



Risk Assessed Marketing

Dr. G.A. "Art" Barnaby, Jr.

Phone: (785) 532-1515 Fax: (785) 532-6925

E-mail: abarnaby@agecon.ksu.edu

Website: www.agmanager.info

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Compare Livestock Risk Protection (LRP) Contract with Chicago Mercantile Exchange (CME) Put Option Premiums for Similar Coverage¹

Introduction. The Risk Management Agency (RMA) recently released the Livestock Risk Protection (LRP) contract for feeder cattle. The alternative tool for managing downside price risk on livestock is the Chicago Mercantile Exchange (CME) put option. Because these coverages are similar it is natural to compare the features and costs of each product. Therefore a model was created to compare LRP with the put option. LRP and puts provide similar protection but not exactly the same protection. One needs to make adjustments to the put option so that it provides the same coverage as LRP for direct comparisons.

The original KSU model developed to make this comparison was viewed by many as complicated and did not provide clear and accurate information. The new model reorganizes the report so that it is easier to understand. Besides the reorganization, the premium comparison was converted to a per hundred weight comparison rather than comparing premiums based on a CME 50,000 pound put contract.

The CME is a "lumpy tool" because it only comes in increments of 50,000 pounds, while the LRP has the advantage of providing coverage on a single calf. This will allow feeder cattle producers to hedge the exact number of cattle they produced. While the put option often leaves producers either over or under hedged and both are costly activities.

Section I. The perimeters of the current day's LRP offer are reported in this section. Producers must select the length of coverage under the LRP contract. Currently, the shortest period is 21 weeks and the longest period is 43 weeks. In the model the 26 week LRP contract is being tracked, which corresponds to the April put. In the near future this LRP contract will revert to a 21 week coverage contract under LRP that will equate with the April put. Once the LRP 21 day contract offer has the same expiration date as the April put, the 21 week contract will then roll over to May as the comparison option. Currently, the 26 week option is rated based on the March

¹Prepared by G.A. (Art) Barnaby, Jr., Professor, Department of Agricultural Economics, K-State Research and Extension, Kansas State University, Manhattan, KS 66506, October 31, 2003, Phone 785-532-1515, e-mail – abarnaby@agecon.ksu.edu

and April puts but the LRP expiration date continues to decline one day at a time as shown on line 3 (table 1).

The maximum coverage level is set by RMA and can not exceed 95 percent of the expected market price for the expiration date as reported on line 3 (table 1). The LRP guarantee or “put strike” coverage level also changes daily and the level of coverage is tied back to a specific option that is trading. Under some conditions while the 95 percent rule would allow for a higher guarantee the equivalent option is not trading on the CME. Therefore, the LRP coverage is not offered for that particular coverage level. The coverage level offers and guarantees are provided in the rating software for the current day’s offer. The RMA calculation software will provide the farmer paid premium for a calf based on the expected market weight at the LRP expiration date. Producers can calculate the current LRP premium costs for their calves by going to the web site located at: <http://www3.rma.usda.gov/apps/premcalc/> The model simply converts the premium cost per calf as reported in the RMA premium calculator to a farmer paid LRP premium per hundred weight as reported on line 7 (table 1).

Section II. The next section calculates the current value of a put option that will provide similar protection as the LRP contract in section I. For the offer on 10/28/03 the April option expiration date is 4/29/04 that will be compared with LRP. The April feeder cattle futures closed at \$88.20. Futures decreased (or increased) on 10/28/03 by \$1.50 or a maximum limit move (line 10, table 1). The April feeder cattle put strike used was \$84.00 and that compares with the LRP guarantee above. On 10/28/03 the April \$84.00 put closed at \$3.10.

There is clearly an argument that could be made that producers will likely need to bid higher than the closing price to actually get a put order filled, especially on the deferred options. Deferred options are “thinly” traded in the feeder cattle market. Producers buying options would also have to pay a commission and commissions vary greatly from broker to broker. Therefore, producers may need to adjust the commission cost on line 13 (table 1). If the analysis overstates the commission but understates the put premium then the two errors probably cancel each other out. Under these assumptions the total premium cost for a put on 10/28/03 would have been \$1,625. The put option must be bought in this 50,000 pound increment and the \$1,625 would be the actual cost. For comparison purposes with the LRP the total put cost was converted to a per hundred weight cost or \$3.25 on 10/28/03.

Section III. The next section simply calculates the difference between the LRP cash cost versus a put on a per hundred weight basis. On 10/28/03 the LRP costs 78 cents per hundred weight less than the equivalent put option. This represents an LRP premium that is 24 percent lower than a similar put option as reported on line 17 (table 1).

Section IV. Through section III farmers can make this comparison with really no sophisticated analysis. All of the information can easily be accessed on the Internet. However, those cash cost comparisons are not equally comparable because there are differences in the LRP coverage versus a put option. Besides the flexibility of matching the protection to the size of the herd, under the LRP contract, the LRP contract has a different expiration date than does the put option.

Because the LRP expires between the March put expiration date and the April put expiration date, an estimated LRP market price was calculated based on the relationship between March CME feeder cattle futures and April CME feeder cattle futures and reported on line 18 (table 1). On line 19 (table 1), a waited average implied volatility was calculated based on the April and March puts.

The next step was to simply take the expected market price and volatility for the LRP expiration date and calculate a theoretical “put” premium based on those parameters. A calculated “put” premium, using standard rating software, based on an expected market price of \$88.257 and a volatility of 20.16, would generate a premium of \$3.033 per hundred weight. The per hundred weight commission costs were added to the total put premium on line 21 (table 1). The \$3.18 value on line 21 (table 1) represents the per hundred weight cost for a “put” option that has the same coverage provided in the LRP contract.

Section V. The current market value of a calculated “put” that provides the same coverage as the LRP coverage was then computed with the current LRP offer. The LRP was 71 cents per hundred weight cheaper than the calculated “put” value on 10/28/03 and reported on line 22 (table 1). LRP provides the same coverage for about 22.42 percent less premium on 10/28/03.

As a general statement, days when the cash price is substantially cheaper for LRP than the equivalent put, are days when livestock producers are likely to purchase the LRP coverage. While this cash comparison on line 16 does not account for the differences between the put and the LRP, it is good starting point and requires very little analysis. One needs to calculate the theoretical value of a put that has the same coverage and expiration date as the LRP contract to make a complete comparison.

Update. The model is updated “often” on the Web site located at:
http://www.agmanager.info/crops/insurance/price_risk/pr_pdf03/sipmod04LRP.pdf
The model will not be updated daily.

Table 1. Compare Livestock Risk Protection (LRP) Contract with Chicago Mercantile Exchange (CME) Put Option Premiums for Similar Coverage

1 Coverage Date	Current		History		
	10/28/03	10/27/03	10/24/03	10/23/03	10/22/03
Section I LRP Offer					
2 LRP Weeks Covered ¹	26.0	26.0	26.0	26.0	26.0
3 LRP Expiration Date	04/27/04	04/26/04	04/23/04	04/22/04	04/21/04
4 % Coverage of Expected Market Price	93.53%	92.41%	93.40%	94.75%	93.78%
5 LRP Guarantee or "Put Strike" ²	\$84.01	\$84.01	\$82.05	\$82.07	\$82.11
6 Premium/head for 750 lbs calf ³	\$18.52	\$22.72	\$21.03	\$24.02	\$25.77
7 Tot LRP Prem per CWT	\$2.47	\$3.03	\$2.80	\$3.20	\$3.44
Section II Put Contract Alternative					
8 Option Expiration Date	04/29/04	04/29/04	04/29/04	04/29/04	04/29/04
9 April Feeder Cattle Futures Close	\$88.200	\$89.700	\$89.050	\$87.800	\$86.550
10 Futures Increase or Decrease	(\$1.500)	\$0.650	\$1.250	\$1.250	(\$0.900)
11 April Feeder Cattle Put Strike	\$84.00	\$84.00	\$82.00	\$82.00	\$82.00
12 April Put Premium	\$3.100	\$2.800	\$2.500	\$2.850	\$3.500
13 Commission ⁴	\$75	\$75	\$75	\$75	\$75
14 Total Producer Costs for a Put	\$1,625.00	\$1,475.00	\$1,325.00	\$1,500.00	\$1,825.00
15 Total Put Cost per 100 CWT	\$3.25	\$2.95	\$2.65	\$3.00	\$3.65
Section III. Cash Comparison Put Vs. LRP					
16 LRP Vs. Put Cash Prem. Difference	(\$0.78)	\$0.08	\$0.15	\$0.20	(\$0.21)
17 % LRP Discount vs. Cash Put	(24.02%)	2.69%	5.81%	6.76%	(5.88%)
Section IV. Value of LRP based on Today's Market and LRP Expiration Date					
18 KSU Estimated LRP Market Price ⁵	\$88.257	\$91.436	\$89.095	\$87.787	\$86.522
19 Mar/Apr Wt KSU Est. Volatility ⁶	20.16	21.75	21.75	22.17	21.96
20 KSU Estimated "Put" Premium to Provide Similar LRP Coverage based on Today's Market ⁷	\$3.033	\$2.435	\$2.432	\$2.900	\$3.222
21 KSU Est. "Put" Premium +Commission	\$3.18	\$2.59	\$2.58	\$3.05	\$3.37
Section V. Comparison of Put Vs. Current Market Value of LRP					
22 Current Valued LRP vs. Put Prem. Diff.	(\$0.71)	\$0.44	\$0.22	\$0.15	\$0.06
23 % Current Market Value LRP Discount	(22.42%)	17.19%	8.60%	5.01%	1.88%