The Effectiveness of LRP Insurance for Feeder Cattle Management

AAEA Extension Session Symposium

Crop Insurance and the Farm Bill:

A New Paradigm in U.S. Agriculture Policy

Louisville, KY October 9, 2013

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Overview of Presentation

- Livestock Revenue Protection (LRP) background and risk management objectives
- LRP policy purchasing parameters
- Retrospective analysis of LRP Feeder Cattle
- Analysis of LRP use by producers
- Implications of cattle producers risk preferences on LRP low participation rates



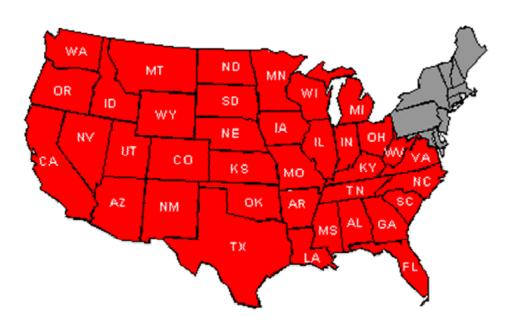
LRP Background

- Ag. Risk Protection Act, 2000 extended the crop insurance program to livestock
- LRP and LGM approved by FCIC in 2002, cattle pilot programs were offered in 2003, but suspended due to the December 2003, BSE case
- Reintroduced as pilot programs in 2004
- Now widely available across 37 states



LRP Feeder Cattle Availability

LRP (Livestock Risk Protection) insurance is an USDA RMA insurance policy intended to provide protection against a price decrease for feeder and fed cattle

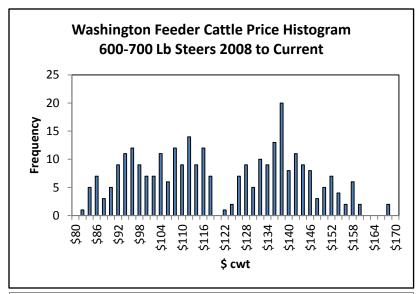


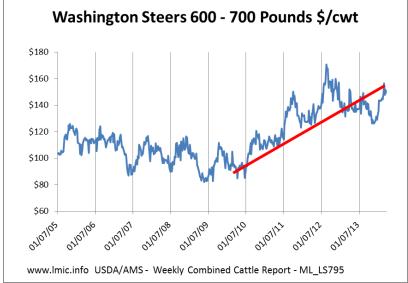
LRP is available in 37 states



LRP Demand Factors

- Livestock producer risks
 - Production (yield) risk
 - Feed cost risk
 - Price risk
 - Weekly price volatility 3%
 - Range -11% to 15%







LRP Demand Factors - continued

- Two sources of demand for LRP
 - Risk management
 - Speculative demand
- LRP resembles a put option to hedge sale price
 - No fixed contract size (50,000 lbs)
 - Can insure 1 to 2,000 head
 - Insure cattle weighing between 600 to 900 pounds at end of insurance period
 - Insure price by paying a premium payment per cwt of head insured
 - Expected lower transaction cost



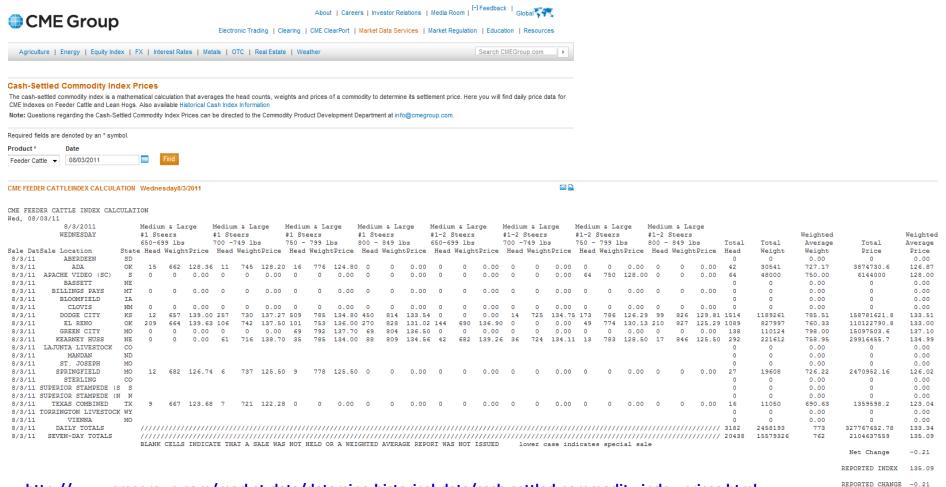
LRP Pricing and Settlement

CME Feeder Cattle Index is used to cash settle Feeder Cattle Futures and LRP policies

- Since both CME Feeder Cattle futures and LRP use the CME Feeder Cattle Index to settle, purchase of LRP for Feeder Cattle is similar to a CME Feeder Cattle put option
- LRP prices are tied directly to the futures market



LRP Actual Value Settlement Feeder Cattle Price Index



http://www.cmegroup.com/market-data/datamine-historical-data/cash-settled-commodity-index-prices.html



LRP Policy Parameters

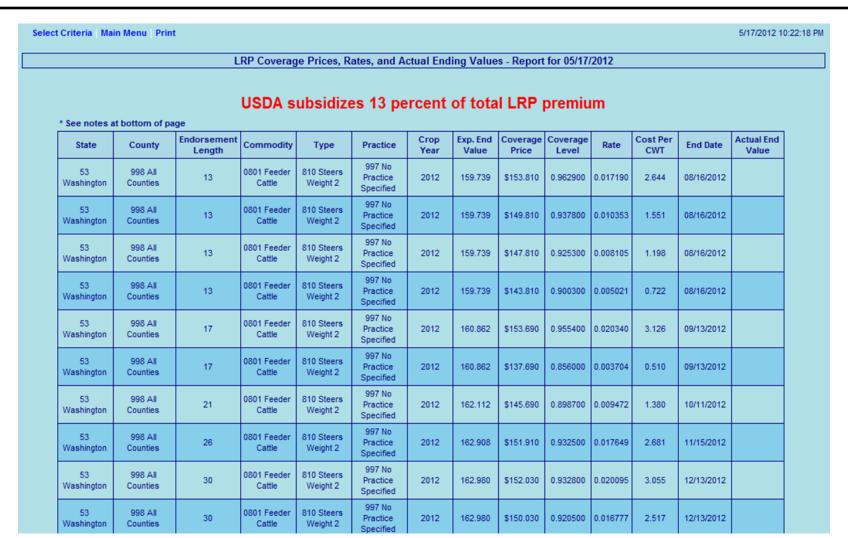
- 1. Can insure steers, heifers, Brahma and Dairy Breeds
- 2. Length of coverage periods:

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13, 17, 21, 26, 30, 34, 39, 43, 47, or 52 weeks
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- Coverage level is the percent of Expected End Value (EEV) insured
 Coverage levels range from 70 to 100%
 Expected End Value (EEV) is the CME Feeder Cattle Price index at the end of the coverage period
- 4. Coverage price (CP) = EEV * Coverage Level Coverage price is the % of Expected End Value ranging from 70 to 100 % the producer wants to insure
- 5. The LRP policy premium is calculated based on coverage level and EEV and amount insured (# head * weight). Premium is subsidized 13%.
- 6. The Actual End Value is the CME Group Feeder Cattle Index at the end of the coverage period



LRP Purchase Coverage Prices, Rates





LRP Coverage Prices, Rates and Actual Ending Values

Risk Averse Scenario - choosing highest coverage available

Nisk Averse Scenario -	choosing riighest ce	verage available
	Endorsement	
	Length	
	13 weeks	Notes
Expected end value	\$159.739	From RMA Table
Coverage Level	0.9629	Producer Chosen
Coverage Price	\$153.813	From RMA Table
Cost / cwt	\$2.644	From RMA Table
Assume 100 600 lb Feeders	600	Cwt insured
Insured Value	\$92,288	Insure coverage price
Premium Payment	\$1,586	Cost * insured weight
Subsidy 13%	\$206	13% subsidy
Net Premium Payment	\$1,380	Net premium payment
Actual End Value	\$138.83	CME price index
Indemnity Payment	\$8,989.61	(Coverage-end)*cwts
Gain/(loss) in expected market value	(\$12,545.40)	ROUGH estimate of market loss
Gain/(loss) in LRP investment	\$7,609.44	Indemity - net premium payment
ROI on LRP	551%	Gain / net premium payment



LRP Retrospective Evaluation

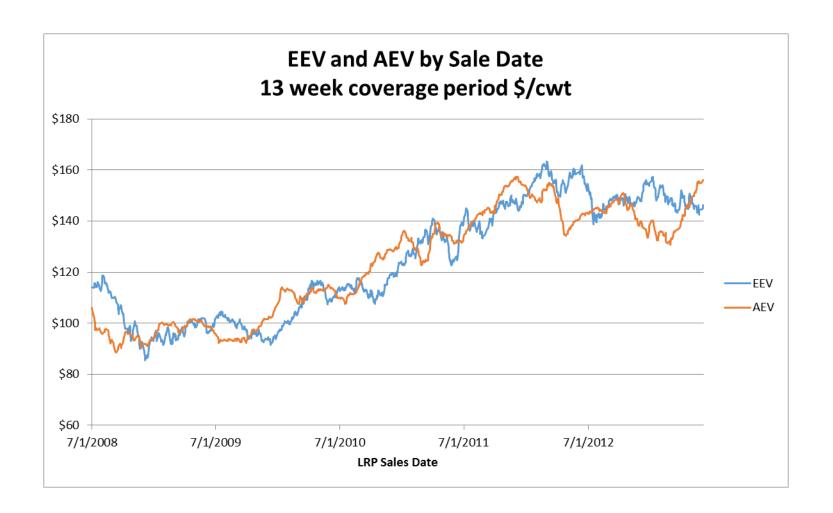
Any questions on LRP policy parameters

Next is a series of graphs evaluating LRP EEV versus AEV on the effectiveness of LPR from a producers perspective for the coverage periods of provided data

Data provided by USDA RMA

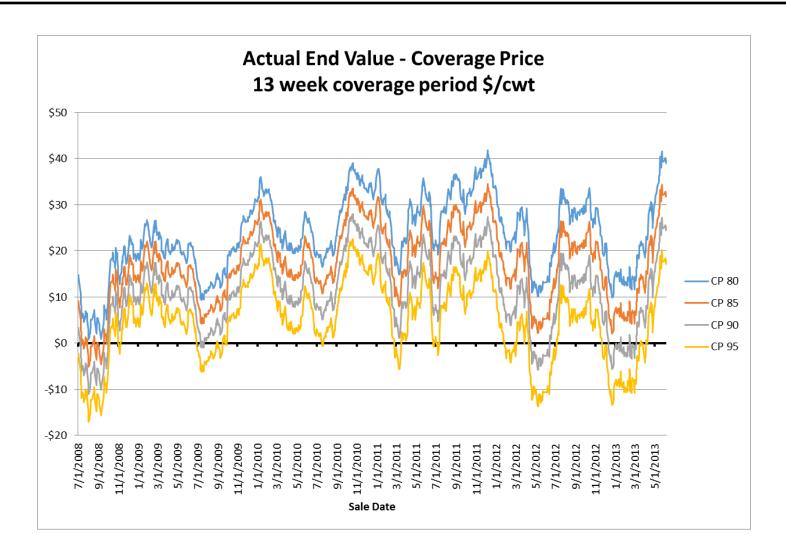


LRP Retrospective Evaluation – 13 weeks



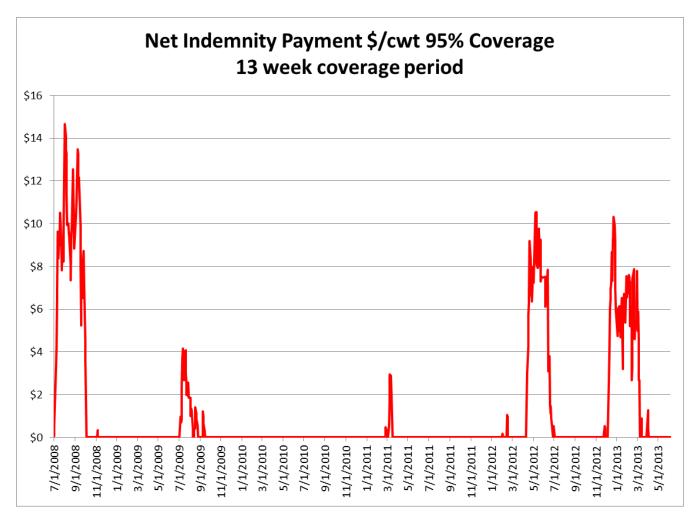


LRP Retrospective Evaluation – 13 weeks



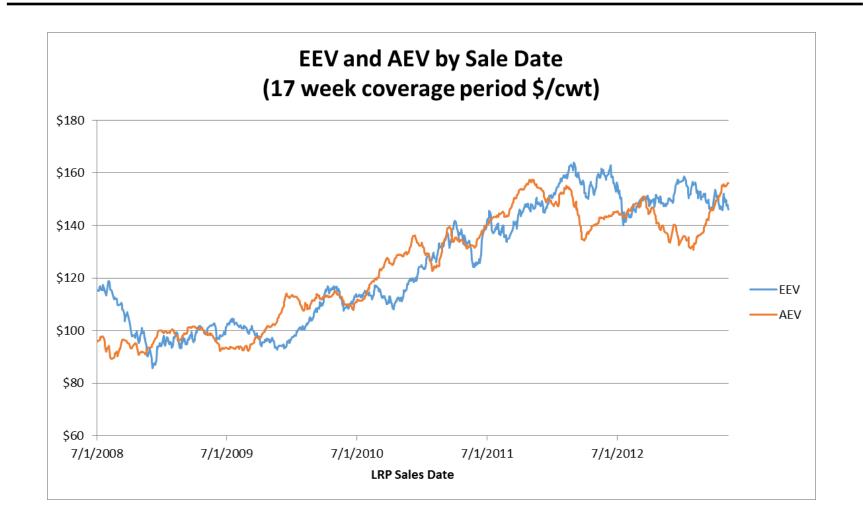


LRP Retrospective Evaluation – 13 weeks



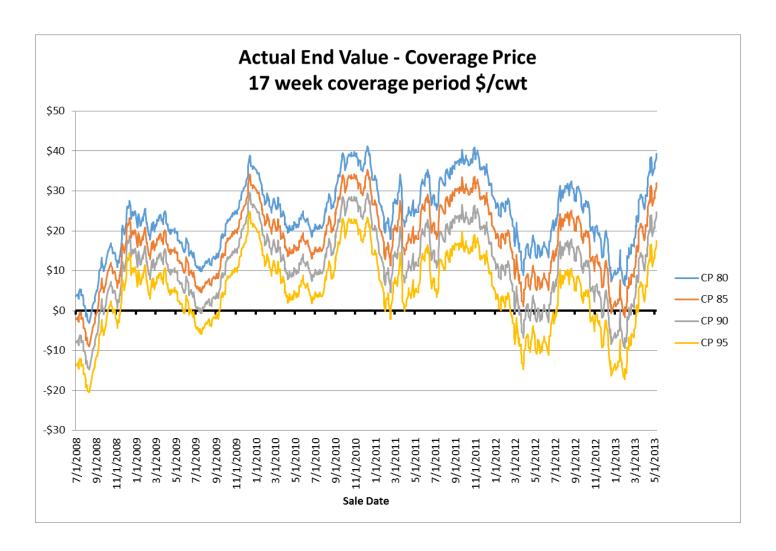


LRP Retrospective Evaluation – 17 weeks



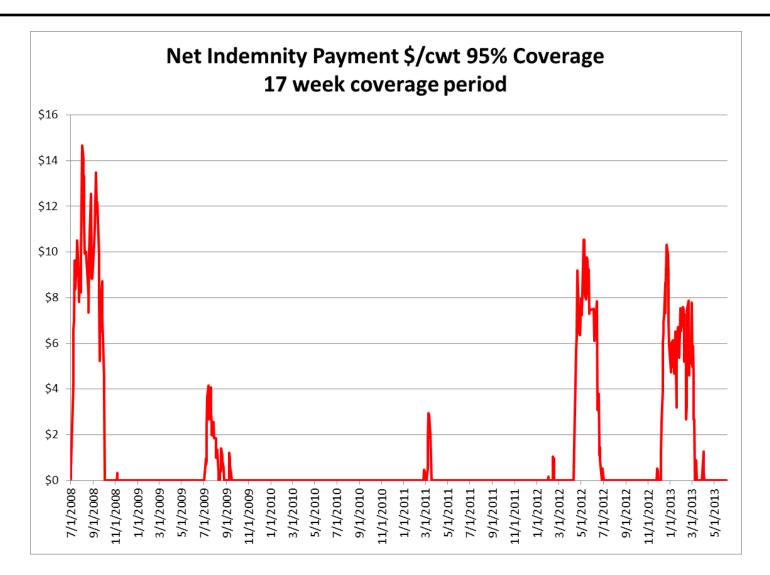


LRP Retrospective Evaluation – 17 weeks



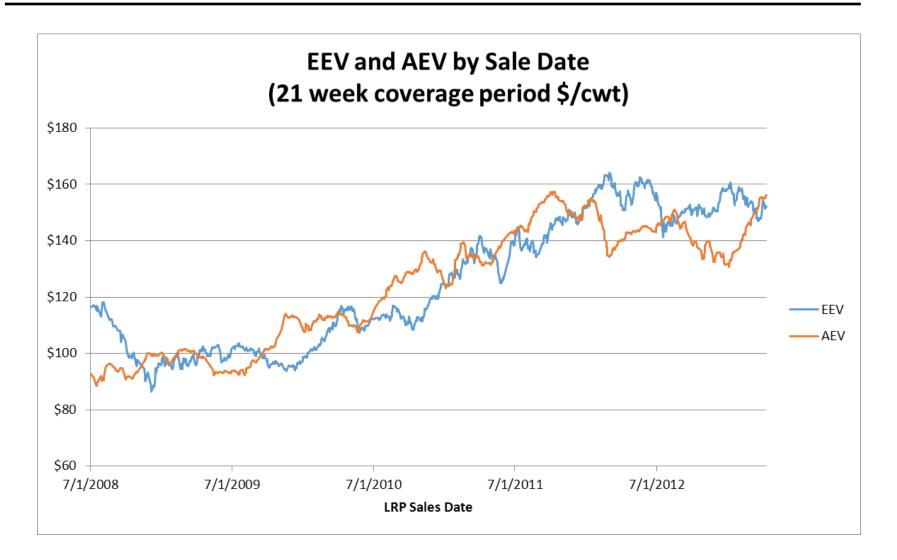


LRP Retrospective Evaluation – 17 weeks



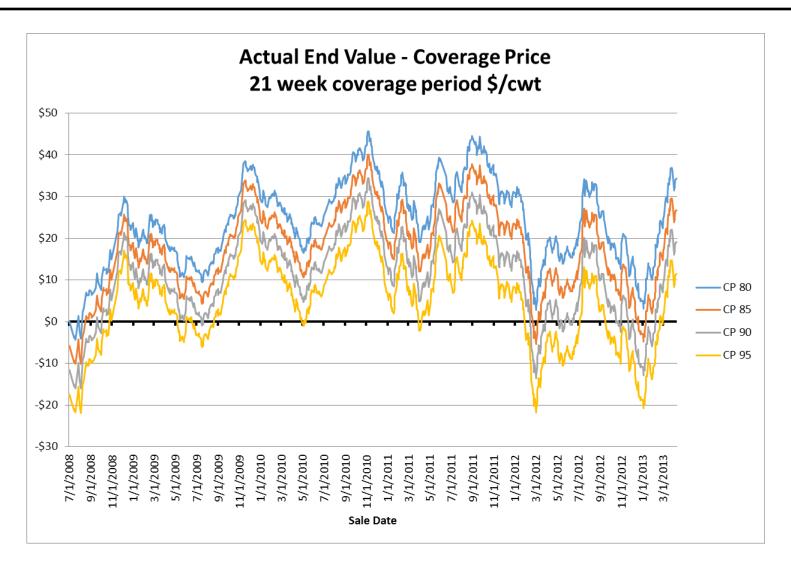


LRP Retrospective Evaluation – 21 weeks



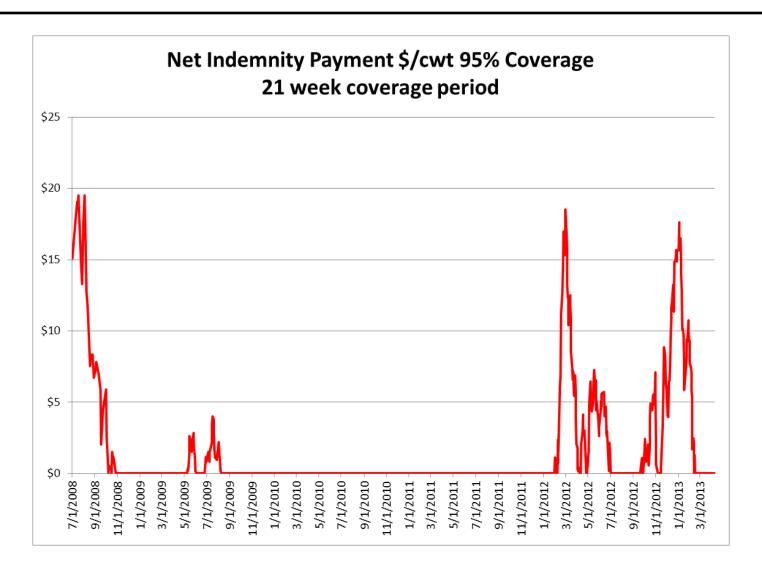


LRP Retrospective Evaluation – 21 weeks



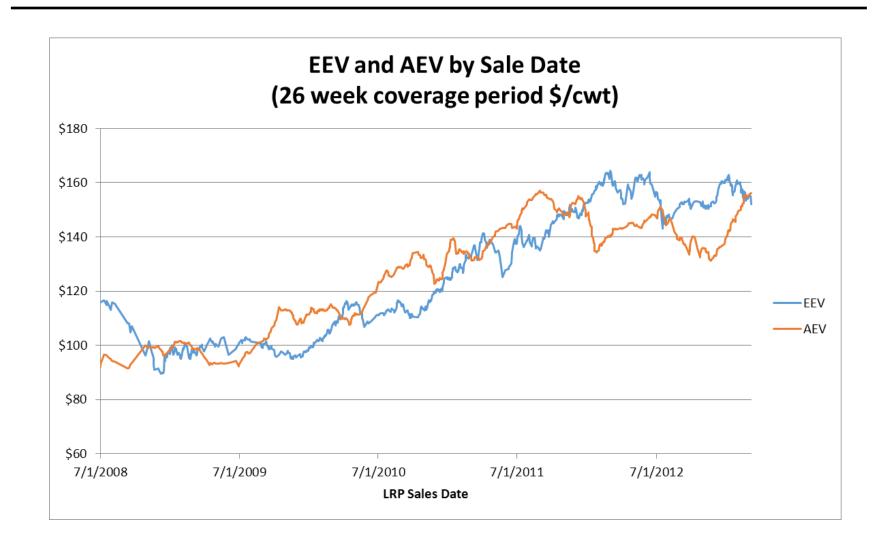


LRP Retrospective Evaluation – 21 weeks



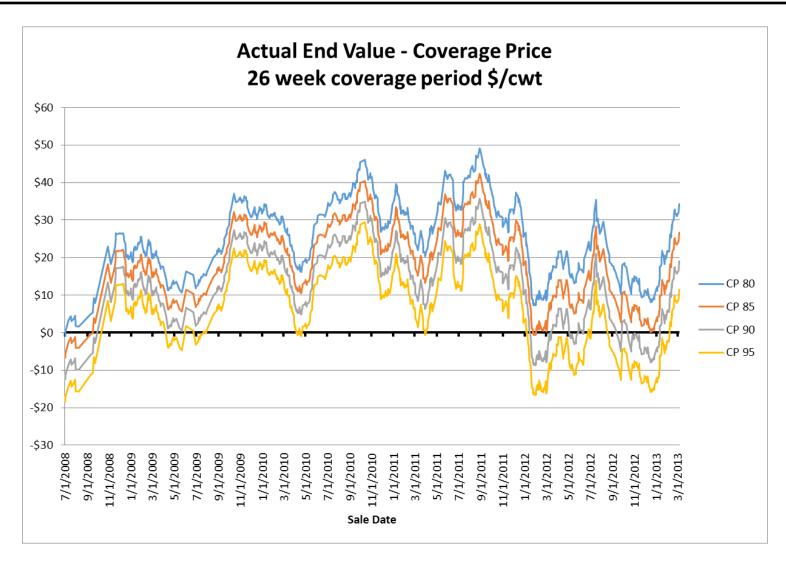


LRP Retrospective Evaluation – 26 weeks



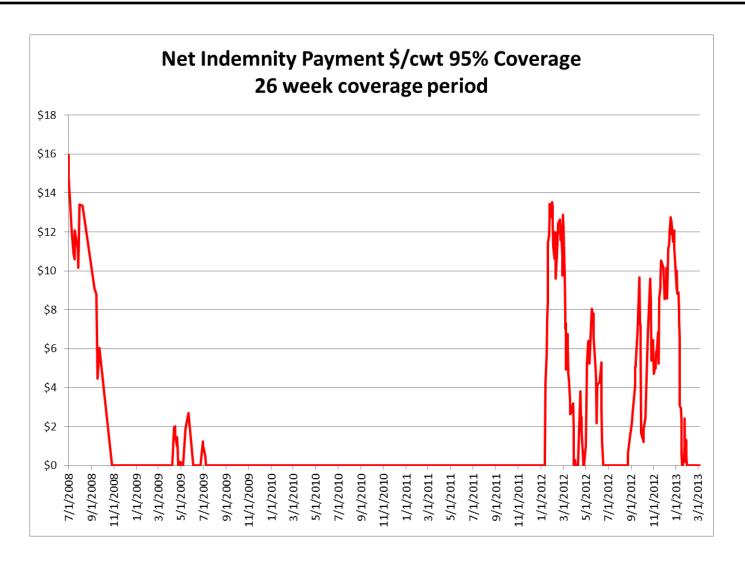


LRP Retrospective Evaluation – 26 weeks



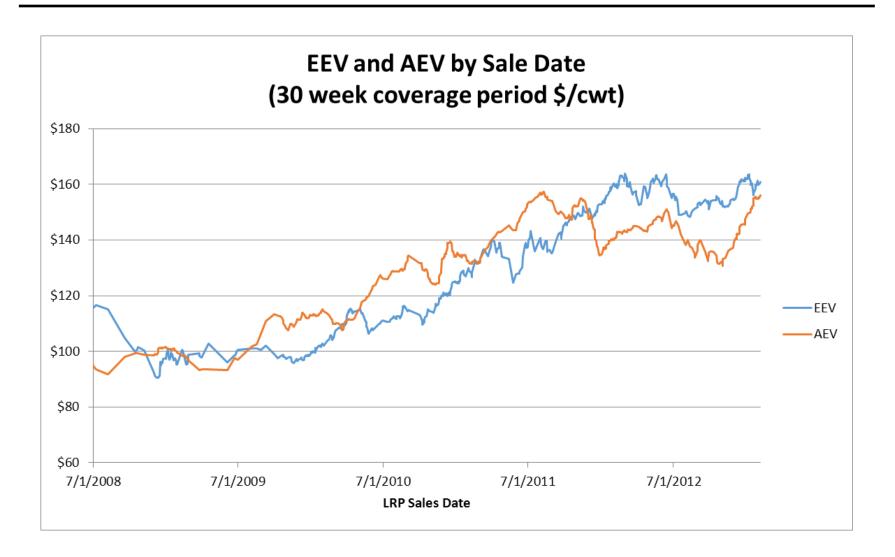


LRP Retrospective Evaluation – 26 weeks



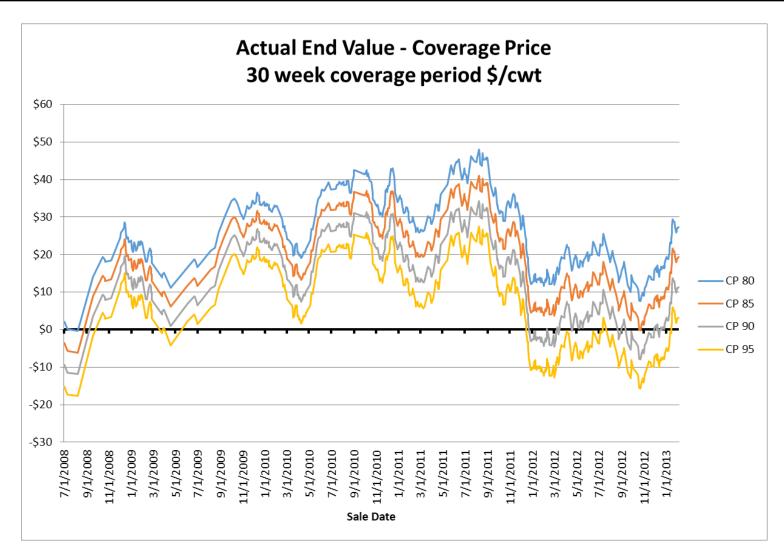


LRP Retrospective Evaluation – 30 weeks



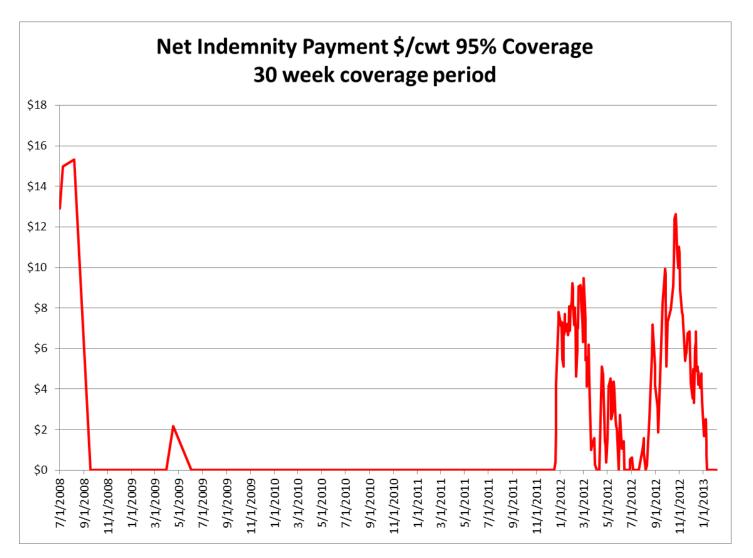


LRP Retrospective Evaluation – 30 weeks



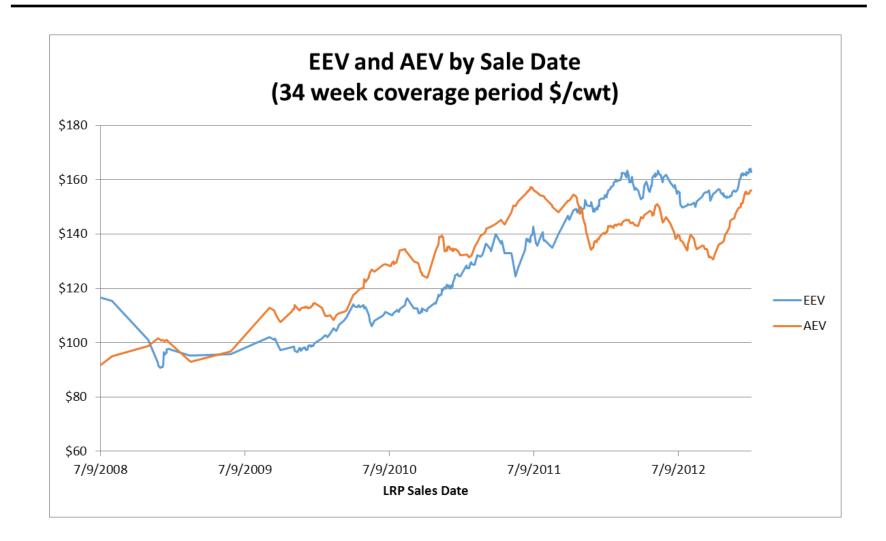


LRP Retrospective Evaluation – 30 weeks



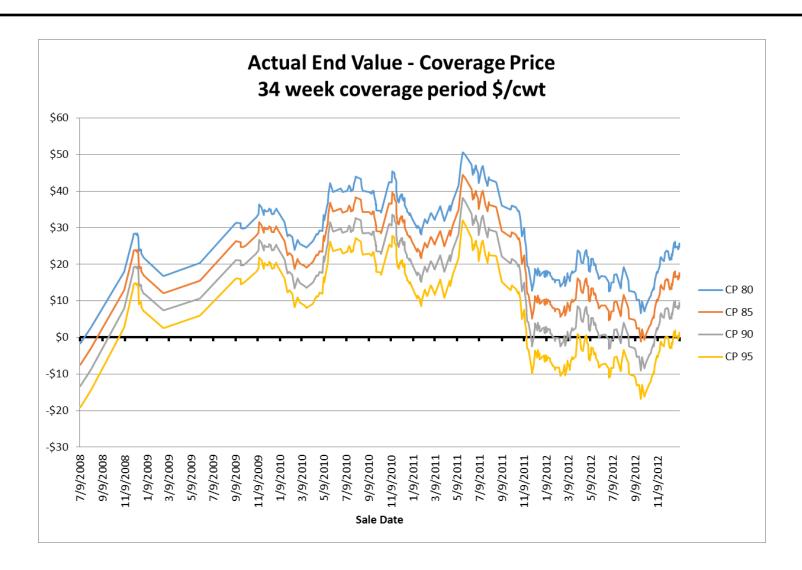


LRP Retrospective Evaluation – 34 weeks



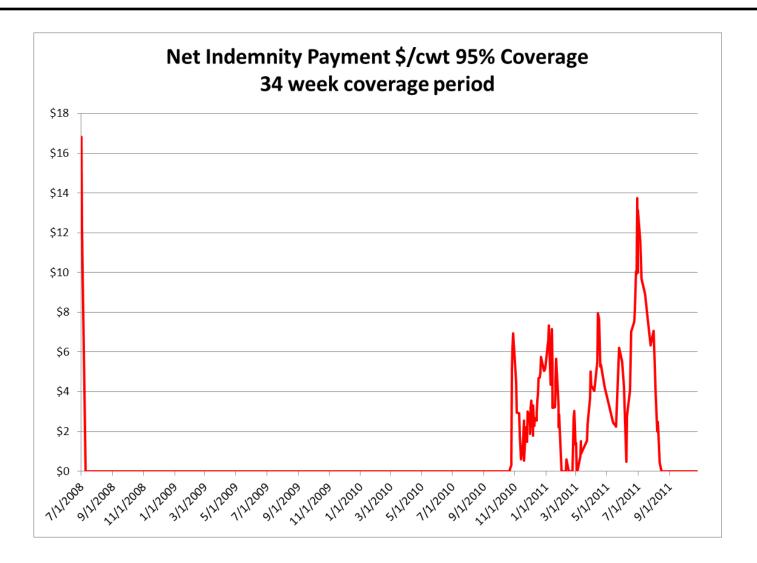


LRP Retrospective Evaluation – 34 weeks





LRP Retrospective Evaluation – 34 weeks





LRP Retrospective Evaluation

Summary of Net Indemnity Payment

		<u> </u>	
		Number	Average
	Total	Indemnity	Net Indemnity
Coverage	Number	Payments	Payment
Period	Offered	>0	\$/cwt
13	1129	211	\$5.58
17	1071	221	\$5.89
21	970	235	\$6.37
26	743	172	\$6.85
30	538	145	\$5.67
34	342	109	\$4.53



LRP Retrospective Evaluation

Interpretations

- Extended periods of times when effective
 - AEV moves below EEV to trigger an indemnity payment
 - In 2008 and 2011-2012 LRP was an effective tool for price risk management
- Need high coverage level to be effective
 - Coverage level less than 90 rarely results in an indemnity payment



LRP October Sale Price Risk Management

October Risk Management Analysis

		,,,	
			Total
Coverage			Number
Period	Sale	End	of Data
(Weeks)	Month	Month	Points
13	July	October	88
17	June	October	71
21	May	October	65
26	April	October	52
30	March	October	26
34	February	October	21



LRP October Sale Price Risk Management

Effectiveness of LRP for October Calf Sales

		Coverage Period					
		13	17	21	26	30	34
	n	19	2	0	0	0	0
2008	n<0	19	2	0	0	0	0
	Avg AEV-CP95	-\$10.47	-\$13.59	\$0.00	\$0.00	\$0.00	\$0.00
	n	14	18	19	11	3	2
2009	n<0	14	11	17	11	2	0
	Avg AEV-CP95	-\$4.83	-\$1.81	-\$3.35	-\$2.59	-\$0.58	\$0.00
	n	19	19	12	16	11	5
2010	n<0	2	0	0	6	0	0
	Avg AEV-CP95	-\$6.58	\$0.00	\$0.00	-\$0.49	\$0.00	\$0.00
	n	18	15	15	12	5	4
2011	n<0	4	0	0	0	0	0
	Avg AEV-CP95	-\$1.38	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	n	18	17	19	13	7	10
2012	n<0	2	17	19	13	7	10
	Avg AEV-CP95	-\$3.37	-\$5.27	-\$8.39	-\$3.31	-\$4.38	-\$8.78

Avg AEV-CP95 is average of n < 0 which is the average indemnity payment \$/cwt.

Average premium payment is \$2.86/cwt for 95% coverage level.



U.S. LRP and LGM Summery of Use

LRP and LGM Policies and Loss Ratios

	Number Policies Earning Premium		Number Policies Earning Indemnity		Loss Ratio	
	LRP	LGM	LRP	LGM	LRP	LGM
2008	715	32	500	22	1.62	1.30
2009	410	21	242	8	1.60	0.37
2010	803	9	441	0	0.48	0.00
2011	1460	8	447	2	0.16	0.10
2012	1228	2	669	1	1.15	1.58

Federal Crop Insurance Corp. Summary of Business - Livestock as of 03/28/2013

http://www3.rma.usda.gov/apps/sob/soblpi/commodity.cfm



2012 LRP by State Use

2012 By State LRP Feeder Cattle Summary of Business a	nd Loss Ratios
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2012 by State LKF	ceder oatt	ic Guillilla	y or Dus	ilicoo alla	LU33 Italius	,			
	Policies	Policy	Number	Avg head		Total			Loss
State	Earn Prem	Indemnity	of Head	policy	Liabilities	Premium	Subsidy	Indemnity	Ratio
ALABAMA	2	2	50	25	43,417	1,272	164	2,862	2.25
ARKANSAS	2	1	157	79	162,756	1,591	207	7,530	4.73
CALIFORNIA	0	0	0	0	0	0	0	0	0
COLORADO	22	5	2,416	110	2,502,953	55,826	7,256	28,313	0.51
GEORGIA	2	2	346	173	373,240	11,716	1,523	27,302	2.33
IOWA	29	15	4,839	167	5,027,134	119,003	15,471	177,078	1.49
IDAHO	12	5	1,006	84	1,046,433	27,950	3,635	32,099	1.15
ILLINOIS	1	1	7	7	5,986	91	12	162	1.78
INDIANA	3	2	340	113	357,539	7,049	917	3,182	0.45
KANSAS	157	96	24,199	154	23,766,208	434,697	56,523	684,973	1.58
KENTUCKY	9	5	911	101	908,370	12,388	1,610	21,152	1.71
MICHIGAN	0	0	0	0	0	0	0	0	0
MINNESOTA	14	7	1,305	93	1,508,524	36,715	4,774	17,302	0.47
MISSOURI	47	27	9,716	207	10,373,453	227,288	29,550	382,629	1.68
MISSISSIPPI	1	1	75	75	69,774	2,570	334	2,298	0.89
MONTANA	34	26	5,005	147	4,997,361	161,322	20,973	266,565	1.65
NORTH CAROLINA	0	0	0	0	0	0	0	0	0
NORTH DAKOTA	126	68	15,745	125	17,722,975	381,829	49,634	687,019	1.8
NEBRASKA	231	136	27,202	118	27,122,685	773,296	100,527	976,992	1.26
NEW MEXICO	2	1	2,180	1090	2,850,892	94,867	12,332	98,814	1.04
OHIO	0	0	0	0	0	0	0	0	0
OKLAHOMA	87	33	25,743	296	27,217,127	467,110	60,724	425,890	0.91
OREGON	11	8	2,267	206	2,751,545	79,886	10,384	95,394	1.19
SOUTH DAKOTA	278	133	40,855	147	41,475,990	1,278,042	166,138	1,046,667	0.82
TENNESSEE	21	12	3,884	185	4,095,138	43,029	5,594	29,647	0.69
TEXAS	8	5	1,608	201	1,603,665	22,698	2,951	30,420	1.34
VIRGINIA	23	17	1,843	80	1,984,994	40,916	5,319	95,248	2.33
WASHINGTON	10	9	580	58	592,993	24,283	3,157	44,078	1.82
WISCONSIN	5	3	253	51	275,398	6,970	906	1,069	0.15
WEST VIRGINIA	20	5	1,569	78	1,736,826	33,933	4,415	21,927	0.65
WYOMING	17	11	2,944	173	3,481,959	98,369	12,787	181,760	1.85

Federal Crop Insurance Corp. Summary of Business - Livestock as of 03/28/2013 http://www3.rma.usda.gov/apps/sob/soblpi/commodity.cfm

Conclusions and future research

- High coverage levels are needed to trigger indemnity payment
- 13 week coverage period was most effective for October price risk management
- Not widely used
 - Need to determine subsidy funding limit constraint to LRP use
 - Need to evaluate continuous use for price risk management
 - Need to evaluate ranch size and risk management preferences
 - 67% of ranches less than 50 head



Questions

Thank you

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Basis – Price difference between Chicago and Toppenish







428 S. G Street Toppenish WA 98948



Market Risk Management - Basis

www.BeefBasis.com

Feeder Cattle 1	Basis Forecast		Compare Selling Strateg <u>Hedge Analy</u>		
State: Washington ▼	Location: Toppenish ▼		Expected Sale Date: 10/16/2012		
Sex: Steer ▼	Frame: Lg & Med/Lg ▼	Grade: All Others ▼	October		
Weight: 600 lbs/head	Head: 100		Sun Mon Tue Wed Thu Fri Sat		
Feeder Cattle Futures Price: 161.4 \$/cwt		Corn Futures Price: 5.26 \$/bu	30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27		
Reference Contract: Oct 2012 Transaction Date: May 16, 2012		Reference Contract: Dec 2012 Transaction Date: May 16, 2012	28 29 30 31 1 2 3 4 5 6 7 8 9 10		
Display Horizontal	Display Vertical		RUN		
Model-Estimated Feeder Cattle Ba	asis Values ¹	Feeder Cattle Basis Results	LRP Cattle Basis Results ⁶		
Model-estimated feeder cattle basis, \$	/cwt ²	-10.18	-11.52		
Confidence interval for basis, \$/cwt ³		-15.65 to -4.70	-17.16 to -5.87		
Expected cash price, \$/cwt		151.22	149.88		
Confidence interval for expected cash p	price, \$/cwt ³	145.75 to 156.70	144.24 to 155.53		
Optimal hedge ratio ⁴		0.9979	N/A		
Number of calves hedged per contract	5	84	N/A		



BeefBasis.com current hedge analysis

Feeder Cattle Futures Market							
Expected Price Realization, \$/cwt							
Feeder Cattle Futures at Sale Date	Basis	Sale Price	Gain On Hedge	Expected Realized Cash Price			
132.00	-10.50	121.50	17.08	138.58			
134.00	-10.50	123.50	15.42	138.91			
136.00	-10.51	125.49	13.75	139.24			
138.00	-10.51	127.49	12.08	139.57			
140.00	-10.52	129.48	10.42	139.90			
142.00	-10.52	131.48	8.75	140.23			
144.00	-10.52	133.48	7.08	140.56			
146.00	-10.53	135.47	5.42	140.89			
148.00	-10.53	137.47	3.75	141.22			
150.00	-10.54	139.46	2.08	141.55			
152.00	-10.54	141.46	0.42	141.88			
154.00	-10.55	143.45	-1.25	142.20			
156.00	-10.55	145.45	-2.92	142.53			
158.00	-10.55	147.45	-4.58	142.86			
160.00	-10.56	149.44	-6.25	143.19			
162.00	-10.56	151.44	-7.92	143.52			
164.00	-10.57	153.43	-9.58	143.85			
166.00	-10.57	155.43	-11.25	144.18			
168.00	-10.57	157.43	-12.92	144.51			
170.00	-10.58	159.42	-14.58	144.84			
172.00	-10.58	161.42	-16.25	145.17			



Market Risk

No matter what market risk tool you chose to use, you still need to market the cattle and deliver them to a sale point.



