Farm Program Policy
- Past, Present and Future

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Giles Distinguished Professor

MISSISSIPPI STATE UNIVERSITY™

Department of Agricultural Economics

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Where I am coming from today

- Dissertation research on crop insurance in the early 1990s
- Worked at ERS in the 1990's mostly on risk management issues
- Moved to Mississippi State in 1997 and have researched risk issues – many related to crop insurance
  - Demand, rating, interaction of crop insurance, Title I programs
  - Actuarial studies for RMA
- In 2013, got invited to help with Senator Cochran's Ag Committee staff on a part-time basis
- Back to academia

Ranked 3rd in AP Poll

Dak for Heisman!

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AGRICULTURAL RISK POLICY & INSURANCE COLLABORATORY

The revolutionary idea that defines the boundary between modern times and the past is the mastery of risk….Risk management guides us over the vast range of decision making from allocating wealth to safeguarding public health, from waging a war to planning a family, from paying insurance premiums to wearing a seatbelt; from planting corn to marketing cornflakes.

Peter Bernstein in "Against the Gods: The Remarkable Story of Risk

Jesse Tack – climate, insurance & weather

J.M. Riley – livestock risk & commodity markets

Ardian Harri – quantitative finance & derivatives

Barry Barnett – farm policy & index products

Alba Collart- specialty crops & behavioral economics

Keith Coble – farm policy, & insurance

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The ~~2011~~, ~~2012~~, ~~2013~~, 2014 Farm Bill

- 112th United States Congress Joint Select Committee on Deficit Reduction (aka the "Supercommittee"), but the Supercommittee failed
- Congress did not adopt a new farm bill in 2012 as scheduled
  - Senate adopted farm bill legislation
  - House Ag Committee bill was not considered by the full House
- 2008 farm bill was extended through the end of 2013
- Senator Cochran is named Ranking Minority Member of the Senate Committee on Agriculture, Nutrition, and Forestry
  - Senate passed farm bill legislation in June 2013
  - House Ag Committee reports out a bill that is defeated on the House floor
  - Nutrition programs are stripped out of House bill. Remaining titles are adopted by House in July. Nutrition legislation is adopted later
- The Agricultural Act of 2014 completed on January 27, 2014

Now in the hands of USDA to implement

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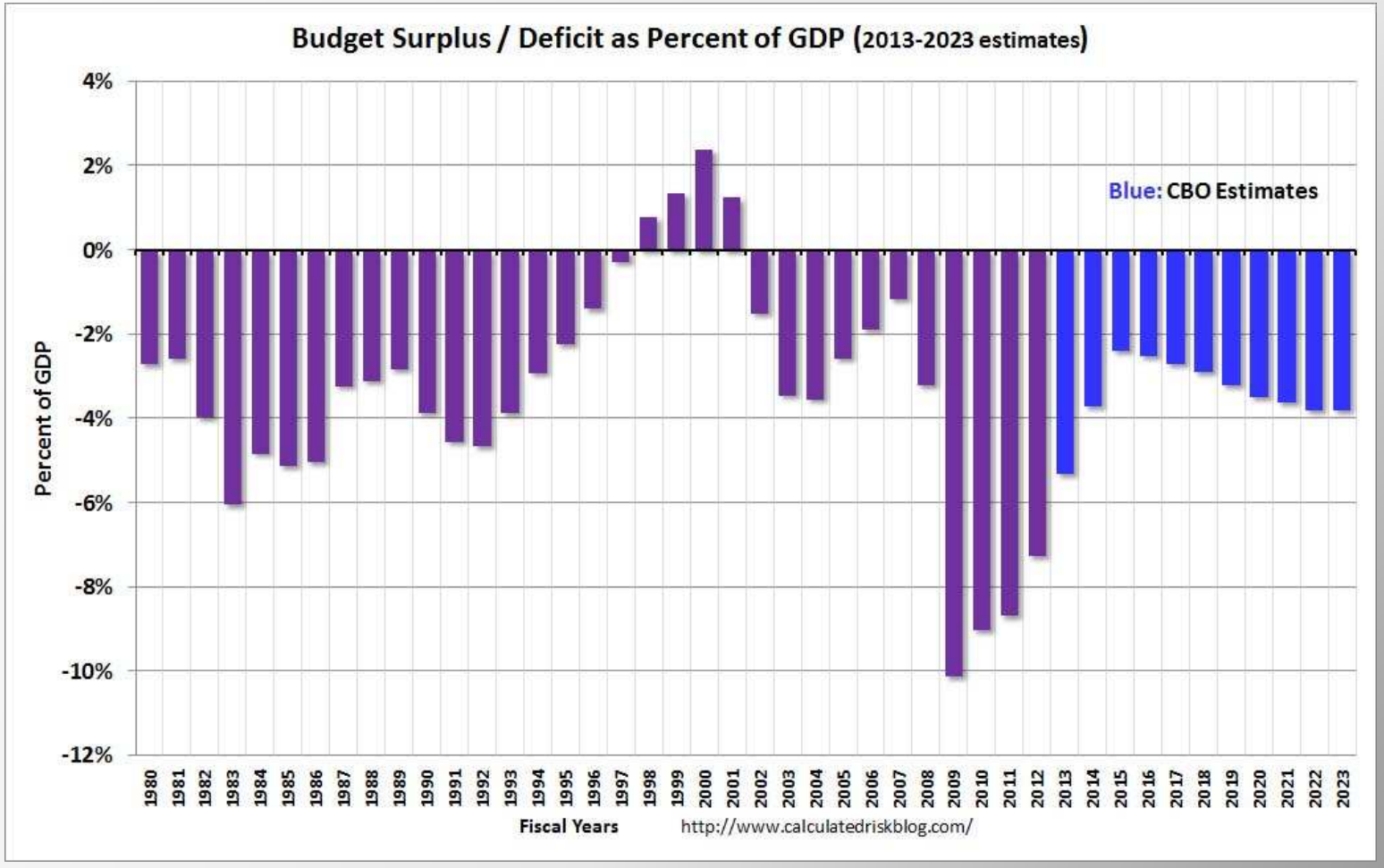
The fascinating inner working of a conference committee

My perspective on how we got here

-- Some driving factors to consider

The Farm Bill was couched in the context of budget deficits = cuts



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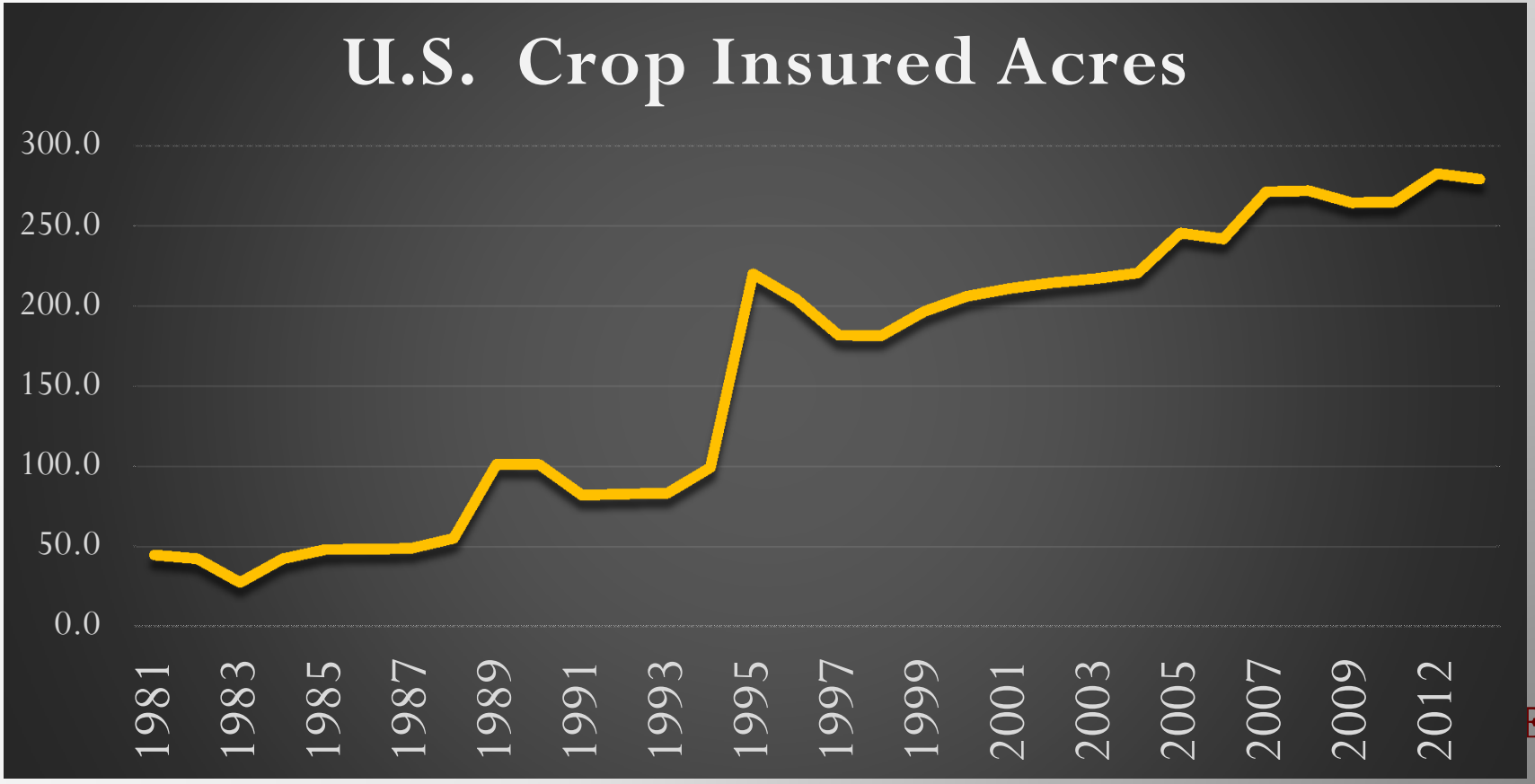
Crop Insurance had grown by five-fold

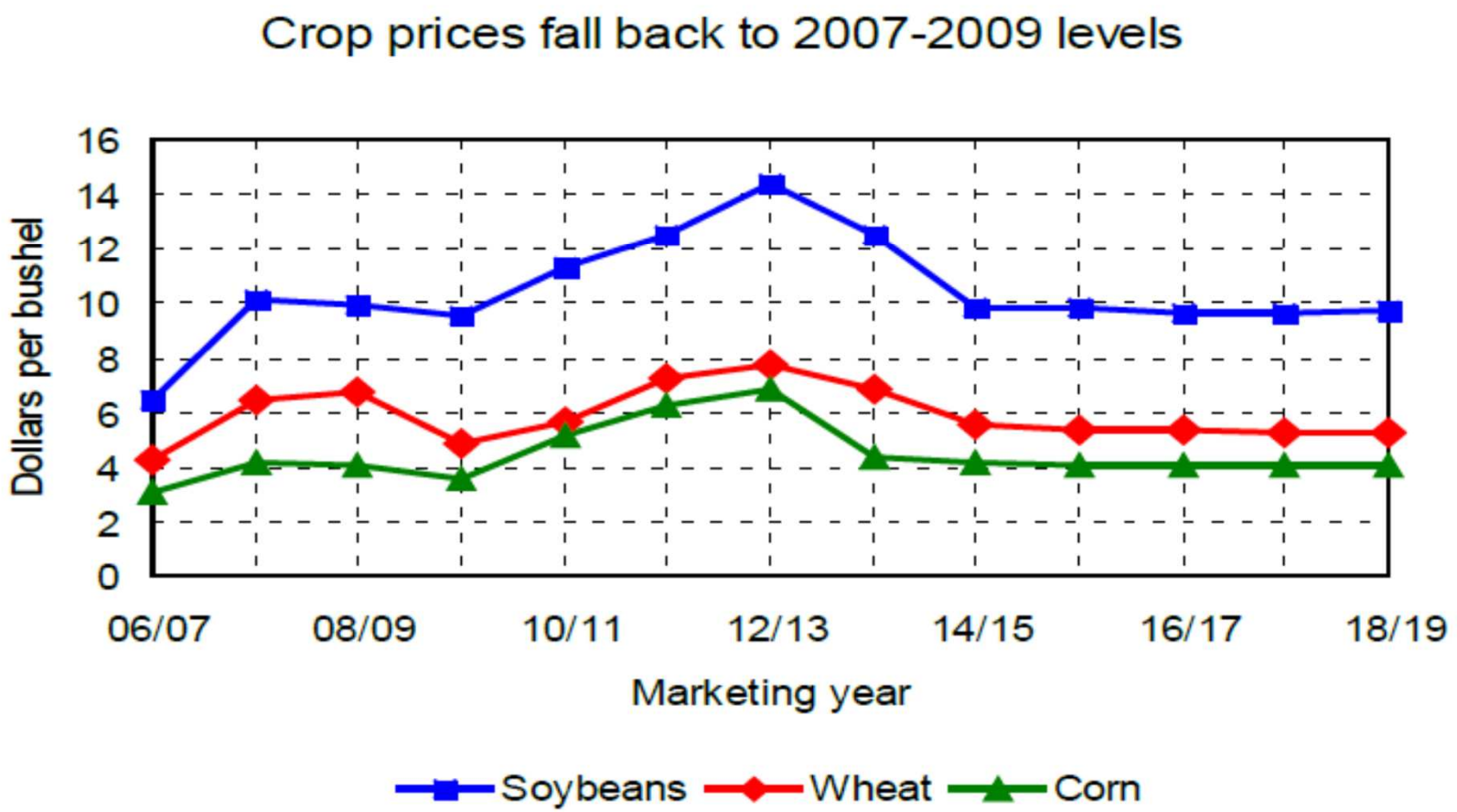
--- apparently supplanted Ad hoc programs

--- Insured price risk

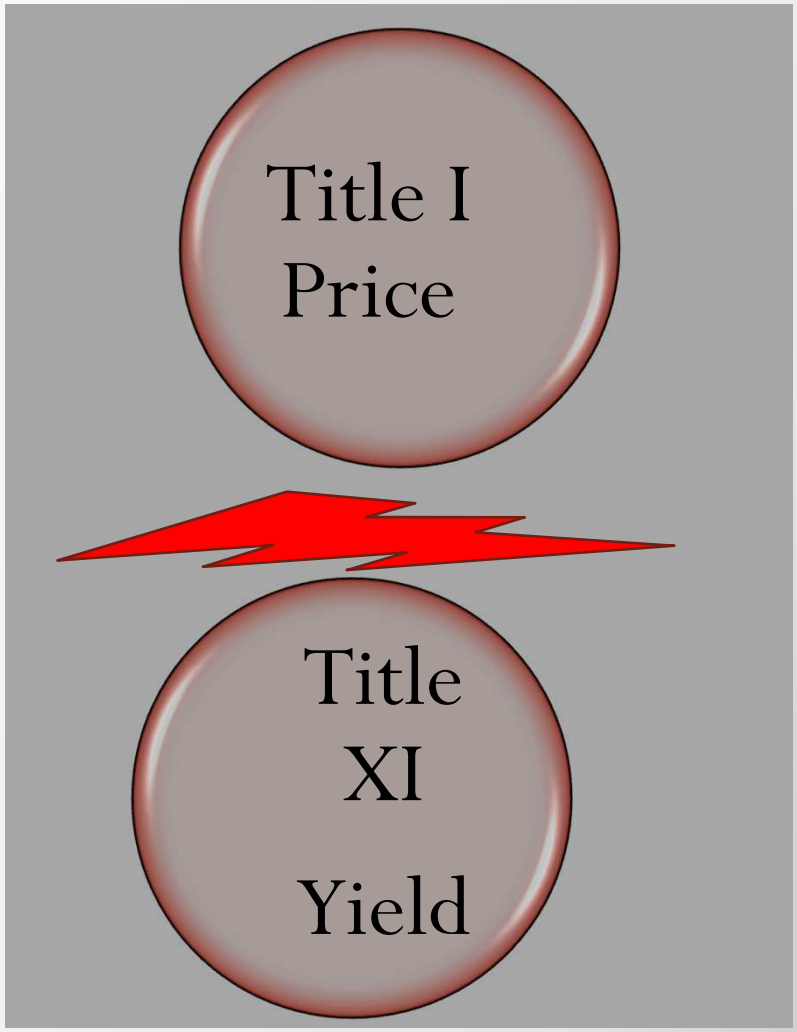
--- Insured area yield and revenue



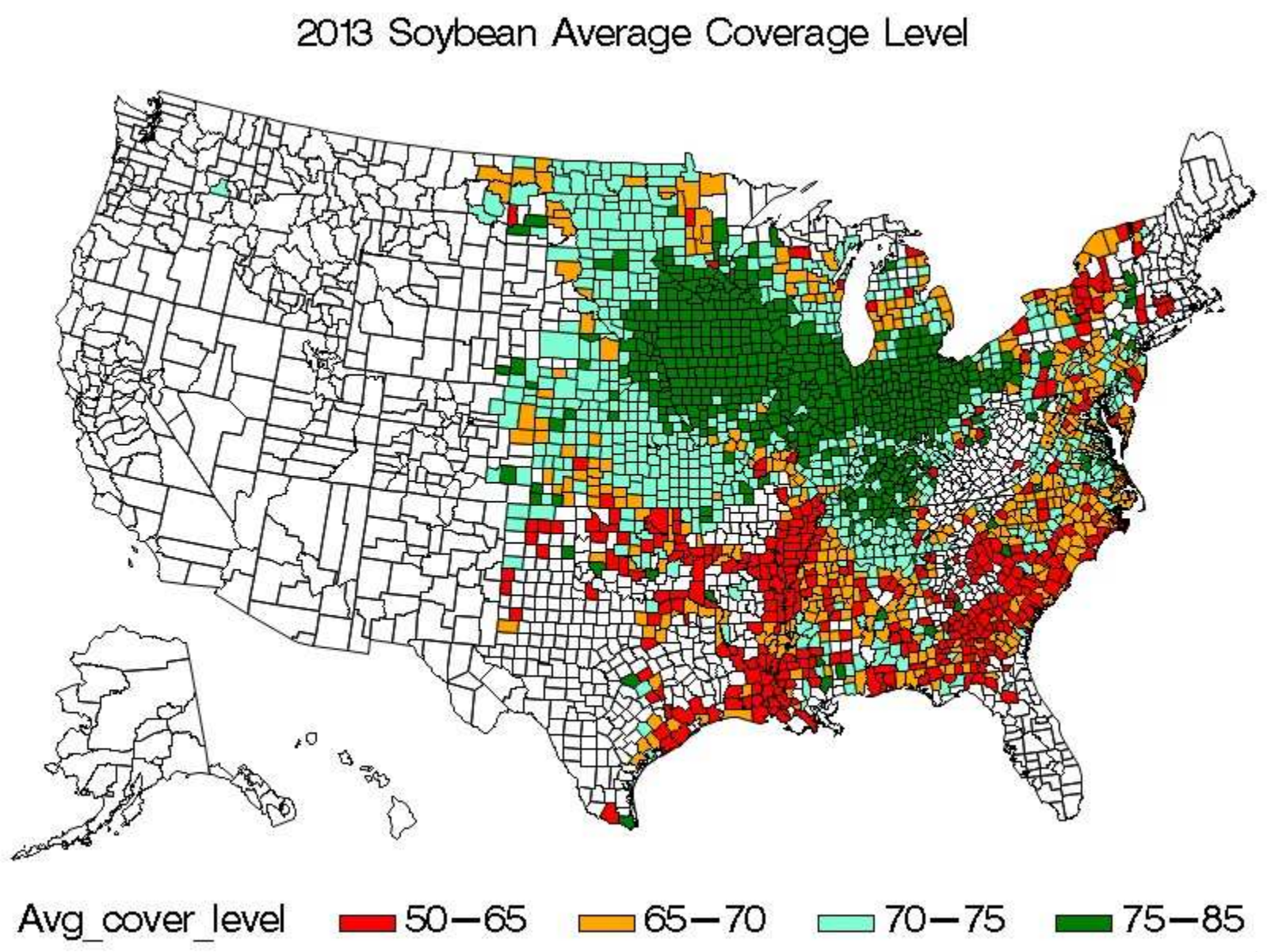
FAPRI's Baseline reports confirmed a general perception we were in a period of high prices



The Evolution of Farm Program Policy & Analysis



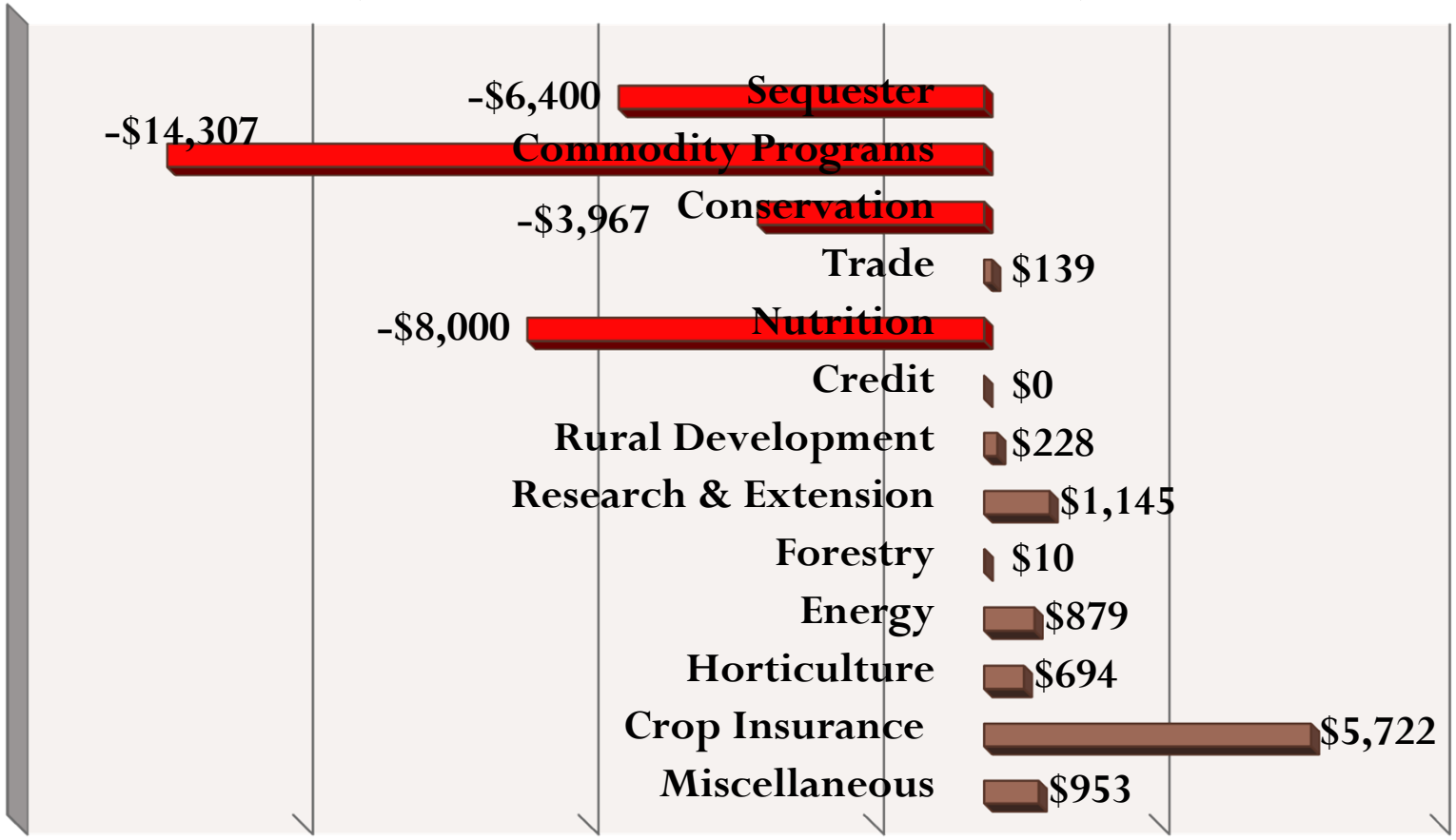
2013 Soybean Coverage Levels



Base Acres Versus Planted Acres
-- became a hot button issue
-- distortion versus risk protection

Crop	CBO Estimate of Base Acres millions	CBO Estimate of Planted Acres millions	% Difference
Corn	84.1	90.0	7%
Soybeans	50.1	76.7	53%
Wheat	73.8	52.5	-29%
Cotton	18.1	10.9	-40%
Rice	4.4	3.1	-31%
Peanuts	1.5	1.3	-9%

Agricultural Act of 2014 Budget Implications
(Total Savings of $23,008 million)



Change in Baseline Funding (Millions)

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CBO Baseline Update shows lower prices = lower baseline not higher because it lowers crop insurance subsidy

CBO Baseline	4/1/2013	4/1/2014	
	2013-23 projected cost	2014-24 projected cost	Change
Total Title I Crop Payments	$58,835	$33,848	-42%
Total Crop Insurance Cost	$95,979	$93,288	-3%

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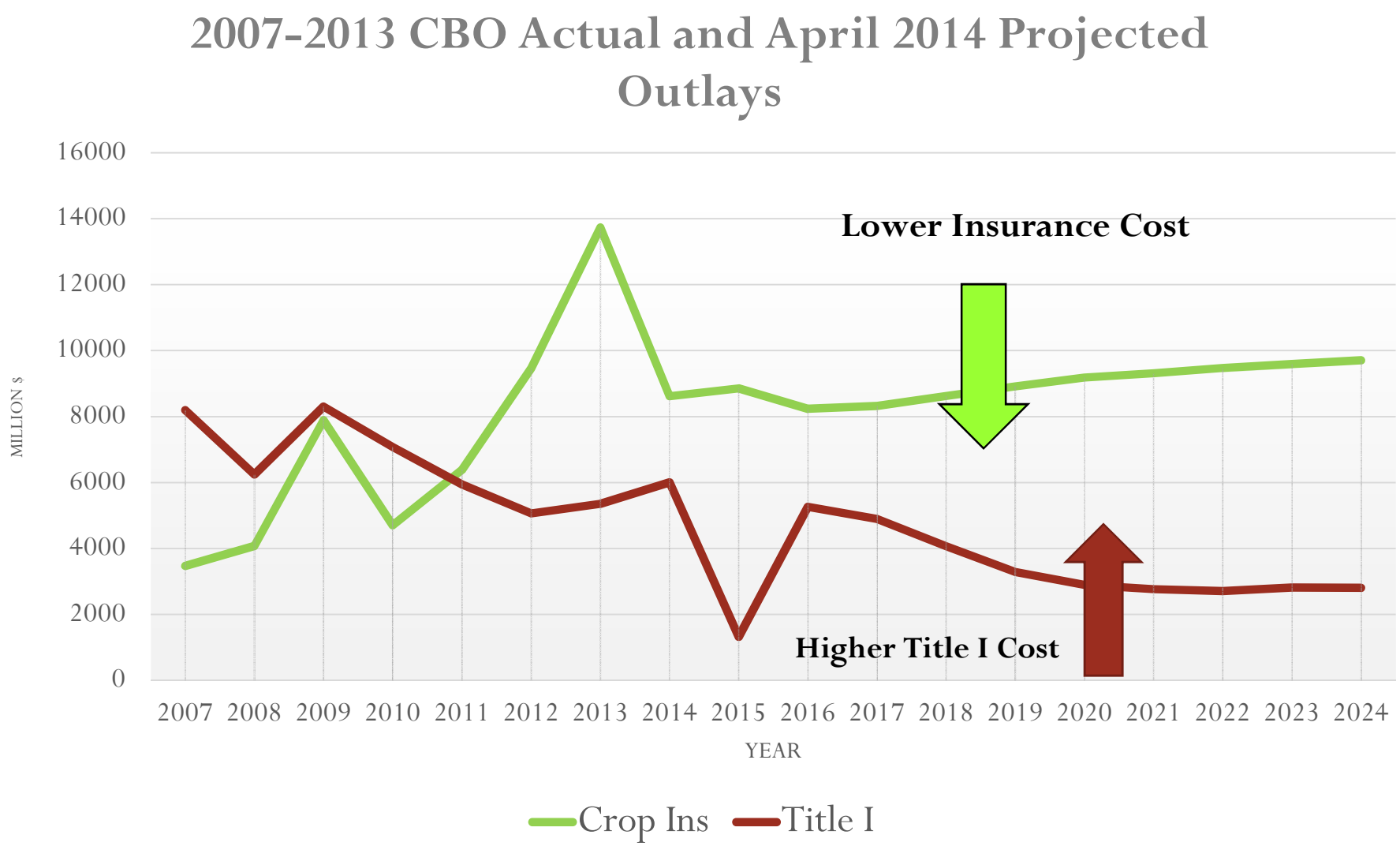
So what do lower prices do to these Baselines?



The Splintering into Commodity "Teams"

Teams	Commodities	Preferred Policy	Motive
Revenue-ers	Corn and Soybeans	Shallow Loss Revenue (County ARC)	Negative price-yield correlation, Buying high levels of crop insurance coverage, liked Olympic average price
Traditionalists	Rice, Peanuts Southern wheat	Price targets (PLC)	Rice has mostly price and input cost risk, peanuts are highly contracted, buy lower crop insurance coverage
Bold Movers	Cotton	STAX	WTO, Recognized Title 11 was golden and Title 1 controversial
The other white crop	Milk	Dairy margin/supply control	Wanted 'pseudo-margin insurance' (insurance with legislated premiums)
Big County Crowd	Mountain State wheat	Individual ARC	Perceived county triggered programs will not work in large counties
Wallflowers	Sugar	Status quo	It is good to not score at CBO

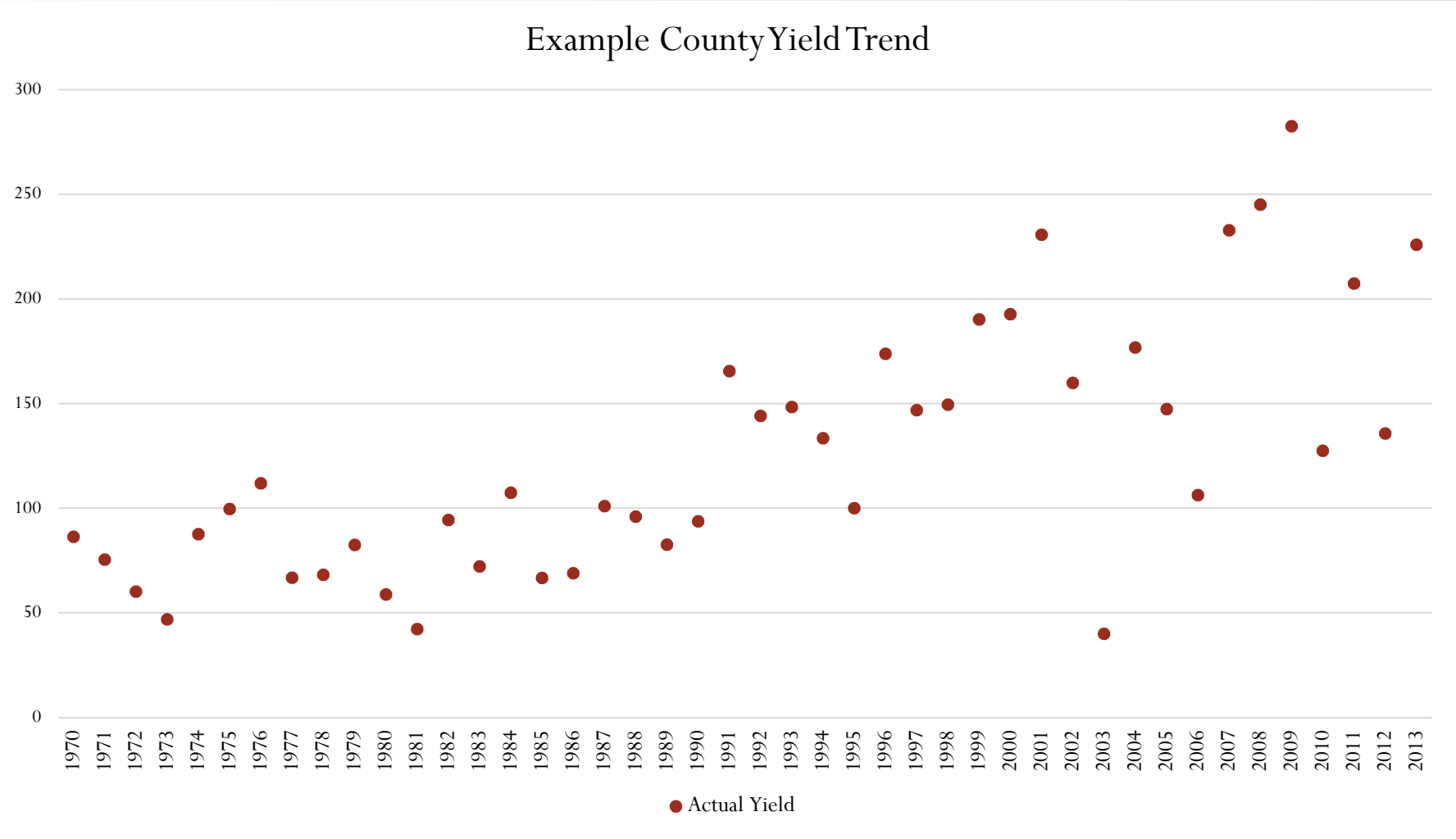
So where are we today?

1. The fundamentals of area products like SCO STAX, & ARC
2. Price-yield & county yield-farm yield correlation
3. Need to avoid the fallacy of small numbers
4. Will these programs have significant impacts?
5. What about hedging?

Area Products – SCO & STAX

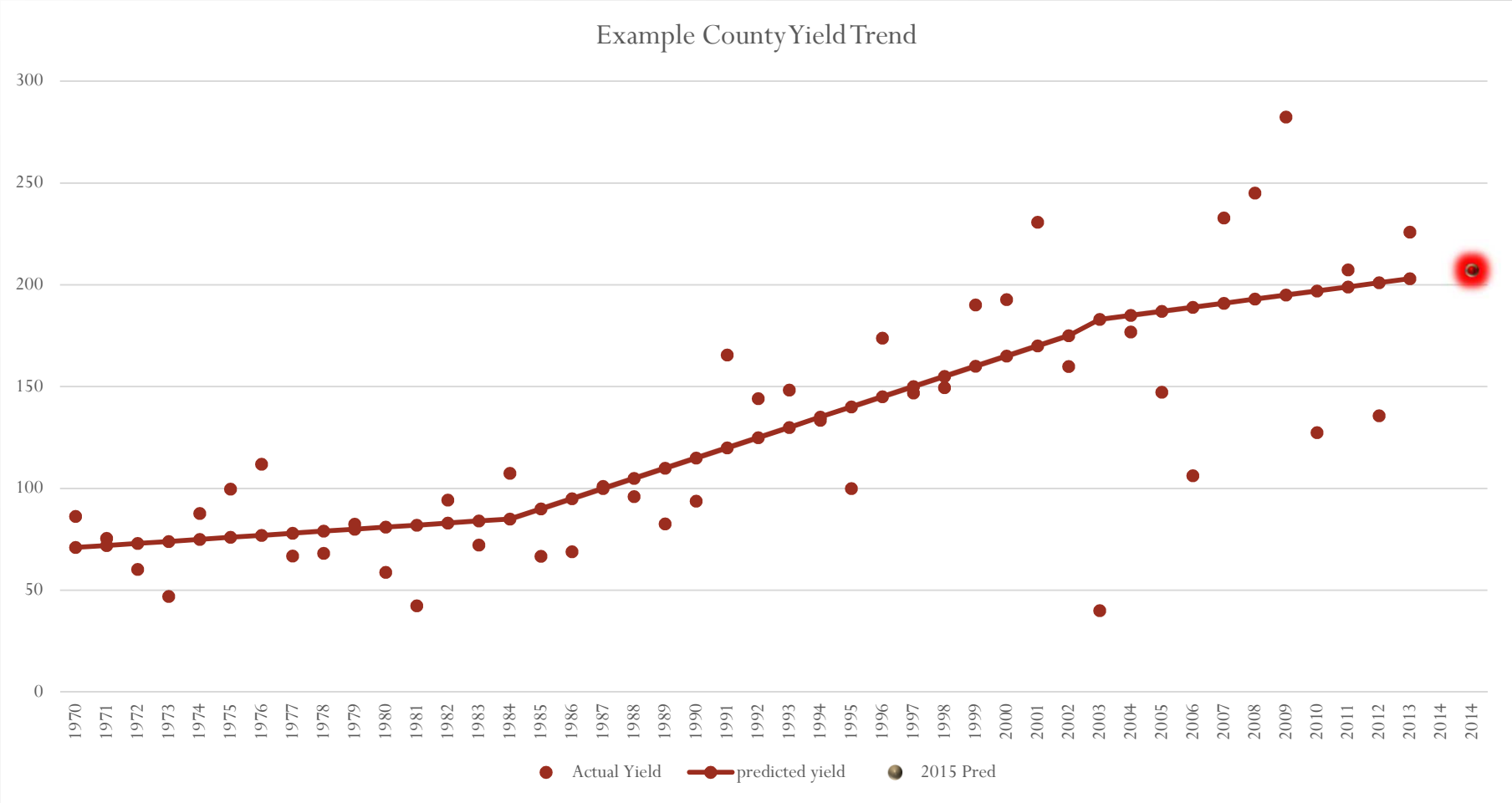
- a shallow loss version of area insurance

AJAE 1997

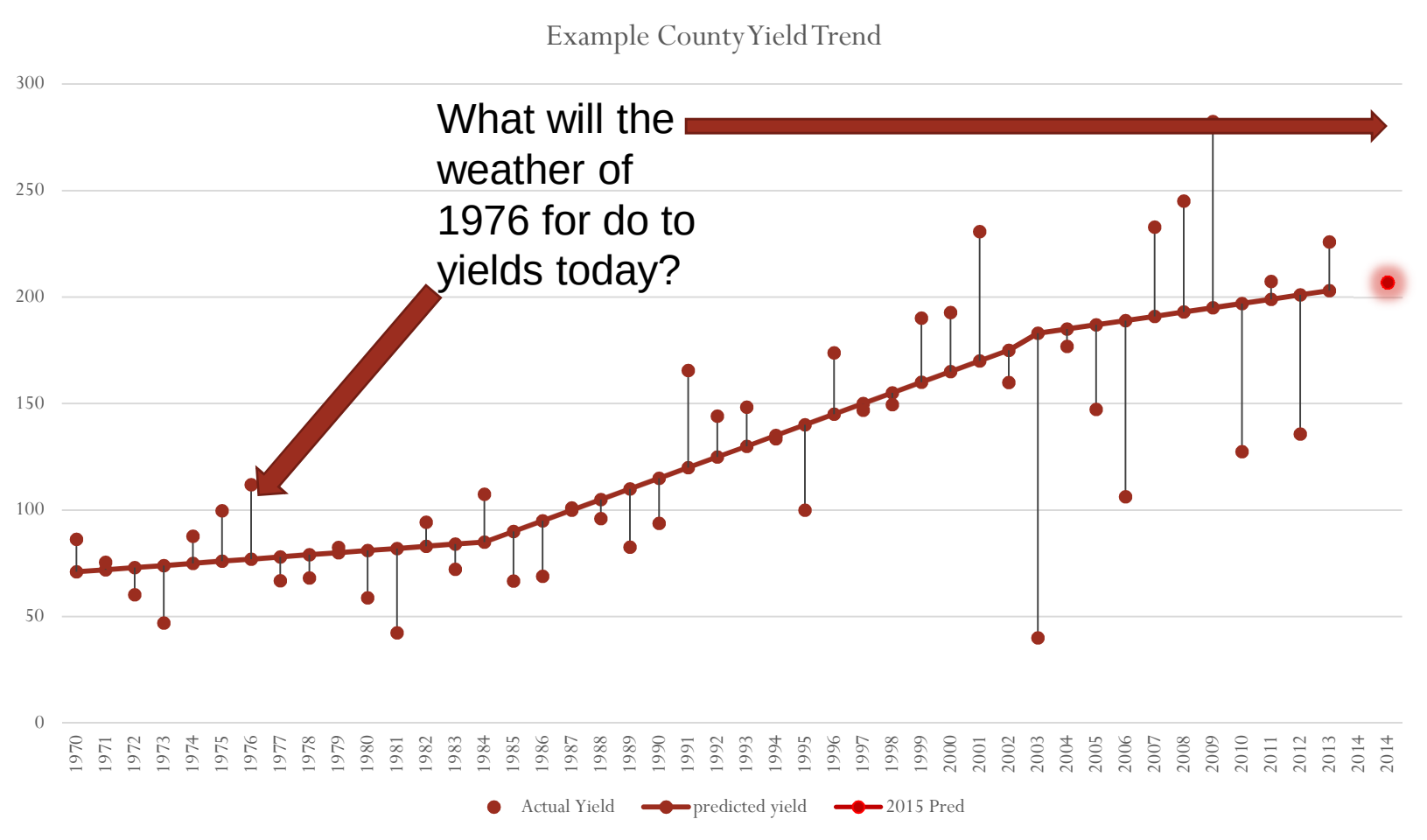


From the history one must predict expected yield two years out

AJAE 2011



Now for the hard part- Using Historic Deviations from trend to assess the odds of deviation from trend next year



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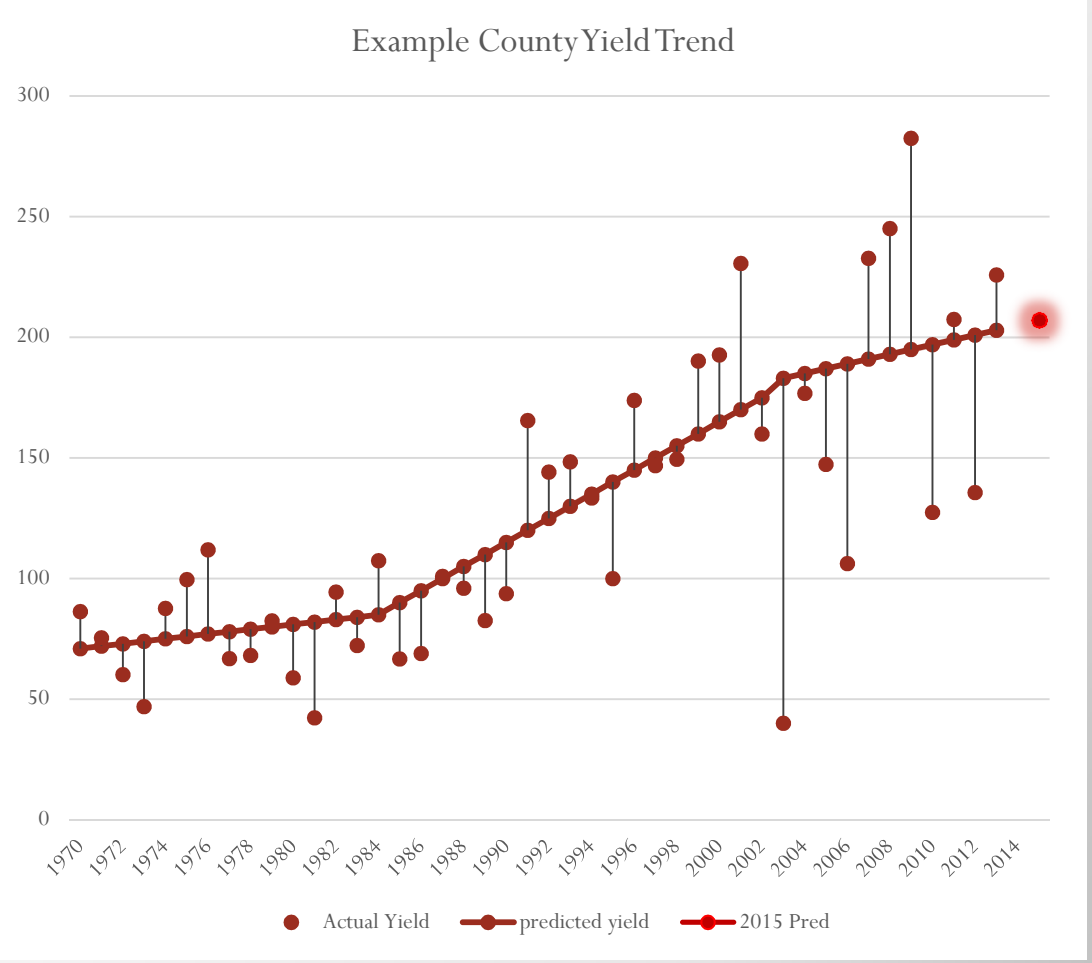

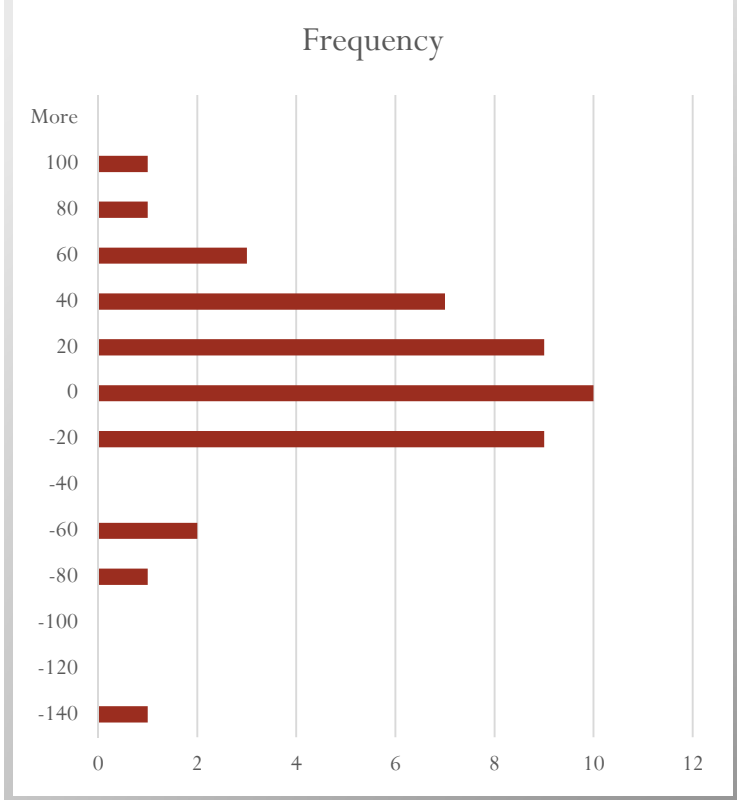

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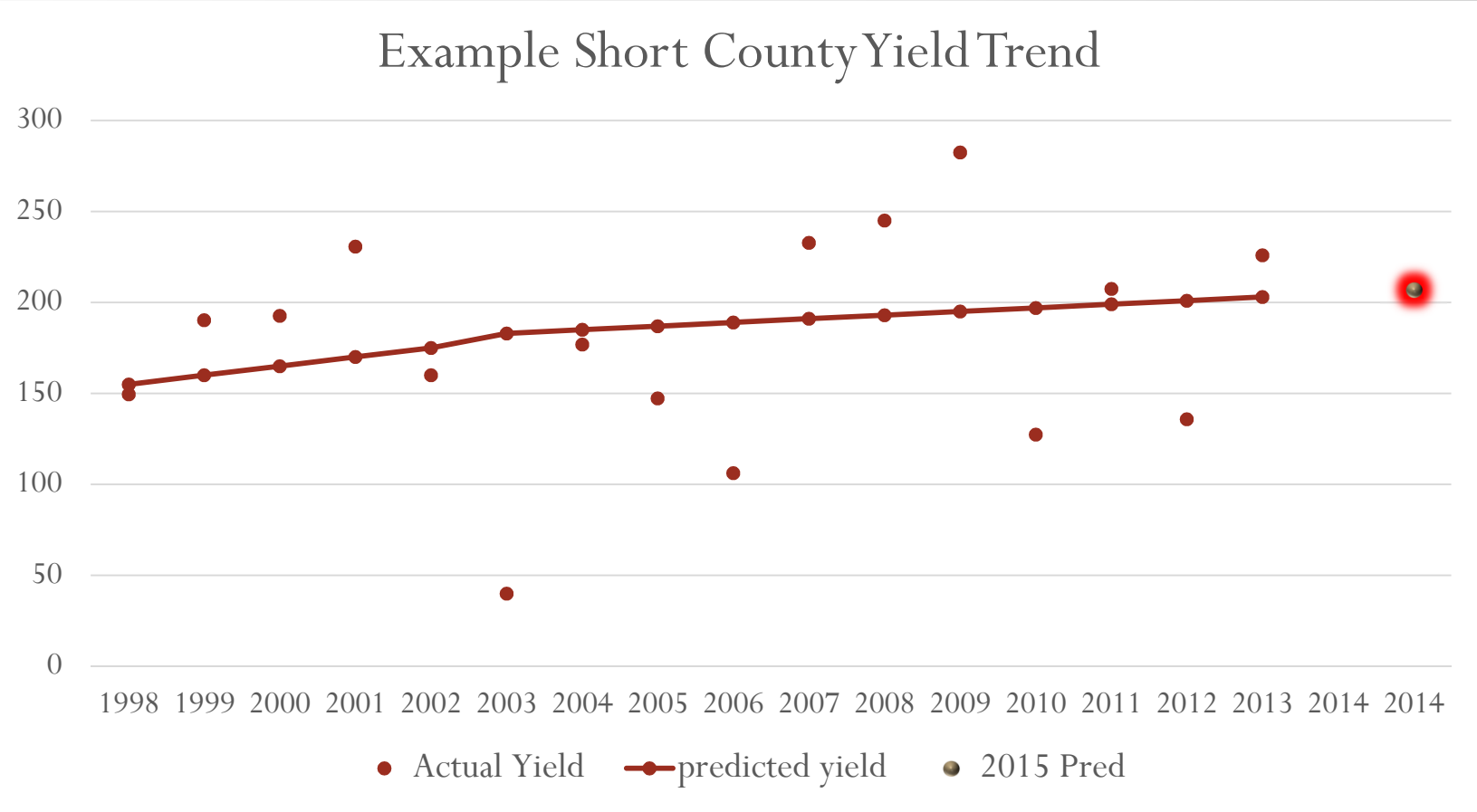
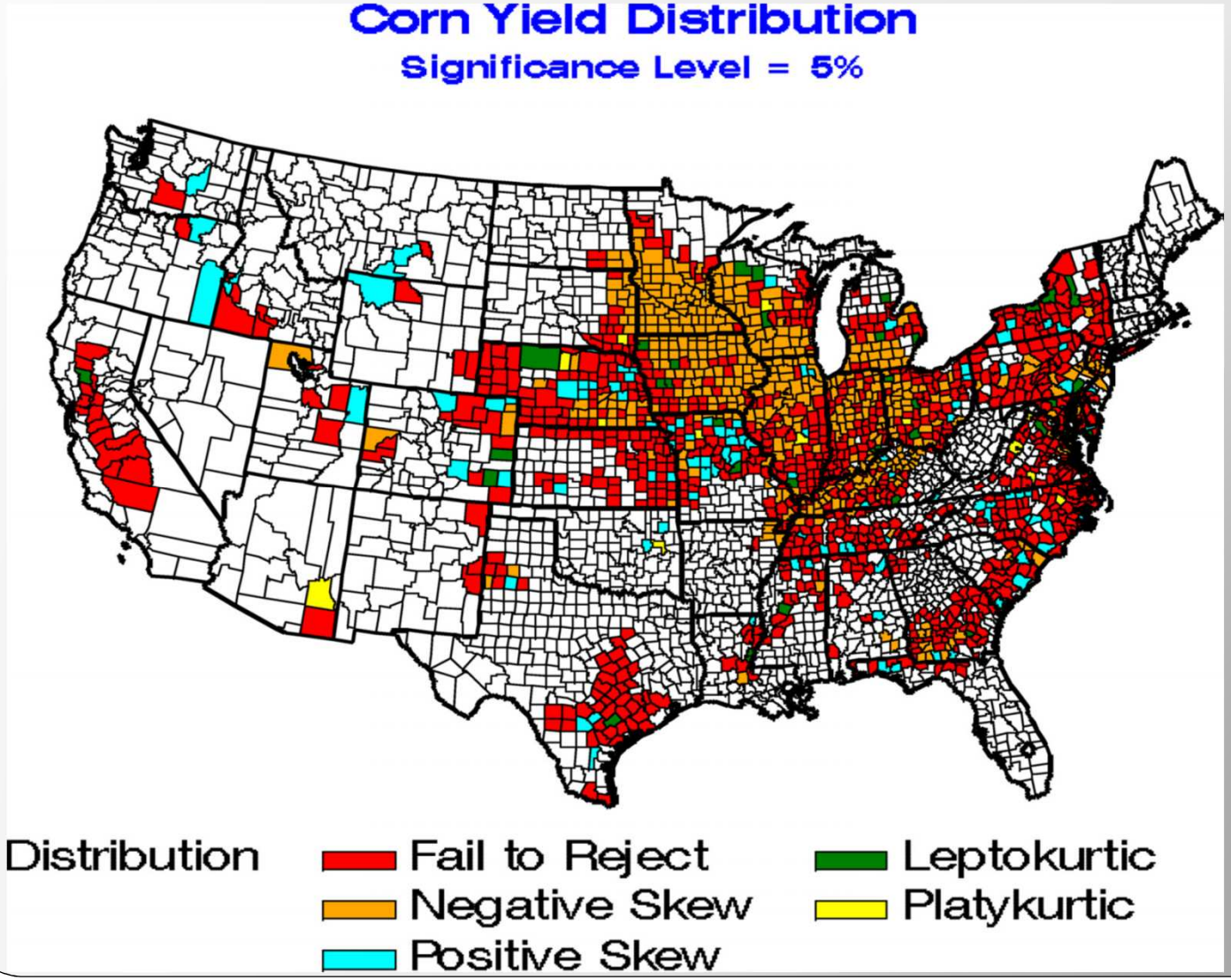
Many counties lack long series
- How to augment rating short series?
- How to accommodate missing series?

AJAE 2014

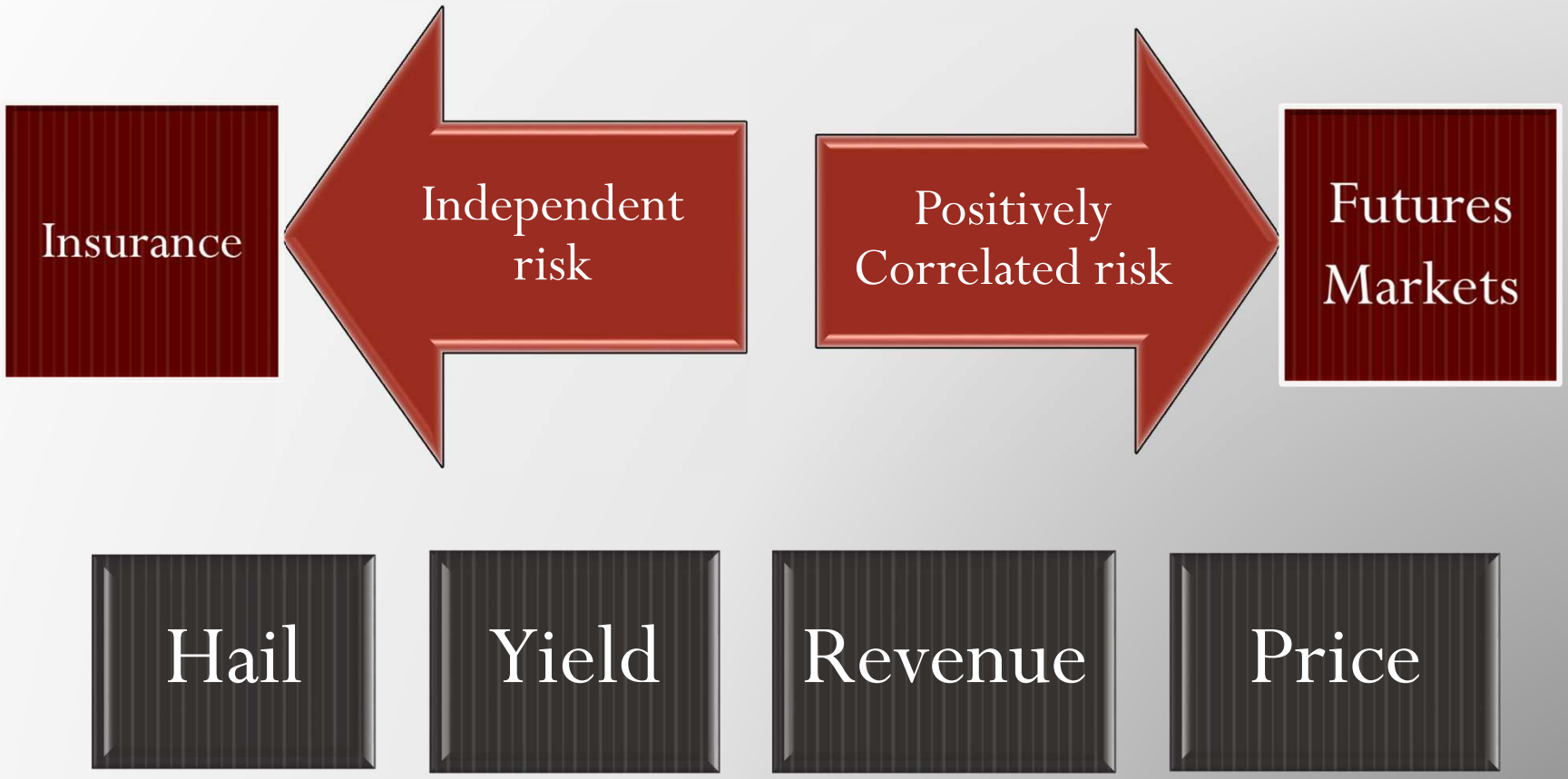


Yield are often not normally distributed

RAE
2009



Agricultural Crop Risk
Spectrum of Risk Independence



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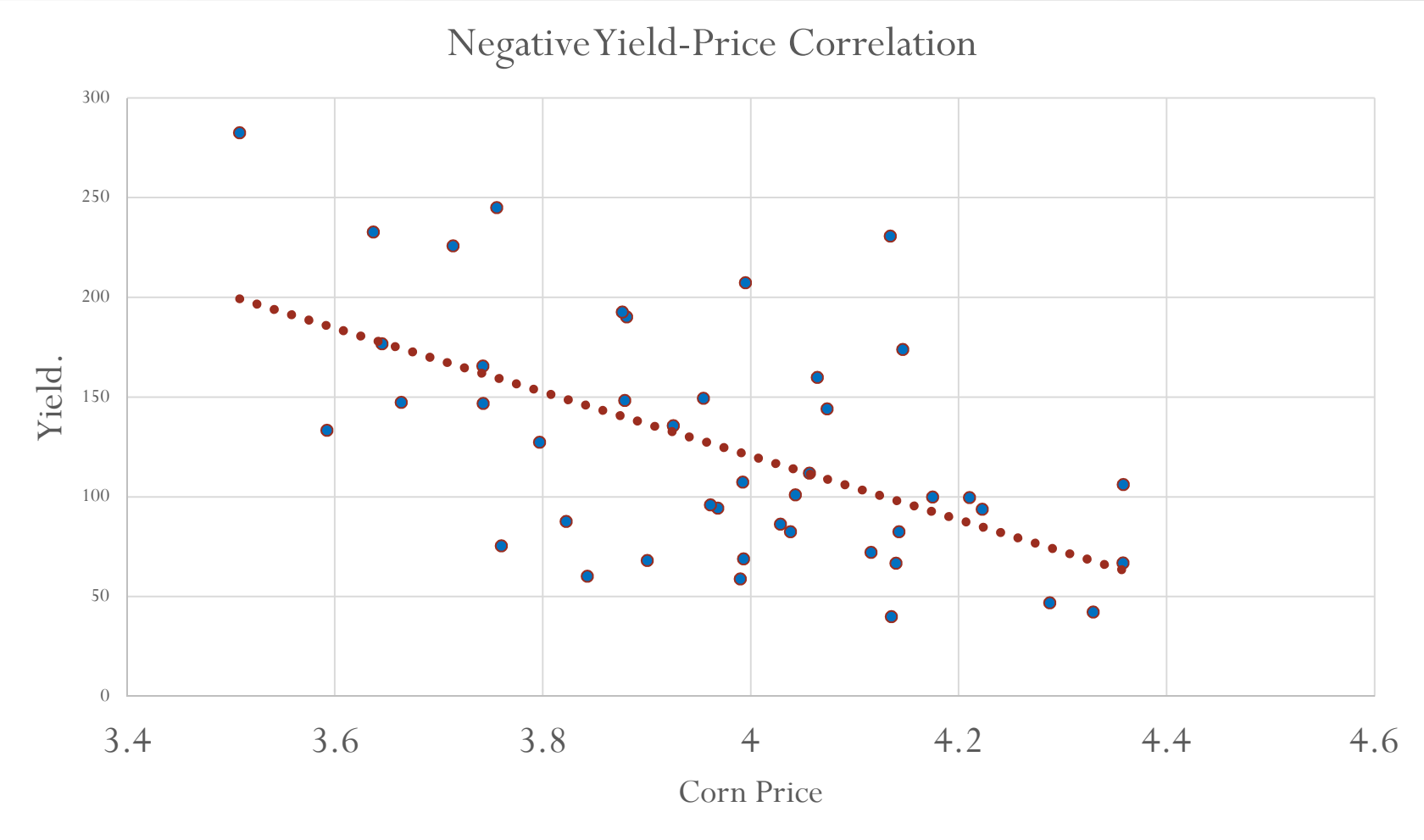
Midwest Corn & Soybean Rates Influenced by Price Yield Correlation – but is it linear?



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The effect of farm-county yield correlation on SCO

(farm-county correlation = 0.79)

Farm Level	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Yield % APH	92%	54%	92%	93%	123%	133%	107%	82%	122%	71%
% SCO paid	30%	100%	31%	26%	0%	0%	0%	72%	0%	100%
SCO payment needed	$46.5	$155.0	$48.1	$40.3	$-	$-	$-	$111.6	$-	$155.0

County Level	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Yield % APH	86%	79%	95%	103%	117%	109%	109%	87%	115%	105%
% SCO paid	57%	85%	19%	0%	0%	0%	0%	53%	0%	0%
SCO payment	$84.6	$126.2	$28.2	$-	$-	$-	$-	$78.7	$-	$-

The Law of Small Numbers and Agricultural Risk

- Nobel Prize winner Daniel Kahneman posited the psychological error of "Law of Small Numbers"
- The law of large numbers implies large samples will be representative of the population from which they are drawn. People's intuition often incorrectly assume a small sample is representative.
- In the case of yield and revenue associated with crop agriculture we get essentially one observation per year.
- Kahneman was focused on statistically trained scientists not laymen

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McLean Co. Ill Example of the Small sample problem

		75% Corn RP	Corn SCO 86-70
	mean	$23.13	$20.37
n=15	std dev	$15.15	$10.15
	c.v.	65%	50%
n=10	std dev	$17.62	$11.81
	c.v.	76%	58%
n=5	std dev	$26.05	$17.45
	c.v.	113%	86%

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Will the New Farm Bill Change Crop Insurance Participation?

Scenarios Evaluated

- Individual-level crop revenue insurance only,
- Individual-level crop revenue insurance and a county-level revenue program and ARC,
- Individual-level crop revenue insurance and county-level supplemental revenue insurance and SCO and
- All farms are assumed to have purchased enterprise unit coverage at the individual level.

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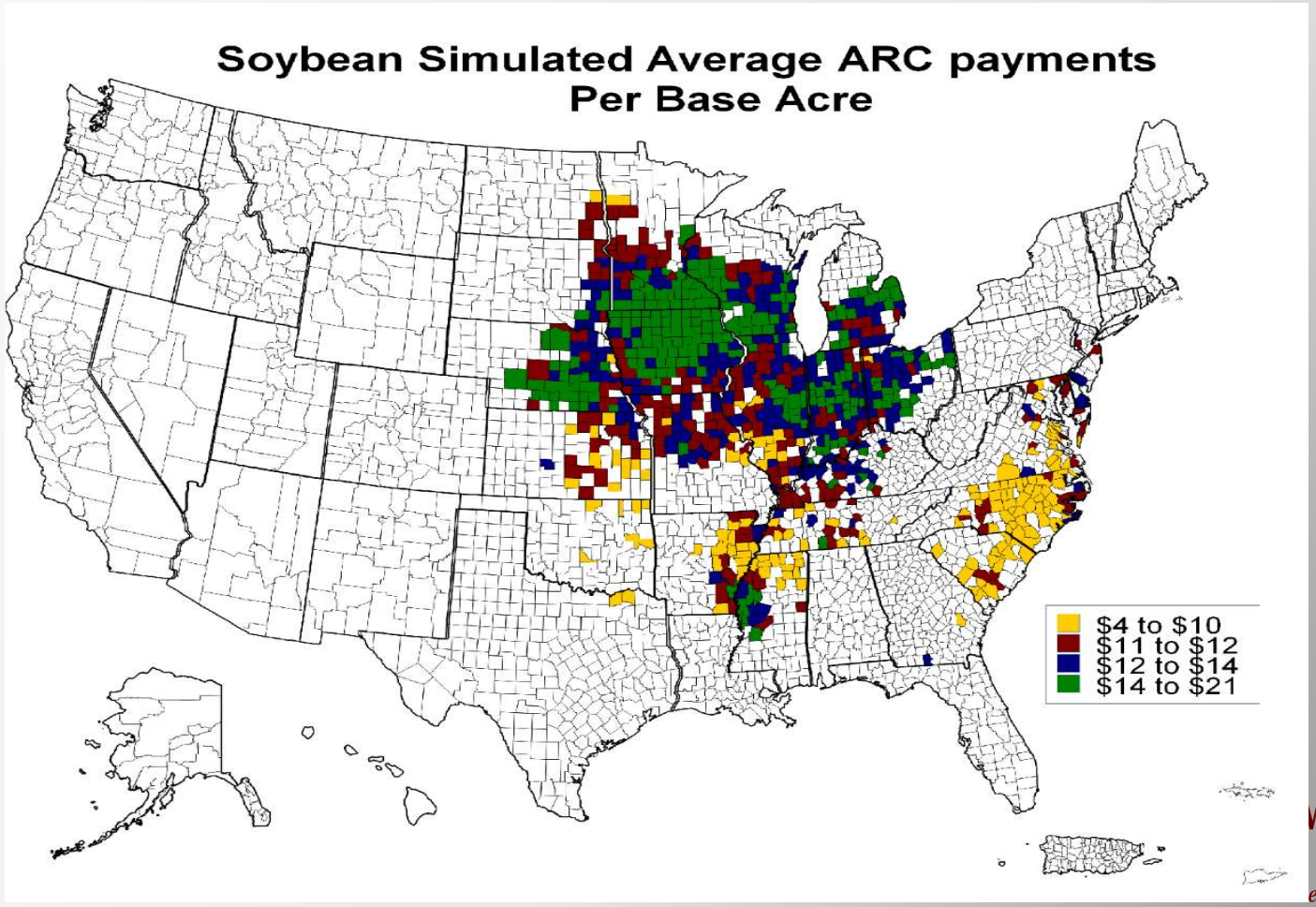
Producer welfare effects

Crop	1	2		3		4
	Crop Revenue Insurance Only	Crop Revenue Insurance and ARC		Crop Revenue Insurance PLC and County-level SCO		Acre weighted Percent of county representative farms Preferring PLC+SCO
	Certainty Equivalent	Certainty Equivalent	Increase in CE from Crop Insurance Only CE	Certainty Equivalent	Increase in CE from Crop Insurance Only CE	
	Dollars	Dollars	Percent	Dollars	Percent	Percent
Corn	$676,848	$710,293	4.9%	$704,268	4.1%	3.2%
Soybeans	$468,813	$488,757	4.3%	$478,815	2.1%	8.4%
Rice	$871,154	$923,368	6.0%	$1,031,823	18.4%	100.0%
Wheat	$243,979	$254,458	4.3%	$261,632	7.2%	100.0%

Regional Differences

- driven by correlation
- yield risk



Estimated volume of individual and shallow loss insurance

Crop	Base individual liability	Individual Liability under new Farm Bill	SCO Liability under New Farm Bill	Sum of Individual & SCO Liability under new Farm Bill
		Millions		
Corn	$41,396	$41,052	$170	$41,222
Rice	$1,243	$994	$716	$1,710
Soybeans	$21,159	$20,792	$327	$21,119
Wheat	$5,693	$5,295	$1,191	$6,485
Total	$69,492	$68,133	$2,404	$70,537
		-1.96%		1.50%

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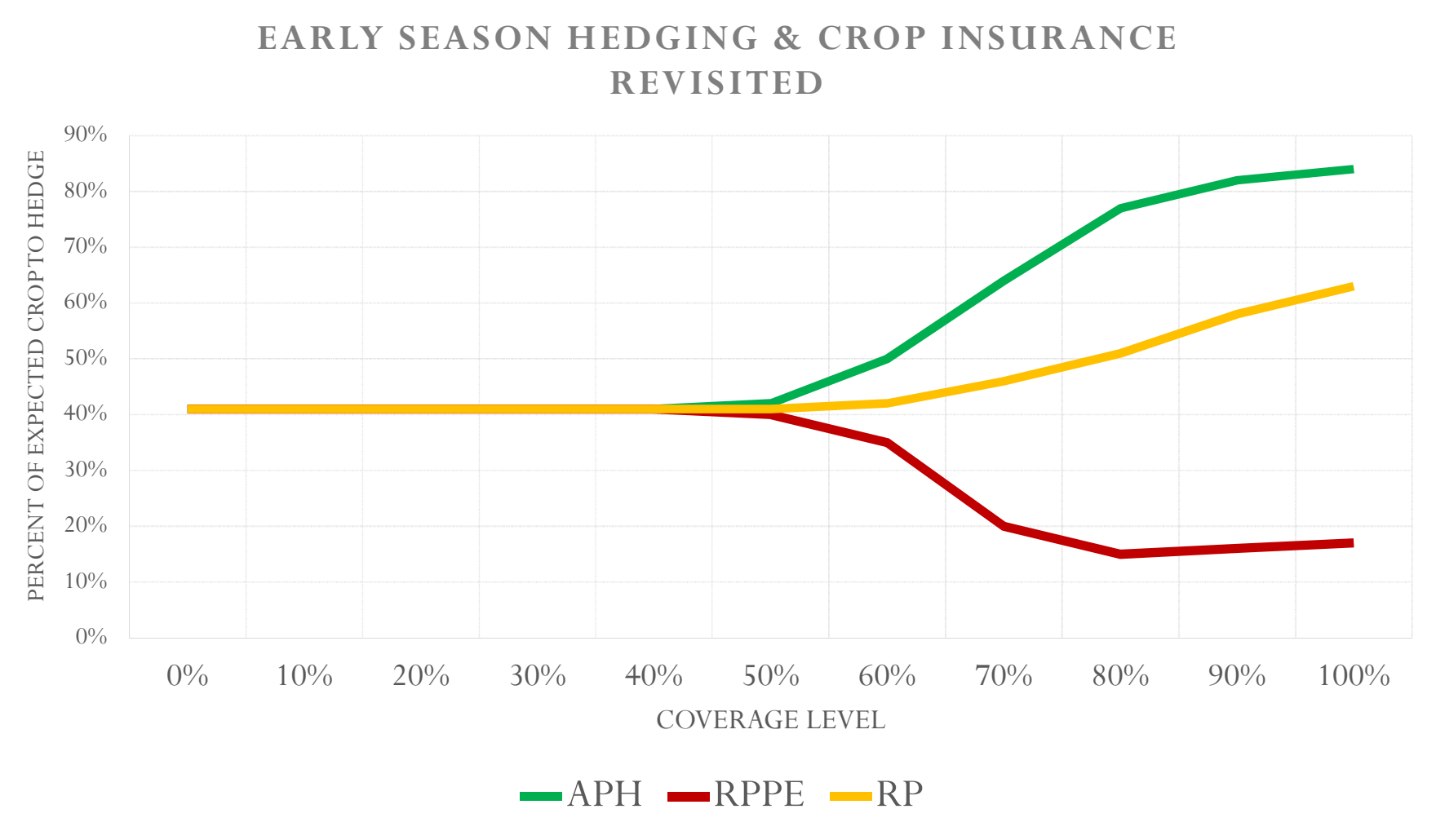
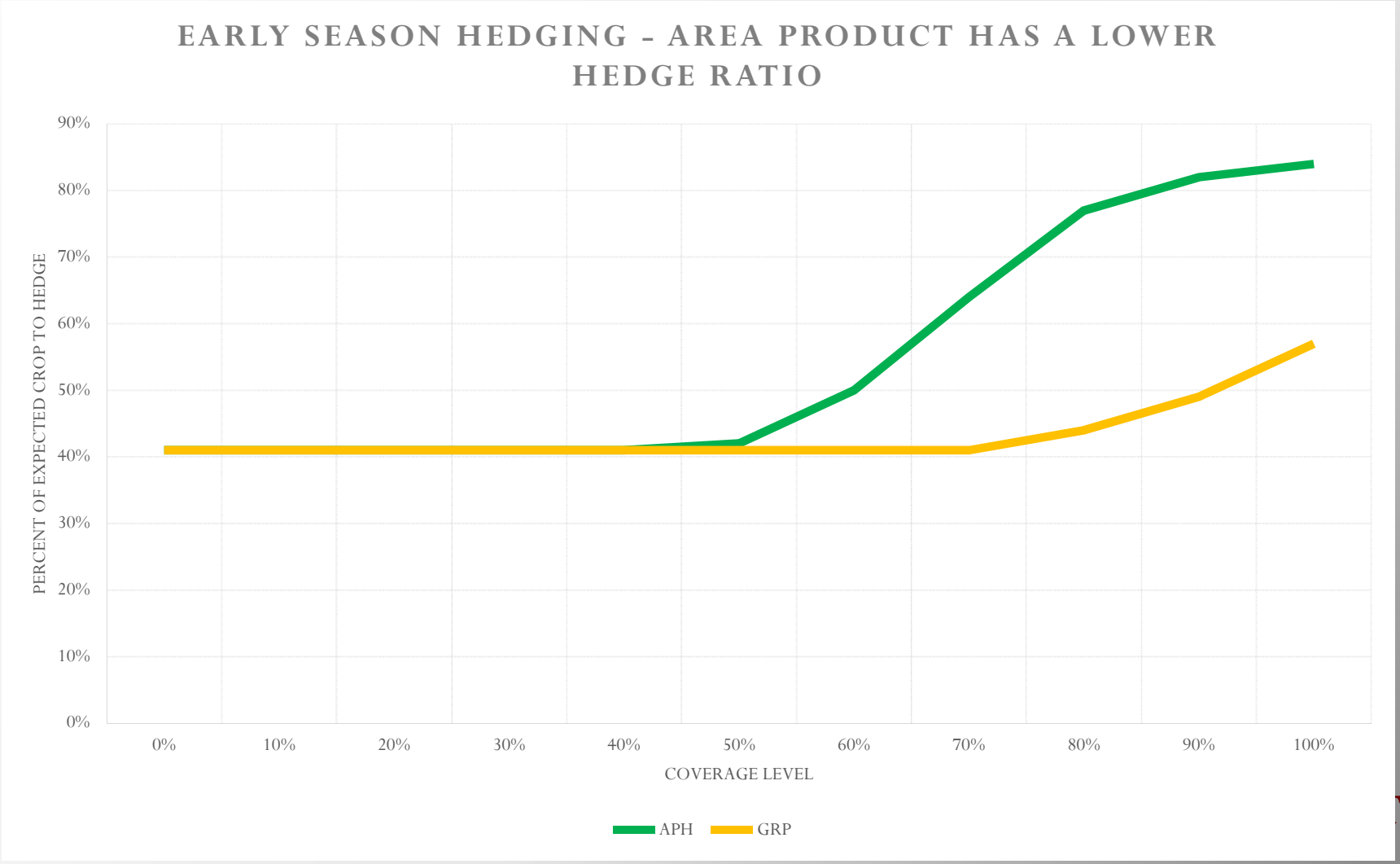
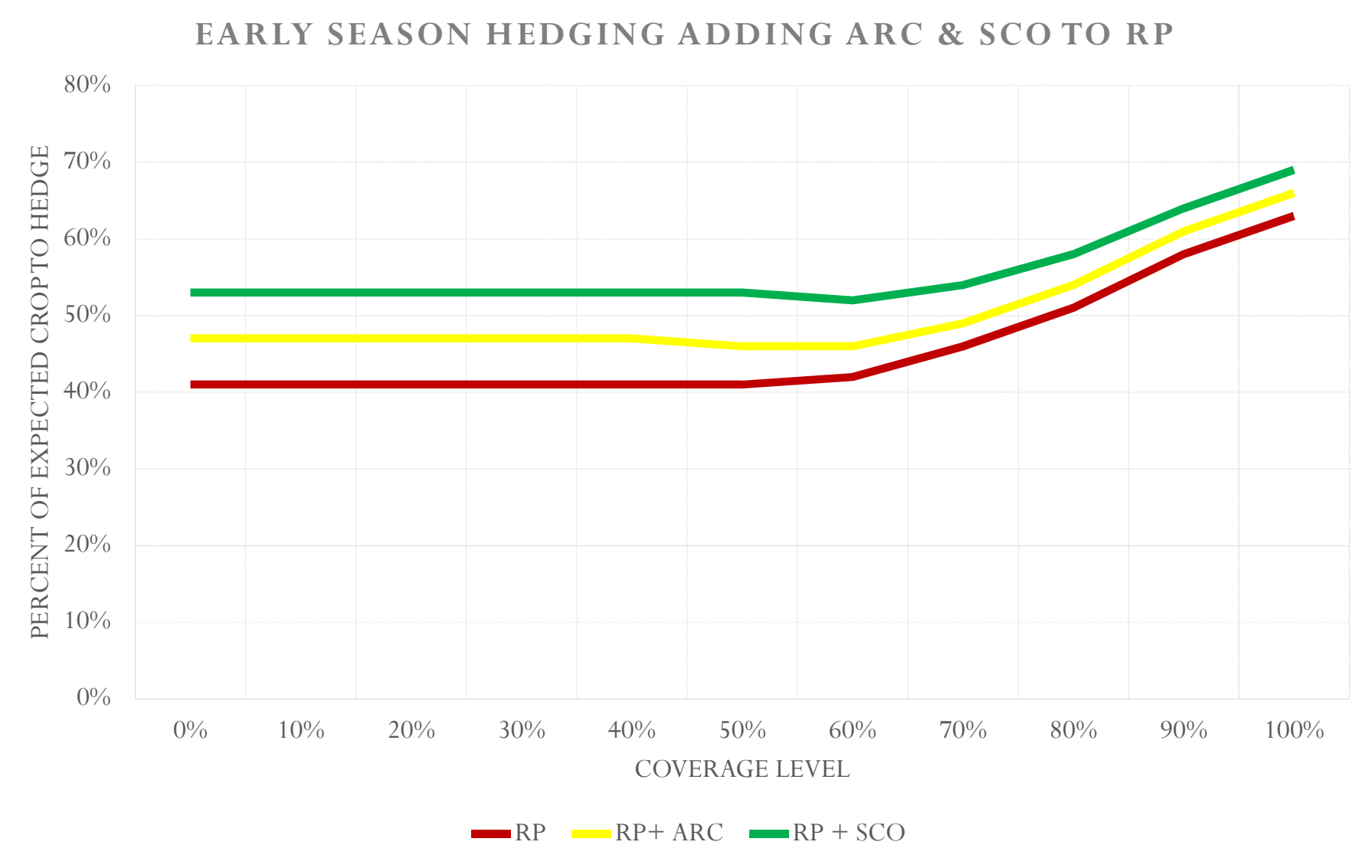
Let's not forget hedging and forward pricing



The Basis Risk of Area Products Lowers the Optimal Hedge



ARC & SCO slightly Increase Optimal Hedge



So where are we headed?

Five Big Questions for the Future of Farm Policy & Crop Insurance

1. Can we push the envelop of insurability
   - Insuring revenue risk without futures markets?
   - Price risk is not normally considered insurable
2. Can we harness 'big ag data' and technology to improve risk management in change climates and production systems?
   - Verifiable knowledge of soils, inputs, practices & risk
   - Privacy issues, policy issues
3. Will behavioral economics provide insights into risk management decision making & marketing?
   - The error of small samples
   - The implication of the demand for insurance & subsidy

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Five Big Questions for the Future of Farm Policy & Crop Insurance

4. What is the proper role of the private sector versus government?
   - World reinsurance market
   - Does proportional A&O work best?

5. What will the next farm bill look like?
   - Budget cuts?
   - Shallow versus deep loss
   - ARC versus SCO
   - Environmental issues

Questions

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- http://blogs.msucares.com/agecon/

The Backroom of the Farm Bill Conference Committee