Strategies for CME Livestock Futures and Options

10 Long and 10 Short Strategies for Forward Pricing Livestock

Global Leadership in the Financial Marketplace

CME is the largest and most diverse financial exchange in the world for trading futures and options. In 2005 our volume surpassed one billion contracts, worth $638 trillion, and we continued to set and break volume and open interest records in 2006. Founded in 1898, we serve the risk-management needs of customers around the globe by offering the widest range of benchmark financial products available on any exchange, traded via our CME Globex electronic trading platform and on our trading floors. Our innovative products cover major market segments including interest rates, equities, foreign exchange, commodities and alternative investment products. In addition, our clearing house matches and settles all trades and guarantees the creditworthiness of every transaction that takes place in our markets.

CME Commodity Products

CME agricultural commodity products help farmers and agribusinesses manage the constant price risks they face, enabling them to lock in profits, enhance business planning and more effectively serve their markets. Commodity-related businesses that use CME commodity products to support and strengthen their operations are able to provide products to their customers at better prices.

Table of Contents

Introduction

This publication is intended for people in the livestock industry who are comfortable with their basic knowledge of how to use CME Livestock futures and options and who want to know more. It guides readers through the mechanics of strategies that are becoming widely used in the livestock and meat business, and demonstrates how to evaluate pricing possibilities on a daily or weekly basis.

Readers who don't feel comfortable with their basic knowledge of futures and options may first wish to review the *Self-Study Guide for Hedging with Livestock Futures and Options,* as well as other CME publications and publications available from universities, lenders, brokers and bookstores. Additional materials may help readers better understand terms and concepts such as basis, short, performance bond, put, call and premium, which are also defined in this publication.

Throughout *Strategies for CME Livestock,* the term "basis" is used to mean the local cash price minus the futures price at the time a producer intends to market his livestock, which should be prior to futures expiration. A positive basis means the local cash price is higher than the futures price; a negative basis means the futures price is higher than the local cash price.

Within this publication, actual basis is the same as estimated basis for every example. Of course, this is not realistic. In practice, an estimated basis determined from historical price relationships is used to estimate the forward price.

Basis risk is always part of using futures or options. Every alternative pricing strategy has to be evaluated in the context of each local basis situation, using local basis for the quality and size of the livestock produced. The realized price when the hedge is liquidated depends on the actual basis at that time.

CME Live Cattle options expire the first Friday of the delivery month of the underlying futures contract; CME Feeder Cattle and CME Lean Hog options expire on the same day as their corresponding futures contract. Therefore, when hedging with CME Live Cattle options, it is necessary to use the basis for the period when the options expire and not for when the futures contract expires. Also, always check with the exchange or a broker regarding current rules.

All examples in *Strategies* exclude commissions and performance bonds (margins). In real situations, a brokerage commission would have to be paid for all futures and options transactions, and performance bond deposits would be required for any option writing and all futures transactions.

Please note that all strategies involving exchange-traded futures and options have an important advantage over fixed price forward cash contracts: ***flexibility.*** Once producers have entered into fixed price forward contracts, they are normally committed, no matter how circumstances change. With exchange-traded futures and options, it is possible to alter or totally remove those commitments by taking offsetting positions in the market.

The examples in this publication use real option premiums and price levels that existed in a past time period in order to demonstrate the concept of each strategy. Varying market conditions, length of time to expiration, price level and general market volatility significantly impact the cost of options; but the concepts of these strategies remain the same. Producers should judge the validity and costs against their own situations, including breakeven costs, capital at risk and market forecast.

As understanding of livestock futures and options grows, livestock producers will no doubt develop variations on these strategies, as well as new applications for these contracts. We hope that *Strategies for CME Livestock Futures and Options* is a valuable resource to all who explore the uses of livestock futures and options in their marketing plans.

Part I: Ten Short Strategies for Inventory Protection

For Livestock Producers

Basic Short Strategies

1. Locking in a Fixed Selling Price: Selling Futures

This traditional hedge offers a "locked-in" or guaranteed price plus or minus any variation in actual basis from expected basis. The expected local hedge price is equal to the short futures price plus or minus the expected local basis. Selling futures is less attractive than the forward contract in that the futures hedge does not lock in a precise price, due to the inability to perfectly predict the basis. Selling futures is more attractive than the forward contract in that it allows the flexibility of altering the pricing decision and capitalizing on a strong basis.

Advantages

» Guarantees a price, subject to basis fluctuation

» Yields best price if market declines significantly after placing hedge

» Can price as much as 12 months in advance

Disadvantages

» Attempts to capitalize on price increases

» Involves re-exposure to market risk

» Performance bond call responsibility

Liquidation

To liquidate the hedge, the producer buys back the futures contract and sells the livestock in the cash market. Delivery is an option to the seller of a futures contract and should only be attempted if it is economically profitable to do so (negative basis greater than delivery costs and the livestock meet contract specifications).

Example

A producer sells October CME Live Cattle futures at $84/cwt. He expects a local basis of minus $1/cwt. in October, when the cattle reach slaughter weight; therefore, his *expected local hedge price* is $83/cwt.

In October when the cattle are ready to be slaughtered:

If Sept. futures are	A Local Cash Purchase	B Gain/Loss from futures	C Realized Purchase Price
$ 92	$ 91	$ 8	$ 83
88	87	4	83
84	83	0	83
80	79	-4	83
76	75	-8	83
			A-B = C

2. Establishing a Minimum Selling Price: Buying Puts

Buying a put option gives a producer a minimum or "floor" price without limiting the opportunity of price increases. The floor price that a put offers is the strike price of the option minus the premium cost, adjusted by the estimated basis. However, if futures prices increase above the strike price by the time the put option expires and the livestock are ready for market, the producer receives the current cash price less the amount of premium paid for the put option. In this scenario of increasing market prices, the put will have declined in value and probably will expire worthless. More expensive (higher strike) puts offer a higher floor price but a lower net price if prices increase. Less expensive (lower strike) puts offer a lower floor price but more opportunity of gaining from market price increases.

Advantages

» Minimum price but no maximum

» No performance bond calls

» Many levels of price insurance (strike prices) to choose from

Disadvantages

» Premium costs; purchasing a long time period of protection in a volatile market is expensive

» Options currently don't offer protection as far into the future as futures contracts trade

Liquidation

When the producer sells the livestock in the cash market, he will usually sell the put if it has value. If livestock prices have increased, the put probably will expire worthless and will not have to be liquidated. Exercising the put is an alternative for the buyer and will result in a short futures position at the strike price of the put. Exercising the put would make sense under the following conditions, and if the producer is comfortable with the resulting short futures position:

1. The livestock had not gained as quickly as expected and protection is still needed.

2. The put is deep-in-the-money, and its liquidity is low.

3. Basis is abnormally weak.

If the producer exercises the put, then he would later liquidate the resulting short futures position when he markets the livestock, just as he would in a simple futures hedge.

Example

A producer purchases a December 60 put @ $3/cwt. to price one group of hogs and a December 56 put @ $1/cwt. to price another group of hogs. At the time, December CME Lean Hog futures are at $58/cwt. Estimated basis for the end of November is minus $2/cwt. His *estimated minimum prices* are: $60 (strike price of first put), minus $3 premium, less $2 basis = $55/cwt.; and $56 (strike price of second put), minus $1 premium less $2 basis = $53/cwt.

At the beginning of December, when the hogs are ready for slaughter:

	A	B	C	
If Dec. futures are	Value of 60 Put	60 Put Gain/Loss	Local Cash Sale	Net Realized Price
$ 68	$ 0	$ -3	$ 66	$ 63
63	0	-3	61	58
58	2	-1	56	55
53	7	4	51	55
48	12	9	46	55
				A+B = C

	A	B	C	
If Dec. futures are	Value of 56 Put	56 Put Gain/Loss	Local Cash Sale	Net Realized Price
$ 68	$ 0	$ -1	$ 66	$ 65
63	0	-1	61	60
58	0	-1	56	55
53	3	2	51	53
48	8	7	46	53
				A+B = C

Advanced Strategies

3. Collecting Options Premiums: Selling Call Options

This strategy is not considered a standard price risk management strategy because it affords very little protection against declining prices. It will enhance the price received for livestock, but only by the amount of the premium taken in. It will, however, outperform other strategies during very stable markets. Selling a call caps the price received for livestock at the strike price sold, plus the premium taken in, plus or minus the basis. Selecting a higher strike gives more opportunity for a price increase but will yield less income from selling the call. Selecting a lower strike will yield more income but give less opportunity if prices increase. Also, the producer is subject to performance bond call risk when selling an option.

Advantages

» Performs better than cash sales alone in a steady or declining market

Disadvantages

» Places a ceiling on the livestock price, with the risk of performance bond calls in a market in which price is increasing

» Only protection against declining prices is the amount of premium received

» Short futures position at call strike price results if buyer exercises

Liquidation

As a call seller, the producer needs to buy back the call if it has value, or face exercise. If the call is expiring worthless (price declines) it need not be bought back, but can be if the producer chooses. Even a worthless call should be bought back, if it has time remaining, when the producer sells the livestock: it could increase in value if the market climbs before the call expires.

Example

A producer sells a September 102 call @ $1/cwt. to apply to the final sale price of his feeder cattle. The September CME Feeder Cattle futures contract is trading at $100/cwt. His estimated basis for 700 lb. yearlings is $2/cwt. (positive basis, cash above futures). The *maximum price* he will receive is: $102 (strike price of the call), plus $1 premium received, plus $2 basis = $105/cwt. If prices decline he will receive the cash price plus the $1 premium taken in.

In September when the cattle are physically ready to be marketed:

If Sept. futures are	Value of 102 Call	A 102 Call Gain/Loss	B Local Cash Sale	C Net Realized Price
$ 110	$ 8	$ -7	$ 112	$ 105
105	3	-2	107	105
100	0	+1	102	103
95	0	+1	97	98
90	0	+1	92	93
				A+B = C

4. Establishing a Minimum Selling Price at Reduced Premium Costs: Purchasing Put and Selling Call Options – The "Fence"

This combination of two previous strategies results in a risk/reward profile that some advanced users of options have found very advantageous. The strategy gives all the downside price protection of an outright out-of-the-money put purchase, but costs less because of the premium taken in from selling the call. Many people try to accomplish it with little or no net premium cost. Selling the call means that there is performance bond (margin) call liability and that price increase opportunities are limited.

The *maximum selling price* equals the strike price of the call less the net premium payout. The *minimum selling price* equals the strike price of the put less the net premium payout. Both are adjusted for local basis. This yields a range or "window" of possible realized price outcomes. The closer the strike prices of the call and put are to each other, the more narrow the window of price risk and opportunity that will result. The further apart the strike prices, the wider the window of price risk and opportunity.

Advantages

» Price risk protection of put option at a lower cash outlay for premium cost

» Higher floor price than outright purchase of put

Disadvantages

» Limited opportunity for price increases

» Performance bond call liability on "short" option position (call that was sold). Short futures position at call strike price results if buyer exercises

Liquidation

Buy back the call (if it has value) or let it expire worthless, and sell the put (if it has value) or let it expire worthless. Sell the livestock in the cash market.

Example

A producer sells a December CME Live Cattle 90 call @ $1/ cwt. and purchases a December 82 put @ $1/cwt. December CME Live Cattle futures are currently trading at $86/cwt. He estimates his local basis to be + $1/cwt. for December. His cost for the options is $1/cwt. for purchasing the put less the $1/cwt. he received for selling the call, or a net cost of $0/cwt. Therefore, his *maximum sale price* is: $90 (strike price of call), minus net cost of option, $0/cwt., plus $1 basis = $91/cwt. His *minimum sale price* is: $82 (strike price of put), minus net cost of options, $0/cwt., plus $1 basis = $83/cwt.

When the beginning of December arrives and the cattle are ready for slaughter:

		A		B	C	D
If Dec. futures are	Value of 90 Call	90 Call Gain/Loss	Value of 82 Put	82 Put Gain/Loss	Local Cash Sale	Net Realized Price
$ 94	$ 4	$ -3	$0	$ -1	$ 95	$ 91
90	0	1	0	-1	91	91
86	0	1	0	-1	87	87
82	0	1	0	-1	83	83
78	0	1	4	3	79	83

<div align="right">A+B+C = D</div>

5. Creating a Minimum Sale Price by Combining Two Transactions: Cash Contracting (or Selling Futures) and Buying Call Options

If done at the same time, with the strike price of the call at or very close to the futures sale price or cash contracted price, this strategy is known as a "Synthetic Put." It gives a floor price without sacrificing all price increase opportunity. It will be discussed again later as a "follow-up" strategy because in practice the call is often purchased after the forward cash sale or futures contract sale.

Selling futures, as in a normal hedge (cash-forward contracting), establishes a fixed selling price for livestock. It is fixed to the penny in the case of a cash contract (with an established basis guarantee). With a futures hedge or shared-basis risk cash contract, it is a fixed price plus or minus any basis variation. Purchasing a call option in addition to the "short" futures hedge or cash contract converts that "fixed-price" into a "floor-price" – with the opportunity to benefit from price increases. In a market where price is increasing, the call will increase in value, repaying part of the performance bond costs of the short futures position or adding dollars to the price of the cash contract.

Advantages

» Excellent for those who prefer cash contracts, but like to keep the potential to benefit from market price increases

» May offer higher floor price than an outright put purchase

» Offers alternative to distant month put options which may be too expensive or are not yet trading

Disadvantages

» Performance bond call liability on short futures position

» If a call with a strike price above the current market is purchased, the call will not begin yielding higher prices until the futures contract goes above the strike of the call and also repays the premium

Liquidation

Sell the call when the livestock are ready to be sold in the cash market or let the call expire worthless. Buy back the short futures contract, if used, and sell the livestock in the cash market or make delivery on your cash contract obligation.

Example 1

A producer sells an August CME Lean Hog futures contract at $56.00/cwt. and at the same time purchases an August CME Lean Hog 56 call @ $1/cwt. His estimated basis for late July is minus $1/cwt. His estimated *minimum sale price is:* Short futures price ($56/cwt.), minus premium cost of $1/cwt., minus estimated basis of $1/cwt = $54/cwt. If the market price increases, he will begin to realize the increase when the futures price rises above the strike price of the call, 56, plus the premium paid out, $1/basis = $57/cwt.

At the beginning of August, when the hogs are ready for slaughter:

	A		B	C	D
If August Futures Are	**Futures Gain/Loss**	**Value of 56 Call**	**56 Call Gain/Loss**	**Local Cash Sale**	**Net Realized Price**
$ 66	$ -10	$ 10	$ 9	$ 65	$ 64
61	-5	5	4	60	59
56	0	0	-1	55	54
51	5	0	-1	50	54
46	10	0	-1	45	54

A+B+C = D

Example 2

If the producer contracted to sell finished hogs during late July for $55/cwt. and also purchased an August 56 call @ $2, his estimated *minimum sale price* is: $55/cwt. cash contract price, minus premium cost of $2 = $53. If August futures rally above $58, the producer will realize a positive return on the call.

At the beginning of August, when the hogs are ready for slaughter:

	A		B	C
If August Futures Are	**Cash Contract Price**	**Value of 56 Call**	**56 Call Gain/Loss**	**Net Realized Price**
$ 66	$ 55	$ 10	$ 8	$ 63
61	55	5	3	58
56	55	0	-2	53
51	55	0	-2	53
46	55	0	-2	53

A+B = C

Comparison of Strategies 1-5

Situation: Live Cattle to Market in August

Prices Available When Hedge Is Placed:

August CME Live Cattle (LC) Futures	$ 86/cwt.
August LC 88 Put	3
August LC 84 Put	1
August LC 88 Call	1
Local Basis estimate (August)	-1

Gains and Losses When Hedge Is Lifted:

If Aug. Futures Are	Buy Futures @86 Gain/Loss	Buy 88 Put @ $3 Value	Gain/Loss	Buy 84 Put @ $1 Value	Gain/Loss	Sell 88 Call @$1 Value	Gain/Loss	Buy 88 Call @$1 Value	Gain/Loss
$ 94	$ 8	$ 0	$ -3	$ 0	$ -1	$ 6	$ -5	$ 6	$ 5
90	4	0	-3	0	-1	2	-1	2	1
86	0	2	-1	0	-1	0	1	0	-1
82	-4	6	3	2	1	0	1	0	-1
78	-8	10	7	6	5	0	1	0	-1

Net Realized Prices When Hedge Is Lifted: Gain or loss from above table plus cash sale

If August Futures Are	And August Cash Is	Sell Futures @ $86	Buy 88 Put	Buy 84 Put	Sell 88 Call	Fence: Sell 88 Call Buy 84 Put	Synthetic Put Sell Fut. @ $86 Buy 88 Call
$ 94	$ 93	$ 85	$ 90	$ 92	$ 88	$ 87	$ 90
90	89	85	86	88	88	87	86
86	85	85	84	84	86	85	84
82	81	85	84	82	82	83	84
78	77	85	84	82	78	83	84

Situation: Feeder Cattle to Market in March

Prices Available When Hedge Is Placed:

March CME Feeder Cattle (FC) Futures	$ 92/cwt.
March FC 94 Put	3
March FC 90 Put	1
March FC 96 Call	1
Local Basis estimate (March)	+1

Gains and Losses When Hedge Is Lifted:

If Mar. Futures Are	Sell Futures @ $92 Gain/Loss	Buy 94 Put @ $3 Value	Gain/Loss	Buy 90 Put @ $1 Value	Gain/Loss	Sell 96 Call @$1 Value	Gain/Loss	Buy 96 Call @$1 Value	Gain/Loss
$ 102	$ -10	$ 0	$ -3	$ 0	$ -1	$ 6	$ -5	$ 6	$ 5
97	-5	0	-3	0	-1	1	0	1	0
92	0	2	-1	0	-1	0	1	0	-1
87	5	7	3	3	2	0	1	0	-1
82	10	12	8	8	7	0	1	0	-1

Net Realized Prices When Hedge Is Lifted: Cash purchase minus gain or loss from above table

If March Futures Are	And March Cash Is	Sell Futures @ $92	Buy 94 Put	Buy 90 Put	Sell 96 Call	Fence: Sell 96 Call Buy 90 Put	Synthetic Put Sell Fut. @ $92 Buy 96 Call
$ 102	$ 103	$ 93	$ 100	$ 102	$ 98	$ 97	$ 98
97	98	93	95	97	98	97	93
92	93	93	92	92	94	93	92
87	88	93	92	90	89	91	92
82	83	93	92	90	84	91	92

Situation: Lean Hogs to Market in February

Prices Available When Hedge Is Placed:

February CME Lean Hog Futures	$67/cwt.
February LH 66 Put	1
February LH 64 Put	.50
February LH 70 Call	.50
Local Basis estimate (February)	-1

Gains and Losses When Hedge Is Lifted:

If Feb. Futures Are	Sell Futures @ $67 Gain/Loss	Buy 66 Put @ $1 Value	Gain/Loss	Buy 64 Put @ $.50 Value	Gain/Loss	Sell 70 Call @$.50 Value	Gain/Loss	Buy 64 Put @ $.50 Value	Gain/Loss
$ 77	$ -10	$ 0	$ -1	$ 0	$ -.50	$ 7	$ -6.50	$ 7	$ 6.50
72	-5	0	-1	0	-.50	2	-1.50	2	1.50
67	0	0	-1	0	-.50	0	.50	0	-.50
62	5	4	3	2	1.50	0	.50	0	-.50
57	10	9	8	7	6.50	0	.50	0	-.50

Net Realized Prices When Hedge Is Lifted: Cash purchase minus gain or loss from above table

If Feb. Futures Are	And Feb. Cash Is	Sell Futures @ $67	Buy 66 Put	Buy 64 Put	Sell 70 Call	Fence: Sell 70 Call Buy 64 Put	Synthetic Put Sell Fut. @ $67 Buy 70 Call
$ 77	$ 76	$ 66	$ 75	$ 75.50	$ 69.50	$ 69	$ 72.50
72	71	66	70	70.50	69.50	69	67.50
67	66	66	65	65.50	66.50	66	65.50
62	61	66	64	62.50	61.50	63	65.50
57	56	66	54	62.50	56.50	63	65.50

Strategies for CME Livestock Futures and Options

Adjustment Strategies

6. Converting a Fixed Price to a Minimum Price: Purchasing Call Options After Selling Futures, or After Forward Contracting at a Fixed Price

Most producers fear missing the opportunity of a market rally after they have hedged or forward contracted at a fixed price. Hedged producers are tempted to lift the hedge early to seize such opportunity, but that exposes them to the downside risk they were trying to avoid in the first place. Both hedged and forward contracted producers can avoid risk while seizing opportunity by buying a call as a second component of their marketing strategy.

By purchasing a call option, producers can restore the opportunity of price increase without sacrificing downside price protection. In effect, the fixed price futures hedge or cash contract is converted to a floor price, and the whole position resembles a put.

The more the strike price of the selected call is above the futures price, the greater the price increase required before the producer will begin to realize a higher price. If he selects a call strike price at or below the futures price, a higher price will be realized much more quickly in a rising market. However, the lower the strike price the producer can choose, the more premium he will have to pay and the lower the resulting floor price will be.

Advantages

» Riskless way to restore price increase opportunity to cash contract or futures hedge

Disadvantages

» Premium cost of call, as well as the margin liability on the short futures position which remains after the adjustment

» Timing important, because call is purchased after hedge or cash contract is made

Liquidation

Sell the call when the livestock are ready to be sold in the cash market, or let the call expire worthless. Buy back the short futures contract, if used, and sell the livestock in the cash market or make delivery on your cash contract obligation.

Example

A short futures hedge or cash contract has been established and the market declines. The producer observes that call options have declined in value and he can now cheaply restore the upside opportunity to his futures hedge or cash contract. This doesn't mean that the only time this strategy should be used is after a market decline. It may be a wise strategy anytime a price advance is anticipated and opportunity may be missed.

A producer sells April CME Feeder Cattle futures at $98/cwt. to hedge some 700-800 lbs. cattle. His estimated basis is plus $1/cwt. His *estimated local hedge price* is then $98/cwt. plus $1/cwt. = $99/cwt.

The April futures contract declines to $95.00/cwt. He purchases an April 96 call for $1.50/cwt. Now his combined position is: *minimum sale price* = futures price ($98/cwt.), minus call premium ($1.50/cwt.), plus estimated basis ($1.00/cwt.) = $97.50/cwt.

In April when the cattle are physically ready to be marketed:

Without Follow-Up

If April Futures Are	A Futures Gain/Loss	B Cash Purchase	C Net Realized Price
$ 108	$ -10	$ 109	$ 99
103	-5	104	99
98	0	99	99
93	5	94	99
88	10	89	99
			A+B = C

With Follow-Up

If April Futures Are	A Futures Gain/Loss	Value of 96 Call	B 96 Call Gain/Loss	C Local Cash Sale	D Net Realized Price
$ 108	$ -10	$ 12	$ 10.50	$ 109	$ 109.50
103	-5	7	5.50	104	104.50
98	0	2	0.50	99	99.50
93	5	0	-1.50	94	97.50
88	10	0	-1.50	89	97.50
					A+B+C = D

7. Converting a Fixed Price to a Minimum Price: Purchasing Put Options After Liquidating a Short Futures Hedge

This strategy is very similar to follow-up #6 except there is no continued performance bond liability because the short futures hedge is offset. The incentive for carrying out this strategy is much the same as in #6: A producer has a fixed forward price and thinks there is opportunity ahead for a price increase. He wants this opportunity without removing his protection against the risk of a market decline.

Many times a hedger will look at this strategy after he has seen a market decline and realized a positive flow of funds into his futures performance bond account. Now he thinks the market may rebound and go higher, but he doesn't want to go unprotected. Therefore, he liquidates his hedge and uses part or all of the futures gain to purchase a put option. Usually a producer in this situation will purchase an "at-" or "out-of-the-money" put which would, along with the futures gain, give him a minimum price fairly close to his original fixed-price and leave plenty of potential for market increases.

Advantages

» Can restore opportunity to profit from price increases

» Ends performance bond call liability without sacrificing price risk protection

Disadvantages

» May sacrifice part of the original hedge price if market remains lower, because of the premium paid out

Liquidation

Sell livestock in the cash market and sell back the put option if it has value, or let the put expire if worthless.

Example

A producer sells June CME Live Cattle futures @ $84/cwt. to hedge his slaughter cattle. His estimated basis for June is + $1/cwt. His *estimated local hedge price* is then $84/cwt. plus $1/cwt. = $85/cwt. The June futures contract declines to $79/cwt. in April. He purchases a June 78 put for $1/cwt. and buys back his futures contract for a gain of $84/cwt. minus $79/cwt. = $5/cwt. Now his *minimum sale price* = futures hedge gain of $5 plus strike price of put ($78/cwt.), minus put premium of $1/cwt., plus estimated basis of $1/cwt. = $83/cwt. So $2/cwt. has been sacrificed from the original hedge price, if the market continues to decline. Additionally, should prices rise, the producer will have the $4/cwt. net gain to add to his local price.

At the beginning of June, when the cattle are physically ready to be marketed:

Without Follow-Up

If June Futures Are	A Futures Gain/Loss	B Local Cash Sale	C Net Realized Price
$ 89	$ -5	$ 90	$ 85
84	0	85	85
79	5	80	85
74	10	75	85
69	15	70	85
			A+B = C

With Follow-Up

If June Futures Are	A Futures Gain/Loss	Value of 78 Call	B 78 Call Gain/Loss	C Local Cash Sale	D Net Realized Price
$ 89	$ 5	$ 0	$ -1	$ 90	$ 84
84	5	0	-1	85	79
79	5	0	-1	80	74
74	5	4	3	75	73
69	5	9	8	70	73
					A+B+C = D

8. Converting a Minimum Price to a Fixed Price - Selling Futures or Cash Contracting After a Put Option Purchase

Often a producer may be committed to a production situation in which he thinks prices are going to increase, but still wants some risk protection. Possibly he is committed to pasture rental, feedlot space or feeder pig purchase. Just in case, he wants some low-cost insurance while waiting for a price increase that he thinks is coming. This floor price may be at least enough to repay a production loan or prevent financial disaster if the producer is highly leveraged. A way to accomplish this is to purchase a low cost put option to afford some risk protection while waiting for a more favorable pricing opportunity. The *subsequent* pricing could be *fixed-price* (futures hedge or cash contract).

Advantages

» Risk management while waiting for more favorable pricing opportunity

Disadvantages

» A drastically lower price could occur before a follow-up "short-hedge" or cash contract is in place

Liquidation

Sell the put or let it expire if it has no value, buy back the futures hedge and sell livestock in the cash market, or deliver the livestock to the cash contracted party. The put can be liquidated when the follow-up pricing is done, but it is not essential and adds no risk if it is not liquidated.

Example

A producer purchases an October CME Lean Hog 52 put for $1/cwt. October CME Lean Hog futures are trading at $56/cwt. He expects a local basis of + $1/cwt. for the end of September. Therefore his estimated *minimum sale price* from the put is: strike price of put ($52/cwt.), minus put premium ($1/cwt.), plus basis of $1/cwt. = $52/cwt.

In the following two months the October futures price increases to $66/cwt. With two months remaining before the hogs are ready for slaughter, the producer sells a futures contract (or establishes a cash contract). He could liquidate the put at this time if it had any value, but there is no risk and very little cost to just leaving it in place. He now has a fixed price of: futures contract sale price ($66/cwt.), minus put premium cost ($1/cwt.), plus basis of $1/cwt. = $66/cwt., unless the futures price falls below the put strike of $52, in which case the net realized price rises by $1 for each $1 the futures falls below $52.

At the beginning of October, when the hogs are ready for slaughter:

Without Follow-Up

If October Futures Are	Value of 52 Put	A 52 Put Gain/Loss	B Local Cash Sale	C Net Realized Price
$ 72	$ 0	$ -1	$ 73	$ 72
66	0	-1	67	66
60	0	-1	61	60
54	0	-1	55	54
48	4	3	49	52
				A+B = C

With Follow-Up

If October Futures Are	A Futures Gain/Loss	Value of 52 Put*	B 52 Put Gain/Loss	C Local Cash Sale	D Net Realized Price
$ 72	$ -6	$ 0	$ -1	$ 73	$ 66
66	0	0	-1	67	66
60	6	0	-1	61	66
54	12	0	-1	55	66
48	18	4	3	49	70
					A+B+C = D

* Put not liquidated when follow-up action taken.

Strategies for CME Livestock Futures and Options

9. Increasing the Minimum Price: Purchasing Put Options as Prices Increase

When a producer has purchased a put and market prices subsequently increase, he may want to do something to capture this new higher price level, again without sacrificing protection against price decline. Follow-up strategy #8 would be one alternative, but it would limit the potential gain from another price increase. Another alternative is to purchase a second, higher strike put, which is favorably priced because of the futures price increase. *The new minimum price is the strike of the second put minus total premium paid out, plus or minus basis.*

Advantages

» Capitalizes on market price increases without limiting extreme price increases

» No performance bond liability

» Allows the market time to move up without accepting limitless risk

Disadvantages

» More than one premium payout. (It may be possible to liquidate the first put with some remaining value, when the second higher strike put is purchased.)

Liquidation

Sell back any puts you hold that have value. Sell the livestock in the cash market.

Example

A producer purchases a November CME Feeder Cattle 96 put for $1/cwt. The November CME Feeder Cattle futures contract is trading at $100/cwt. He expects a basis for his 400-500 pound calves of + $5/cwt. in November. Therefore the 96 put is offering him an *estimated minimum price* of: put strike price ($96/cwt.), minus premium cost ($1/cwt.), plus basis ($5/cwt.) = $100/cwt.

One month later, November futures are trading at $105/cwt. He purchases a November 102 put for $1/cwt. He can liquidate his 96 put if it has value or he may choose to leave it in place for double protection should the market drop back down below $96. His new *minimum price* is: put strike ($102/cwt.) minus total premium cost ($2/cwt., $1 for 96 put + $1 for 102 put), plus basis ($5/cwt.) = $105/cwt.

In November, when the cattle are physically ready to be marketed:

Without Follow-Up

If November Futures Are	Value of 96 Put	A 96 Put Gain/Loss	B Local Cash Sale	C Net Realized Price
$ 110	$ 0	$ -1	$ 115	$ 114
105	0	-1	110	109
100	0	-1	105	104
95	1	0	100	100
90	6	5	95	100
				A+B = C

With Follow-Up

If November Futures Are	A 96 Put* Gain/Loss	Value of 102 Put*	B 102 Put Gain/Loss	C Local Cash Sale	D Net Realized Price
$ 110	$ -1	$ 0	$ -1	$ 115	$ -113
105	-1	0	-1	110	108
100	-1	2	1	105	105
95	0	7	6	100	106
90	5	12	11	95	111
					A+B+C = D

*Assumes first put was retained, since it had practically no value and there was no benefit
to selling it at the time the second put was purchased.

10. Cashing in Minimum Price Protection: Purchasing Put Options as Prices Decrease

When a producer has purchased a put and market prices later decline, he will probably observe that his put has increased in value. He may wish he could cash in the value of those puts and use the value to pay down a line of operating credit, but may still want some price protection. He can accomplish that by using a portion of the gain from the first put purchased (higher strike price), then purchasing a lower strike price put after a substantial market decline. The final minimum price equals the strike price of the last put purchased, minus its premium, plus the gain from the first put, adjusted for basis. This is similar in nature to follow-up strategy # 7.

Advantages

» Allows hedger to collect on a portion of his price insurance early if the market declines, and payoff some of his production expenses

» Allows for a higher net realized price in cases when the market subsequently increases

Disadvantages

» Usually sacrifices a portion of the floor price because of second put premium

Liquidation

This forward pricing strategy is liquidated just like the straight put purchase pricing strategy, by liquidating the remaining put if it has value or letting the put expire worthless, and selling the cash livestock.

Example

A producer purchases a February CME Live Cattle 84 put for $1.50/cwt. The February CME Live Cattle futures contract is trading at $86/cwt. He expects a basis for his cattle that will be ready for slaughter in February at 1100 lb. of -$2/cwt. Therefore, the 84 put is offering him an *estimated minimum price* of: put strike price ($84/cwt.), minus premium cost ($1.50/cwt.), minus basis ($2/cwt.) = $80.50/cwt.

Two months later the February futures contract is trading at $78/cwt. He sells the 84 put for $6.50/cwt. and purchases a February Live Cattle 78 put at $1.50/cwt. His *new minimum sale price* is: gain from 84 put ($5/cwt.) plus strike price of second put ($78/cwt.), minus 78 put premium ($1.50/cwt.), minus basis ($2/cwt.) = $79.50.

In February, when the cattle are ready for slaughter:

Without Follow-Up

If February Futures Are	Value of 84 Put	A 64 Put Gain/Loss	B Local Cash Sale	C Net Realized Price
$ 92	$ 0	$ -1.50	$ 90	$ 88.50
87	0	-1.50	85	83.50
82	2	0.50	80	80.50
77	7	5.50	75	80.50
72	12	10.50	70	80.50

A+B = C

With Follow-Up

If February Futures Are	A 84 Put* Gain/Loss	Value of 78 Put*	B 78 Put Gain/Loss	C Local Cash Sale	D Net Realized Price
$ 92	$ 5	$ 0	$ -1.50	$ 90	$ 93.50
87	5	0	-1.50	85	88.50
82	5	0	-1.50	80	83.50
77	5	1	-0.50	75	79.50
72	5	6	4.50	70	79.50

A+B+C = D

Strategies for CME Livestock Futures and Options

Part II: Ten Long Hedge Strategies for Procurement Protection

*For Cattle Feeders, Stocker Operators, Meat Packers
and Institutional Users of Meats*

Basic Long Strategies

1. Locking in a Fixed Purchase Price-Buying Futures

This traditional hedge offers the advantage of "locking in" input costs plus or minus any variation in actual basis from expected basis. The expected local hedge price is equal to the long futures price plus the expected local basis. Some prefer forward cash contracting over buying futures because of basis risk. Buying futures, however, allows the flexibility of altering the pricing decision at some future time, which cash contracting does not.

Advantages

» Locked in price, subject to basis variation

» Yields best price if market advances significantly after placing hedge

» Can price input costs as much as 12 months in advance

Disadvantages

» Attempts to capitalize on price declines by liquidating hedge early re-exposes position to market risk

» Performance bond call responsibility

Liquidation

To liquidate the hedge, sell back the futures contract at the same time acquiring the livestock. Holding a long position until the delivery period arrives creates the risk of being assigned the livestock delivery. If a hedger is willing to stand for delivery, be aware that it is the seller, and not the buyer, who decides the day and location, and consult exchange rules to determine what will be expected of both parties. At this writing, deliveries are possible in live cattle only, while feeder cattle and lean hogs are cash-settled.

Example

A feedlot manager purchases September CME Feeder Cattle futures at $94/cwt. He expects a local basis of minus $1/cwt. in September when yearlings are to be placed; therefore, his expected hedged price is $93/cwt.

In September when the producer is ready to place the cattle on feed:

If Sept. Futures Are	A Local Cash Purchase	B Gain/Loss from futures	C Realized Purchase Price
$ 102	$ 101	$ 8	$ 93
98	97	4	93
94	93	0	93
90	89	-4	93
86	85	-8	93
			A-B = C

2. Establishing a Maximum Purchase Price: Buying Calls

Buying a call option provides a maximum or "ceiling" price without limiting the opportunity of price decreases. The ceiling price that a call offers is the strike price of the option plus the premium cost, adjusted by the estimated basis. However, if futures prices decrease below the strike price by the time the call option expires, the buyer pays only the current cash price plus the amount of premium paid for the call option. In this scenario of decreasing market prices, the call will have declined in value and probably will expire worthless. More expensive (lower strike) calls offer a lower ceiling price but a higher net purchase price if prices decrease. Less expensive (higher strike) calls offer a higher ceiling price but more opportunity of gaining from market price decreases.

Advantages

» Maximum purchase price but no minimum

» No performance bond calls

» Many levels of price insurance (strike prices) to choose from

Disadvantages

» Premium outlay

» Options currently don't offer protection as far into the future as futures contracts do

Liquidation

When a hedger buys livestock in the cash market, the call is usually sold if it has value. If it is worthless there is no need to offset. Exercising the call if it has value is an alternative for the buyer and will result in a long futures position purchased at the strike price of the call. Exercising the call into a long futures position for live cattle should be considered if:

1. The option is about to expire and the livestock have not yet been purchases

2. The hedger is comfortable with the potential performance bond calls associated with a futures position

3. The hedger is comfortable with the risk of being assigned a livestock delivery on the long futures contract position in the delivery month

If the hedger exercises the call, then he liquidates the resulting long futures position when he purchases the livestock, just as he would in a simple futures hedge.

Example

A hog packer purchases a December 60 call @ $1/cwt. to price one group of hogs and a December 56 call @ $3/cwt. to price another group of hogs. At the time, December CME Lean Hog futures are at $58/cwt. Estimated basis for the beginning of December is minus $2/cwt. The firm's *estimated maximum prices* are: $60 (strike price of first call), plus $1 premium, less $2 basis = $59/cwt.; and $56 (strike price of second call), plus $3 premium, less $2 basis = $57/cwt.

At the beginning of December, when the cash hogs are ready for slaughter:

If Dec. Futures Are	A Local Cash Purchase	Value of 60 Call	B 60 Call Gain/Loss	C Net Realized Price
$ 68	$ 66	$ 8	$ 7	$ 59
63	61	3	2	59
58	56	0	-1	57
53	51	0	-1	52
48	46	0	-1	47
				A-B = C

If Dec. Futures Are	A Local Cash Purchase	Value of 56 Call	B 56 Call Gain/Loss	C Net Realized Price
$ 68	$ 66	$ 12	$ 9	$ 57
63	61	7	4	57
58	56	2	-1	57
53	51	0	-3	54
48	46	0	-3	49
				A-B = C

Advanced Strategies

3. Collecting Option Premiums: Selling Put Options

This strategy is not considered a standard price-risk management strategy because it affords protection against rising prices *only to the extent of the premium taken in.* Selling a put establishes the minimum price paid for livestock at the strike price, less the premium taken in, plus or minus the basis. Selecting a lower strike gives more opportunity for a price decrease, but will yield less income from selling the put. Selecting a higher strike will yield more income, but give less opportunity if prices decrease. Also, the seller is subject to performance bond call risk when selling an option. This strategy is best suited for very stable market periods.

Advantages

» Performs better than cash purchases alone in a steady market

Disadvantages

» Establishes a minimum cost of livestock purchases, with the risk of performance bond calls in a market in which prices are decreasing

» Only protection against rising prices is the amount of premium received

» Long futures position at put strike price results if assigned an exercise

Liquidation

A put seller needs to buy back the put if it has value, or face exercise. Even a worthless put should be offset when the seller purchases the livestock; otherwise a sharp market decline could increase the value of the long put before the option expires.

Example

A feedlot manager sells a September 90 put @ $1/cwt. The September CME Feeder Cattle futures contract is trading at $92/cwt. His estimated basis for 700 lb. yearlings is minus $2/cwt. The *minimum price* he will pay is $90 (strike price of put), minus $1 premium received, minus $2 basis = $87/cwt. If prices rise, he will have to pay the higher cash price minus only the $1.50 premium taken in.

In September when the producer is ready to place the cattle on feed:

If Sept. Futures Are	A Local Cash Purchase	Value of 90 Put	B 90 Put Gain/Loss	C Net Realized Price
$ 100	$ 98	$ 0	$ 1	$ 97
95	93	0	1	92
90	88	0	1	87
85	83	-5	-4	87
80	78	-10	-9	87

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A-B = C

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4. Establishing a Maximum Purchase Price at Reduced Premium Costs: Purchasing Calls and Selling Put Options - The "Fence"

This combination of two previously mentioned strategies results in a risk/reward profile that some sophisticated users of options have found very sensible. The strategy gives all the upside price protection of an outright out-of-the-money call purchase, but costs less because of the premium gained from selling the put. Many people try to accomplish it with little or no net premium cost. However, selling a put involves performance bond call liability and limits price decrease opportunities. The *maximum purchase price* equals the strike price of the call, plus the net premium payout. The *minimum purchase price* equals the strike price of the put, plus the net premium payout. Both are adjusted for local basis. This yields a range or "window" of possible realized prices. The closer the strike prices of the put and call are to each other, the narrower the window of price risk and opportunity. The further apart the strike prices, the wider the window.

Advantages

» Price risk protection of call purchase at a lower cash outlay for premium

» Yields lower ceiling price than purchase of call alone

Disadvantages

» Limited opportunity for price decreases

» Performance bond call liability on "short" option position (put that was sold). Long futures position at put strike price results if the put is exercised

Liquidation

Buy back the put (if it has value) or let it expire worthless, and sell the call (if it has value) or let it expire worthless. (Buying back even a worthless put may be a smart idea, to guard against a sudden market down-move.) Purchase the livestock in the cash market.

Example

A packer sells a December CME Live Cattle 82 Put @ $1/cwt and purchases a December CME Live Cattle 88 call @ $1.50/cwt. December CME Live Cattle futures are currently trading at $86/cwt. He estimates his local basis to be + $1/cwt. for December. His net cost for the option is $.50/cwt. Therefore, his maximum purchase price is $88 (strike price of the call), plus net cost of options, $.50/cwt., plus $1 basis = $89.50/cwt. His minimum purchase price is $82 (strike price of the put), plus net cost of options, $.50/cwt., plus $1 basis = $83.50/cwt.

When the beginning of December arrives and the cattle are acquired for slaughter:

If Dec. Futures Are	A Local Cash Purchase	Value of 82 Put	B 82 Put Gain/Loss	Value of 88 Call	C 88 Call Gain/Loss	D Net Realized Price
$ 94	$ 95	$ 0	$ 1	$ 6	$ 4.50	$ 89.50
90	91	0	1	2	.50	89.50
86	87	0	1	0	-1.50	87.50
82	83	0	1	0	-1.50	83.50
78	79	4	-3	0	-1.50	83.50

A-B-C = D

5. Creating a Maximum Purchase Price by Combining Two Transactions: Cash Contracting (or Buying Futures) and Buying Put Options

If done at the same time, with the strike price of the put at, or very close to, the futures purchase price or cash contracted price, this strategy is known as a "Synthetic Call." It provides a ceiling price without sacrificing all price decrease opportunity. It will be discussed again later as a follow-up strategy, because in practice the put is often purchased after the forward cash contract purchase or the long futures contract is initiated.

Buying futures as in a normal hedge or cash-forward contracting establishes a fixed purchase price for cash livestock needs. It is fixed to the penny in the case of a cash-contract (with an established basis adjustment). With a futures hedge it is a fixed price plus or minus any variation in basis. By purchasing a put option in addition to the long futures hedge or cash contract, the hedger has converted that fixed-price into a ceiling-price, with the opportunity to benefit from price decreases. In a market where price is decreasing, the put will increase in value, repaying the performance bond costs of the long futures position or subtracting dollars from the price of the cash contract.

Advantages

» Excellent for those dealing in cash contracts, but who like to keep the potential for benefiting from market price decreases

» May offer lower ceiling price than an outright call purchase

Disadvantages

» Performance bond call liability on long futures position

» If a put with a strike price below the current market is purchased, the put will not begin yielding lower prices until the futures price moves below the strike of the put

Liquidation

Sell the put (if it has value) when the livestock are ready to be purchased in the cash market, or let the put expire if worthless. Sell the long futures contract, if used, and buy the livestock in the cash market; or take delivery on cash contract initiated earlier.

Example 1

A packer buys an August CME Lean Hog futures contract at $66/cwt. and at the same time purchases an August 66 put @ $2/cwt. His estimated basis for late July is plus $1/cwt. The estimated *maximum purchase price* is: long futures price $66/cwt., plus premium cost of $2/cwt., plus estimated basis of $1/cwt = $69/cwt. If the market price decreases below $66/cwt., the packer will realize a return on the put to compensate for the long hedge performance bond requirements.

At the beginning of August, when the hogs are acquired for slaughter:

If Aug. Futures Are	A Local Cash Price	B Futures Gain/Loss	Value of 66 Put	C 66 Put Gain/Loss	D Net Realized Price
$ 76	$ 77	$ 10	$ 0	$ -2	$ 69
71	72	5	0	-2	69
66	67	0	0	-2	69
61	62	-5	5	3	64
56	57	-10	10	8	59

A-B-C = D

Example 2

If the packer contracts to purchase finished hogs in late July for $67/cwt., and purchases an August 66 put @ $2/cwt., his estimated *maximum purchase price* is: $67/cwt. cash contract price, plus premium cost of $2/cwt. = $69. If the August futures price drops below $66/cwt., the packer will realize some return on the put.

At the end of July, when the hogs are acquired for slaughter:

If Aug. futures are	A Cash Contract Price	Value of 66 Put	B 66 Put Gain/Loss	C Net Realized Price
$ 76	$ 67	$ 0	$ -2	$ 69
71	67	0	-2	69
66	67	0	-2	69
61	67	5	3	64
56	67	10	8	59
				A-B = C

Comparison of Strategies 1-5

Situation: Live Cattle for August Acquisition

Prices Available When Hedge Is Placed:

August CME Live Cattle (LC) Futures	$ 86/cwt.
August LC 84 Call	3
August LC 88 Call	1
August LC 84 Put	1
Local Basis estimate (August)	+1

Gains and Losses When Hedge Is Lifted:

If Aug. Futures Are	Buy Futures @ $86 Gain/Loss	Buy 84 Call @ $3 Value	Gain/Loss	Buy 88 Call @ $1 Value	Gain/Loss	Sell 84 Put @ $1 Value	Gain/Loss	Buy 84 Put @ $1 Value	Gain/Loss
$ 94	$ 8	$ 10	$ 7	$ 6	$ 5	$ 0	$ 1	$ 0	$ -1
90	4	6	3	2	1	0	1	0	-1
86	0	2	-1	0	-1	0	1	0	-1
82	-4	0	-3	0	-1	2	-1	2	1
78	-8	0	-3	0	-1	6	-5	6	5

Net Realized Prices When Hedge Is Lifted: Cash purchase minus gain or loss from above table

If Aug. Futures Are	And August Cash is	Buy Futures @ $86	Buy 84 Call	Buy 88 Call	Sell 84 Put	Fence: Sell 84 Put Buy 88 Call	Synthetic Call: Sell Fut. @ $86 Buy 84 Put
$ 94	$ 95	$ 87	$ 88	$ 90	$ 94	$ 89	$ 88
90	91	87	88	90	90	89	88
86	87	87	88	90	86	87	88
82	83	87	88	90	84	85	86
78	79	87	88	90	84	85	82

Situation: Feeder Cattle to Place on Feed in March

Prices Available When Hedge Is Placed:

March CME Feeder Cattle (FC) Futures	$92/cwt.
March FC 90 Call	3
March FC 94 Call	1
March FC 88 Put	1
Local Basis estimate (March)	+1

Gains and Losses When Hedge Is Lifted:

If Mar. Futures Are	Buy Futures @ $92 Gain/Loss	Buy 90 Call @ $3 Value	Gain/Loss	Buy 94 Call @ $1 Value	Gain/Loss	Sell 88 Put @ $1 Value	Gain/Loss	Buy 88 Put @ $1 Value	Gain/Loss
$ 102	$ 10	$ 12	$ 9	$ 8	$ 7	$ 0	$ 1	$ 0	$ -1
97	5	7	4	3	2	0	1	0	-1
92	0	2	-1	0	-1	0	1	0	-1
87	-5	0	-3	0	-1	1	0	1	0
82	-10	0	-3	0	-1	6	-5	6	5

Net Realized Prices When Hedge Is Lifted: Cash purchase minus gain or loss from above table

If Mar. Futures Are	And March Cash is	Buy Futures @ $92	Buy 90 Call	Buy 94 Call	Sell 88 Put	Fence: Sell 88 Put Buy 94 Call	Synthetic Call: Buy Fut. @ $92 Buy 88 Put
$ 102	$ 103	$ 93	$ 94	$ 96	$ 102	$ 95	$ 94
97	98	93	94	96	97	95	94
92	93	93	94	94	92	93	94
87	88	93	91	89	88	89	93
82	83	93	86	84	88	89	88

Situation: Lean Hogs for February Acquisition

Prices Available When Hedge Is Placed:

February CME Lean Hog Futures	$67/cwt.
Feb. LH 68 Call	1
Feb. LH 70 Call	.50
Feb. LH 64 Put	.50
Local Basis estimate (February)	+1

Gains and Losses When Hedge Is Lifted:

If Feb. Futures Are	Buy Futures @ $67 Gain/Loss	Buy 68 Call @ $1 Value	Gain/Loss	Buy 70 Call @ $.50 Value	Gain/Loss	Sell 64 Put @ $.50 Value	Gain/Loss	Buy 64 Put @ $.50 Value	Gain/Loss
$ 77	$ 10	$ 9	$ 8	$ 7	$ 6.50	$ 0	$ .50	$ 0	$ -.50
72	5	4	3	2	1.50	0	.50	0	-.50
67	0	0	-1	0	-.50	0	.50	0	-.50
62	-5	0	-1	0	-.50	2	-1.50	2	1.50
57	-10	0	-1	0	-.50	7	-6.50	7	6.50

Net Realized Prices When Hedge Is Lifted: Cash purchase minus gain or loss from above table

If Feb. Futures Are	And February Cash is	Buy Futures @ $67	Buy 68 Call	Buy 70 Call	Sell 64 Put	Fence: Sell 64 Put Buy 70 Call	Synthetic Call: Buy Fut. @ $67 Buy 64 Put
$ 77	$ 78	$ 68	$ 70	$ 71.50	$ 77.50	$ 71	$ 68.50
72	73	68	70	71.50	72.50	71	68.50
67	68	68	69	68.50	67.50	68	68.50
62	63	68	64	63.50	64.50	65	66.50
57	58	68	59	58.50	64.50	65	61.50

Strategies for CME Livestock Futures and Options

Adjustment Strategies

6. Converting a Fixed Price to a Maximum Price-Purchasing a Put Option after Buying Futures

Suppose a cattle feeder has either long hedged or forward contracted to buy livestock. The market goes up, so he is glad he protected himself. But then the market begins to fall back again, and the feeder sees that he is missing out on opportunity. What can he do? He can *buy a put* to restore downside opportunity without sacrificing upside protection. Prior to the advent of options he was either locked in, or if hedged, he could have lifted the hedge prematurely and taken his chances.

By purchasing a put option *after* he has purchased futures or forward contracted livestock, he is converting the fixed price futures hedge or cash contract to a ceiling price, *and the whole position resembles a call.*

The further the strike price of the selected put is below the futures price, the greater the price decrease required before he will begin to realize a lower price. If he selects a put with a strike price at or above the futures price, a lower price will be realized much more quickly in a declining market, but it will be more costly than a put with a lower strike price.

Advantages

» Riskless means to restore downside opportunity to cash contracts or futures hedge

Disadvantages

» Premium outlay for put, as well as performance bond liability on long futures position which remains after adjustment

» Timing is important, because put is purchased after hedge or cash contract is initiated

Liquidation

Sell the put (if it has value) when the livestock are ready to be purchased in the cash market, or let the put expire if worthless. Sell the long futures contract, if used, and buy the livestock in the cash market; or take delivery on the cash contract initiated earlier.

Example

A feedlot operator buys April CME Feeder Cattle futures at $98.00/ cwt. for placement of 600-700 lb. calves. His estimated basis is +$1/cwt. His estimated local hedge price is then $98/cwt. + $1/cwt. = $99/cwt.

The April futures contract increases to $105/cwt. He purchases an April 104 put for $1.50/cwt. Now his combined position is: *maximum purchase price* = futures price, $98/cwt., plus call premium, $1.50/cwt., plus estimated basis, $1/cwt. = $100.50/cwt.

In April when the producer is ready to place the cattle on feed:

Without Follow-Up

If April Futures Are	A Cash Purchase	B Futures Gain/Loss	C Net Realized Price
$ 108	$ 109	$ 10	$ 99
103	104	5	99
98	99	0	99
93	94	-5	99
88	89	-10	99

A-B = C

With Follow-Up

If April Futures Are	A Cash Purchase	B Futures Gain/Loss	Value of 104 Put	C 104 Put Gain/Loss	D Net Realized Price
$ 108	$ 109	$ 10	$ 0	$ -1.50	$ 100.50
103	104	5	1	-.50	99.50
98	99	0	6	4.50	94.50
93	94	-5	11	9.50	89.50
88	89	-10	16	14.50	84.50

A-B-C = D

7. Converting a Fixed Price to a Maximum Price- Purchasing Call Options after Liquidating a Long Futures Hedge

This strategy is very similar to follow-up #6 except there is no continued performance bond liability because the long futures hedge is offset. The incentive for carrying out this strategy is much the same as in #6. There is a fixed forward price and apparent opportunity ahead for a price decrease. A livestock hedger wants this opportunity without removing protection against the risk of a market increase.

Often a long hedger will look at this strategy after a market increase has resulted in a positive flow of funds into his futures performance bond account. Now he thinks the market may retrace and go lower, but he doesn't want to go unprotected. Therefore, he liquidates his hedge, and uses part or all of the futures gain to purchase a call option. Usually a hedger in this situation will purchase an at- or out-of-the-money call which would give him a maximum price fairly close to his original fixed-price, while leaving plenty of potential for a market decline.

Advantages

» Can restore opportunity to profit from price decreases

» Stops performance bond call liability without sacrificing price risk protection

Disadvantages

» Premium outlay may sacrifice some of the original hedged price if market remains higher

Liquidation

Buy livestock in the cash market and sell back the call option (if it has value) or let the call expire if worthless. Can exercise the call into a long futures position and even take delivery of live cattle if comfortable with that situation.

Example

A packer buys June CME Live Cattle futures @ $84/cwt. to hedge his slaughter requirements. His estimated basis for June is +$1/cwt. His hedge price is then $84/cwt. + $1/cwt. = $85/cwt. The June futures contract increases to $89/cwt. in April. He purchases a June 90 call for $1/cwt. and sells back his futures contract for a gain of $5/cwt. Now his combined position is: *maximum purchase price* = the strike price of the call ($90/cwt.), minus the net futures gain of $5/cwt., plus call premium of $1/cwt., plus estimated basis, $1/cwt. = $87/cwt. The packer has sacrificed $2/cwt. from the original hedge price, if the market continues to increase. However, should prices drop, he has an additional $4/cwt. net gain to reduce the purchase price of the cattle.

At the beginning of June when the cattle are acquired for slaughter:

Without Follow-Up

If June Futures Are	A Cash Purchase	B Futures Gain/Loss	C Net Realized Price
$ 99	$ 100	$ 15	$ 85
94	95	10	85
89	90	5	85
84	85	0	85
79	80	-5	85
			A-B = C

With Follow-Up

If June Futures Are	A Cash Purchase	B Futures Gain/Loss	Value of 90 Call	C 90 Call Gain/Loss	D Net Realized Price
$ 99	$ 100	$ 5	$ 9	$ 8	$ 87
94	95	5	4	3	87
89	90	5	0	-1	86
84	85	5	0	-1	81
79	80	5	0	-1	76
					A-B-C = D

8. Converting a Maximum Price to a Fixed Price-Buying Futures or Cash Contracting after a Call Purchase

Often a livestock purchaser may be in a situation where he thinks prices are going to decrease, but still wants some upside risk protection. He could purchase a low cost call option to afford some risk protection and then comfortably wait for a more favorable pricing opportunity, specifically an opportunity to buy futures at a lower price.

Advantages

» Risk management while waiting for more favorable pricing opportunity

Disadvantages

» Timing is critical

» Margins if futures are employed in follow-up

Liquidation

Sell the call or let it expire if it has no value, sell back the futures hedge and purchase livestock. (The call can be liquidated when the follow-up pricing is done, but it is not essential and adds no risk if it is not liquidated.)

Example

A packer purchases an October CME Lean Hog 60 call for $1/cwt. October CME Lean Hog futures are trading at $56.00/cwt. He expects a local basis of + $1/cwt. for the beginning of October. Therefore, his *maximum purchase price from* the call is: strike price of call ($60/cwt.), plus call premium ($1/cwt.), plus basis of $ 1/cwt. = $62/cwt.

In the following two months the October futures price decreases to $50.00/cwt. With two months remaining until the hogs are ready for slaughter, the hedger buys a futures contract. He could liquidate the call at this time if it had any value, but there is no risk and very little cost to just leaving it in place. He now has a fixed price of: futures contract purchase, $50/cwt., plus call premium, $1/cwt., plus basis of $1/cwt. = $52/cwt., unless the futures price rises above the call strike of $60/cwt., in which case his net realized price would drop favorably by $1 for each $1 the futures rises above $60/cwt.

At the beginning of October, when the hogs are ready for slaughter:

Without Follow-Up

If October Futures Are	A Cash Purchase	Value of 60 Call	B 60 Call Gain/Loss	C Net Realized Price
$ 72	$ 73	$ 12	$ 11	$ 62
66	67	6	5	62
60	61	0	-1	62
54	55	0	-1	56
48	49	0	-1	50
				A-B = C

With Follow-Up

If October Futures Are	A Cash Purchase	B Futures Gain/Loss	Value of 60 Call	C *60 Call Gain/Loss	D Net Realized Price
$ 72	$ 73	$ 22	$ 12	$ 11	$ 40
66	67	16	6	5	46
60	61	10	0	-1	52
54	55	4	0	-1	52
48	49	-2	0	-1	52
					A-B-C = D

* Assumes 60 call was retained because it had almost no value when the futures
were purchased @ $50/cwt., and there was no benefit to selling it at that time.

9. Decreasing the Maximum Price - Purchasing Call Options as Prices Decrease

When a livestock hedger has purchased a call and the market price subsequently decreases, he may want to capture this new lower price level, again without sacrificing protection against price increases. Follow-up Strategy #8 would be one alternative, but it would limit the possibility of an extreme down-move in prices. As prices decrease, all call options would become less expensive. This means that any call would be offering a lower net ceiling price if purchased then than if purchased before.

In this strategy a hedger would take advantage of the decline in call prices by buying a call with a lower strike price than the one he already has. The *new maximum price* is the strike of the second call plus total premium paid out, plus or minus the basis.

Advantages

» Capitalize on market price decreases without limiting benefit of a further price decrease

» No performance bond liability

» Allow market time to move down without accepting limitless risk

Disadvantages

» More than one premium payout (though it may be possible to liquidate first call with some remaining value, when the second lower strike call is purchased)

Liquidation

Sell back any calls that have value. Buy livestock in cash market.

Example

A producer purchases a November CME Feeder Cattle 104 call for $1/cwt. to set a ceiling on the price he will pay for calves going into his stocker operation. The November CME Feeder Cattle futures contract is trading at $100/cwt. He expects a basis of +$5/cwt. in November. Therefore the 104 call is offering him an *estimated maximum price* of: call strike price ($104/cwt.), plus premium cost ($1/cwt), plus basis ($5/cwt.) = $110/cwt. One month later, November futures are trading at $94/cwt. He purchases a November 96 call for $1/cwt. He can liquidate his 104 call if it has value or, if it has no value, he may choose to leave it in place for double protection should the market go back up above 104. His new *maximum price* is call strike ($96/cwt.), plus premium cost of $2/cwt. ($1 for 104 call + $1 for 96 call), plus basis ($5/cwt.) = $103/cwt.

In November, when he is ready to acquire the calves:

Without Follow-Up

If November Futures Are	A Cash Purchase	Value of 104 Call	B 104 Call Gain/Loss	C Net Realized Price
$ 110	$ 115	$ 6	$ 5	$ 110
105	110	1	0	110
100	105	0	-1	106
95	100	0	-1	101
90	95	0	-1	96

A-B = C

With Follow-Up

If November Futures Are	A Cash Purchase	B *104 Call Gain/Loss	Value of 96 Call	C 96 Call Gain/Loss	D Net Realized Price
$ 110	$ 115	$ 5	$ 14	$ 13	$ 97
105	110	0	9	8	102
100	105	-1	4	3	103
95	100	-1	0	-1	102
90	95	-1	0	-1	97

A-B-C = D

* Assumes first call was retained, because it had practically no value and there
was no benefit to selling it at the time the second call was purchased.

10. Cashing-In Maximum Price Protection – Purchasing Call Options as Prices Increase

When a livestock hedger has purchased a call and market prices later increase, he will see that his call has increased in value. He may want to cash in the value of that call, without sacrificing protection against further livestock price increases before making cash purchases. He can do this by selling the first call, then using a portion of the gain to purchase a higher strike price call after a substantial market increase. The final maximum price equals the strike price of the last call purchased, plus its premium, minus the gain from the first call, adjusted for basis. This is similar in nature to Follow-up Strategy # 7.

Advantages

» Allows hedger to collect a portion of his price insurance early if the market increases

» Lowers net realized price in cases when the market subsequently declines

Disadvantages

» Usually sacrifice a portion of the ceiling price because of second call purchase

Liquidation

Just like the straight call purchase strategy, the hedger would liquidate the remaining call if it has value or let the call expire if worthless, and purchase cash livestock.

Example

A packer purchases a February CME Live Cattle 86 call for $1.50/cwt. The February CME Live Cattle futures contract is trading at $84/cwt. He expects a basis in January of minus $2/cwt. Therefore, the 86 call is offering him an *estimated maximum price* of: call strike price ($86/cwt.), plus premium cost ($1.50/cwt.), minus basis ($2/cwt.) = $85.50/cwt.

Two months later the February futures contract is trading at $92/ cwt. He sells the 86 call for $6/cwt. and purchases a February CME Live Cattle 92 call at $1.50/cwt. His new *maximum purchase price* is: strike price of second call ($92/cwt.), plus 92 call premium ($1.50/cwt.), minus gain from 86 call ($4.50/cwt.), minus basis ($2/cwt.) = $87.

In February when the cattle are acquired for slaughter:

Without Follow-Up

If February Futures Are	A Cash Purchase	Value of 86 Call	B 86 Call Gain/Loss	C Net Realized Price
$ 97	$ 95	$ 11	$ 9.50	$ 85.50
192	90	1	4.50	85.50
87	85	1	-.50	85.50
82	80	0	-1.50	81.50
77	75	0	-1.50	76.50

A-B = C

With Follow-Up

If February Futures Are	A Cash Purchase	B 86 Call Gain/Loss	Value of 92 Call	C 92 Call Gain/Loss	D Net Realized Price
$ 97	$ 95	$ 4.50	$ 5	$ 3.50	$ 87
92	90	4.50	0	-1.50	87
87	85	4.50	0	-1.50	82
82	80	4.50	0	-1.50	78
77	75	4.50	0	-1.50	72

A-B-C = D

Strategies for CME Livestock Futures and Options

Glossary

Appropriate Futures Contract When hedging, this is the futures contract that will expire when or just after the cash product is physically ready for market. This is also the futures contract to use when figuring that basis.

Assignment of Hedging Account The establishment of a first lien by a lender who provides credit to a borrower for purposes of hedging (performance bond money).

At-the-Money Option Call and put options are at-the-money when the price of the underlying futures is the same as the strike price.

Basis (actual) The difference between the local cash price and the "nearby" expiring futures contract.

Basis (estimated) An estimate of the normal difference between the local cash market price and the futures market price, based on past history. The basis is estimated for the specific time period when livestock are going to be marketed.

Breakeven Cost An average amount for each unit of production that pays a business operator a wage for his labor and interest on his money invested.

Broker: A person paid a fee or commission for executing buy or sell orders of a customer. In commodity futures trading, the term may refer to: (1) floor broker: a person who actually executes orders on the trading floor of an exchange; (2) account executive, associated person, registered commodity representative or customer's man: the person who deals with customers in the offices of futures commission merchants (FCMs); and (3) futures commission merchants .

Buyer, Holder An individual who buys an option.

Call Option An exchange-traded contract that gives the purchaser the right to *buy* the futures contract underlying the option at the stated strike price prior to the expiration date of the option. A seller (writer) has the obligation to sell the underlying futures contract at the strike price, prior to expiration, if the buyer chooses to exercise the option.

Clearing House An adjunct to a futures exchange that settles sales transactions executed on the floor of an exchange as well as electronically matched trades, using a process of matching purchases. A clearing organization is also charged with properly conducting delivery procedures and guaranteeing the adequate financing of the entire operation.

Cost of Delivery Basis The costs - transportation, yardage, inspection fees - of delivering livestock that fulfill the contract specifications of a CME futures contract to a CME-approved delivery point.

Exercise or Strike Price The price at which one may purchase or sell the underlying futures contract upon the exercise of an option.

Expiration Date The last day an option may be offset or exercised.

Futures Commission Merchant (FCM) Individuals, associations, partnerships, corporations and trusts that solicit or accept orders for the purchase or sale of any commodity for future delivery on or subject to the rules of any contract market, and that accept payment from, or extend credit to, those whose orders are accepted.

Futures Contract A contract traded on a commodity futures exchange for the purchase or sale of a standardized quantity and quality of a financial instrument or physical commodity for later delivery.

Hedge A means of managing price or market risk by taking a position in the futures market opposite to that held in the cash market.

In-the-Money Option An option that has intrinsic value. A call option is in-the money when the price of the underlying futures contract is above the strike price. A put option is in-the-money when the price of the underlying futures contract is below the strike price.

Intrinsic Value The amount of money that could be realized by exercising an option at its strike price. See "In-The-Money Option."

Limit Order An order that must be executed at a specific price or better.

Long One who has bought a futures contract and who has not yet closed out his position by an offsetting sale or by taking delivery. Also, one who has purchased and still holds an unexpired option.

Long Hedge The purchase of futures contracts as a temporary substitute for the subsequent purchase of the actual cash commodity.

Maintenance Performance Bond A sum, usually smaller than – but part of – an initial performance bond, which must be held on deposit at all times. If a customer's equity falls below the futures maintenance performance bond level, the broker must issue a "performance bond call" for the amount of money required to restore the customer's equity in the account to the original, or initial, level.

Market Order An order to be executed immediately at the best available price.

Market Risk The possibility of price decline for the owner of a commodity or producer and the possibility of price increase for a person who needs to purchase the commodity.

Offset a Hedge Sometimes called "liquidate" or "unwind." This is a process whereby a hedger both fulfills a cash transaction and cancels a futures position. A short hedger would buy the previously sold futures and sell his cash product. A long hedger would sell the previously purchased futures and buy the cash product.

Out-of-the-Money Option An option that has no intrinsic value and the premium paid is all time value. A call option is out-of-the-money when the strike price is above the current price of the underlying futures contract. A put option is out-of-the-money when the strike price is below the current price of the underlying futures contract.

Performance Bond Funds that must be deposited with a broker for each futures contract (and for each short options position) as a guarantee of fulfillment of the contract. Also called a security deposit or margin. (This is the Initial Performance Bond, the level to which the account must be returned if a performance bond call is issued.)

Premium The market-determined cost of an option. The premium is ultimately determined by the willingness of buyers to purchase the option and sellers to sell the option at a particular price. Key factors that affect this willingness are: strike price level relative to futures price level, time remaining until expiration and market volatility.

Put Option An exchange-traded contract that gives the purchaser the right to sell the futures contract underlying the option at the stated strike price prior to the expiration date of the option. The seller has the obligation to buy the underlying futures contract at the strike price prior to expiration, if the buyer chooses to exercise.

Risk Preference Individuals may be risk-averse, risk-neutral or risk-taking in their attitudes toward taking on business opportunities. Futures and options permit the transfer of risk.

Glossary

Seller, Writer An individual who sells an option, either to offset a previous purchase, or to initiate a short option position.

Short One who has sold a futures contract and who has not yet closed out his position by an offsetting purchase or by delivery. Also, one who has sold an option which is unexpired.

Short Hedge The sale of futures contracts as a temporary substitute for the later sale of the cash commodity.

Speculate To assume a pre-existing market or business risk for the opportunity of making a profit.

Stop Order An order that will become a market order when the market reaches a designated price. Sell-stops are placed below the current market and buy-stops are placed above the current market.

Time Value The amount of value an option has over and above its intrinsic value.

Underlying Futures Contract The futures contract that may be purchased or sold upon the exercise of the option.

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Getting Started in CME Livestock Products

Today's greater need for risk management and hedging tools has required investors to become increasingly sophisticated about futures and options on futures products. In light of growing global demand and expanding electronic accessibility, CME commodities are generating increased opportunities for hedgers and speculators in these markets. With customers around the world; a diverse product line; deep, liquid markets; and strategic alliances with other exchanges, CME is truly a global marketplace. Why not make it yours?

Electronically traded CME Livestock products:
- CME Live Cattle futures and options
- CME Feeder Cattle futures
- CME Lean Hog futures and options
- CME Frozen Pork Bellies futures

CME Livestock Trading Tools:
- Trading E-Livestock Options on CME Globex Demo: **www.cme.com/elivestockoptionsdemo**
- Free, real-time quotes: **www.cme.com/elivestockquotes**
- Daily Livestock Report: **www.dailylivestockreport.com**
- Historical data: **www.cme.com/moorereports**

For additional information about CME commodity products, please visit our Web site at **www.cme.com/commodity**. You will be able to access a number of other brochures and marketing and education materials that can answer your questions or help you to begin trading these products.

For information on how the CME cash-settlement indexes are calculated contact the CME Commodity Marketing Department at 312.930.4597. The indexes are also published online on our Web site. Additionally, if you would like to talk to a CME representative, please call our Customer Service Line, 1.800.331.3332. Outside the U.S., please call 312.930.2316.

Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, and because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for a futures position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles. And only a portion of those funds should be devoted to any one trade because they cannot expect to profit on every trade.

All references to options in this brochure refer to options on futures.

cme

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