RISK-RETURN CHARACTERISTICS OF COMMODITY OPTIONS AND POTENTIAL PRODUCER USES

by

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It's my job to set the stage for today's discussion of options on agricultural futures contracts or ag options as they are commonly known, by briefly reviewing the risk-return characteristics of ag options versus futures contracts and the potential producer uses of these options. I will start with some basic definitions for those not familiar with options.

Definitions

An option gives the purchaser the right, but not the obligation, to buy or sell a commodity or a futures contract at a given price (termed the strike price) during a given period of time. In contrast, a futures contract is an agreement to purchase or sell a commodity at a given price during a given period of time. A futures contract obligates both parties to the contract to fulfill the contract. A purchaser of an option can walk away from the contract; it is not necessary to exercise an option.

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There are two basic types of options, calls and puts. A call gives the purchaser the right to purchase the commodity or the futures contract at a given price during a given time period and a put gives the purchaser the right to sell the commodity or the future. In this regard, the purchaser of a call is not the opposite party to a purchaser of a put. The opposite party to a purchaser of a call is the grantor or writer of the call and similarly, the opposite party to a purchaser of a put is the grantor of a put. In addition, options are not free; the price of an option is called the premium and it is this price, the premium, that will be determined in the market place. It should also be noted that the exercise of the ag options under discussion will result in the establishment of futures positions.

Risk-Return Characteristics

Those, then are the basic definitions. The next question is how the risk-return characteristics of options differ from futures. Let's start with the case of a purchaser of a put or a call. The purchaser of a put or call has limited risk--the most that they can lose is the premium. On the other hand, to profit from the purchase of an option, they must first recoup the premium. So, for example, in the case of a call, the price of the underlying future must rise by more than the value of the premium before they break-even. In contrast, a person who purchases a futures contract (a long) faces the substantial risk that the price of the commodity will decline. However, the long pays no explicit cost for the futures position; there is no associated premium.

Now consider the case of a grantor of a call. The grantor's return is the premium and the risk is that the price of the underlying future will increase by more than the premium. In other words, the grantor of a call by agreeing to sell the underlying future at a certain price, earns the premium, but foregoes the opportunity for substantial price appreciation.

Producer Uses of Ag Options

Potential producer uses of ag options can be divided into three main categories, namely:

1. price protection
2. dealing with quantity risk; and
3. income generation.

Price Protection

Like futures, options can be used to shift the risk of price change. The classic example of risk-shifting from futures markets is the grain farmer at harvest. The farmer can sell the grain immediately or store it in anticipation of higher prices later in the season. While the second alternative is often attractive since grain prices are apt to be at their seasonal low right after harvest, it is risky--grain prices may fall rather than rise. Thus, one of the important economic functions of futures markets is to facilitate hedging--to allow such a producer to shift the risk of price change of his inventory.

Ag options can provide another alternative. Instead of entering into a short position in futures, the grain farmer may prefer to purchase a put with a strike price near today's futures price. If the price subsequently rises, the farmer can walk away from the option or if it still has some value, offset it and sell his grain in the cash market. On the other hand, if prices subsequently fall, the farmer can exercise the option, receive a short futures position which can then be offset for a gain or settled by delivery. Thus, the put acts as a price floor; it sets a minimum price for the grain, yet allows the producer to profit from price increases. The futures hedge, in contrast, allows the producer to lock-in a price. Of course, the option has a price, the premium plus transactions costs, while the cost of the futures position is limited to transaction costs.

Along these same lines, another suggested use of options is as insurance against catastrophic price movement. A producer may be willing to bear the risk of normal price movement, but may want to protect himself against major price changes. In this case, he would purchase an out-of-the money put (a put whose strike price is substantially below the current price). Due to the smaller probability that such a put will be profitable compared to one with a strike price equal to the current price, its premium will be low. Thus, out-of-the-money puts may provide relatively cheap insurance against catastrophic price declines.

Dealing with Quantity Risk

A second potential use of ag options by producers is to deal with quantity or yield risk. Consider the case of a producer trying to hedge expected production at planting time. In addition, to having to cope with price risk, he also has to deal with quantity risk-the exact yield is unknown. Using futures, a prudent policy would be to hedge less than expected production. That way, if actual production is less than expected, the producer is not overhedged. However, using ag options (i.e. purchasing puts) allows a producer to hedge expected production since options do not have to exercised.

In this regard, the presence of a Cob-Web cycle increases the importance of this use. If a Cob-Web cycle exists for the commodity under consideration, then when actual production exceeds expected production, harvest-time prices will be lower than expected for many producers, so a producer who has purchased puts for price protection for a larger proportion of his expected production than he would have using futures, clearly benefits. Conversely, in years of shortage, the walk-away feature of options in contrast to futures allows the producer to benefit from the higher current prices.

Income Generation

The final likely use of ag options by producers is to earn income. A producer with an inventory of grain may consider writing call options. By giving up profits from substantial

price appreciation, he can earn the premium. The converse case of writing puts is less applicable to a producer. Covered writers of puts are apt to be those with forward sales of the commodity such as dealers and other middlemen.

Conclusion

As I am sure you are all aware, this brief discussion of the risk-return characteristics and potential producer uses of ag options has ignored many real life complications, most important of which is basis risk. Yet I hope it is clear that depending on the size of the premiums and the liquidity of the market, ag options may provide an important new risk-management tool for producers.