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Rice Production Self Sufficiency in Bangladesh: Role of Technology, Plot, and Farmer

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Area of Study: Bangladesh

- Country Profile
 - Area: 56,977 square miles
 - Population: 160 million
 - Staple food item: Rice
 - Arable land: Decreasing
- Achievement: Rice Production Self-Sufficiency
 - Contributing Factors:
 - Adoption of HYV of Rice
 - Trade Liberalization on Production Inputs
 - Subsidy on Diesel and Fertilizer



Motivation

Previous Studies

- Factors affecting technology adoptions.
 - Farm Size: Feder et al., (1985)
 - Education: Huffman (2001)
 - Tenure Arrangements: Newbery, (1975)
 - Credit Constraints: Krishnan (1996)
 - Information Constraints: Schutjer & Van der Veen (1997)
 - Social Networks & Learning: Conley & Udry (2010)
 - Risk: Ward and Singh (2013)

This study

- We estimate the role of HYV rice technology, farm, and farmer characteristics on achieving rice production self-sufficiency in Bangladesh.
- Research Goal:

To estimate the percent contribution of

- HYV rice technology
- Farm (soil) characteristics
- Farmer characteristics

Data

- Source: IRRI survey in Bangladesh (2014)

- Technologies:

- High Yield Varieties (HYV)
- Traditional Varieties (TV)

- Seasons:

- Boro (HYV)
- Aman (TV)



Empirical model

- We use a differential yield and gross return function
 - Variables included: Yield, area, experience, labor application, fertilizer application, and soil quality
 - Each variable is differenced by technology (HYV & TV)
-
- We control for:
 - Farmer Characteristics
 - Farm Characteristics
 - Plot Characteristics





Results and Discussion

- Decomposition of Expected Output by Source

| Percent of Mean HYV Output Gains Due to | (Percent) |
|---|-----------|
| HYV method, of which | 61.57 |
| Unconditional productivity gains from | |
| Base productivity effect | 100.61 |
| Experience with HYV | -30.47 |
| Marginal yield gains from | |
| Land | 0.008 |
| Labor | 13.91 |
| Fertilizer | 0.03 |
| Plot specific characteristic (soil) | 3.08 |
| Farmer-specific effects | 35.35 |



Results

- Results highlight the importance of controlling for farmer characteristics in technology adoption studies
- Farmer characteristics shape adoption decisions
- Individual traits impact adoption decisions
- Plot specific characteristics are the least contributors to technology adoption

Questions/Comments

Thank you
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