Price Volatility: Protecting Farmers and Consumers

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Maize price volatility

The graph shows the nominal USD price per metric ton for maize in Lilongwe retail, from 2000 to 2008. The price volatility is evident with fluctuations over the years.
Outline

1. Impact on consumers and farmers
2. Causes of price volatility
3. Policy options
4. Conclusions
1. Impact on farmers

- Do farmers benefit from high maize prices?
Smallholder Households’ Position in the Maize Market

- Mozambique: 50% sell only, 30% buy only, 20% both, 10% neither
- Zambia: 40% sell only, 40% buy only, 20% both, 10% neither
- Kenya: 50% sell only, 20% buy only, 30% both, 10% neither
- Malawi: 50% sell only, 30% buy only, 20% both, 10% neither
Smallholder Households’ Position in the Maize Market

The diagram shows the percentage of smallholder households in Mozambique, Zambia, Kenya, and Malawi that sell only, buy only, both, or neither maize. The categories are indicated by different colored bars: sell only (light blue), buy only (dark blue), both (teal), and neither (light yellow). The percentages are marked on the y-axis, which ranges from 0 to 60 percent. The countries are listed on the x-axis.
## Characteristics of smallholder farmers, Zambia 2003/04

<table>
<thead>
<tr>
<th></th>
<th>N=</th>
<th>Farm size (ha)</th>
<th>Asset values (US$)</th>
<th>Gr. Rev., maize sales (US$)</th>
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<th>Total hh income (US$)</th>
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<tbody>
<tr>
<td>Top 50% of maize sales</td>
<td>31,328</td>
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<td>720</td>
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<td>31,328</td>
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<td>Rest of maize sellers</td>
<td>328,561</td>
<td>1.6</td>
<td>316</td>
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<td>634</td>
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<td>0</td>
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Note: N= represents the number of households, and the percentages are based on the total number of households (N) for the category.
1. Impact on farmers

• Do farmers benefit from high maize prices?
1. Impact on farmers

- Do farmers benefit from high maize prices?
  - A small minority do.
  - The majority, who are net buyers, don’t!
1. Impact on consumers

- Do consumers suffer from high maize prizes?
## Food staple consumption, Malawi

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Quantity consumed (kg/person/year)</th>
<th>Daily caloric intake (kcal/person/day)</th>
<th>Share of caloric intake (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>133</td>
<td>1154</td>
<td>54%</td>
</tr>
<tr>
<td>Cassava</td>
<td>89</td>
<td>161</td>
<td>7%</td>
</tr>
<tr>
<td>Potato*</td>
<td>88</td>
<td>163</td>
<td>8%</td>
</tr>
<tr>
<td>Others</td>
<td>647</td>
<td></td>
<td>31%</td>
</tr>
<tr>
<td>Total</td>
<td>2125</td>
<td></td>
<td>100%</td>
</tr>
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Source: FAO, 2009a

* FAO data combine potato and sweet potato.
# Food staple consumption, Uganda

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<th>Commodity</th>
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<th>Daily caloric intake (kcal/day)</th>
<th>Calorie share (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantains</td>
<td>172</td>
<td>419</td>
<td>18%</td>
</tr>
<tr>
<td>Cassava</td>
<td>101</td>
<td>300</td>
<td>13%</td>
</tr>
<tr>
<td>Maize</td>
<td>31</td>
<td>266</td>
<td>11%</td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>82</td>
<td>215</td>
<td>9%</td>
</tr>
<tr>
<td>Beans</td>
<td>16</td>
<td>148</td>
<td>6%</td>
</tr>
<tr>
<td>Wheat</td>
<td>7</td>
<td>42</td>
<td>2%</td>
</tr>
<tr>
<td>Rice</td>
<td>4</td>
<td>53</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>1133</td>
<td>1133</td>
<td>48%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2360</strong></td>
<td><strong>2360</strong></td>
<td><strong>100%</strong></td>
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1. Extreme price volatility hurts

- poor urban households (net buyers)
- deficit farm households (the majority)
- Maize consumers
- planning for all farmers
Outline

1. Impact on consumers and farmers
2. Causes of price volatility
3. Policy options
4. Conclusions
2. Causes of food price variation

- Weather $\rightarrow$ production volatility
- World price transmission
- Private trader hoarding & collusion
2. Causes of food price variation

- Weather → production volatility
- World price transmission
- Private trader hoarding
- High transport and marketing costs
- Trade barriers
- Demand substitutes
- Unpredictable government policies (trade bans, pricing, public imports, tariffs)
Weather $\rightarrow$ production volatility

Zambia: staple food production

- **Maize**
- **Cassava**

Production ('000 tons)
World price transmission?

Nairobi wholesale

f.o.b. US gulf
2. Causes of food price variation

- Weather → production volatility
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- Private trader hoarding
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## 2. Causes of food price variation

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<th>Importance</th>
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<tbody>
<tr>
<td>Weather</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>World prices</td>
<td>*</td>
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Outline

1. Impact on consumers and farmers
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### 3. Policy Options

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<th>Policy Regimes</th>
<th>Instruments</th>
<th>Countries</th>
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<tr>
<td>A. Free market</td>
<td>open borders, public goods</td>
<td>Mozambique, Uganda, South Africa</td>
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<td>B. State dominated</td>
<td>buffer stocks, trade controls</td>
<td>Malawi, Zambia, Tanzania</td>
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A. Free trade regime:
South Africa, domestic and border prices for white maize, 1992-2006
Ethiopia Wheat

![Graph showing the price of Ethiopia Wheat from 2006 to 2009, with a significant increase in prices in late 2008. The graph includes lines for White wheat wholesale Addis, Import Parity Revised, and Import Sales Price.]
Foreign exchange constraints

- Import is highly profitable
- Traders refuse to import because they cannot convert burr into dollars
Malawi, domestic and border prices for white maize, 2000-2006
Malawi, domestic and border prices for white maize, 2000-2006

![Graph showing wholesale price (US$ per ton) for import parity, export parity, and south of Malawi from 2000 to 2006. The graph highlights the fluctuation in prices with a notable peak in 2002.]
Lusaka, domestic and border prices for white maize, 1994-2006
Lusaka, domestic and border prices for white maize, 1994-2006
Policy uncertainty → price spikes

Examples: a) Zambia- 2001/02, 2002/03, b) Malawi: 2001/02, 2005/06

- National food production shortfall anticipated
- Who’s going to import? And how much?
- State announces plan to import X tons
- Supplies dwindle; prices skyrocket
- “EVIDENCE THAT MARKETS FAIL!”
- State incurs delays in contracting for imports
- Private traders sit on sidelines
When does import parity fail to cap price rises?

- When import and export bans prevent trade
- Foreign exchange unavailable
- Late decision making and import authorization
- Uncertainty over government action
- When traders fear subsidized government sales and so fail to import
Import parity caps price rises

- When borders remain open
- Foreign exchange is available
- Under stable, predictable government policies
Trade bans

• Drive trade into informal channels
• Raise transaction costs
• Increase bands between import and export parity
• Discourage investment in staple food production and trade
Trade bans $\rightarrow$ high-cost, informal trade
3. Comparing Policy Regimes

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Finding 1

- Maize grain prices are generally *more volatile and less predictable* in Group B, the state dominated market systems.

- Malawi and Zambia have the highest degree of price volatility and uncertainty.
Maize Grain Prices Unpredictability

Mozambique-Maputo

Malawi-Lilongwe

Conditional CV (%)

Year/Month
Maize Grain Prices Unpredictability

Mozambique-Maputo

Zambia-Lusaka

Conditional CV (%)
Comparison of Unconditional Coefficient of Variation for Capital City Markets/major Consumption Centers

![Comparison Graph]
Finding 2

- With the exception of Malawi, Group B, state-dominated marketing systems have failed to match maize production growth for SSA.

- By contrast, Mozambique and Uganda, countries with relatively open marketing and trade policies have experienced more than a 100% increase in maize production over the past two decades.
Figure 5. Maize Production Index for Sub-Saharan Africa, Zambia, Malawi, Tanzania, Kenya, Mozambique, and Uganda, 1985 to 2008

Source: Data from FAOStat
Maize Production Growth, 1985 - 2008

Source: Data from FAOStat
Outline

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### Food price variation: causes and cures

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<th>Cure</th>
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<tbody>
<tr>
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<td>***</td>
<td>diversification, irrigation, forecasting</td>
</tr>
<tr>
<td>Unpredictable policies</td>
<td>***</td>
<td>transparency</td>
</tr>
<tr>
<td>Transport costs</td>
<td>**</td>
<td>infrastructure</td>
</tr>
<tr>
<td>Trade barriers</td>
<td>**</td>
<td>open borders</td>
</tr>
<tr>
<td>Demand substitution</td>
<td>**</td>
<td>diversification</td>
</tr>
<tr>
<td>World prices</td>
<td>*</td>
<td>options contracts</td>
</tr>
<tr>
<td>Hoarding</td>
<td>*</td>
<td>competition</td>
</tr>
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Conclusions on Price Volatility

- Problem for maize, (wheat, rice)
- Problem for poor consumers (including deficit farm households) and for surplus farmer incentives
- Cure problem at source (diversification, irrigation, forecasting, infrastructure, policy risk)
- Open borders limit price volatility
- Private sector requires predictability
- Government price interventions (buffer stocks, trade bans) costly, ineffective, often unpredictable & counterproductive