

Using Futures, Options or LRP Insurance to Manage Feeder Cattle Price Risk

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Understanding Risk In Agricultural Prices

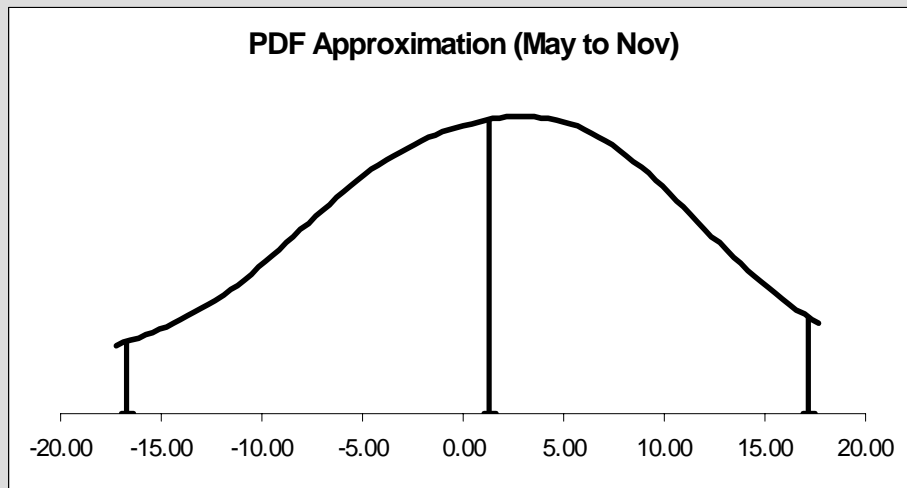
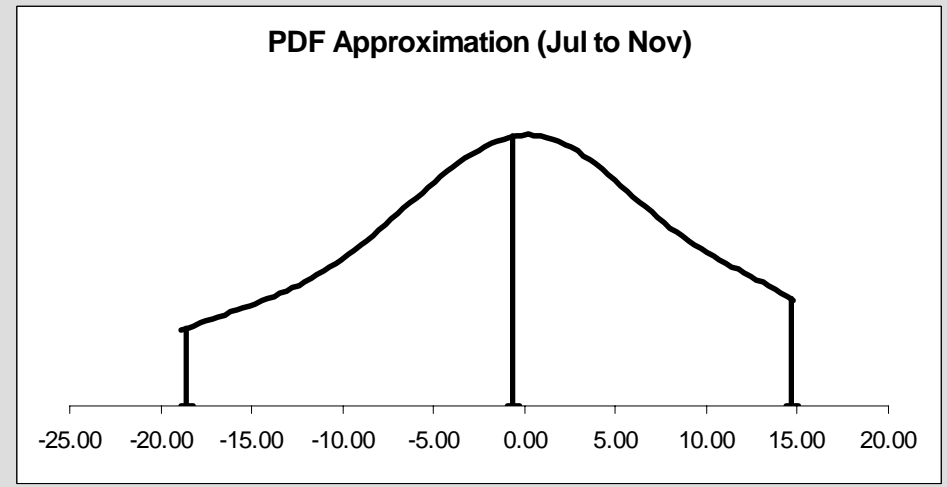
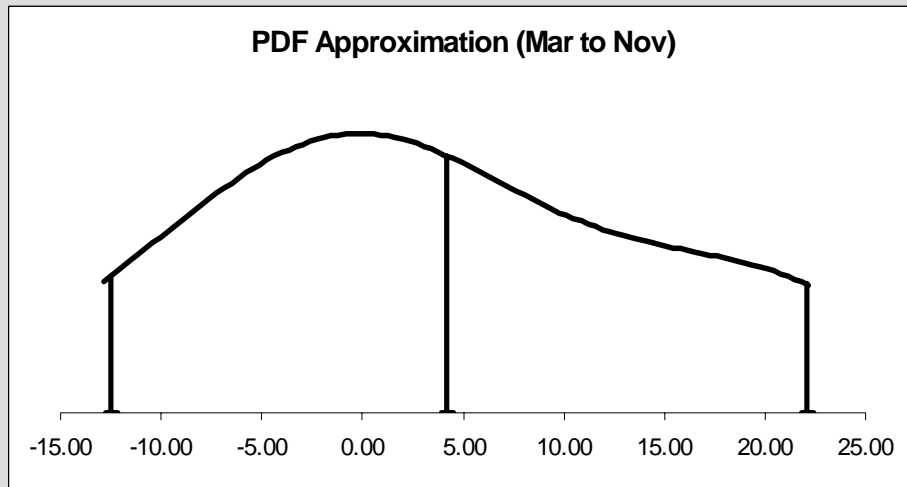
- Wyoming Auctions 650 Steer Calf Price
 - October 2006 \$114.85 per cwt
 - November 2006 \$103.00 per cwt
 - A difference of \$77 per calf sold
 - The prior 5 years the average difference was less than \$25 per head between Oct and Nov

 - Reason for drop in 2006, Grain Prices were increasing dramatically during that time frame
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Understanding Risk In Agricultural Prices

- The futures market is a predictor of prices in the future
 - For example, in the spring cattle producers look at fall feeder cattle futures contract to get an idea of what calf and feeder cattle prices might be in the fall
 - How much do these futures contracts prices change from spring to fall
 - Specifically Nov Feeder Cattle Futures
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Changes in Nov Feeder Cattle Futures from Spring to Fall, 1999-2008



**Range of Market Changes
On Average Prices were about what
were expected
\$19/cwt lower in fall than expected
\$22/cwt higher in the fall than expected
Standard Deviation = \$9.50/cwt**

Changes in Nov Feeder Cattle Futures from Spring to Fall, 1999-2008

- A Standard Deviation of 9.50
 - This means that in 1 out of 3 years prices are likely to be more than \$9.50 per cwt higher or lower in November than what was expected in the spring
 - That means \$50 more or \$50 less than you expected for a 550 lb calf
 - You probably are not concerned about the \$50 more, can you financially withstand the \$50 less?
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November Feeder Cattle

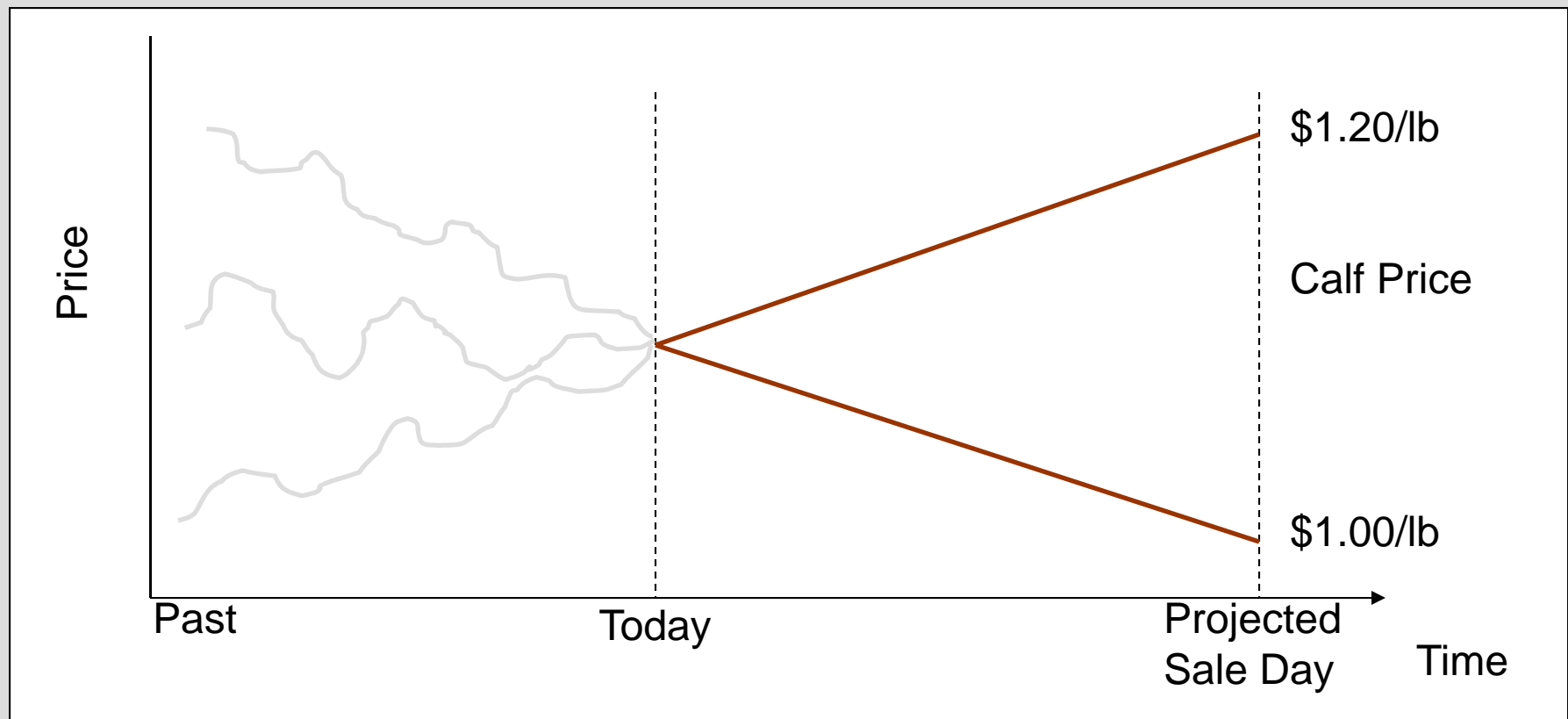
GF X0 [10] - FEEDER CATTLE-GLOBEX LAST: 111.15 CHANGE: ▼ 0.40 HIGH: 111.60 LOW: 110.95 11/3/2010



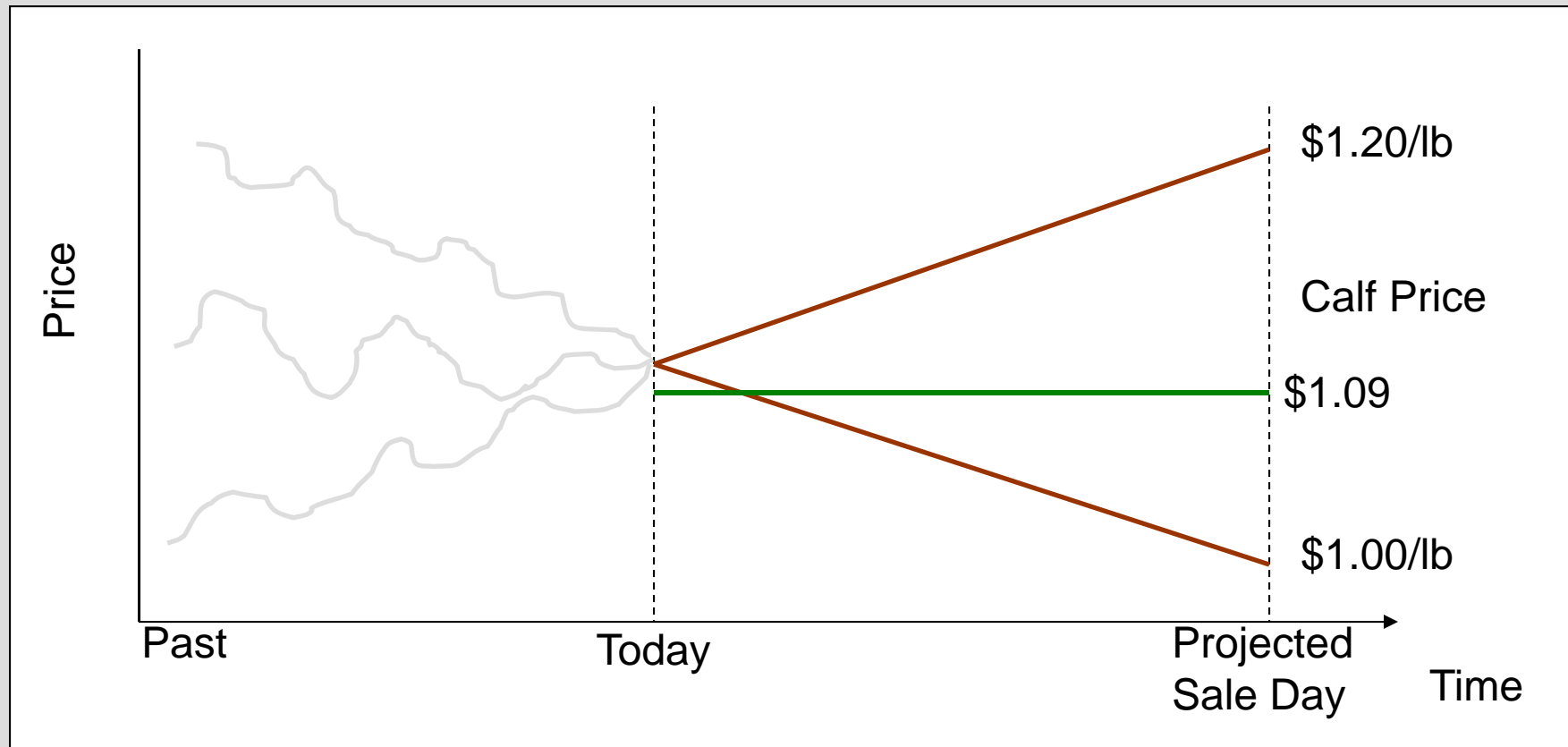
What Choices do you have if you do not wean and sell until November?

- Separate the Pricing and Delivery Decision
 - Price any time
 - Deliver in November when you wean
 - Pricing Alternatives
 - Forward Contract / Futures Hedge
 - Put Option / LRP Feeder Cattle Insurance
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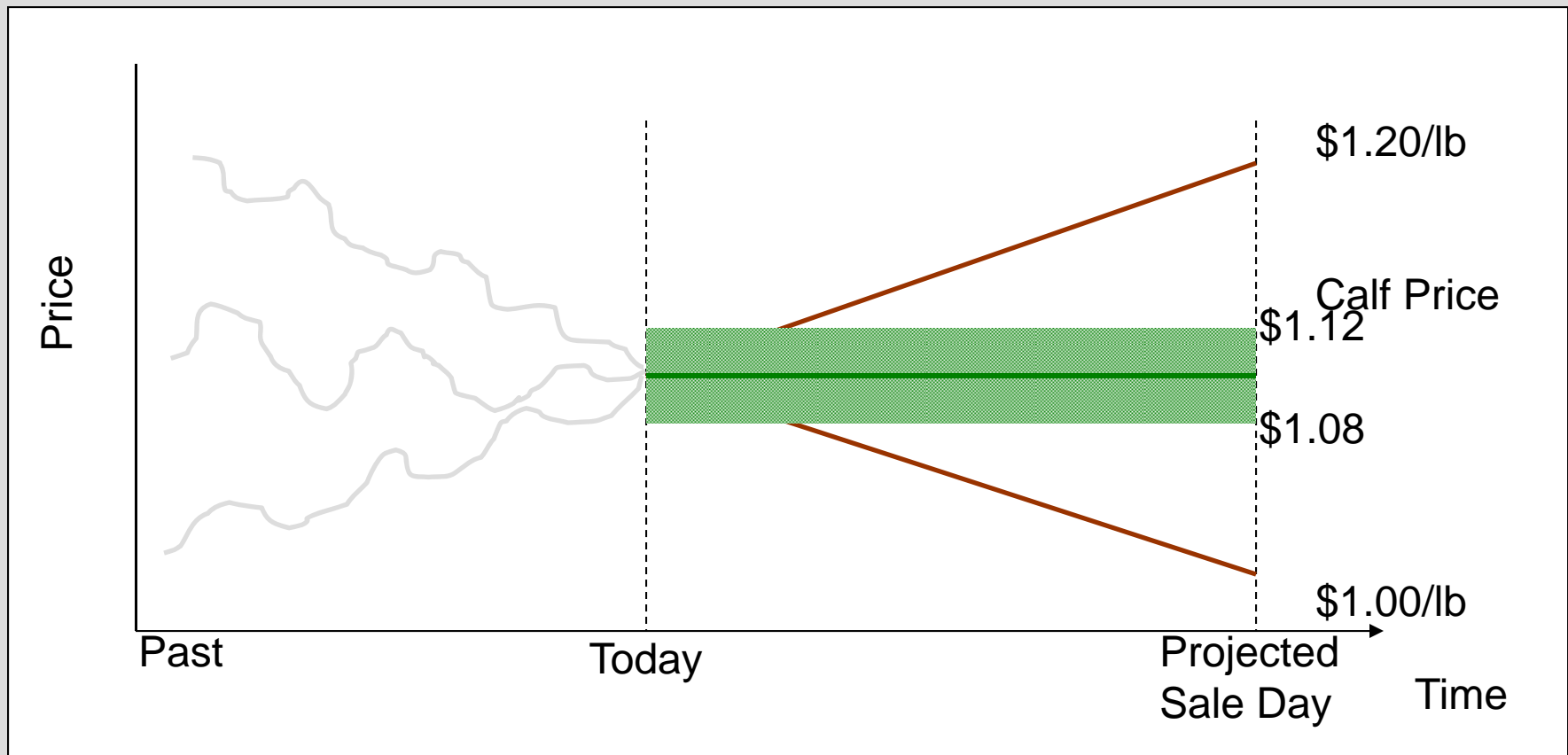
Cash Price Uncertainty



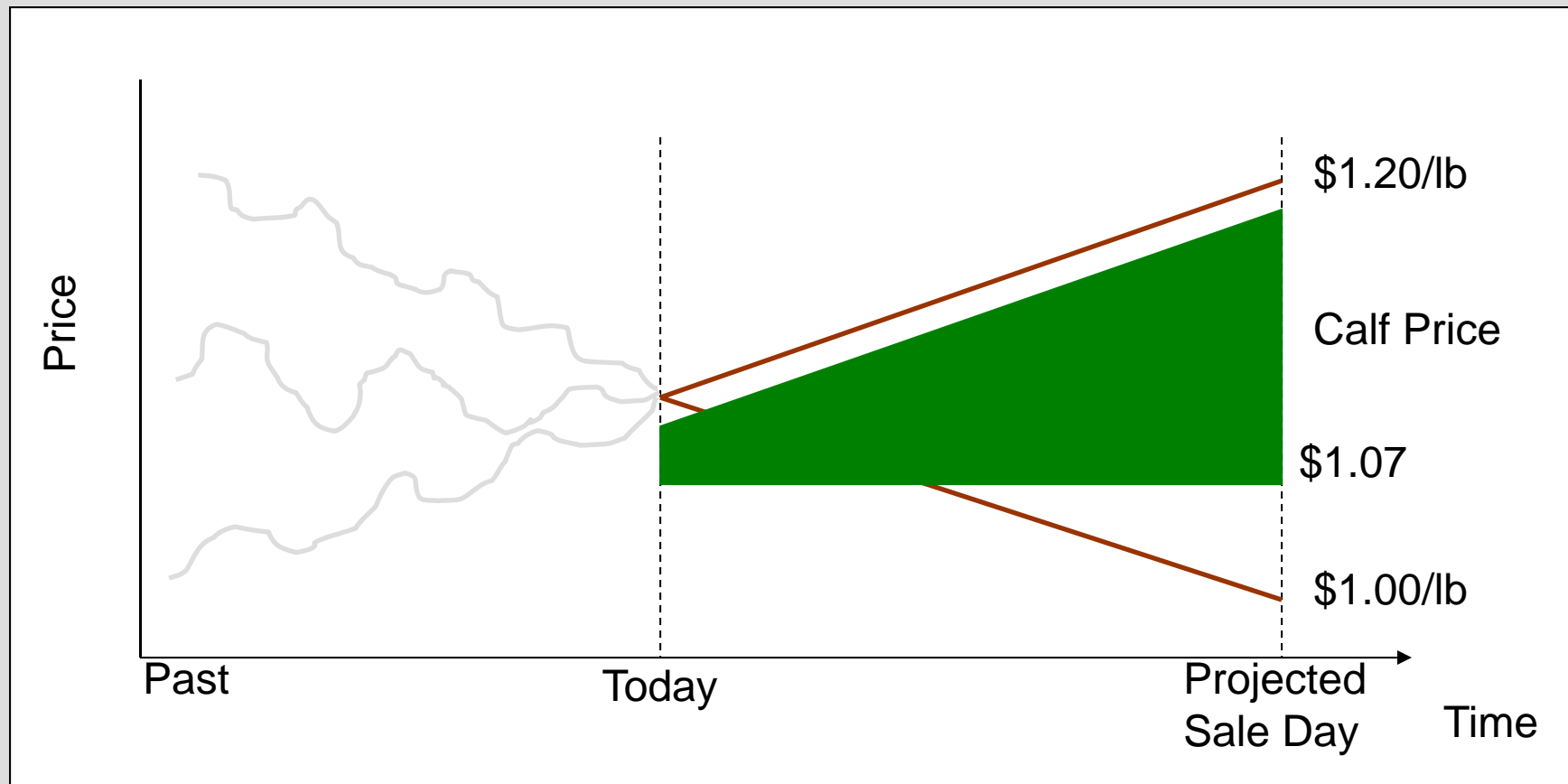
Cash Price Uncertainty Forward Contract



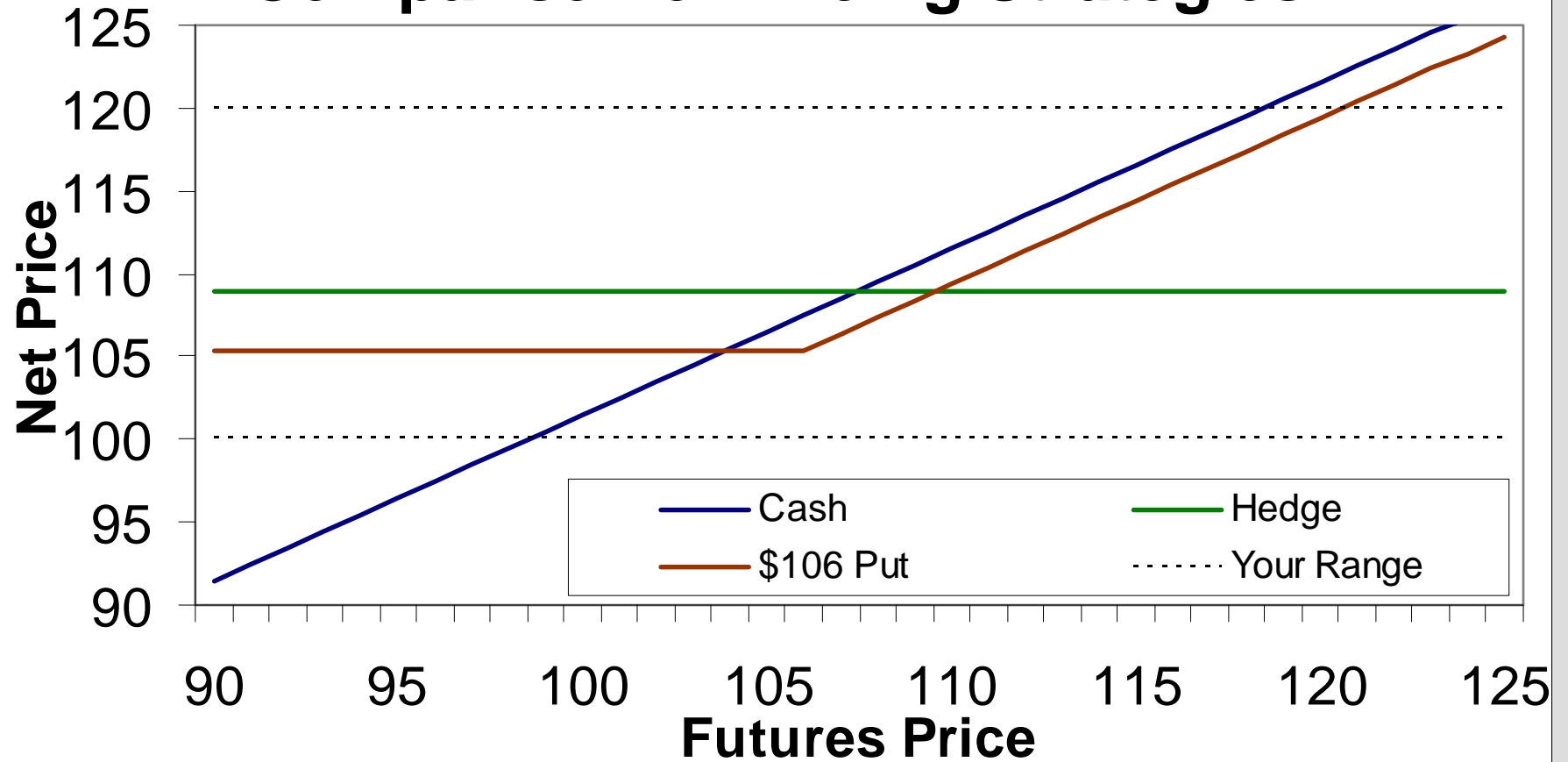
Cash Price Uncertainty Futures Hedge



Cash Price Uncertainty Put Option or LRP Insurance



Comparison of Pricing Strategies



Short Futures Hedge

Date	Cash	Futures	Basis
Aug 4	Exp. Net Sale Price \$120	Sell Nov FC \$115	Exp. \$5.00

Futures Hedge (Actual)

Date	Cash	Futures	Basis
Aug 4	Exp. Net Sale Price \$120	Sell Nov FC \$115	Exp. \$5.00
Nov 2	Sell 550 lb Steer \$118.91	Buy Nov FC \$111.55	\$7.36
		\$3.45	
NSP = 118.91 + 3.45 = 122.36			

Futures Hedge (Higher Scenario)

Date	Cash	Futures	Basis
Aug 4	Exp. Net Sale Price \$120	Sell Nov FC \$115	Exp. \$5.00
Nov 2	Sell 550 lb Steer \$125.00	Buy Nov FC \$120.00	\$5.00
		-\$5.00	
NSP = 125.00 - 5.00 = 120.00			

Hedging Summary and Risk

- ❑ A short hedger will receive the expected net price regardless of whether futures prices move higher or lower
 - ❑ However, if basis weakens, then the short hedger will receive a lower net price than expected
 - ❑ If basis strengthens, then the short hedger will receive a higher net price than expected
 - ❑ Hedging removes price level risk
 - ❑ Hedging does not remove basis risk, local price risk relative to the market level
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Options and Futures

- Futures contracts are an obligation
 - Must deliver or offset
 - Liable for margin calls
 - “Locked into” a price
- Options on futures contracts are the right to take a position in the futures market at a given price called the “strike” price, but beyond the initial premium, the option holder has no obligation to act on the contract
 - Lock-in a price but can still participate in the market if prices move favorably
 - No margin calls
 - Pay a “premium” for the option (similar to price insurance)

Buy a Put Option for Price Protection

- Put option: the right to sell a futures contract at a given price (right to a short position at a given strike price)
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The Mechanics of Put Option

- A producer buys a Put to protect against declining prices
 - Chooses Strike Price and Pays the premium
 - Determines the minimum expected price
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Minimum Expected Price Examples

Min Exp Price = Strike Price – Premium +/- Basis

\$107.50 = \$108 - \$2.50 + \$2.00 feeder cattle

\$93.20 = \$98 - \$3.30 - \$1.50 live cattle

Buying a Put

Nov 2010 FC (Actual)

Date	Cash	Options	Basis
Aug 4	Exp. Min. \$114.82	Buy \$112 FC Put Pay \$2.18	Exp. \$5.00
Nov 2	Sell 550 lb Steer \$118.91	Nov FC 111.55 \$112 Put has \$1.30 value	Actual \$7.36
		-\$0.88	
Net Sale Price = \$118.91 - \$0.88 = \$118.03			

Buying a Put

Nov 2007 FC (Higher Scenario)

Date	Cash	Options	Basis
Aug 4	Exp. Min. \$114.82	Buy \$112 FC Put Pay \$2.18	Exp. \$5.00
Nov 2	Sell 550 lb Steer \$125	Nov FC 120 \$112 Put as \$0 value	Actual \$5.00
		-\$2.18	

Net Sale Price = \$125 + \$2.18 = \$122.82

Put Option Summary

- Put Options can be used to establish a price floor, a minimum price
 - Worst case you lose your premium
 - Can take advantage of higher market prices
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LRP Feeder Cattle Insurance

Livestock Risk Protection Insurance

- Establishes a floor selling price
 - Pays producer if National cash price index falls below insured level
 - Does not insure your cash price
 - Basis risk must still be considered
 - Very similar to purchasing a put option
 - Options are fixed in size (50,000 lbs)
 - LRP is flexible (1-1,000 hd)
 - LRP purchased through Crop Insurance Rep.
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LRP “Terminology”

- Expected Ending Value (EEV)
 - The expected National cash index
 - This is based on the underlying futures market price at the time
 - Coverage Prices
 - Range from 70% to 95% of EEV
 - Determines level of protection
 - Similar to choosing a strike price for a put option
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LRP "Terminology"

□ Cost Per CWT

- $\text{Cost/cwt} = \text{Coverage Price} \times \text{Rate}$
- Premium cost of coverage
 - Similar to a Put Premium

□ Actual Ending Value (AEV)

- Cash Index Price on Coverage End Date

□ Indemnity

- Paid if AEV is Less than Coverage Price
 - $\text{Indemnity} = \text{Coverage Price} - \text{AEV}$
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Feeder Cattle

Actual Ending Value

- CME Feeder Cattle Cash Index Price
 - National Average 650-850 lb. Steers
 - Medium and Large Frame 1-2 beef steers
 - If insuring lighter steers, heifers, Brahman or dairy calves a price adjustment is used
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Price Adjustment Factor

Weight	Steers Weight 1	Heifers Weight 1	Brahman Weight 1	Dairy Weight 1
< 600 lbs	110%	100%	100%	100%
Weight	Steers Weight 2	Heifers Weight 2	Brahman Weight 2	Dairy Weight 2
600-900 lbs	100%	90%	90%	80%

Feeder Cattle LRP Example

- Aug 4, 2010, Expect to sell 100 head of 550 lb steer calves in 13 weeks
 - Expect to Sell Nov 2, 2010
 - Expected Ending Value = \$126.42/cwt
 - (Nov FC 114.93 X 1.10)
 - Coverage Price = \$120.94/cwt
 - EEV X Coverage Level = \$126.42/cwt X 95.67%
 - Rate = 0.01712
 - Cost/Cwt = \$2.07/cwt
 - Coverage Price X Rate = \$120.94/cwt X 0.01712
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Feeder Cattle LRP Actual Result

- Coverage Price \$120.94
 - Actual Ending Value \$122.67
 - CME FC Index \$111.52 X 1.10 = \$122.67
 - Actual Ending Value is higher than Coverage Price
 - No indemnity paid
 - Net Price is \$118.91 - \$2.07 = \$116.84
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Feeder Cattle LRP (Lower Scenario)

- Coverage Price \$120.94
 - Actual Ending Value \$115.50
 - CME FC Index \$105 X 1.10 = \$115.50
 - Actual Ending Value is lower than Coverage Price
 - Indemnity paid of \$5.44
 - ($\$120.94 - \115.50)
 - Net Price is $\$112 + \$5.44 = \$117.44$
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More Detailed Information

Futures and Options

- Dillon Feuz, Utah State University, has an on-line series of Marketing Workshops at:

<http://cattlemarketanalysis.org/workshop.html>

LRP Insurance

- Darrell Mark, University of Nebraska-Lincoln has an on-line series of LRP Workshops at:

<http://livestockinsurance.unl.edu/>

Cow-Calf Risk Analysis Tool (CCRAT)

- On-Line Decision Support Tool
- Developed by Dillon M Feuz, USU
 - Funded in part by the USDA-RMA
- Compare Expected Returns Using
 - Cash
 - Futures
 - Options
 - LRP Feeder Cattle Insurance
 - AGR-Lite Crop Insurance

<http://cattlemarketanalysis.org/ccrat.html>

Cattle Market Analysis

Provided by Dillon M. Feuz, PhD

Funded By RMA



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RMAonline

Cow Calf Risk Analysis Tool

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This site was created with the purpose of helping cow-calf operations effectively analyze the net income risk involved in running a cow-calf operation and providing an analysis of a few of the most popular risk management tools available to producers. These tools include **hedging** with the futures market, **buying a put option**, buying livestock risk protection-feeder cattle insurance (**LRP**), or buying adjusted gross revenue-lite insurance (**AGR-Lite**). The analysis tool asks for basic information such as number of head of cattle you are running as well as weaning percents, weights, and price. Based on the information provided by the user, the tool will then perform a simulation analysis.

It is important to note that the purpose of this tool is not to calculate nor to predict the net income of any given year. It is designed rather to quantify the amount of risk inherent in the cash market, as well as production risk, and quantify the reduction of risk available through the various pricing and insurance options. Links have been provided to pages containing specific information and help in calculating some of the different values you will need to enter. For additional help there are numerous resources available at www.cattlemarketanalysis.org

To continue on to the risk analysis tool just click [here](#).

