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Swine Insurance and the Marketing Plan

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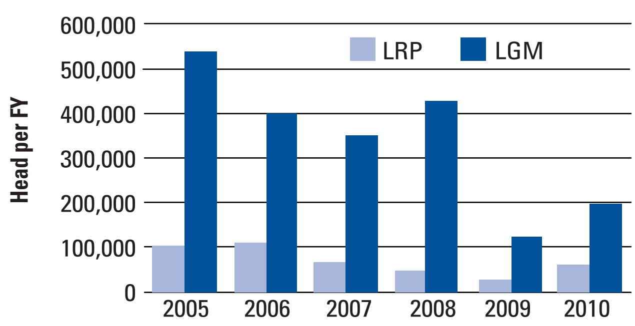
BACKGROUND

Pork producers are generally familiar with managing risk through futures, options, and other contracts (short- and long-term). Producers often have self-insured feed risks by raising or storing needed feed. The performance of different risk management tools changes with new market conditions. Risks change and demand and inputs become more and less volatile. Two insurance products, Livestock Risk Protection (LRP) and Livestock Gross Margin (LGM), are available for swine, but neither has been widely used. In this article we examine the insurance products and see if there is a place for them in swine marketing plans.

Both insurance products have been modified since they were initially introduced, resulting in a changing usage pattern over time (fig. 1). Over time, LRP, the price-insurance product, has been modified by lowering the number of weeks of coverage available and adding a 100% coverage level. In FY2010 there were 63,264 head covered by LRP under 44 policies in 9 states. LGM, the margin-insurance product, has been modified by dropping basis adjustments and changing swine weights and feed quantities. As such, the margin is wider than in earlier years, but the level of risk covered has changed ambiguously. In FY2010 there were 200,190 head covered by LGM under 93 policies in 8 states. The overall use remains very small relative to swine production.

Figure 1. Swine volume covered by insurance

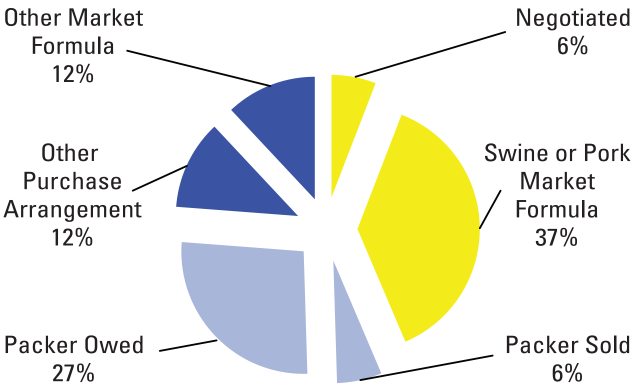


AMS REPORTS

Direct price reports at www.ams.usda.gov provide some insight into pricing trends and the relevancy of marketing and insurance tools. For the second quarter of 2010, about one-third of all swine slaughtered were either *Packer Owned* or *Packer Sold*. Of producer-sold swine, only 6% were *Negotiated*. The *Swine or Pork Market Formula* was the largest category. The remaining categories are of interest from an insurance standpoint. The *Other Purchase Arrangement* sales may include feed prices, affecting how LGM insurance may perform. The *Other Market Formula* sales are often tied to or based off of spot or formula prices, leaving risk to be managed. The contracts come up for renewal or reach the end of their lifespan, leaving producers to explore other risk management tools.

The insurance products share some features of CME contracts. Futures (and options) settle on the tenth business day of month to the CME Lean Hog Index, a 2-day weighted average of *Negotiated and Swine and Pork Market Formula* prices. These pricing categories combined to represent 43% of head slaughtered during the second quarter of 2010 (see "AMS Reports" above and fig. 2). The 40,000-pound (lean) contract represents about 208 head. Contract months include Feb., April, May, June, July, Aug., Oct., and Dec. The other months of the year may present additional basis risk for those trying to hedge swine price risk. Futures contracts are currently listed with open interest spanning the next 15 months, and options contracts are currently listed with open interest spanning the next 12 months. Producers have to selectively hedge swine to benefit from using futures. Options and the insurance products can be more uniformly purchased to provide a baseline level of protection.

Figure 2. 2nd Quarter 2010 swine by purchase type



Source: Livestock Marketing Information Center

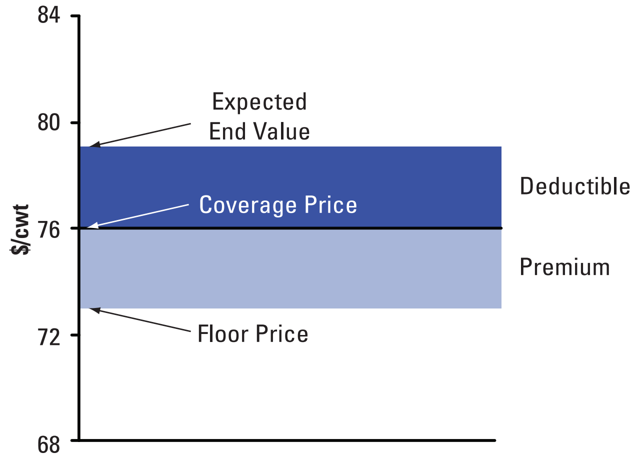
Also of note is the wide dispersion of prices possible under different purchase types. In the National Daily Direct Hog Prior Day Report–Average Net Price Distribution (LM_HG215), the complete range of prices and volume shows substantial variation in the prices received across purchase types. The range for *Other Market Formula* and *Other Purchase Arrangement* can be quite large relative to the other types. This means there may be risk that could be covered by insurance or that any insurance may be ineffective or redundant.

LRP

LRP is price insurance from the date of purchase. As such, it functions the same as buying put options. The number of head to be covered and basis risk from the timing of sales likely dictate how well LRP may work. For a producer, the process of evaluating and buying LRP mirrors buying a put option. First, a coverage period is selected (ranging from 13 to 26 weeks out). This should match when the finished swine will be sold at a target selling weight. Then, the expected end value is found based off the futures price (fig. 3). Then a producer picks from available deductible levels, which are similar to strike prices. These give a coverage price that is 70–100% of the expected end value. Subtracting the premium paid at the time coverage is purchased leaves an effective floor price.

The cost of LRP should be compared to the cost of buying put options. The cost of LRP is the premium (less a 13% subsidy) that compares to an option premium plus any brokerage commission. The products function similarly and the costs will likely be close per cwt. If fewer head than a standard contract amount are to be covered, then LRP will likely be cheaper to obtain. LRP settles to the CME Lean Hog Index on the day coverage ends. Then, if any indemnity is owed, it is sent to the producer or assignee. Basis risk may also favor using LRP coverage, especially if the producer is expecting to sell on a date that is more than a month away from a standard option contract expiration date.

Figure 3. Components of LRP coverage



LGM

LGM insurance covers the finishing margin for different types of swine operations. LGM coverage bundles hog, corn, and soybean meal protection together. The feed amounts can serve as proxies for other feeds. $Margin_t$ depends on LH_t, the lean hog futures price, C_t, the corn futures price, and SM_t, the soybean meal futures price; the feed amounts and timing of pricing the feed depends on the operation type—farrow-to-finish, feeder pig finishing, or segregated early weaned; the prices for different months are entered into the following formulas based on the type of operation:

Farrow-to-Finish

$$Margin_t = (2.6\ cwt)(0.74)(LH_t) - (12\ bu)(C_{t-3}) - (138.55\ lbs/2000\ lbs)(SM_{t-3})$$

Feeder Pig Finishing

$$Margin_t = (2.6\ cwt)(0.74)(LH_t) - (9\ bu)(C_{t-2}) - (82\ lbs/2000\ lbs)(SM_{t-2})$$

Segregated Early Weaned (SEW)

$$Margin_t = (2.6\ cwt)(0.74)(LH_t) - (9.05\ bu)(C_{t-2}) - (91\ lbs/2000\ lbs)(SM_{t-2})$$

The expected farrow-to-finish margin is based on the respective futures prices at the time the insurance is sold. The actual farrow-to-finish margin is the difference between the final per-head value of the finished swine minus the cost of corn and soybean meal priced three months earlier (or about halfway through the insurance period). The producer picks a deductible from $0 to $20 per head.

For example, in June 2010 there was LGM coverage offered that ended in December. The December Lean Hog futures price was $72.98 per cwt, the September Corn futures price was $3.53 per bushel, and the September Soybean Meal futures price was $270.10 per ton. The expected margin was thus $79.35 per head:

$$\text{Expected Margin}_{Dec} = (2.6)(.74)(\$72.98) - (12)(\$3.53) - (138.55/2000)(\$270.10) = \$79.35$$

The December coverage with a $0 deductible had an estimated premium cost of $8.89 per head. For comparison, the December Lean Hog put option with a $72 strike price was trading at $3.75 per cwt (before commissions), or $9.75 per head (2.6 cwt), at that same time. Using an option pricing formula and assuming 20% volatility and average prices, the per-head equivalent cost for *at the money* options would be $10.40 for 6-month Lean Hog put options, $1.80 for 3-month Corn call options, and $0.75 for 3-month Soybean Meal call options. Thus, by bundling together the options, LGM can present a lower initial cost of risk protection compared to buying the options separately.

Eligible livestock insurance agents sell LRP and LGM. LRP is available on business days after prices are posted in the afternoon through 9 a.m. CT the following day. LGM is available only on the last business Friday of the month after prices are posted through 8 p.m. CT the following day.

The RMA website, www.rma.usda.gov, has a section dedicated to livestock products. Of note for producers, there are links for an agent locator, policy documents, the specific coverage endorsement, a question and answer bulletin, and a premium calculator. Approximate quote levels are available in advance to help producers choose between LGM-Swine and other tools. Iowa Agricultural Insurance Innovations maintains a premium estimator, www.iaii.us, that can be used to approximate LGM premiums.

SUMMARY

Pork producers use a variety of methods to price and sell swine. The risks vary depending on the method used. Insurance may help mitigate some risks when tailored to individual needs. LRP, as price protection, may reduce basis risk and offer a cost advantage over put options, depending on the number of head covered. LGM is cost-effective covering the finishing margin. Insurance coverage cannot be lifted early, limiting its usefulness for rolling or synthetic strategies. Both products may have a place now or in the future in swine marketing plans.

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