Determinants of price level: the role of production cost and farm productivity

Steven Haggblade (MSU)

Presented at the Comesa training workshop
"Food price variability: Causes, consequences, and policy options"
On 28-29 January 2010 in Maputo, Mozambique
under the Comesa-MSU-IFPRI African Agricultural Markets Project (AAMP)

Outline

- Determinants of price level
- Exercise 1. What affects farm productivity? (estimate yield functions)
- Exercise 2. Compute plot-level cost of production
Determinants of price

![Graph showing the determinants of price with demand curve D0 and supply curve S0 at price P0.]

Determinants of price

![Graph showing the determinants of price with demand curve D0, supply curve S0, and new supply curve S1 at price P1. The arrow indicates a shift in supply.]
What affects cost of supplying maize to the market?

- Farm-level cost of production
- Transport costs (distance to market)
- Marketing costs (handling, storage, profit, risk premium)
Why does productivity vary?

- Among farmers?
- Across plots?

Good farmer or bad farmer?
Good farmer or bad farmer?
Good farmer or bad farmer?

Why does productivity vary?

- Among farmers?
- Across plots?
Factors affecting plot-level yield:

Exercise 1. Estimating plot-level yield functions: Yield = function of:

- Seed type (hyv vs. local)
- Fertilizer application (kg/ha)
- Time of planting (number of days after November 1)
- Tillage system (hand hoe, conservation farming basins, plowing, ripper)
- Number of years experience with CF
- Plot size
- Gender
Interpreting regression coefficients

![Graph showing the relationship between Maize yield (kg/ha) and Fertilizer application (kg/ha).](image)

Maize yield (kg/ha)

1,500
1,000
500

Fertilizer application (kg/ha)

100

ΔM

ΔF
Interpreting regression coefficients

Maize yield (kg/ha)

Fertilizer application (kg/ha)

hybrid

Local maize variety

500

1,000

1,500

100

100

hybrid

Local maize variety

500

1,000

1,500

100

100

Fertilizer application (kg/ha)
Regression equation
Yield = a + b Fert + c HYV + ...

Exercise 1. Results
Exercise 2. Compute plot-level cost of production

- Select a farmer
- Use “Cost” worksheet to compute production cost

Exercise 2. Results

<table>
<thead>
<tr>
<th>Farmer, plot</th>
<th>Cost of production ($/ton)</th>
</tr>
</thead>
</table>

Average
Conclusions:

- Cost of production differs across farms and plots
- Efficient farmers produce at lowest cost
- Policy instruments for lowering farmers’ cost of production
  - Agricultural research (breeding, agronomic)
  - Extension (improves agronomic and management practices)