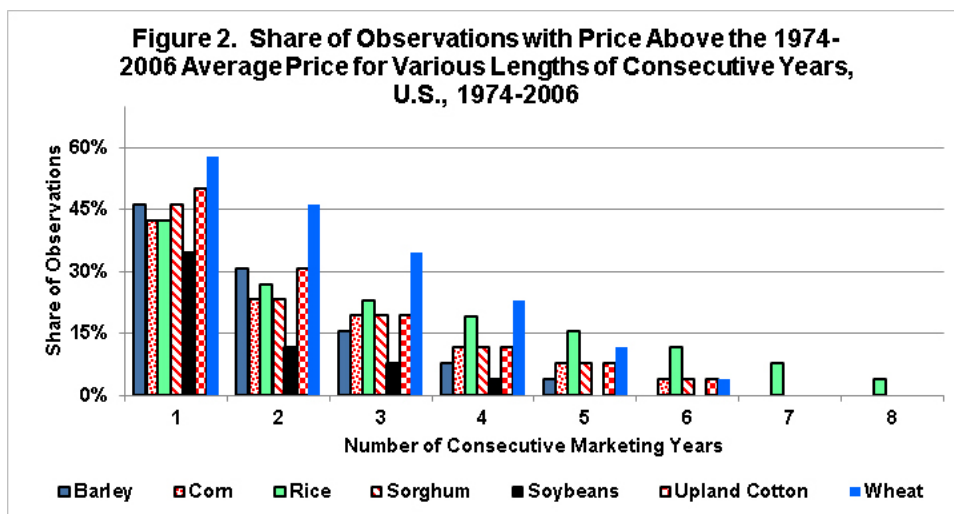


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It is worth pointing out that barley has one 3-year period during which price was 10% or more below the average price for each of the 3 years. The other 6 crops each have one 4-year period during which price was 10% or more below the average price for each of the 4 years. Excluding barley, these extended periods with price 10% or more below the 1974-2006 average price are associated with the Asian financial crisis of the late 1990s.

Persistence of High Prices

Figure 2 presents, by crop, the share of observations in which price is above the 1974-2006 average price for the various lengths of consecutive years. As with the persistence of low prices, the persistence of high prices also declines as the length of persistence increases. Again, rice stands out, this time for persistence of high prices over the longer periods of consecutive years. Some differences exist when comparing the persistence of high price with the persistent of low prices, but it is difficult to know if these differences are the result of a relatively small sample size that will disappear over a longer analysis period.



Summary Observations for Managing Risk and Farm Policy

Not unexpectedly, this study found that both persistent low price and persistent high price was a feature of the 7 program crops examined. It should be noted that farm programs, especially public stock-related programs, could affect the findings of this analysis. While the impact of public stock-related farm programs was substantially less than during the period before 1972, they nevertheless did exist until the 1996 farm bill. However, it is also important to point that the longest, deepest period of persistent low prices occurred during the Asian financial crisis, which occurred after the 1996 farm bill.

Because the crop insurance guarantee price is determined each year, low prices that span multiple years is not a risk covered by crop insurance. In essence, the occurrence of multiple years of low prices is a hole in the current crop insurance safety net. Hence, this analysis suggests caution in concluding that crop insurance is the only risk management tool a farm needs.

Farm commodity programs have traditionally provided assistance against multiple years of low prices. But, this study finds that periods of persistent low prices often involve low prices that are only slightly below the average price. Farms need to develop a risk management strategy for these persistent periods of shallow low prices. For persistent periods of shallow low prices, a key risk management strategy is to have a low cost of production relative to other farms.

The direct payment program also can be seen as a program that would help farms manage the risk of persistent shallow low prices. Moreover, the experience of rice with an extended period of persistent shallow low prices may in part explain why it so strongly supports the continuation of the direct payment program. In other words, the support of rice for direct payments may rest upon more than just the high direct payment per acre that rice receives.

Last, the persistence of low and high prices can help explain why policy analysts and policy makers in general have a poor track record in forecasting the cost of farm programs. For example, the cost of farm programs under the current 2008 farm bill and the preceding 2002 farm bill were overestimated, while the cost of the 1996 farm bill was underestimated. Most forecasting is done under the assumption of normal conditions and the occurrence of random events. However, as this study finds, persistent periods of low prices and high prices are not uncommon in crops, even during a period of stable prices. Moreover, predicting the occurrence of a persistent period of low or high prices is difficult, if not impossible. Thus, not unexpectedly, the variance in forecasting the cost of farm programs is high. The high variability in forecast error is an emerging issue in farm policy and could become a bigger issue in the future if the U.S. becomes focused on reducing its ongoing federal budget deficit. A way to reduce the variability of the cost of farm programs when persistent periods of low and high prices exist is to use a moving average that adjusts the target parameter with market conditions. In other words, a policy response is to build an automatic adjustment mechanism into the operation of farm programs in recognition that persistent periods of low and high prices are probable even if they cannot be predicted.