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Emerging Issues

Iowa Farming: Evolving Risk and Risk Management

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A prominent Iowa row-crop producer recently commented, "There isn't much risk to crop farming in Iowa today."

Considering the floods of 1993, below normal yields in 1995, the changes in the federal farm income safety net, not to mention recent price volatility, this statement sounds odd at first glance. However, given the variety of marketing and risk management tools available, and the existing market conditions, midwestern farmers who manage carefully can hedge a great deal of short run risk in a cost effective manner. Alternatively, livestock producers may be finding increasing risk due to volatile feed costs and weak market conditions.

In this column we delineate basic risk management approaches, discuss how changes in market conditions affect performance of management instruments, and provide a summary overview of what the future might hold.

Risk Management Instruments

Whereas economic theory has a focus on profit maximization, a sound risk management approach involves optimization. This means that enterprises accept a slightly lower profit in return for hedges against catastrophic events. For example, crop yield insurance is not usually purchased to increase or maximize profits, but to hedge against unusual events such as droughts and floods. The premium paid reduces expected income, but it also reduces financial uncertainty.

Alternatively, the objective of speculative activities is to enhance income, as opposed to reducing risk. Some of today's marketing tools employed, ostensibly, as risk management instruments have the potential to increase rather than decrease financial risk. Some hedge to arrive contracts and futures-market positions are examples of tools that have the potential, possibly a high potential, for adverse risk-increasing side effects. Arguably, the intermingling of speculative and hedging activities underlies recent problems associated with hedge-to-arrive contracts. Thus, a sound management plan would, at least implicitly, structure risk-management tools differently than tools to increase profit.

For financial optimization purposes, "pure" risk reducing tools can be delineated from those that also aim to increase or maximize profit. Examples of pure risk reducing tools are federal crop insurance (hedge-for-yield reductions), commodity price options (hedge-against-adverse-price movements), and revenue insurance (hedge-for-revenue reductions whether yield or price induced). With these tools there is a known cost associated with risk hedges, and the financial obligations are clearly defined.

Tools and strategies that attempt to maximize gains are not, generally, efficient risk management tools, as the degree to which risk has actually been reduced (or possibly increased) can be difficult to define. Also, the actual cost of risk management may be difficult to predict, as this will vary depending on final market conditions and ending contract settlements. An important guiding principle is that a financial tool cannot both maximize gains and reduce uncertainty — this contradiction is responsible for many failures attributed to financial instruments.

Current Market and Policy Situation

As stated in previous editions of the Iowa Ag Review, the extremely low world stockholding situation has significantly affected feed grain and soybean price behavior. Prices are expected to be more volatile and more responsive to yield shocks throughout the growing season, especially with regards to yield shocks in major producing regions.

In other words, for any given change in expected average U.S. yield, prices will adjust more rapidly than historical behavior might indicate. Also, because realized average U.S. yield is tending to be more and more dominated by yield changes in the major producing regions, the correlation between changes in expected corn-belt yields during the growing season and market price movements over the same period is expected to increase.

Yield variability is also on the rise. As actual yields have increased over time, the potential effects on average U.S. yield of a severe drought, flood, or disease has also increased. This is demonstrated in U.S. corn yield in Figure 1.
Thus, now and in the future, not only is the price reaction to a given yield shock greater than what has been observed over most of this century, but the yield shocks themselves have been increasing in size. This implies that volatility of speculative instruments, because they depend on yield and price movements, is now greater than previously under a much different market environment.

The bottom line is that for Midwestern corn and soybean producers, careful use of today's marketing tools is required. Short run revenue risk can be managed, even though both yield and price volatility are continuing to increase, however, as long as pure risk management tools are utilized.

**Implications for Livestock Producers**

The record high corn prices of 1996 have reduced profits for livestock and poultry producers. In response, Iowa cattle and hog producers have reduced production while the state's poultry production has been less affected. Cattle feeding has been relatively unprofitable since 1993 due to large beef supplies and low cattle prices, but the higher corn prices increased feedlot losses. Feeder cattle placements in leading states during the second quarter were down 21 percent from the previous year, falling to one of their lowest levels in 20 years.

While placement rates into Iowa's larger feedlots were comparable to other states, there is reason to believe that smaller farmer-feeders reduced their feedlot inventories. The lower than expected feedlot returns and higher feedlot cost of grain has caused cattle feeders to bid less for feeder cattle. Cow herds suffered very large losses on 1995 calves and are expected to show losses on the 1996 calf crop as well. However, beef herd liquidation has begun and cow herd profits will return in future years.

Unlike cattle producers, hog producers thus far in 1996 have earned small profits in spite of higher feed costs thanks to the highest hog prices since 1990. However, some producers are reducing their breeding herds. Iowa's breeding herd on June 1996 was 13 percent below June 1995 compared to a 2.5 percent average decline in the remaining 49 states.

Most of Iowa's cattle and hogs are produced on diversified grain and livestock farms where farmers have the option of selling the livestock or selling the grain at the current higher prices. As a result, Iowa's feedlot and hog inventories have declined more than other leading states.

Over time, increased grain and feed price variability will place a greater premium on risk management strategies for livestock producers. The greater risk in grain, and likely in livestock prices, is expected to produce greater profit opportunities for well-managed operations. However, feeder pig and feeder cattle producers whose selling price is inversely related to feed costs will be particularly vulnerable to volatile grain prices.

For decision-making analysis, producers providing their own feed needs should determine a consistent procedure for pricing grain sold from the crop enterprise to the livestock enterprise. For example, is the grain priced at harvest, when used, or at cost of production? Livestock producers purchasing their feed should develop a strategy for dealing with greater price risk. Such strategies include integrating back into grain production, increased grain storage, contracting for feed, or the use of grain futures and options.

A commonly used strategy by many Iowa diversified farms is to retain the flexibility to shut down the livestock enterprise when grain prices are high and use livestock to add value to produced grain when grain prices are low. A smaller and decreasing segment of the livestock industry has this flexibility. As a result, Iowa livestock inventories — particularly feedlots — may fluctuate more in the future. While this strategy can be profitable for the producer, it places a greater burden on allied industries that carry extra capacity which may be underutilized at times.

Strategies to manage increased risk associated with greater grain price and probable livestock price volatility will be important for Iowa livestock producers. Those producers buying grain will face increased profit risk resulting from fluctuating grain prices.