Opportunities to Improve Household Food Security Through Promoting Linkages between Formal and Informal Marketing Agents: Experience From Eastern Cape Province, South Africa

Presented by
Lulama Ndibongo Traub and T.S. Jayne

Outline

- Study Objectives
- Marketing Margin Models
- Model Results & Implications
- Case-Study Objectives
- Overview of the Eastern Cape
- Key Findings
- Conclusions
- Current Events
In other countries in the region, during the control period, the marketing boards would supply maize to large “registered” millers to produce maize meal.

Informal small-scale milling was either illegal or incapable of developing due to controls on grain movement.

Liberalization removed these controls and made lower-cost maize meal available to consumers.

[A] Lusaka-Zambia: Price trends

Linear trend (meal): -0.655***
Linear trend (grain): 0.235**

<table>
<thead>
<tr>
<th>Year/Month</th>
<th>Wholesale maize grain</th>
<th>Retail maize meal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994/5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995/6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997/8</td>
<td></td>
<td></td>
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<tr>
<td>1998/9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999/0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001/2</td>
<td></td>
<td></td>
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<tr>
<td>2002/3</td>
<td></td>
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<tr>
<td>2003/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004/5</td>
<td></td>
<td></td>
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<tr>
<td>2005/6</td>
<td></td>
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</tr>
</tbody>
</table>

*** 1%  ** 5% level of significance
Maize grain and maize meal prices, 1996-1999, informal vs. formal channels

Objectives:

1. to empirically access the impact of market deregulation on the size of the maize milling/retail margins within South Africa.
2. To consider the implications for food security policy
Marketing Margins Models

$$MM_t = F\{X_t; T_t; D_{mt}; \text{REFORM}\}$$

$$X_t = (\text{Wages}_{t-1}, \text{RER}_{t-1}, \text{ER Volatility}_{t-1}, \text{Rainfall index})$$

$$T_t = \text{time trend}$$

$$D_{mt} = \text{Seasonal dummy variables}$$

$$\text{REFORM} = \text{categorical variable}$$

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Figure 1. Inflation-adjusted maize and maize meal prices, South Africa, May 1975 to December 2004
Table 1. Descriptive Statistics of Real Maize Grain and Maize Meal Prices

<table>
<thead>
<tr>
<th>Phase 1: Control Period</th>
<th>Phase 2: Partial Reform</th>
<th>Phase 3: Full Market Reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=132)</td>
<td>(n=84)</td>
<td>(n=72)</td>
</tr>
</tbody>
</table>

**Producer price, maize grain (R/mt)**

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1188</td>
<td>836</td>
<td>650</td>
<td>667</td>
</tr>
<tr>
<td>CV (%)</td>
<td>7.7</td>
<td>9.8</td>
<td>19.1</td>
<td>20.1</td>
</tr>
</tbody>
</table>

**Wholesale price, maize grain (R/mt)**

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1039</td>
<td>950</td>
<td>838</td>
<td>895</td>
</tr>
<tr>
<td>CV (%)</td>
<td>10.9</td>
<td>7.0</td>
<td>13.1</td>
<td>25.6</td>
</tr>
</tbody>
</table>

**Retail price, maize meal (R/mt)**

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2351</td>
<td>2336</td>
<td>2681</td>
<td>2835</td>
</tr>
<tr>
<td>CV (%)</td>
<td>8.8</td>
<td>6.4</td>
<td>9.3</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Maize Meal Retail Prices: Actual vs. Simulated
Result Summary: Welfare Effects

- Rising Milling/Retailing Margins
  - Linear Regression:
    - Conditional mean increased by R173 per ton → 16%
  - Piece-Wise Linear Regression:
    - Milling margins increased by R6/month → 40%
- Transfer of Consumer Surplus
  - Actual Retail Prices: 13% higher than simulated → $179 million/year
- Findings are robust to alternative model specification and estimation method

Conclusion

- Need to address the “why”?
  - In other countries in the region, liberalization removed the barriers to investment in alternative milling channels, but not in South Africa – why?
- Study Objectives
  - To understand why alternative milling channels have not developed in response to liberalization
  - To determine consumer demand for small-scale milled maize
  - To identify potential market barriers
Overview: Eastern Cape


Overview: Eastern Cape

Overview: Eastern Cape


Flow of Maize Grain & Meal within the Eastern Cape

Consumers

Retail

Wholesale

Milling

Assemblers/Wholesalers

Production

Rural

Spaza

Orient Bazaar

Boxer C&C

Bakkie Millers

Subsistence Farmers

Small-scale Farmers

PSP

Idylla

Algoa

Indwe

Kornta Packaging

Peri-Urban

Independent Retailers

Sparg Wholesalers

Metro Cash & Carry

Free State/Western Cape/Kwazulu Natal Farmers/Silos/Traders

Urban

Spar Retailers

Shoprite Checkers

Pick 'n Pay

Brown & Weir

Sasko Depots

Pioneer Foods (Sasko Milling)

External Millers

Small-scale Farmers

Free State/Western Cape/Kwazulu Natal Farmers/Silos/Traders
Key Findings: Consumers’ Willingness-to-pay

Percentage of hh’s Preferring Straight-run Meal at Given Discounted Prices

- Low-income
- Medium-income
- High-income

Key Findings: Maize Grain Counterfactual Cost Build-up

Actual and Counterfactual Prices for 12.5kg bag of Maize Grain and Maize Meal: August – October, 2004

<table>
<thead>
<tr>
<th></th>
<th>Maize Grain</th>
<th>Super-sifted Meal</th>
<th>Special Meal</th>
<th>Sifted Meal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal marketing system</td>
<td>11.08</td>
<td>36.71</td>
<td>30.54</td>
<td>24.30</td>
</tr>
<tr>
<td>Informal millers</td>
<td>13.09</td>
<td>18.41</td>
<td>18.41</td>
<td>18.41</td>
</tr>
<tr>
<td>Price % Discount</td>
<td>-</td>
<td>37% - 42%</td>
<td>27% - 32%</td>
<td>6% - 12%</td>
</tr>
</tbody>
</table>
Key Findings: Cost Savings to Consumers from Sourcing Maize from Informal Millers

Percentage of Monthly Income Spent on Super-Sifted Meal: Aug – Oct 2004

Key Findings: Market Barriers

Main Reasons Stated by Small-millers for not Engaging in Production Milling

- Customers bring their own grain: 58.8%
- Didn’t think of it: 43.2%
- Consumers prefer commercial meal: 35.3%
- No access to credit: 15.7%
- Not profitable: 13.7%

- Dumping Practice
- Food Fortification Legislation
Conclusion: Summary of Key Points

- Small-scale millers could make meal available to consumers at a significantly lower cost than the large millers.
- Given likely price differentials, there is strong consumer demand for alternative maize processing/retailing channels.
- The development of these alternative marketing channels could significantly reduce the cost of staple meal to consumers:
  - Would effectively transfer roughly $180 million per year from large millers/retailers to consumers.
  - Would reduce the magnitude of food crises during drought years and in the current environment of high world food prices.

Summary of Key Points (cont.)

- But major market barriers currently prevent the development of these informal marketing channels:
  - Information Gap
  - Dumping Practice
  - Legislation
- Hence, government may wish to investigate:
  - Potential dumping practices of large millers.
  - Effects of exempting small millers from fortification regulations.
  - Provide active support for the development of more competition at milling / retailing stage.
Thank You

Marketing Margins Models

\[ MM_t = F\{X_t ; D_{mt} ; T_t ; \text{REFORM}_t ; \text{REFORM}(T_t - T_{d})\} \]

Prior to deregulation
\[ E(MM_t) = \delta_0 + X_t \beta_i + \delta_2 T_t + \sum_{m=1}^{11} \gamma_i D_{mt} \]

\( \delta_2 \) = monthly trend in the level of the margin
\( \delta_0 \) = intercept

After deregulation
\[ E(MM_t) = (\delta_0 + \delta_t - \delta_3 T_{d}) + X_t \beta_i + (\delta_2 + \delta_3) T_t + \sum_{m=1}^{11} \gamma_i D_{mt} \]

\( \delta_3 \) = measures the difference between the monthly trend of the margin
\( \delta_t \) = margin differential at the point immediately following reform
Results: Linear Regression

<table>
<thead>
<tr>
<th>Time</th>
<th>Margin (R/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/1991</td>
<td>R1168 + R55</td>
</tr>
<tr>
<td></td>
<td>Slope = R1.3</td>
</tr>
</tbody>
</table>

Results: Piece-wise Linear Regression

<table>
<thead>
<tr>
<th>Time</th>
<th>Margin (R/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/1991</td>
<td>Slope = R6.02</td>
</tr>
<tr>
<td>05/1991</td>
<td>Slope = - R0.8</td>
</tr>
</tbody>
</table>