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Distributional Analysis of Crop Insurance Subsidies

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- 1 Motivation
- 2 Empirical Methods
- 3 Results
- 4 Concluding Remarks

Objectives for this research

- Evaluate the Impact of subsidy cap (proposed in AFFIRM Act).
- Investigate the validity of claims that federal payments are consolidated.
 - Claims made by EWG, Washington Post (2015), Heritage Foundation.
- Farm Bill discussions are beginning and due 2018.
- Congress appears to be ready to cut domestic programs. Where to find those cuts?

Cost of Major Crop Insurance Programs, 2010-2015

	2010	2011	2012	2013	2014	2015
Subsidies	3.51	6.46	5.83	6.06	4.97	4.82
Farmer Premium	6.21	10.40	9.31	9.85	8.09	7.73
Indemnities	3.24	8.95	15.83	10.33	7.43	4.43
Reported Percent of Total Premium						
A&O	0.24	0.13	0.11	0.12	0.15	0.18
Underwriting Gains	0.33	0.16	-0.11	0.06	0.11	0.23
Estimated Amounts						
Payments to Farmers	4.04	11.46	18.19	12.61	9.29	6.34
Payments to Insurance	3.55	3.08	0.07	1.79	2.15	3.15
Total Cost of Program	7.59	14.54	18.26	14.40	11.44	9.49

Note: All dollar figures presented in Billions. Payments To Farmers include Subsidies + Indemnities - Farmer-Paid Premiums. Payments to Insurance are based on percents of total premium. Amounts include all policies for corn, cotton, soybeans, and wheat.

Outline

- 1 Motivation
- 2 Empirical Methods
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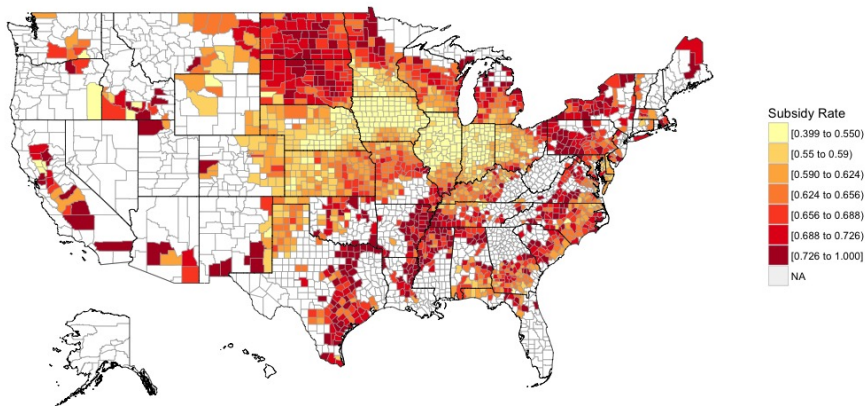
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Methods to Estimate Impact Insurance Subsidies

- Farm-level data collected from the 2014 ARMS.
- Observations weighted according to NASS.
- Includes operations with $>1,000$ crop sales and some crop acreage.
- Regional/crop differences in average county coverage levels.
 - No significant relationship between coverage level with
 - DA ratio,
 - scale,
 - sales,
 - net worth,
 - diversification.
 - Regional variation found in coverage levels, particularly with corn and soybeans.

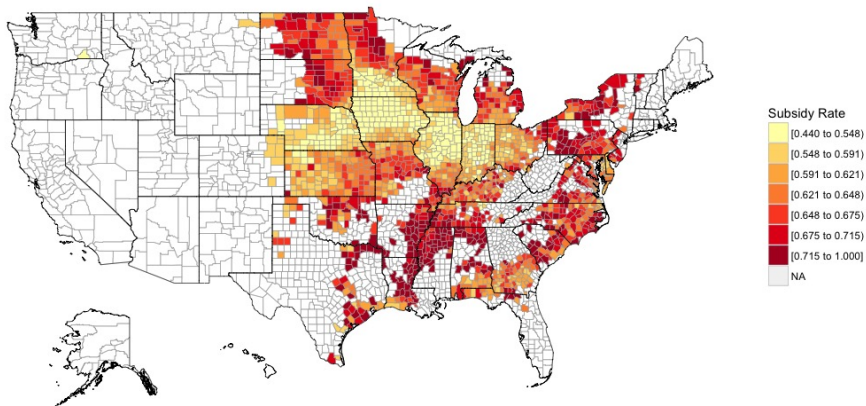
Regional Variation in the Effective Subsidy Level - Corn

2014 Average Subsidy Rates - Corn



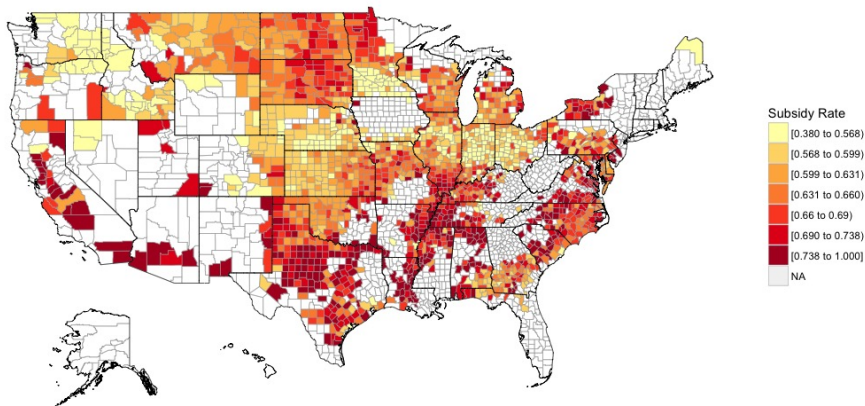
Regional Variation in the Effective Subsidy Level - Soybean

2014 Average Subsidy Rates - Soybeans



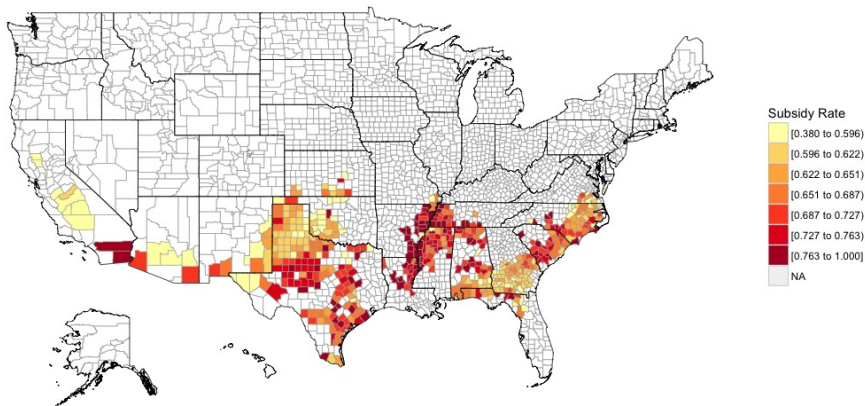
Regional Variation in the Effective Subsidy Level - Wheat

2014 Average Subsidy Rates - Wheat



Regional Variation in the Effective Subsidy Level - Cotton

2014 Average Subsidy Rates - Cotton



Subsidy Rate Schedule, by Coverage Level

Unit	Coverage Level (Percent)							
	50	55	60	65	70	75	80	85
Basic or Optional Unit	67	64	64	59	59	55	48	38
Enterprise Unit	80	80	80	80	80	77	68	53

Estimating Farm Level Insurance Subsidies

$$SR_i = \sum_{k=1}^5 SR_{kc} \left(\frac{Q_{ik}}{Q_{iT}} \right)$$

- SR_i is the subsidy rate for farm i ,
- SR_{kc} is the subsidy rate for commodity k for county c (from RMA).
- $k = (\text{corn}, \text{cotton}, \text{soybean}, \text{wheat}, \text{other})$ (62.4 % used for 'other' commodities)
- Q_{ik} is the acres devoted to commodity k on farm i
- Q_{iT} is the acres devoted to all commodities (T) on farm i

Estimating Farm Level Insurance Subsidies (cont.)

$$CISUB_i = CIEXP_i(SR_i/[1 - SR_i])$$

- SR_i is the subsidy rate for farm i ,
- $CISUB_i$ is the crop insurance premium subsidy received by farm i
- $CIEXP_i$ is the amount of crop insurance premium paid by farm i

Descriptive Statistics of Key Variables from the ARMS, 2014

Variable Name	Weighted	Percentile		
	Mean	10th	50th	90th
Total Crop Sales (in USD 1,000)	317.2	16.0	193.5	1,266.3
Total Livestock Sales (in USD1,000)	102.6	0.0	0.0	286.8
Net Worth (in USD1,000)	2,045.4	222.9	1,484.0	6,206.3
Gross Farm Income (in USD1,000)	492.6	44.1	349.2	1,835.7
Total Crop Acres (acres)	699.1	85.0	550.0	2,550.0
FCIC Insurance Expense (in USD1,000)	8.15	0.0	3.2	34.0
Off-farm Income (in USD1,000)	57.53	0.0	30.0	112.5
Debt-to-Asset Ratio (percentage)	20.7	0.1	7.9	51.6

Note: n=11,331. Observations are weighted using appropriate weights provided in ARMS data.

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Weighted Farm-level Characteristics, ARMS 2014 - Split by Crop Sales Quantile

Quantile	Crop Sales			Livestock Sales	Net Worth	Crop Acres	Obs.
	LB	Mean	UB				
0-10	NA	4.0	7.8	39.1	669.1	177	540
10-20	7.8	12.1	17.5	63.1	765.6	193	682
20-30	17.5	26.1	34.7	84.8	1,072.9	332	886
			...				
70-80	245.7	323.0	422.2	171.5	2,647.3	1,545	1,395
80-90	422.2	590.1	821.5	121.3	3,196.1	2,068	1,673
90-100	821.5	1,789.9	NA	204.5	5,905.9	3,912	1,988

Weighted Farm-level Characteristics, ARMS 2014

Crop Sales Quantile	Total Subsidy	Per Acre Subsidy	Percent of Subsidies
0-10	333	3.32	0.2
10-20	789	8.22	0.4
20-30	2,051	9.82	1.0
30-40	2,540	10.96	1.3
40-50	5,524	14.81	2.6
50-60	5,736	14.63	3.1
60-70	9,375	17.66	5.6
70-80	15,289	18.66	9.8
80-90	26,544	20.63	19.9
90-100	62,828	23.02	56.1

The AFFIRM Act

- Introduced in House and Senate in October 2015.
- Prohibits premium subsidies:
 - Any individual or entity with AGI greater than \$250,000.
 - that exceed \$40,000 per year.
 - Related to the Harvest Price option
- Establishes a cap on A&O and overall rate of return to insurance providers.
- Eliminates restriction on budget neutrality regarding SRA.

Hypothetical Impact from Premium Cap in 2014

	50k Cap	40k Cap
Farms Impacted (%)	4.05	5.23
Reduction in Subsidies (%)	30.00	35.61
Reduction in Subsidies (\$ B)	1.74	2.06

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Final Thoughts

- Is it problematic that subsidies follow crop sales?
- Is the consolidation of benefits a problem?
- Should benefits be distributed based on ability-to-pay?
- If cuts are needed in crop insurance, there are other avenues.
 - Eliminate subsidies related to HPO (1.9B)
 - Weather-based Disaster Program (2.0B-4.5B)
 - Free 70% CL for RP-HPE (0.6B) or ARP (1.6B)

Thank you for your time.

Discussion/Questions?

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