


# “Hedging Outcomes with LGM Insurance”

## Understanding Risk Management Using Livestock Gross Margin Insurance

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### *Understanding Risk Management Using Livestock Gross Margin Insurance*




Home Study Course  
Chapter 5  
*Hedging Outcomes with LGM Insurance*

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### Chapter 5 Objectives

- Impacts of price changes on gross feeding margins
- Determining net margins received from hedges using LGM insurance
- Conditions for suspension of LGM sales




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### Changes in Gross Margin

- Indemnities are paid when hedged gross feeding margins narrow to a specific level
- Gross margin changes based on move of one commodity price relative to another
- Ex: Fed Cattle ↑ + Feeder Cattle ↓ + Corn ↓



Gross Margin ↑

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Gross Margin Increases		
<i>Fed Cattle</i>	<i>Feeder Cattle</i>	<i>Corn</i>
<i>Swine</i>	<i>Soybean Meal</i>	<i>Corn</i>
↑	↓	↓
↑	↓	↔
↑	↔	↓
↑	↔	↔
↔	↓	↓
↔	↔	↓
↔	↓	↔
Large ↑	Small ↑	Small ↑
Small ↓	Large ↓	Large ↓

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<http://livestockinsurance.unl.edu>  
 University of Nebraska-Lincoln

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Gross Margin Decreases		
<i>Fed Cattle</i>	<i>Feeder Cattle</i>	<i>Corn</i>
<i>Swine</i>	<i>Soybean Meal</i>	<i>Corn</i>
↓	↑	↑
↓	↑	↔
↓	↔	↑
↓	↔	↔
↔	↑	↑
↔	↔	↑
↔	↑	↔
Large ↓	Small ↓	Small ↓
Small ↑	Large ↑	Large ↑

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### Hedging Example 1

- Yearling operation
- Producer buys LGM on January 31, 2006 to insure August 2006 target marketings
- Deductible \$0/hd
- GMG = \$85.13/hd
  - ✓ Same GMG as in Chapter 2

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### Minimum Expected Margin (MEM)

- MEM = GMG + Expected LGM Basis Margin
- Expected LGM Basis Margin =
  - (12.5 × Exp LC basis) – (7.5 × Exp FC basis) – (57.5 × Exp C basis)
  - ✓ Exp 8/31 LC basis = \$1.83/cwt
  - ✓ Exp 3/31 FC basis = \$1.00/cwt
  - ✓ Exp 6/30 C basis = \$0.09/bu
- Expected Basis Margin = \$10.20/hd

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### Minimum Expected Margin (MEM)

- MEM = GMG + Expected Basis Margin
- MEM = \$85.13/hd + \$10.20/hd
- MEM = \$95.33/hd

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### Understanding Risk Management Using Livestock Gross Margin Insurance

Date	Cash	LGM Insurance	LGM Basis
1/31/06	No Action	Buy LGM Insurance Adj. LC price = \$85.52/cwt Adj. FC Price = \$114.70/cwt Adj. C Price = \$2.15/bu GMG = \$85.13/hd (Deductible = \$0/hd)	Exp 8/31 LC Basis = \$1.83/cwt Exp 3/31 FC Basis = \$1.00/cwt Exp 6/30 C Basis = \$0.09/bu Exp Basis Margin = \$10.20/hd

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Date	Cash	LGM Insurance	LGM Basis
1/31/06	No Action	Buy LGM Insurance Adj. LC Price = \$85.52/cwt Adj. FC Price = \$114.70/cwt Adj. C Price = \$2.15/bu GMG = \$85.13/hd (Deductible = \$0/hd)	Exp 8/31 LC Basis = \$1.83/cwt Exp 3/31 FC Basis = \$1.00/cwt Exp 6/30 C Basis = \$0.09/bu Exp Basis Margin = \$10.20/hd
3/31/06	Buy FC @ \$121.07/cwt	No Action	Act 3/31 FC Basis = \$2.82/cwt
6/30/06	Buy C @ \$2.15/bu	No Action	Act 6/30 C Basis = -\$0.32/bu
8/31/06	Sell LC @ \$81.27/cwt	No Action	Act 8/31 LC Basis = -\$2.73/cwt
12/31/06	Cash GM = -\$15.775/hd	Adj. LC Price = \$84.00/cwt Adj. FC Price = \$118.25/cwt Adj. C Price = \$2.47/bu AGM = \$21.10/hd Indemnity = \$64.03/hd (GMG > AGM)	Act Basis Margin = -\$36.875/hd Exp Basis Margin = \$10.20/hd Difference = -\$47.075/hd

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### Net Margin (NM)

- **NM = Cash Gross Margin + Indemnity**
- **NM = -\$15.775/hd + \$64.03/hd**
- **NM = \$48.255/hd**
  
- **NM without LGM = -\$15.775/hd**
  - ✓ Cash Gross Margin

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### Actual Basis Margin

- **Actual LGM Basis Margin =**  
 $(12.5 \times \text{Act LC basis}) - (7.5 \times \text{Act FC basis}) - (57.5 \times \text{Act C basis})$ 
  - ✓ Act 8/31 LC basis = -\$2.73/cwt
  - ✓ Act 3/31 FC basis = \$2.82/cwt
  - ✓ Act 6/30 C basis = -\$0.32/bu
- **Actual Basis Margin = -\$36.875/hd**
- **Act Basis Margin – Exp Basis Margin = -\$47.075/hd**

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### Outcome with Indemnity & Basis Margin Weakening

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- MEM = \$95.33/hd
- NM = \$48.255/hd
- NM – MEM = Act Basis Margin – Exp Basis Margin
- NM – MEM = -\$47.075/hd
  - ✓ Act Basis Margin – Exp Basis Margin = - \$47.075/hd

### Hedging Example 2

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- Expected and Actual LGM Basis are the same as hedging example 1
- MEM = GMG + Expected Basis Margin
- MEM = \$85.13/hd + \$10.20/hd
- MEM = \$95.33/hd
- No indemnity is paid (GMG < AGM)
  - ✓ This is actual outcome that occurred in 2006

Date	Cash	LGM Insurance	LGM Basis
1/31/06	No Action	Buy LGM Insurance Adj. LC Price = \$85.52/cwt Adj. FC Price = \$114.70/cwt Adj. C Price = \$2.15/bu GMG = \$85.13/hd (Deductible = \$0/hd)	Exp 8/31 LC Basis = \$1.83/cwt Exp 3/31 FC Basis = \$1.00/cwt Exp 6/30 C Basis = \$0.09/bu Exp Basis Margin = \$10.20/hd
3/31/06	Buy FC @ \$111.00/cwt	No Action	Act 3/31 FC Basis = \$2.82/cwt
6/30/06	Buy C @ \$1.94/bu	No Action	Act 6/30 C Basis = -\$0.32/bu
8/31/06	Sell LC @ \$88.00/cwt	No Action	Act 8/31 LC Basis = -\$2.73/cwt
12/31/06	Cash GM = \$155.95/hd	Adj. LC Price = \$90.73/cwt Adj. FC Price = \$108.18/cwt Adj. C Price = \$2.26/bu AGM = \$192.83/hd Indemnity = \$0/hd (GMG < AGM)	Act Basis Margin = -\$36.875/hd Exp Basis Margin = \$10.20/hd Difference = -\$47.075/hd

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### Net Margin (NM)

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- NM = Cash Gross Margin + Indemnity
- NM = \$155.95/hd + \$0/hd
- NM = \$155.95/hd

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### Outcome without Indemnity & Basis Margin Weakening

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- MEM = \$95.33/hd
- NM = \$155.95/hd
- NM - MEM = (Act Basis Margin – Exp Basis Margin)  
+ (AGM – GMG)
- NM – MEM = (-\$36.875/hd - \$10.20/hd)  
+ (\$192.83/hd - \$85.13/hd)
- NM – MEM = \$60.62/hd

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### Summary of Hedging Outcomes

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- Prefer second scenario
  - ✓ Higher net margin (\$155.95/hd vs. \$48.255/hd)
  - ✓ AGM exceeds GMG
  - ✓ LGM basis was still weaker than expected
- Protection worked in first scenario
  - ✓ Just wasn't protected from LGM basis weakening
- Premiums were not included in this example

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### Suspension of LGM Insurance Sales

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- Sales will be suspended when:
  - ✓ Lean hogs or live cattle futures prices decrease by daily limit two consecutive days when EGM is being determined
  - ✓ Input prices (feeder cattle or corn or soybean meal) increase by daily limit two consecutive days when EGM is being determined

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### Suspension of LGM Sales

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- Sales can also be suspended if an event occurs during or after trading hours deemed to significantly change market conditions on which LGM for that day was rated
  - ✓ News reports
  - ✓ Announcements
  - ✓ Other events
- Limited underwriting capacity

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## LGM Insurance Summary

- Establishes minimum gross feeding margin
- More flexible than futures and options with guaranteed pricing
- Producers must still assume some basis risk
- Can use futures and options with LGM
- Cannot use LRP and LGM on same livestock at the same time

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