

# Chapter 2

## How Does Livestock Gross Margin Insurance Work?

### In this chapter, you will learn:

- definitions of LGM terminology;
- how to access Expected and Actual Gross Margins, Gross Margin Guarantees, and premium rates from USDA-RMA;
- the process used by USDA-RMA to determine if an indemnity is paid;
- how to calculate LGM premiums; and
- how to collect an indemnity from LGM coverage.

### 2.1 Introduction

*Chapter 1* provided a basic description of how LGM insures the gross margin for cattle feeders and swine finishers. Basic program provisions such as eligible livestock and states, substantial beneficial interest, contract size limitations, and the length of the insurance period were covered in the opening chapter. *Chapter 1* also explained how to purchase coverage and discussed how LGM can be used as a risk management tool. *Chapter 2* focuses on the terminology of LGM as well as indemnity payments and premiums. This section also provides an in-depth example that illustrates the usefulness and practicality of this product.

### 2.2 Terminology

The LGM insurance program has several unique terms users should be familiar with in order to understand how to hedge price risk with LGM. These terms include:

- **Target Marketings** — The number of slaughter-ready livestock that are expected to be marketed during the insurance period and that the producer wants to insure with LGM.
- **Adjusted Futures Price** — The LGM futures price (calculated according to LGM rules) plus state- and month-specific LGM basis.
- **LGM Basis** — An adjustment to the LGM futures price to determine adjusted futures price. It is based on the historical difference between LGM futures price and the local cash price. The state- and month-specific basis numbers for cattle are 10-year averages calculated using price data from the National Agricultural Statistics Service (NASS). State- and month-specific basis for swine are 5-year averages from NASS. (Soybean meal in LGM for Swine does not include a state- and month-specific basis adjustment.)
- **Expected Gross Margin (EGM)** — The difference between the expected fed cattle or market swine selling price and the expected input prices. The expected input prices for cattle are the expected feeder cattle and corn prices, based on feeder cattle and corn futures markets respectively. The expected fed cattle selling price is based on live cattle futures. The expected input prices for swine are the expected soybean meal and corn prices, which are based on their respective futures contracts. The expected swine selling price is based on lean hog futures with a yield factor adjustment. The EGM is the gross margin that is expected at the end of each month of the insurance period at the time it is purchased. Once all EGMs are calculated for each of the 11 target months (for cattle) and 6 target months (for swine), all monthly EGMs are multiplied by their respective monthly target marketings to equal the total EGM (see *Section 2.4* for calculation).
- **Deductible** — The portion of an insured value that producers elect not to insure, ranging from \$0 to \$150 per head in \$10 per head increments for cattle and \$0 to \$20 per head in \$2 per head increments for swine.
- **Gross Margin Guarantee (GMG)** — The total EGM minus a deductible (per head deductible times the number of livestock to be marketed).
- **Total Actual Gross Margin (AGM)** — The difference between the actual fed cattle or market swine selling prices and the actual input prices. The actual input prices for cattle include actual feeder cattle and corn prices based on the futures market. The actual input prices for swine include actual soybean meal and corn prices using futures market prices. (Both the actual and expected fed cattle and lean hog selling prices and the actual and expected input prices are more thoroughly explained in the detailed example in *Section 2.4*.) Once AGMs are calculated for each of the target months, all monthly AGMs are multiplied by their respective target marketings for those months. The total AGM is compared to the GMG to determine if an indemnity is due.

- **Indemnity** — The amount paid by the insurance policy if the GMG, estimated prior to the insurance period, is higher than the total AGM realized after the insurance period. The indemnity is equal to the amount by which the GMG exceeds the total AGM. Indemnities are not paid until the end of the 11-month insurance period for cattle and 6-month insurance period for swine. The indemnity is calculated by subtracting the total AGM from the GMG (both which are aggregated across all target marketings in the insurance period). Thus, indemnities are not paid monthly based on monthly target marketings and prices, but rather on all 11 or 6 months combined.
- **Yield Factor** — A factor of 0.74 included in the swine EGM and AGM calculations to convert the CME lean hog futures price to a live hog equivalent price.

To summarize, target marketings are established for each target marketing month at the time of coverage purchase on the sales closing date. An EGM for each target marketing month is also calculated at this time and then multiplied by each month's respective target mar-

ketings. The GMG is then determined by subtracting the elected deductible from the EGM. After the insurance period (11 months for cattle and 6 months for swine) ends, an AGM is calculated for each target marketing month. The target marketings originally planned for each month are then multiplied by their respective AGM for each target marketing month. This yields a total AGM which is then used to determine if an indemnity is to be paid to the producer. An indemnity will be paid if the GMG is greater than the total AGM.

### 2.3 USDA-RMA Web site

The USDA Risk Management Agency (RMA) maintains a Web site that provides expected and actual gross margins for all eligible states. All target marketing months and expected and actual gross margins have been archived for each eligible state since the program's inception. It is available at [http://www3.rma.usda.gov/apps/livestock\\_reports/](http://www3.rma.usda.gov/apps/livestock_reports/). (Note that although this is a cattle example the concept and Web page is the same for swine.)

To access expected and actual gross margin information from the USDA-RMA Web site, follow these steps (after each of steps 1 and 2, click the "Next" button):

LGM Expected Gross Margin - Report for 2007, NEBRASKA, CATTLE											
CATTLE (803) CALF FINISHING (807) JAN. - NOV. INSURANCE PERIOD (901)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	273.96	276.28	240.79	232.34	254.36	268.80	238.67	226.01	235.75	248.69
Actual Gross Margin	N/A	299.84	307.33	276.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) YEARLING FINISHING (808) JAN. - NOV. INSURANCE PERIOD (901)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	108.03	201.30	269.05	212.85	186.23	156.85	134.20	116.85	151.00	194.48
Actual Gross Margin	N/A	136.15	232.75	303.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) CALF FINISHING (807) FEB. - DEC. INSURANCE PERIOD (902)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	260.07	232.85	225.25	248.76	256.68	234.48	238.89	246.89	249.18	255.62
Actual Gross Margin	N/A	307.33	276.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) YEARLING FINISHING (808) FEB. - DEC. INSURANCE PERIOD (902)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	180.80	255.25	217.68	211.45	167.80	131.25	110.15	148.15	191.03	223.95
Actual Gross Margin	N/A	232.75	303.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) CALF FINISHING (807) MAR. - JAN. INSURANCE PERIOD (903)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	281.15	281.55	312.95	310.47	281.25	287.04	278.44	261.00	261.84	249.03
Actual Gross Margin	N/A	276.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) YEARLING FINISHING (808) MAR. - JAN. INSURANCE PERIOD (903)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	300.85	272.08	277.98	203.70	135.50	111.58	144.60	188.55	223.68	204.00
Actual Gross Margin	N/A	303.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) CALF FINISHING (807) APR. - FEB. INSURANCE PERIOD (904)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	272.94	301.09	306.22	288.31	305.64	290.12	264.79	270.79	252.71	246.26
Actual Gross Margin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CATTLE (803) YEARLING FINISHING (808) APR. - FEB. INSURANCE PERIOD (904)											
	1	2	3	4	5	6	7	8	9	10	11
Expected Gross Margin	N/A	269.50	276.95	200.68	121.80	108.23	146.65	187.98	220.55	189.13	192.43

Figure 2.1. Expected and Actual Gross Margin Web page.

1. Select a crop year — When purchasing coverage, the first year listed is the most current year in which there exists target marketing months that are available for coverage. Remember that the insurance crop year begins July 1 and ends June 30. If looking up an expected or actual gross margin from a year other than the current year, select the year in which coverage was initially purchased from the drop-down list.
2. Select a state — This is the state in which the livestock to be insured are located (see *Section 1.4*).
3. Select the commodity — The two commodities available are cattle and swine.
4. Click the “Create Report” button.

The USDA expected and actual gross margin page will look like *Figure 2.1*. The rows of interest are labeled on the table. The rows include:

- Row A — Type of cattle feeding operation selected, either calf finishing or yearling finishing. Remember swine finishing operations that will be listed are farrow to finish, feeder pig finishing, and segregated early weaned (SEW) pig finishing operations. Also included is the specific 11-month insurance period for cattle or 6-month insurance period for swine in which producers have purchased coverage. The beginning and ending months listed will change depending upon which sales closing date the LGM policy is purchased. The first insurance period listed in *Figure 2.1* shows the months January through November, implying a Dec. 31 sales closing date. Basically, the sales closing date is one day before the first month of the insurance period listed.
- Row B — Months of the insurance period are listed by number, with “1” being the first month of the insurance period (listed in Row A) and “11” being the last month of the insurance period for cattle (“6” will be the last month of the insurance period for swine). In *Figure 2.1*, the first insurance period listed represents month 1 as January and month 11 as November. Although “1” represents the first month of the insurance period, no coverage is available during this month. Coverage does not begin until the second month of the insurance period, listed as “2” on the Web site (see *Section 1.2*).
- Row C — Expected Gross Margin per head. The EGM per head is posted for each month in which livestock are insurable under the LGM policy of that particular insurance period.
- Row D — Actual Gross Margin per head. The AGM per head is posted for each month in which livestock are insurable under the LGM policy of that particular insurance period. The AGMs are posted once RMA validates the price data (usually at the end of each insurable month) used to calculate the AGMs.

## 2.4 Purchasing LGM — An Example

At the time of coverage purchase, producers must choose the type of operation that best fits their situation. Again, the cattle operations include yearling finishing or calf finishing operations. The three swine operations insured by LGM are farrow to finish, feeder pig finishing, and SEW pig finishing operations. Each type of operation is accompanied with its own set of equations that allow an Expected Gross Margin (EGM) per head to be calculated for each target marketing month. The EGM per head for month  $t$  is calculated using one of the following equations:

### Yearling Finishing Operation

$$EGM_t = [12.50 \text{ cwt} \times \text{Live Cattle Price}_t] - [7.50 \text{ cwt} \times \text{Feeder Cattle Price}_{t-5}] - [57.5 \text{ bu} \times \text{Corn Price}_{t-2}]$$

(Equation 2.1)

Where Live Cattle Price is in \$/cwt, Feeder Cattle Price is in \$/cwt, Corn Price is in \$/bu, and  $t$  is the target marketing month.

### Calf Finishing Operation

$$EGM_t = [11.50 \text{ cwt} \times \text{Live Cattle Price}_t] - [5.50 \text{ cwt} \times \text{Feeder Cattle Price}_{t-8}] - [54.5 \text{ bu} \times \text{Corn Price}_{t-4}]$$

(Equation 2.2)

Where Live Cattle Price is in \$/cwt, Feeder Cattle Price is in \$/cwt, Corn Price is in \$/bu, and  $t$  is the target marketing month.

### Farrow to Finish

$$EGM_t = [2.5 \text{ cwt} \times \text{Swine Price}_t \times 0.74] - [(196.16 \text{ lbs} / 2000 \text{ lbs/ton}) \times \text{Soybean Meal Price}_{t-3}] - [13.86 \text{ bu} \times \text{Corn Price}_{t-3}]$$

(Equation 2.3)

Where Swine Price is in \$/cwt, Soybean Meal Price is in \$/ton, Corn Price is in \$/bu, and  $t$  is the target marketing month.

### Feeder Pig Finishing

$$EGM_t = [2.5 \text{ cwt} \times \text{Swine Price}_t \times 0.74] - [(132 \text{ lbs} / 2000 \text{ lbs/ton}) \times \text{Soybean Meal Price}_{t-2}] - [9.6 \text{ bu} \times \text{Corn Price}_{t-2}]$$

(Equation 2.4)

Where Swine Price is in \$/cwt, Soybean Meal Price is in \$/ton, Corn Price is in \$/bu, and  $t$  is the target marketing month.

### SEW Pig Finishing

$$EGM_t = [2.5 \text{ cwt} \times \text{Swine Price}_t \times 0.74] - [(142 \text{ lbs} / 2000 \text{ lbs/ton}) \times \text{Soybean Meal Price}_{t-2}] - [9.7 \text{ bu} \times \text{Corn Price}_{t-2}]$$

(Equation 2.5)

Where Swine Price is in \$/cwt, Soybean Meal Price is in \$/ton, Corn Price is in \$/bu, and  $t$  is the target marketing month.

To calculate the EGM per head, consider, for example, a yearling finishing operation in Nebraska and a sales closing date of Jan. 31, 2006. To determine the expected live cattle price associated with an August target marketing month ( $t = \text{August}$ ), the August CME live cattle closing futures price for the last three days in January is averaged. The average of the closing August 2006 live cattle futures price on Jan. 27, 30, and 31 was \$84.32/cwt. (Note that because the sales closing date for swine is the second to last business day of the month, Jan. 26, 27, and 30 would be used to determine the average lean hog futures price.) The state- and month-specific LGM basis of \$1.20/cwt for August in Nebraska is then added to the August futures average to yield \$85.52/cwt. This basis number changes yearly and can be found on the RMA Web site at <http://www.rma.usda.gov/livestock/>. The \$85.52/cwt represents the live cattle price expected in August as of Jan. 31. A different sales closing date, say February 2006, would have a different expected live cattle price for August 2006 because it would be based on the August live cattle futures average in the last three days of February. The same process is used for a calf finishing operation with an August target marketing month. The process for swine is also very similar. The only difference is that swine are finished and marketed sooner, so with a January sales closing date, the last target marketing month under any of the three swine operations would be July.

The next step in the calculation is to determine the expected feeder cattle price. Expected feeder cattle prices will be determined based on a standardized feeding period that is assumed to be 240 days for a calf finishing operation and 150 days for a yearling finishing operation. So, for a calf finishing operation, the expected feeder cattle price will be eight months prior to marketing ( $t - 8$ ) and for a yearling finishing operation, five months ( $t - 5$ ). Continuing the previous example of a yearling finishing operation with an August 2006 target marketing month, the expected feeder cattle price would coincide with March 2006 CME feeder cattle futures (five months before August). To determine the expected feeder cattle price associated with an August target marketing month and Jan. 31 sales closing date, the March CME feeder cattle closing futures price for the last three days in January is averaged. The average March 2006 CME feeder cattle futures closing price on Jan. 27, 30, and 31 was \$110.07/cwt. The state- and month-specific LGM basis of \$4.63/cwt for March in Nebraska is then added to the March futures price to yield \$114.70/cwt. The \$114.70/cwt represents the feeder cattle price expected in March as of Jan. 31. For a calf finishing operation, the same process is done to calculate an expected feeder cattle price. However, in this case, December would be the placement month, and because there is no December feeder cattle futures, the average of November and January is used.

In order to determine the cost of corn, the expected corn price is established using the Chicago Board of Trade (CBOT) futures prices. For a calf finishing operation, it is assumed the cattle will consume 54.5 bushels of corn per animal. Yearlings are assumed to eat 57.5 bushels of corn. For a farrow to finish operation, it is assumed the pigs will consume 13.86 bushels of corn per animal. Swine in feeder pig finishing and SEW pig finishing operations are assumed to eat 9.6 and 9.7 bushels of corn per head, respectively. These estimates are based on Iowa State University budgets and feed rations (see *Section 1.3*). Because livestock consume corn continuously throughout the feeding period and corn may be purchased on an as-needed basis, the midpoint of the feeding period (4 months for calves, 2 months for yearlings, 3 months for pigs in a farrow to finish operation, and 2 months for both feeder pigs and SEW pigs), is used as an average. In our example with a target marketing month of August 2006, the corn price would coincide with June 2006 prices for the yearling finishing operation (two months prior to August). Although the LGM policy calls for a June futures price for the August target marketing month, the CBOT does not have a June corn futures contract. Therefore, an average of the January closing prices for the futures months before and after June (May and July) is used. The average May 2006 corn futures price on Jan. 27, 30, and 31 was \$2.28/bu. The average July 2006 corn futures price on Jan. 27, 30, and 31 was \$2.37/bu. To determine the average June corn futures price for LGM, an average is calculated using May and July futures, giving a June price of \$2.33/bu ( $1/2 \times \$2.28/\text{bu} + 1/2 \times \$2.37/\text{bu}$ ). The state- and month-specific LGM basis of  $-\$0.18/\text{bu}$  for June in Nebraska is then added to the June futures average to yield \$2.15/bu. The \$2.15/bu represents the corn price expected in June as of Jan. 31. It is important to note that the average calculation in this case (and for fed cattle, feeder cattle, swine, and soybean meal) is actually a weighted average. The weights are based on the unequal time difference between the month being calculated and the surrounding contract months, allowing “closer” months to be more heavily weighted in the average. This is significant when calculating an average corn price for a month like February where one of the surrounding months (December in this case) is two months prior to February. A simple average cannot be used, but instead a weighted average ( $1/3 \times \text{December Price} + 2/3 \times \text{March Price}$ ) is used to determine the February futures price.

When calculating the EGM and AGM for swine, soybean meal prices are included in a way similar to the corn calculation described previously. Like corn, soybean meal is consumed continuously during the feeding period and may be purchased on an as-needed basis. Therefore, three months for pigs in a farrow to finish operation, and two months for both feeder pigs and SEW pigs is used as

an average for the feeding period midpoint. (The difference in the number of months used as the feeding period midpoint for a farrow to finish operation and the feeder pig finishing and SEW pig finishing operations is because swine in a farrow to finish operation are finished over a longer period of time.) For a farrow to finish operation, it is assumed the pigs will consume 196.16 lbs of soybean meal per animal. Swine in feeder pig finishing and SEW pig finishing operations are assumed to eat 132 lbs and 142 lbs of soybean meal per head, respectively. Remember, no state- and month-specific LGM basis adjustment is made for soybean meal.

Once all expected prices have been determined, the EGM can then be calculated by inserting each price into *Equation 2.1*. It is important to remember that an expected gross margin is determined separately for each of the 11 months in the insurance period for cattle and 6 months in the insurance period for swine according to the steps described previously. Also, the calculations outlined above work the same for every month, no matter when the insurance policy is purchased.

$$\text{Expected Gross Margin}_{\text{Aug}} = (12.50 \text{ cwt} \times \$85.52/\text{cwt}_{\text{Aug}}) - (7.50 \text{ cwt} \times \$114.70/\text{cwt}_{\text{Mar}}) - (57.5 \text{ bu} \times \$2.15/\text{bu}_{\text{Jun}}) = \$85.13 \text{ per head} \quad (\text{Equation 2.6})$$

An EGM for August can then be determined by multiplying the number of target marketings for the month of August by the EGM per head. For example, if 500 head were to be marketed in August, the August EGM would equal \$85.13 per head times 500 head or \$42,565.00.

At the time of policy purchase, EGMs are calculated for each target marketing month. All applicable EGMs are multiplied by their respective target marketings in each month. These monthly totals are then summed to create the total EGM. The GMG is then calculated by subtracting the total deductible (per head deductible times the number of livestock to be marketed) from the total EGM (see *Section 2.5*).

When the insurance period ends, the total AGM can be calculated. First, the AGM for each target marketing month is calculated using an equation similar to *Equation 2.1* and a process similar to that described previously. Returning to the example with the August 2006 target marketing month, the actual live cattle price for the August target marketing month ( $t = \text{August}$ ) can now be determined. It is important to note that even if the cattle were actually marketed in a month other than August (for example September), the actual price and all calculations are still based on the original August target marketing month. The live cattle price for August is determined using the average August CME live cattle futures prices for the three days prior to the last day of trade of the August futures contract. The futures contracts are expired at the point when actual prices are

determined, and the last three days of trade prior to the last day of the contract's trade is used because large price moves associated with contract settlement are sometimes experienced on the last trading day. These larger price moves may present a market volatility that is inconsistent with the price experienced throughout the contract month. The August 2006 CME live cattle average futures closing price on Aug. 28, 29, and 30 was \$89.53/cwt. The state- and month-specific LGM basis of \$1.20/cwt for August in Nebraska is again added to the August CME futures average to yield \$90.73/cwt. The \$90.73/cwt represents the live cattle price that actually occurred during August. The same LGM basis (calculated by RMA) used with the expected live cattle price is again used to determine the actual live cattle price. Basis does not change between expected and actual price calculations, leaving producers exposed to some basis risk margin in the cash markets (see *Section 4.2*). This process is consistent with that of calf finishing and swine operations.

The next step in the calculation is to determine the actual feeder cattle price. Actual prices will be determined like expected prices. For a target marketing month of August 2006, the feeder cattle prices would coincide with March 2006 futures (five months prior to August). Regardless of whether the yearlings were actually purchased and placed on feed in March, the LGM AGM is based on March feeder cattle prices. To determine the actual feeder cattle price associated with an August target marketing month, the CME feeder cattle futures price for the last three days prior to the last day of trade in March will be used. Again, the last day of trade is not used with any expired contract for any cattle feeding or swine finishing operation. The average March 2006 feeder cattle futures price on March 27, 28, and 29 was \$103.55/cwt. The state- and month-specific LGM basis of \$4.63/cwt for March in Nebraska is again added to the March futures average price to yield \$108.18/cwt. The \$108.18/cwt represents an actual March feeder cattle price used in the AGM calculation for August marketings. It is important to note that sometimes the actual price (for feeder cattle, soybean meal, or corn) may equal the expected price if the month used to determine the expected or actual commodity price is before the sales closing date. If this example had been for a calf finishing operation, the sales closing date would still be Jan. 31, but the month used to calculate actual and expected feeder cattle prices would be December (eight months prior to the August target marketing month). Because December has already come to pass by Jan. 31, the expected and actual feeder cattle prices in this instance would be the same.

In order to determine the actual cost of corn, the actual corn price for June 2006 is established using the CBOT futures prices. The average May 2006 CBOT corn futures closing price (using the last three days prior to the last day of contract trade) on May 9, 10, and 11 was

\$2.32/bu. The average July 2006 CBOT corn futures closing price (using the last three days prior to the last day of contract trade) on July 11, 12, and 13 was \$2.55/bu. To determine the average June corn futures price, an average using May and July CBOT corn futures is calculated, giving a June price equal to \$2.44/bu ( $1/2 \times \$2.32/\text{bu} + 1/2 \times \$2.55/\text{bu}$ ). The state- and month-specific LGM basis of -\$0.18/bu for June in Nebraska is again added to the June futures average to yield \$2.26/bu. This is the same basis used in the expected corn price calculation. The \$2.26/bu represents an actual June corn price used in the AGM calculation for August marketings.

Once all actual prices have been determined, the AGM can then be calculated by inserting each price into Equation 2.7.

$$\text{Actual Gross Margin}_{\text{Aug}} = (12.50 \text{ cwt} \times \$90.73/\text{cwt}_{\text{Aug}}) - (7.50 \text{ cwt} \times \$108.18/\text{cwt}_{\text{Mar}}) - (57.5 \text{ bu} \times \$2.26/\text{bu}_{\text{Jun}}) = \$192.83 \text{ per head} \quad (\text{Equation 2.7})$$

The AGM for August can then be determined by multiplying the number of target marketings for the month of August by the AGM per head. In this example, 500 head were targeted to be marketed in August, making the total AGM equal to \$192.83 per head times 500 head or \$96,415.00.

An indemnity will be paid if the GMG is higher than the total AGM. In this example, *no indemnity is paid* because the GMG (\$42,565.00) is less than the total AGM (\$96,415.00). No indemnity was paid due to the way that the fed cattle, feeder cattle, and corn prices moved from January to August and essentially changed the gross margin. The fed cattle price actually increased from \$85.52/cwt to \$90.73/cwt over the insurance period. Feeder cattle prices made a favorable move as well, decreasing from \$114.70/cwt to \$108.18/cwt. Unlike the other two commodities, corn made an undesirable move in the market, increasing from \$2.15/bu to \$2.26/bu. The favorable moves in the fed cattle and feeder cattle markets more than compensated for the unfavorable move in the corn market, resulting in no indemnity payment because the AGM was higher than the insured GMG.

## 2.5 Premiums

At the time of policy purchase, producers can elect to not insure a portion of their expected gross margin by selecting a deductible between \$0 and \$150 per head in \$10 per head increments for cattle and \$0 to \$20 per head in \$2 per head increments for swine. Like any insurance policy, as deductibles increase, premiums decrease. Premiums depend on a number of factors, including the amount of coverage selected, a producer's marketing plan (the number of livestock in various target marketing months), the level of the futures prices,

and the amount of price volatility. Because the premiums are based on actual market prices, the cost of LGM insurance and available coverage levels vary each sales closing period.

The premiums are determined through a statistical simulation and not by a simple step-by-step equation. A determinant Monte Carlo simulation is used to calculate simulated losses from 5,000 random draws. These random draws are the same for every insured. Inputs into this simulation are projected monthly gross margin levels, 5,000 monthly gross margin draws, a marketing plan that shows the number of cattle marketed in each of the ten months (or the number of swine marketed in each of the five months), and a deductible level. RMA first calculates the total EGM and GMG as explained in Section 2.4. A simulated total AGM for the insurance period is then determined and compared to the GMG to find simulated losses. The average of the simulated losses is then multiplied by 1.03 to determine the total premium that will be paid by the producer. Further information regarding LGM for Cattle premium calculations can be accessed from RMA's Web site at [http://www.rma.usda.gov/policies/2008/lgm/08LGM\\_CattlePremCalc.pdf](http://www.rma.usda.gov/policies/2008/lgm/08LGM_CattlePremCalc.pdf), and LGM for Swine premium calculations are available at [http://www.rma.usda.gov/policies/2008/lgm/08LGM\\_SwinePremCalc.pdf](http://www.rma.usda.gov/policies/2008/lgm/08LGM_SwinePremCalc.pdf).

Producers cannot calculate the premiums themselves. However, premiums and associated GMGs can be accessed from RMA's online calculator at <http://www.rma.usda.gov/apps/premcalc/>. To access LGM premiums and GMGs via the USDA Web site, follow these steps:

1. New users must obtain a Login ID and Password. No fees are associated with setting up a new account, which can be set up by clicking on the words "New users click here." Fill in the appropriate account and security information and return to the main menu. Once an account is set up, a list of choices will be displayed. Click "start a new calculation."
2. Select a crop year — When purchasing coverage, the first year listed is the most current year in which there exists target marketing months available for coverage. Select the year in which coverage was initially purchased from the drop-down list.
3. Select a state — This is the state in which the livestock to be insured are located (see Section 1.4).
4. Select a county — This is the county in which the livestock to be insured are located. Premiums for LGM do not actually vary across counties within a state. USDA-RMA's crop insurance premium pricing Web site is set up for this for crop insurance policies that do vary by county (e.g. Multi-Peril Crop Insurance, Crop Revenue Coverage, and Revenue Assurance).

5. Select an insurance plan — Choose Livestock Gross Margin.
6. Select the appropriate commodity — Choose either cattle or swine. Select the type of operation (calf or yearling for cattle, farrow to finish, finishing, or SEW pig finishing for swine) and the corresponding insurance period. Next enter the number of head corresponding to the appropriate target marketing month(s). A zero must be entered for the months

in which no livestock will be marketed. Choose the appropriate deductible and click “process quotes.” (It will take a few minutes for the quote to be processed.)

7. The following screen will appear after the quote is processed. A GMG and a producer premium are provided. Clicking on the “Detail Worksheet” or the “Producer Worksheet” will provide further information regarding the GMG and producer premium.

Login ID	Calc ID	Crop Year	Insurance Plan	State	County
jwaterb	235922	2007	82	31	109
Crop	Type	Practice	Measure		
0803	807	904	DOL		
Menu					
Premium Calculations for Quote: 001					
Premiums					
Gross Margin Guarantee			Producer Premium		
			\$269.00		
\$2,698.87					
Menu					
<a href="#">Detail Worksheet</a>   <a href="#">Producer Worksheet</a>   <a href="#">Quote Criteria List</a> <a href="#">Calculation List</a>   <a href="#">Print</a>   <a href="#">Home Page</a>   <a href="#">Logout</a>					

The premium for the initial insurance period must be paid in full at the time the application is due, otherwise the application will not be accepted. The premium for all subsequent insurance periods must be fully paid by the applicable sales closing date for each policy. Otherwise, all target marketings will be reduced to zero for each month of the insurance period (that the premium is not paid), and a producer will have no coverage for any livestock under that unpaid policy.

## 2.6 Indemnity Payments

Indemnities are not paid until the end of the insurance period and are based on the total AGM and GMG, so a loss in one particular month may be offset by gains in another month. The differences between the GMG and the total AGM are calculated, and an indemnity is paid if the actual is less than the guarantee. Because of this, it is possible for months when the AGM exceeds the GMG to offset those where the GMG is greater than the AGM. In the event that an indemnity is due (GMG is

higher than the total AGM), the insurance company will issue a notice of probable loss (see *Appendix 2*) approximately 10 days after all AGMs in the 11-month (cattle) or 6-month (swine) insurance period are released by RMA. Within 15 days of receipt of this notice, the producer must then submit a marketings report (see *Appendix 3*) and packer sales receipts to document that the livestock actually were marketed and sold in order to receive the indemnity payment.

## 2.7 Summary

This chapter covered technical terminology specific to the LGM policy such as target marketings, EGM, GMG, and total AGM. This chapter also explained additional LGM policy provisions and how actual and expected prices and margins are calculated. Premiums and deductibles were also discussed, and the chapter concluded with determining indemnities. *Chapter 3* will provide additional detail on LGM policy provisions.