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RISK MANAGEMENT AND MARKETING

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CATTLE 86-34

Summary

Some risk can be transferred to someone else, some may have to be retained by the producer. Price risk is one type of risk which can be shifted to someone else.

The cash market method of pricing keeps the risk in the hands of the producer. Often, that means that risk is not managed, just accepted as part of doing business. The forward pricing techniques--cash forward pricing, futures market and options--offer some opportunity to manage price risk by shifting some of that risk to someone else.

Merely shifting price risk to someone else doesn't necessarily mean either more profits or even prudent management of that risk. Each producer must evaluate his or her own situation and decide how much price risk they can afford and want to keep and how much they want to "get rid of". Then, they must decide how best to do that given their own situation, including their ability to use the techniques available. Remember, incorrect use actually could increase price risk. The key is to "manage the risk" you keep and shift, not necessarily to either keep it all or shift it all to someone else.

All marketing techniques require time if done correctly. The use of forward pricing techniques requires more information, not less. Time is required both to learn the procedures and to learn what they can and cannot do.

(Key Words: Risk Management, Marketing, Hedging, Options Market.)

Introduction

Producers of all agricultural commodities assume many types of risk, including everything from weather risk to disease risk to price risk. The cattle producer is no exception.

In many cases, there are no means to totally shift the risk to someone else. In fact, that probably would not be desirable, since it is the assumption of risk which can lead to profits (or losses). Rather, producers must learn to manage their risk so that it becomes a servant rather than the ruler.

The primary purpose of this paper is to outline some of the means which the producers can use to manage only one form of risk--price risk. Cattle producers have four basic methods which they can use to manage price risk--the cash market, contracting for future delivery, the futures market and the options market. The pricing alternatives are discussed briefly so that comparisons can be made.

Cash Market

Most producers are familiar with the cash market. That is the method they use most often. Essentially, a price is not determined for the producer's cattle until they "go to market". Most producers do "expect" certain price levels to be prevalent when they market their cattle; but, when the cash method is used, there are no guarantees. The producer is a price taker. The only decisions are when to market and which market outlet to use.

The cash market is used most by cattle producers because they are familiar with it. For many feeder cattle producers, the cash market is the only viable alternative they have to price their product. The cash market is easier to use and requires fewer decisions. It is the method under which the producer maintains the greatest degree of price risk. In fact, the risk is not really managed—it just is included as part of the situation or it is assumed that "there isn't anything that can be done about it".

Three major factors must be remembered when using the cash method of marketing. First, because the maximum level of price risk is maintained by the producer, this method provides the maximum potential for profits and losses. Since either profits or losses can occur, the producer must be willing and able to accept either situation. Second, all planning is based upon price expectations or forecasts. These forecasts can either be someone else's forecast or the producer's forecast. There is a tendency to be too optimistic in forecasting, meaning net profits often are smaller or net losses are larger than expected. Third, if lenders view the cash method of marketing as "too risky", they may refuse to lend money, they may lend less money or they may charge a higher rate of interest for the money they do lend.

Contracting For Future Delivery

Of the four methods noted, this pricing technique is second to the cash method in frequency of use by cattle producers. However, it is a very distant second. Essentially, this pricing technique involves the use of a written contract between the seller (producer) and the buyer. Sometimes this is called a forward contract or a cash forward contract. The contract involves not only price but a system whereby premiums can be added or discounts can be deducted from the initial price. Quality factors, quantity factors and any other considerations deemed important should be part of the written contract. In this method of pricing, the actual price or the method to be used to determine the actual price is determined when the contract is made. Actual delivery of the cattle of the quality and quantity described in the contract occurs at a later date, also specified in the contract.

Many contract prices used in this pricing method are based upon the futures market. For example, if a producer decided in the Spring that he wanted to make a contract to deliver feeder cattle in November, the contract price likely would be the November futures price for feeder cattle plus or minus a set amount, such as \$3 or \$4 per hundredweight. The details for a premium above that price, or a discount from it, would be outlined in the contract. It is likely that a premium would be added if the average weight of the cattle sold is considerably less than 650 lb. A discount could be made if the average weight was at or above 650 lb. A similar procedure could be used for fed cattle using the live cattle futures market.

Since the forward contract price usually is based upon the futures market, changes there affect most forward contracts. Starting with the September, 1986, feeder cattle futures contract, all settlements of contracts still open at maturity are made by cash settlement. Delivery of the feeder animal to fulfill the contract is not possible. The criteria (quality factors) used to arrive at the settlement price is based upon slightly heavier and slightly lower quality animals than were used to determine the futures market price. The net impact to the producer using the cash forward contract for feeder cattle is in the areas of basis. The preceding paragraph suggested that a \$3 or \$4 per hundredweight deduction from the futures market price be taken to arrive at a cash forward contract price. Now, no deduction should be made if the producer's cattle weigh approximately 650 to 700 lb and meet the other specifications of the futures contract. Of course, deductions still are necessary if the producer's cattle are much below the quality of the animals described in the corresponding feeder cattle contract. And, a positive basis may be used (added) if a producer's cattle are of high quality but weigh less than 600 lb.

This method is fairly easy to use and has gained some acceptance among producers. Price risk is shifted from the producer to the buyer. Therefore, most of the price risk is managed and the element of risk reduced. However, the producer must accept the price as agreed upon--opportunity to accept a higher price than the agreed upon price if actual cash prices are higher at the time the cattle are delivered are gone. Any exceptions likely will be relatively costly.

This method of pricing generally yields a lower net price to the producer than do the other forward pricing methods. However, there are no margin calls and a broker is not needed. The main participants in the contract are the buyer and seller.

Futures Market

Most producers have heard about the futures market, very few use it and many would like to see it eliminated. This pricing method is more complicated than the first two methods discussed. Essentially, it involves the pricing of a commodity now with actual delivery of the product at a later date. That procedure is called hedging. The main difference from a forward contract is in the delivery process. In a forward contract, delivery of the product is expected. In a futures contract, delivery is possible (except for feeder cattle) but not expected. Prior to the delivery date, the seller buys back his contract, thereby relieving him of the responsibility to deliver. That repurchase generally occurs close to the time the cattle are sold on the cash market. However, the repurchase can be made at any time prior to the expiration of the contract. A quick example may show the mechanics. In the example, the basis is assumed to be zero.

	Cash Market	Futures Market
March	Calves are born	Sell a Nov futures -- \$75
Mar-Nov	Raise calves to 500 lb	Hold futures contract
Nov	Sell calves -- \$70	Buy Nov futures contract -- \$70

In the above example, the total cost of producing a 500-lb calf is assumed to be \$350 or \$70 per hundredweight. If the cash price was only \$70, there would have been a break-even situation on the cash side. But, the futures market showed a net gain of \$5 (sell for \$75 and buy for \$70). If one adds the \$5

futures market gain to the \$70 cash price, the total price is \$75 or a net of \$5 per hundredweight. In this case, the futures market added to returns from the cash side because prices went down. If prices had gone higher, say \$80, the returns from the cash side would have been reduced by "losses" on the futures side. The net result, however, still would have been a \$75 price. Again, a similar procedure could be used by the cattle feeder using the live cattle contract.

Producers do not make extensive use of the futures market for several reasons—they don't understand it, they don't trust it or it doesn't fit their situation. Most of the price risk is shifted to someone else, usually a speculator. The producer does maintain basis risk. Generally, that risk is much lower than price risk. Also, the producer cannot take advantage of higher prices should they occur. Therefore, this tool offers price protection if prices drop but not the ability to benefit if prices go higher.

The net price to the producer generally is higher than the forward contract price. However, there is an initial margin requirement and more may be required. Also, a broker must be used and that involves a commission charge.

Three major considerations must be remembered when using the futures market. First, there is the rule of opposite transactions. When buying (or producing) the physical or cash commodity, the producer sells a futures contract. When selling the physical commodity, the producer buys back the contract. Second, the volume of product hedged must be equal to or less than the actual, physical volume on hand or in the production process. Transactions in the futures market for larger quantities than on hand or to be produced are called speculating. Third, it is essential that the user understand the role of margin money (and the need for an unlimited margin account), the impact of basis and contract specification, especially as they relate to actual production qualities.

Options

This pricing alternative is the newest and probably least used of those available to cattle producers. In fact, there is not an options program available for feeder cattle, only fed cattle. There may be an options program for feeder cattle early in 1987, but that is not certain.

The live cattle options programs was initiated in mid-1985 and has met with limited success. This alternative has been compared to an insurance policy—you pay a charge (premium) for price protection and use that protection only if circumstances warrant using it.

There are several basic definitions or concepts which must be understood before a producer should even consider using the options market.

Options defined -- The RIGHT to buy or sell a futures contract at a specific price on or before an expiration date.

Call option -- Right to BUY a Futures Contract. The Call Buyer pays the premium and has the right to exercise. The Call Seller collects the premium and has an obligation if call is exercised.

Put option -- Right to SELL a Future Contract. A Put Buyer pays the premium and the right to exercise. A Put Seller collects the premium and has an obligation if the put is exercised.

Strike price -- Price at which the Option Holder may buy or sell the underlying Futures contract. This price is set by the exchange.

Premium -- Price of an Option. This is negotiated by the buyer and seller. Major factors affecting the premium are (1) volatility of futures prices, (2) strike price compared to futures price, (3) time, (4) market expectations, and (5) interest rates.

The concept of options seems confusing to those who have not used it. A producer who wants to use the options for cattle can use either of two basic strategies: (a) buy a put option or (b) sell a call option.

Buying A Put Option. In this strategy (buying a put), the buyer (or producer) really is paying a premium for the right (not obligation) to sell a live cattle futures contract. Since it is not an obligation, there are no margin calls. The only costs involved are the initial premium and a broker's commission (generally in the \$50 to \$100 range per contract).

In this alternative, the buyer has unlimited upside price potential and also sets a floor price for his cattle. The procedure used to compute the minimum expected net price is as follows:

$$\text{Strike Price} - \text{Premium} - \text{Basis} = \text{Minimum Expected Net Price}$$

This means that basis, the same basis used in the futures market, is critical in arriving at a final expected price.

An example of this strategy might best illustrate what happens under various price changes. Again, a fed cattle example will be used because there is not a program for feeder cattle. In the example, the basis is assumed to be \$1, the premium is assumed to be \$3 and the strike price is assumed to be \$60 (all on a hundredweight basis). Therefore, the expected minimum price is \$56 (\$60-\$3-\$1). Also, assume it is now October 15 and the cattle will be ready for market in April. That means the initial action would be to buy a live cattle April option in October at a strike price of \$60 and the cost of the option (premium) would be \$3. The results of the action are shown in the chart below under various assumptions about cattle prices in April (actually late March since the April options contracts expire late in March).

Cash Fed
Cattle Price

<u>In April</u>	<u>Action</u>	<u>Net Price</u>
\$70	Sell cattle and not exercise option (forfeit premium)	$70-3-1=\$66$
\$65	Sell cattle and not exercise option (forfeit premium)	$65-3-1=\$61$
\$60	Sell cattle and not exercise option (forfeit option)	$60-3-1=\$56$
\$55	Sell cattle--offset option--collect \$5 premium	$55-3-1+5=\$56$
\$50	Sell cattle--offset option--collect \$10 premium	$50-3-1+10=\$56$

The example is used to illustrate that the producer has set a floor price for his cattle through the use of options; but that the producer also can take advantage of higher prices should they occur. That was not possible in the futures market.

In the above example, the original premium is forfeited if prices move higher or stay at the strike price level. If cash prices move lower, the producer can gather in money by offsetting his option. In this case, originally a \$60 put option was purchased for \$3. When the cash price is only \$55, the option has a value of \$5 ($60 - 55$). If the cash price is only \$50, the \$60 put option has a value of \$10. Originally, a premium was paid for the right to sell something for \$60 (strike price). Now, that something is worth only \$50. Therefore, the right to sell at \$60 is worth \$10 ($60-50$).

Selling A Call Option. Another alternative for the producer is to sell a cattle call option for April. It should be made clear that this alternative has very limited use under special circumstances and should be used only by those who fully understand the possible impacts. In fact, the use of a call alone (not in conjunction with a put) may add risk to the producer's situation. Assuming the values are the same as in the previous example, the seller (or producer) gathers in a premium (\$3) for the obligation (not the right) to fulfill the rights of the buyer should that buyer choose to exercise his option. The buyer's rights in this case are to buy a futures contract at the strike price of \$60. The buyer paid the \$3 premium which the seller received. If the buyer exercises his option, the seller (or producer) must either sell a contract to the buyer for \$60 or take offsetting action (buy a call), and that may involve additional expenditures.

The seller of any option (put or call) does not pay a premium. Rather, the seller gathers in the premium. However, the seller may have to pay margin money if the "market moves against him". The seller has limited upside price potential and has unlimited risk. The seller does, however, generate additional income from the premium received. If nothing happens to futures prices, the seller pockets the premium.

A chart similar to the one used for buying a put can be used to illustrate the results of a higher, lower or unchanged price. The assumptions used are the same as for the previous strategy--the strike price is \$60, the basis is \$1 and the initial premium is \$3.

Cash Cattle Prices in April	Action	Net Price
\$70	Sell cattle and pay to offset option	$\$70+3-1-10 = \62
\$65	Sell cattle and pay to offset option	$\$65+3-1-5 = \62
\$60	Sell cattle and keep premium	$\$60+3-1 = \62
\$55	Sell cattle and keep premium	$\$55+3-1 = \57
\$50	Sell cattle and keep premium	$\$50+3-1 = \52

A quick comparison of the two strategies points out the following.

(1) If prices move sharply higher or lower than the original strike price, buying a put will result in a higher net price. This method does shift price risk to someone else, usually a speculator.

(2) If prices don't deviate significantly from the strike price, selling a call option will result in a higher net price. Note that price risk still is maintained by the producer. If prices go down, selling a call will not give any protection.

Which Alternative Is Best?

There is no one strategy which results in the highest net price at all times. In fact, the knowledge of which strategy is best is known only after the fact. That, however, does not mean that producers merely must take their chances and hope they pick the best strategy. A great deal depends on the producer's goals and objectives.

For producers who are risk seekers and have no real problem maintaining all of their own price risk, the cash market likely will suit them best. As noted earlier, it is the easiest to use and requires little or no knowledge of the other alternatives which could be used.

The other alternatives--forward contracting, futures market and options--all provide a floor to prices. However, both the forward pricing techniques and the futures market also provide a ceiling. Only the options market (buying a put) also provides upward price potentials.

In general, when the futures price is significantly higher than the original strike price at expiration of the option, having bought a put would have resulted in the highest net price. When the futures price is approximately equal to the original strike price at expiration of the option, having sold a call would have resulted in the highest net price. Again, remember that selling a call is not recommended as a pricing tool for products to be sold unless the user fully understands what is involved. When the futures price is significantly lower than the original strike price at expiration of the option, selling a futures contract would have resulted in the highest net price.