Fertiliser Subsidies: Potential, Pitfalls and Practice

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Fertiliser Subsidies: Potential, Pitfalls & Practice

- **Potential**
  - Purposes (what?) & people (who?)
  - Processes (how?)
  - Preconditions (where?)

- **Pitfalls**

- **Practice**
  - Performance
  - Principles
  - Instruments
Potential: purposes?

- Conventional core *producer* emphasis
  - Increased productivity from new technology adoption
    - Increase input *profitability*
    - Overcome inefficiencies from farmers’ lack of knowledge of benefits / techniques & depressed output prices
  - Support more remote areas & farm incomes

- Wider issues
  - Private input market development
  - Replenishment of soil fertility
  - Social protection for poor subsidy recipients
  - Regional, national & household food security
  - Meeting broad based political demands – producers & consumers

- *Is this what was achieved in the Green Revolution?*
- *Is this what economic theory suggests*
Potential: theory

- Produce price ($)
- Produce quantity

- Producer surplus
- Consumer surplus

Diagram showing the relationship between produce price and quantity, with areas representing producer and consumer surplus.
Potential: Green Revolution outcomes

- Higher productivity of land and labour in staple food production
- Lower staple food prices
- Higher real incomes for the poor
- Increased demand for non-staples, services
- Released land and labour for non-staples, services

(e.g. Hazell & Rosegrant, 2000)

Three dimensions of dynamic development for livelihoods and rural economies:

- **Hanging in**: food security (availability, entitlements)
- **Stepping up**: increasing productivity
- **Stepping out**: diversification and structural change

(Dorward, 2009)
Potential: Critical Processes

- Focus on staple foods
- Focus on consumer benefits from stable lower prices
- Focus on price: productivity tightrope
- Focus on affordability: seasonal finance a major constraint in poor rainfed grain production
- Focus on accessibility: development of low cost supply system(s)
Potential: Preconditions

- Technology, agro ecology, basic input profitability
- Problems of affordability & temporary low productivity / profitability etc – potential incremental input use, not displacement & transfers
- Political commitment
- Logistical capacity
- Accountability
- Clear policy & programme objectives & consistent coordination with complementary policies & investments
  - Reasonable food price stability
  - Social protection
  - Roads
  - Research, extension
- Production & market information for policy makers
- Good macro-economic management

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Pitfalls

- Design & system inefficiencies: over-use, dead-weights, displacement, leakages
- Technical inefficiencies: timing, application methods, formulation, lack of complementary research and extension
- Spiralling costs and no exits
- Parastatal inefficiency vs private sector incentives
- The dark side (corruption, diversion, fraud)

- Scale
- Politics
## Practice: performance

<table>
<thead>
<tr>
<th></th>
<th>Ghana</th>
<th>Zambia</th>
<th>Malawi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td>2008</td>
<td>2002-</td>
<td>2005/6-</td>
</tr>
<tr>
<td><strong>Cost (mill US$)</strong></td>
<td>15</td>
<td>60-110</td>
<td>50-220</td>
</tr>
<tr>
<td><strong>Volume (‘000mt)</strong></td>
<td>30</td>
<td>66</td>
<td>130-220</td>
</tr>
<tr>
<td><strong>Leakage</strong></td>
<td>??</td>
<td>70%?</td>
<td>?? Varied</td>
</tr>
<tr>
<td><strong>Displacement</strong></td>
<td>??</td>
<td>40%+</td>
<td>20-40%</td>
</tr>
<tr>
<td>B:CR (?productivity, prices?)</td>
<td>??</td>
<td>0.6 to 1.4</td>
<td>0.7 to 1.9</td>
</tr>
<tr>
<td><strong>Fiscal efficiency (?leaks, displacement??)</strong></td>
<td>??</td>
<td>v. low?</td>
<td>&lt;0 to 1.1</td>
</tr>
<tr>
<td><strong>Output price impacts</strong></td>
<td>?? Low</td>
<td>??</td>
<td>2005/6 only</td>
</tr>
<tr>
<td><strong>Labour / wage impacts</strong></td>
<td>??</td>
<td>??</td>
<td>2005/6</td>
</tr>
<tr>
<td><strong>Supply system impacts</strong></td>
<td>X local dealers</td>
<td>negative</td>
<td>X local dealers</td>
</tr>
</tbody>
</table>
Practice: principles

- Substantial potential, but major pitfalls
- Cross country learning critical – but limited
- Focus on staples with substantial per unit subsidy on limited input volumes (address affordability constraints)
- Timeliness
- Paradoxes: State capacity paradox
  - Political paradox
  - Consistency paradox
- Build trust
- Preconditions:
  - Technology
  - Capacity
  - Complementary policies & investments
  - Information
  - Accountability & transparency
Practice: instruments

- Targeting - staple crops
  - poor areas with potential?
  - poor producers / universal?

- Rationing

- Vouchers - Fixed price? Flexi?

- Remoteness premia

- Smart cards, barcode systems, national IDs

- Tender systems

- Audit systems & penalties

- Agro-dealer support systems

- Systems for stakeholder engagement, performance targets & monitoring, trust, commitment
References

- Hazell, P. and M. Rosegrant, Rural Asia: Beyond the Green Revolution. 2000: OUP/ ADB
Malawi: constraints on input use

- Highly variable maize prices
- **Profitability** low & variable, even for deficit households
- **Maize price ‘tight rope’**
- **Affordability**

**Access**
Limited private sector network & poor roads

### Maize and Nitrogen Value: Cost Ratios

- **Pre harvest prices**
- **Post harvest prices**
- **Pre H with subs**
- **Post H with subs**

- 2003/4: 1 bag = 10% median per capita annual expenditure

Highly variable maize prices

Profitability low & variable, even for deficit households

Maize price ‘tight rope’

Affordability

2003/4: 1 bag = 10% median per capita annual expenditure

Access
Limited private sector network & poor roads
Malawi rural economy: poverty & the low maize productivity trap

- High poverty rates (50% < $0.40 in 2004)
- Small holdings (50% < 1.0ha)
- Continuous maize cultivation
- Declining soil fertility
- Recurring food insecurity
- Highly variable maize prices

Low producer investment, low maize & agric productivity, low & vulnerable real incomes, consumer ‘lock in’ to low productivity maize, low demand for non-agric goods & services
Changing subsidy impacts on households & markets

**RURAL HOUSEHOLDS**

- **Poorer households**
  - Resale
  - Incremental use
  - Displacement use

- **Less-poorn households**
  - Resale
  - Incremental use
  - Displacement use

- **Y1 Increased real incomes**
  - **Y1 Increased production**
  - **Y2 Increased real incomes**
  - **Y2 Increased production**

**RURAL ECONOMY**

- **Y1 Increased wages**
- **Y2 Reduced maize prices**
- **Y2 Increased wages**
- **Input service demand & investment**
- **Farm/ non farm demand & investment**
2005/6 – 2008/9 Input Subsidy Programmes

- 2004 presidential elections: all parties campaigned on fertiliser subsidies, though different types
- 2004/5 very poor harvest & subsequent high maize prices
- 2005/6 – 2008/9 maize & tobacco fertiliser & seed subsidy, targeted vouchers (2007/8 also cotton seed & chemicals, 2008/9 also storage chemicals & ea & coffee fertiliser)

<table>
<thead>
<tr>
<th></th>
<th>2005/6</th>
<th>2006/7</th>
<th>2007/8</th>
<th>2008/9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidised fertiliser sales (‘000MT)</td>
<td>132</td>
<td>175</td>
<td>217</td>
<td>197</td>
</tr>
<tr>
<td>% retail by private sector</td>
<td>0</td>
<td>28%</td>
<td>24%</td>
<td>0</td>
</tr>
<tr>
<td>Subsidised maize seed sales (MT)</td>
<td>??</td>
<td>4,500</td>
<td>5,500</td>
<td>??</td>
</tr>
<tr>
<td>Programme cost ($ million)</td>
<td>51</td>
<td>74</td>
<td>115</td>
<td>?221</td>
</tr>
<tr>
<td>Incremental fertiliser sales (% subsidy sales: higher for poorer farmers)</td>
<td>70-80%</td>
<td>60-70%</td>
<td>??</td>
<td>??</td>
</tr>
<tr>
<td>Incremental maize production (‘000MT)</td>
<td>550</td>
<td>700</td>
<td>??</td>
<td>??</td>
</tr>
</tbody>
</table>
### Global price & cost control challenges

<table>
<thead>
<tr>
<th></th>
<th>2005/6</th>
<th>2006/7</th>
<th>2007/8</th>
<th>2008/9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programme cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$ million</td>
<td>36.4</td>
<td>51</td>
<td>53.6</td>
<td>74</td>
</tr>
<tr>
<td>% national budget</td>
<td>4.3%</td>
<td>5.6%</td>
<td>5.4%</td>
<td>8.4%</td>
</tr>
<tr>
<td>% GDP</td>
<td>2.1%</td>
<td>3.1%</td>
<td>3.4%</td>
<td>5.5%</td>
</tr>
<tr>
<td><strong>Benefit cost ratio:</strong></td>
<td>2005/6</td>
<td>2006/7</td>
<td>2007/8</td>
<td>2008/9</td>
</tr>
<tr>
<td>high response</td>
<td>1.38</td>
<td>1.3</td>
<td>1.9</td>
<td>1.15</td>
</tr>
<tr>
<td>moderate</td>
<td>1.12</td>
<td>1.06</td>
<td>1.54</td>
<td>0.94</td>
</tr>
<tr>
<td>low response</td>
<td>0.86</td>
<td>0.81</td>
<td>1.18</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Fiscal efficiency:</strong></td>
<td>2005/6</td>
<td>2006/7</td>
<td>2007/8</td>
<td>2008/9</td>
</tr>
<tr>
<td>high response</td>
<td>0.76</td>
<td>0.44</td>
<td>1.13</td>
<td>0.15</td>
</tr>
<tr>
<td>moderate</td>
<td>0.24</td>
<td>0.09</td>
<td>0.68</td>
<td>negative</td>
</tr>
<tr>
<td>low response</td>
<td>negative</td>
<td>negative</td>
<td>0.23</td>
<td>negative</td>
</tr>
</tbody>
</table>
Global price challenges

- Breakeven Maize prices in Malawi to achieve VCR of 2 with changing urea prices & different technical efficiencies

<table>
<thead>
<tr>
<th>Year</th>
<th>Urea price $/mt</th>
<th>Grain: N ratio</th>
<th>Maize prices $/mt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Europe</td>
<td>Malawi</td>
<td>B/E</td>
</tr>
<tr>
<td>2006/7</td>
<td>220</td>
<td>470</td>
<td>15</td>
</tr>
<tr>
<td>2007/8</td>
<td>290</td>
<td>590</td>
<td>15</td>
</tr>
<tr>
<td>2008/9a</td>
<td>630</td>
<td>1,260</td>
<td>15</td>
</tr>
<tr>
<td>2008/9b</td>
<td>400</td>
<td>800</td>
<td>15</td>
</tr>
<tr>
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<td>220</td>
<td>470</td>
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<td>400</td>
<td>800</td>
<td>20</td>
</tr>
</tbody>
</table>

- 2008/9a B/E prices would be very damaging for the poor & the economy but around /above import parity (SAFEX + $100)
Staples in poor economies & livelihoods

- Food in expenditures of the poor – rural & urban
- Income to land & labour
- Indirect linkages
- Growth – factor supply & domestic demand for structural transformations out of agriculture

<table>
<thead>
<tr>
<th>Broad Role</th>
<th>High potential staples</th>
<th>Low potential staples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries with Minerals</td>
<td>Pro-poor growth</td>
<td>Least cost welfare, growth platform</td>
</tr>
<tr>
<td>Coastal, No minerals</td>
<td>Support growth</td>
<td>Subsistence &amp; support growth</td>
</tr>
<tr>
<td>Land locked, No minerals</td>
<td>Drive &amp; support growth</td>
<td>Subsistence &amp; support growth</td>
</tr>
<tr>
<td></td>
<td>Major driver &amp; then supporter</td>
<td>Subsistence</td>
</tr>
</tbody>
</table>
Maize: 1957 prices, nominal & deflated with US & stylised low income US CPI