Crop Insurance and Conserving Agricultural Practices

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Where I am coming from today

• Dissertation on crop insurance in the early 1990s
• Worked at USDA in the 1990’s 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
  • Engage with many groups such as AGree on ag risk issues
• In 2013 invited to help with Senate Ag Committee staff
• Back to academia
  • Risk & insurance
  • Big ag data
Crop insurance program growth

1989-2015 Subsidy Percent and Net Acres Insured for U.S. Crop Insurance

- Subsidy %
- Acres

Mississippi State University
Department of Agricultural Economics
2014 Percentage of Planted Acres Insured

These 4 crops account for more than 70% of insured acres.
Crop Insurance in the 2014 Act

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

- Commodity Programs: -$14,307
- Conservation: -$3,967
- Nutrition: -$8,000
- Sequester: -$6,400

Credit: $0
Rural Development: $228
Research & Extension: $1,145
Forestry: $10
Energy: $879
Horticulture: $694
Crop Insurance: $5,722
Miscellaneous: $953

Change in Baseline Funding (Millions)
The Evolution of Farm Program Policy & Analysis

Past
- Title I Price Risk
- Title 4 Conservation
- Title XI Yield

Present
- Title I Price
- Title 4 Conservation
- Title XI Yield

Future?
- Title I Price
- Title 4 Conservation
- Title XI Yield
How Did the 2014 Farm Bill Impact U.S. Crop Insurance?

- New “shallow loss” crop insurance products (SCO/STAX).
- Almost all federal support for cotton producers will be via crop insurance.
- Even for commodities other than cotton, crop insurance will be the primary mechanism for federal support of crop agriculture in the United States.
- Farmers must now be in compliance with federal soil conservation guidelines to be eligible to purchase federal crop insurance.
  - Perhaps affects non-program crops the most.
The Relationship of Crop Insurance & Conservation Practices

- A decrease in risk will cause an increase in output by a risk averse producer.
- There are risk increasing and risk decreasing inputs.
- If crop insurance is risk reducing:
  - Potentially expands output (production)
    - Expand acreage
    - Change crop mix
  - Substitute for risk reducing inputs (e.g. irrigation)
  - Enhance risk increasing inputs (e.g. fertilizer)
  - Question of magnitude in many cases & confounded by other programs
The Extensive Margin – Crop insurance effect on production in marginal areas

• Literature suggests some shifting of land into insurable crops (e.g. hay to soybeans).
  • Magnitude usually small
  • Some increase in enterprise specialization and production efficiency. Estimated efficiency gains are far less than the subsidies
• Most studies do not reflect current program
Input use and crop insurance

- While results are mixed most find:
  - Chemical input use may decline somewhat
  - Nitrogen use declines
  - Results may vary by crop, region, and weather events
  - Area based insurance helps avoid the moral hazard problem because reducing inputs will not increase indemnity
Premium Rates

• For yield insurance products rates are driven by last 20 years of losses in the county weighted by historical weather

• Rates will be higher for
  • Higher coverage
  • Riskier practices
  • Revenue Protection > Yield Protection
  • Less natural hedge (prices moving inversely of yield)
  • Higher price risk (revenue products)
Subsidizing Crop Insurance

- Subsidy = RMA estimated breakeven premium – producer paid premium
- Subsidy will increase with
  - Higher crop value
  - Greater risk
  - More acres insured
  - Higher coverage level
  - Enterprise Units
- RP > RPHPE > YP
Variation in Subsidy by Region

2014 Subsidy Per Acre
Corn
Premium Rate Adjustments for Soil Conserving Practices

• Any resulting increase in expected yield is already being captured by the APH yield (which, in turn, reduces premium rates).

• Must be able to demonstrate that the practice reduces yield variability.
  • Much more data are required to demonstrate variance reduction than are required to demonstrate mean impacts.
  • Marginal impact on variance reduction likely depends on geographic region, management ability, interactions with other practices.

• Can it be verified?
Higher risk = Higher rates

Two Farm Revenue Distributions
But we seldom see just a change in mean yield

Two Farm Revenue Distributions

Series2  Series3
The hard work to incorporate conservation practice in USDA program

• Natural Resources Conservation Service, Risk Management Agency and Farm Service Agency formed an interagency workgroup to develop a consistent cover crop policy.

• RMA then revised the special provisions statement to say:
  • *Insurance shall attach to a crop following a cover crop when the cover crop meets the definition provided in the basic provisions, was planted within the last 12 months, and is managed and terminated according to NRCS guidelines.*
  • *Haying or grazing a cover crop will not impact eligibility for a prevented planting payment provided such action did not contribute to the acreage being prevented from planting.*

Summary

- Crop insurance has increased in cost and importance
- Conceptually there is a risk reduction and subsidy effect
- What is the relationship between risk and soil types, conservation practices and soil health?
  - Not easy to answer and answer may vary
- Some risk reduction is partially accounted for by mean effect
- Subsidy will mask actuarial effects
  - On average, growers pay only about 40% of the total premium cost.
- Final thought: Are there conservation practices worth incentivizing even if they are risk increasing?