Risk Preference and Human Capital: What Do They Say about Adoption of Cost-Share Conservation Programs

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  1. Analyze participation in Environmental Quality Incentives Programs (EQIP).
  2. EQIP offers technical assistance and cost-share for conservation practices.
  3. Adoption of conservation practices is made less risky when implemented through EQIP

Risk attitudes and Technology Adoption

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2. Exception is when a technology is risk reducing once implemented.

   Risk averse farmers are more likely to adopt risk-reducing technologies (e.g. irrigation technology).

Role of Information

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- Those who adopt technologies tend to have more information about the technologies.
- Then, what affects quantity and quality of information farmers obtain?

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- Highly educated farmers are more capable of collecting useful information.
- What is the impact of education on technology adoption given the same level of risk averseness?

Two risk averse farmers with different levels of education

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Less educated farmers

More educated farmers

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- Less capable of utilizing information

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Less educated farmers

- Less capable of utilizing information
- High transaction cost

More educated farmers

- More capable of utilizing information
- Low transaction cost

Two risk averse farmers with different levels of education

Less educated farmers

- Less capable of utilizing information
- High transaction cost
- May feel overwhelmed to digest information and simply choose not to adopt

More educated farmers

- More capable of utilizing information
- Low transaction cost
- May be more active in searching information to reduce risk associated with adoption and more likely to adopt

Data

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- County level EQIP payment from 1996 to 2008 obtained from Environmental Working Group (EWG).

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- Analyze how farmers in each category are different from each other in terms of risk preference and education.

Measurement of Risk Aversion

1. Crop Insurance Expense/ Total Variable Cost is calculated (used in Goodwin and Rejesus ,2008 etc.)
2. Create dummy variable for the 5^{th} quintile (top 20%) of the variable.

Table: Results from Multinomial Logit Model
Base Group is "Never Applied to EQIP"

	Applied, but never accepted		Accepted, has a EQIP contract	
Variable	**Coefficient**	**Std Err**	**Coefficient**	**Std Err**
Risk averse	-1.51	1.06	0.46***	0.16
LTHS	0.38	0.65	-1.04***	0.34
Risk averse*LTHS	2.59*	1.57	0.99	0.64
HS	-0.14	0.45	-0.46***	0.15
Risk averse*HS	0.79	1.49	0.26	0.26
farming as primary occupation	0.49	0.49	1.00***	0.18
acres	6.94E-05	0.00	6.94E-05***	0.00
acres2	-3.29E-10	0.00	-6.30E-10***	0.00
Livestock	0.25	0.42	0.51***	0.13
Dairy	-0.24	0.79	0.61***	0.17
beginning	-0.21	0.63	-0.06	0.19
Non White	-31.47	6609609	-1.15*	0.59
Limited Resources	-0.68	1.03	-0.83**	0.37
Atlantic	0.50	0.74	0.55***	0.19
South	0.96	0.70	0.37*	0.20
Plains	0.87	0.72	0.29	0.18
West	0.19	0.82	0.24	0.21
EQIP payment (count average)	2.59E-07	0.00	2.59E-07**	0.00
_cons	-6.29	0.75	-4.30	0.23

Number of observations = 5609

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Effect of Education

Base group is some college education and beyond

$$\frac{\partial \text{EQIP3}}{\partial \text{LTHS}} = -1.04^{***} + 0.99 \text{ (Risk Averse)}$$

$$\frac{\partial EQIP3}{\partial HS} = -0.46^{***} + 0.26(\text{Risk Averse})$$

$$\frac{\partial EQIP3}{\partial SCOLB} = 0.46^{***}(\text{Risk Averse})$$

Effect of Risk-averseness

Base group is some college and beyond

Category 1 against 2

$$\frac{\partial \text{EQIP}}{\partial \text{Risk Averse}} = -1.51 + 2.59^{*}(LTHS) + 0.79(HS)$$

Category 1 against 3

$$\frac{\partial \text{EQIP}}{\partial \text{Risk Averse}} = 0.46^{***} + 0.99(LTHS) + 0.26(HS)$$

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- Risk averse farmers who have some college education or beyond is more likely to apply to EQIP and have an EQIP contract than not risk averse counterparts.
- Risk averse farmers who have less education may be left out from USDA's effort to promote working land conservations.

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- Need to estimate the model with different specifications of “risk averseness” to see the robustness of the results.