

Chapter 5

Hedging Outcomes with LRP Insurance

In this chapter, you will learn:

- how to calculate minimum expected selling prices;
- how changes in price and basis affect the outcome of LRP hedges; and
- some final considerations when purchasing LRP.

5.1 Introduction

The first four chapters of this study course provided a thorough explanation of LRP insurance. Chapter 1 explained the basic provisions of LRP and the type of protection provided. The second chapter outlined underwriting rules of the program as well as the limitations, advantages, and drawbacks those rules may impose. Chapter 3 covered the mechanics of the program—how LRP actually works. Included in the chapter were LRP terminology, determination of Actual Ending Value (AEV), and determining cost of LRP price protection. Chapter 4 described LRP basis, which is not the same as futures basis with which many producers are familiar. A comparison between LRP and futures basis was presented, along with LRP basis risk reduction and seasonal basis patterns for fed cattle, swine, and feeder cattle. This final chapter will provide examples of the outcome of hedging a future livestock sale with LRP. The resulting sale price of a hedge will be examined under varying levels of AEV and actual LRP basis. Some final considerations for LRP users also will be discussed. Finally, a summary of this study guide will be provided.

5.2 Hedging Outcomes

When hedging with LRP, recall that the insurance policy creates a price floor by paying an indemnity if AEV is less than the Coverage Price on the end date. As a result, it is possible to calculate a minimum expected selling price (MESP) for livestock covered with LRP (see Section 4.2). The MESP can be determined by subtracting the premium cost from the Coverage Price, and adding expected LRP basis:

MESP equals Coverage Price minus Premium Cost To Producer plus Expected LRP basis. Actual sale price (ASP) can vary from MESP for two reasons. First, if the AEV is higher than the Coverage Price, producers can take advantage of the price rally and receive higher cash prices, though no indemnity is paid (note that the LRP premium would still be paid). This condition is beneficial to producers in that they receive an ASP

higher than their MESP. Second, actual LRP basis can be different than expected. In other words, the relationship between a producer's local cash market selling price and the index price used as AEV can change relative to the producer's expectation when initiating the hedge. This situation can be beneficial or detrimental to producers depending on how their local cash price changes relative to AEV. LRP basis can be forecasted using historical average data discussed in Chapter 4 and available at www.lrp.unl.edu.

An example can illustrate how to establish and evaluate an LRP hedge. Suppose that on February 20, Joe Farmer wants to use LRP to insure hogs he intends to sell the third week of May. On February 20, LRP insurance is available with an ending date of May 21 with Coverage Prices ranging from \$45.71/cwt to \$55.71/cwt with premium costs ranging from \$0.21/cwt for the low coverage level to \$1.75/cwt for the high Coverage Price (before the 13 percent subsidy). Joe feels a Coverage Price of \$55.71/cwt (91.9 percent of the EEV of \$60.61/cwt) is the best level of protection for his operation. The producer premium for this level of coverage was \$1.52/cwt (87 percent of \$1.752/cwt, the total premium). Joe selects the average Western Corn Belt (WCB) price series as most representative of his typical selling price as that is the price on which his marketing contract is based. The average WCB base hog LRP basis for the week ending May 23 is Joe's best estimate of the LRP basis he expects on May 21. Using historical basis data, Joe determines the three-year average WCB LRP basis for the third week of May is -\$2.41/cwt. Joe then calculates his MESP to be \$51.78/cwt (\$55.71/cwt less \$1.52/cwt plus -\$2.41/cwt). This is the minimum price he will receive if his basis forecast is correct, regardless if prices go down.

Joe's LRP insurance policy provides protection in the event prices decrease and are lower than the Coverage Price on May 21. For example, assume that the AEV (CME Lean Hog Index) on May 21 is \$52.00/cwt and the actual LRP basis is -\$2.41/cwt (as forecasted above). Joe's cash market selling price is the AEV plus LRP basis, or \$49.59/cwt (\$52.00/cwt + -\$2.41/cwt). In this case, Joe would receive an LRP indemnity of \$3.71/cwt (Coverage Price of \$55.71/cwt less AEV of \$52.00/cwt) because the AEV was less than his Coverage Price. The cash market price is lower in May, but Joe receives an indemnity payment to make up the difference of the price decline below his insured Coverage Price, as shown in *Table 5.1* on the following page.

Table 5.1 Hedge Outcome With Price Decrease and No Basis Change.

MESP = \$55.71/cwt - \$1.52/cwt + -\$2.41/cwt = \$51.78/cwt				
<i>Date</i>	<i>Cash</i>	<i>Ending Value</i>	<i>LRP Insurance</i>	<i>LRP Basis</i>
2/20	No action	Expected Ending Value = \$60.61/cwt	Buy LRP With Coverage Price = \$55.71/cwt For \$1.52/cwt	Exp. 5/21 basis to be -\$2.41/cwt
5/21	Sell Hogs @ \$49.59/cwt	Actual Ending Value = \$52.00/cwt	LRP Indemnity = \$3.71/cwt	Actual 5/21 basis is -\$2.41/cwt
	Cash price received = \$49.59/cwt		Net on LRP = \$2.19/cwt	Diff. b/w Act. & Exp. = \$0.00/cwt
ASP = \$49.59/cwt + \$2.19/cwt = \$51.78/cwt				

Joe's ASP for the hogs is determined by adding the net gain on LRP (any indemnity received less premium cost) plus the cash selling price (realize that if no indemnity is paid, the net on LRP is a loss as Joe must pay the premium). His ASP would be \$51.78/cwt (\$49.59/cwt plus \$2.19/cwt). In this case, Joe's ASP equaled MESP because prices decreased *and* Joe's LRP basis forecast equaled the actual basis on May 21. Without LRP insurance, Joe's ASP would have been his cash price of \$49.59/cwt. An even larger drop in price would have resulted in ASP lower than MESP if he did not have the LRP insurance policy.

The LRP insurance policy would have also allowed Joe to benefit from higher prices on May 21. Suppose, for example, that the AEV on May 21 was \$60.00/cwt and Joe's actual LRP basis was -\$2.41/cwt (as forecasted above). His local cash price would be \$57.59/cwt in this case (\$60.00/cwt + -\$2.41/cwt). No LRP indemnity would be paid because the AEV exceeded the Coverage Price of \$55.71/cwt. The ASP for the hogs would be determined as before and would be \$56.07/cwt (\$57.59/cwt + -\$1.52/cwt). This outcome is illustrated in *Table 5.2* below.

Table 5.2 Hedge Outcome With Price Increase and No Basis Change.

MESP = \$55.71/cwt - \$1.52/cwt + -\$2.41/cwt = \$51.78/cwt				
<i>Date</i>	<i>Cash</i>	<i>Ending Value</i>	<i>LRP Insurance</i>	<i>LRP Basis</i>
2/20	No action	Expected Ending Value = \$60.61/cwt	Buy LRP With Coverage Price = \$55.71/cwt For \$1.52/cwt	Exp. 5/21 basis to be -\$2.41/cwt
5/21	Sell Hogs @ \$57.59/cwt	Actual Ending Value = \$60.00/cwt	No LRP Indemnity = (AEV > Coverage Price)	Actual 5/21 basis is -\$2.41/cwt
	Cash price received = \$57.59/cwt		Net on LRP = -\$1.52/cwt	Diff. b/w Act. & Exp. = \$0.00/cwt
ASP = \$57.59/cwt + -\$1.52/cwt = \$56.07/cwt				

In this case, when AEV on the end date was above the insured Coverage Price, Joe's ASP exceeded MESP and he benefited from the price increase. While Joe would have received a higher price had he not purchased the LRP insurance, he did have protection in case of a decline in prices (he essentially gave up \$1.52/cwt of the price increase as payment for protection from price decreases).

LRP basis also can affect whether Joe's ASP meets

his MESP (in the event of a price decrease). Suppose, as before, the AEV on May 21 was \$52.00/cwt but that Joe's actual LRP basis was -\$3.41/cwt (\$1.00/cwt weaker than forecasted). This indicates that Joe's local cash price was \$48.59/cwt (\$52.00/cwt + -\$3.41/cwt). He would receive an LRP indemnity of \$3.71/cwt as before because the AEV (\$52.00/cwt) was less than the Coverage Price (\$55.71/cwt). *Table 5.3* below shows this result.

Table 5.3 Hedge Outcome With Price Decrease and Weaker Basis Than Expected.

MESP = \$55.71/cwt - \$1.52/cwt + -\$2.41/cwt = \$51.78/cwt				
<i>Date</i>	<i>Cash</i>	<i>Ending Value</i>	<i>LRP Insurance</i>	<i>LRP Basis</i>
2/20	No action	Expected Ending Value = \$60.61/cwt	Buy LRP With Coverage Price = \$55.71/cwt For \$1.52/cwt	Exp. 5/21 basis to be -\$2.41/cwt
5/21	Sell Hogs @ \$48.59/cwt	Actual Ending Value = \$52.00/cwt	LRP Indemnity = \$3.71/cwt	Actual 5/21 basis is -\$3.41/cwt
	Cash price received = \$48.59/cwt		Net on LRP = \$2.19/cwt	Diff. b/w Act. & Exp. = -\$1.00/cwt
ASP = \$48.59/cwt + \$2.19/cwt = \$50.78/cwt				

Joe's ASP would be \$50.78/cwt (\$48.59/cwt plus \$2.19/cwt). In this case, his ASP was \$1.00/cwt lower than MESP. This difference was due to the weaker than expected LRP basis lowering the cash price by \$1.00/cwt compared to the first example. In both this case and the first case, the AEV decline was the same, so the difference between what Joe expected to receive versus what he actually received was not affected by the price decrease. Instead the unanticipated change in the relationship between the CME Lean Hog Index price and his local cash price (the weakening LRP

basis) caused the different ASP.

A stronger than forecasted LRP basis (with a decline in price level) would result in an ASP higher than the MESP. For example, assume again that the AEV on May 21 was \$52.00/cwt but that actual LRP basis was -\$0.41/cwt (\$2.00/cwt stronger than Joe forecasted). Joe's cash hog price would then be \$51.59/cwt (\$52.00/cwt + -\$0.41/cwt). An LRP indemnity of \$3.71/cwt would be paid as before because the AEV was less than the Coverage Price. *Table 5.4* on the following page illustrates this outcome.

Table 5.4 Hedge Outcome With Price Decrease and Stronger Basis Than Expected.

MESP = \$55.71/cwt - \$1.52/cwt + -\$2.41/cwt = \$51.78/cwt				
<i>Date</i>	<i>Cash</i>	<i>Ending Value</i>	<i>LRP Insurance</i>	<i>LRP Basis</i>
2/20	No action	Expected Ending Value = \$60.61/cwt	Buy LRP With Coverage Price = \$55.71/cwt For \$1.52/cwt	Exp. 5/21 basis to be -\$2.41/cwt
5/21	Sell Hogs @ \$51.59/cwt	Actual Ending Value = \$52.00/cwt	LRP Indemnity = \$3.71/cwt	Actual 5/21 basis is -\$0.41/cwt
	Cash price received = \$51.59/cwt		Net on LRP = \$2.19/cwt	Diff. b/w Act. & Exp. = \$2.00/cwt
ASP = \$51.59/cwt + \$2.19/cwt = \$53.78/cwt				

Joe's ASP would be \$53.78/cwt (\$51.59/cwt plus \$2.19/cwt) which is \$2.00/cwt higher than MESP. This difference was due to actual LRP basis being \$2.00/cwt higher than expected causing the cash market price to be \$2.00/cwt higher. In both of the last two cases, the price decline was the same amount, so the difference between what Joe expected to receive versus what he actually received was not affected by the price level decrease (as measured by AEV). Rather, the actual LRP basis being weaker (stronger) than Joe's expectation resulted in an ASP lower (higher) than MESP.

Note that if AEV is higher than the Coverage Price (no indemnity paid) and actual LRP basis is different than expected, the result of the hedge can vary. If basis is stronger than expected, ASP will be higher than the ASP if actual basis equaled the forecasted basis. If LRP basis is weaker than expected and AEV is above the Coverage Price, ASP will be lower. It would even be possible in this case for the ASP to be less than MESP if the basis weakens substantially compared to its forecasted level.

5.3 Final Considerations

One point to consider when evaluating LRP as a hedging instrument is the program's availability. Section 1.6 discussed the hours of availability for LRP insurance. However, at times, USDA may make LRP unavailable during normal hours of availability because of certain conditions. Underwriting rules for 2005 suspend sales of all Specific Coverage Endorsements of a given class of livestock if at least four of the underlying CME futures contracts for that class of livestock settle at their daily limit for two consecutive

days. Sales of that livestock class will resume when there have been two consecutive days without four underlying futures contracts settling at the daily limit.

Also, sales of LRP may be suspended if underwriting capacity limits have been exceeded. There are maximums both for the total amount of coverage sold for the crop year and also for a given day. If either maximum amount is exceeded, sales of LRP will be halted for the remainder of that period of time or until capacity becomes available by existing contracts ending. Also, each company certified to sell LRP insurance has a limited amount of underwriting capacity. If LRP becomes a popular product, underwriting capacity may be an important factor to consider when choosing an insurance company for LRP. A producer would not want to select a company only to discover that company has little or no remaining underwriting capacity. However, as a new pilot program, underwriting capacity is not likely to be an issue. Further, for the 2005 crop year, almost \$19 million in underwriting capacity remained with less than three months left in the crop year.

Finally, LRP sales can be suspended if a news report, announcement, or other event occurs during or after trading hours that is believed by the Secretary of Agriculture or RMA staff to significantly change market conditions from those on which the LRP insurance for that day was rated. For example, when BSE was announced in the U.S. on December 23, 2003, sales of LRP insurance for fed and feeder cattle were suspended shortly thereafter. This policy prevents adverse selection by preventing producers from purchasing LRP with prior knowledge of what markets will likely do the following day.

5.4 Conclusion

LRP insurance is a program that may be useful to livestock producers wishing to establish a minimum selling price for their livestock. For those producers with smaller herds who may not be able to use futures or options contracts, the flexibility of LRP may prove beneficial. As an insurance product, LRP may be attractive to producers who may not understand or may not be comfortable trading in the futures or options markets. Despite the similarity in how LRP and options contracts work, LRP is a fairly straightforward program that may reduce some confusion people experience with options hedges. The program has other advantages over futures or options hedging. Once LRP is priced for a given day, the prices are guaranteed and will not change for that day. Also, LRP is available after normal market trading hours allowing producers to purchase price coverage at times not previously available. Additionally, LRP insurance provides a significant reduction in basis risk for fed cattle and

swine producers. When hedging, basis risk is the only component of producers' ASP that is not protected. By reducing basis risk, LRP makes it easier for producers to accurately forecast MESP, and consequently, producers may have a better approximation of future cash flows. However, not all basis risk is eliminated, and producers are still exposed to some variation in actual selling prices (particularly with feeder cattle). Additionally, once a hedge is established with LRP, it cannot be lifted or sold back to recapture some of the premium cost. A 30-day marketing window is allowed prior to the end date of coverage, but selling livestock before the end date exposes the policy holder to price risk. With restrictions on taking offsetting futures or options positions, LRP may limit some producers' common marketing strategies. All these factors are important to think about when evaluating LRP as a hedging tool.