Fertilizer subsidies & voting behavior: 
Political economy dimensions of input 
subsidy programs

Nicole M. Mason (MSU), T.S. Jayne (MSU), 
& Nicolas van de Walle (Cornell)

Selected paper presented at the 4th International Conference of the 
African Association of Agricultural Economists 
Yasmine Hammamet, Tunisia

Fertilizer subsidies in SSA

- Resurgent popularity of input subsidies in SSA
  - 7 countries, US$2 billion in 2012 (Ricker-Gilbert et al., 2013)

- Stated objectives:
  - Increase access to inputs, productivity, & production
  - Raise incomes, improve food security

- Other objectives:
  - “Do something” for rural poor (Jayne et al., 2010)
  - (Re-) Election: garner and maintain rural votes
1. Past election outcomes → subsidized input targeting?
   1. Quantitative empirical evidence of such effects
      □ Ghana (Banful, 2011)
      □ Tanzania (Pan & Christiaensen, 2012)
      □ Malawi & Zambia (Mason and Ricker-Gilbert, 2013)
      □ Kenya (Jayne et al., 2013)
      □ Nigeria (Takeshima & Liverpool-Tasie, 2013)
      ▪ Political economy not focus except for Banful (2011) and, to a lesser extent, Pan & Christiaensen (2012)

2. Targeted input subsidies → election outcomes?
   ▪ Qualitative: input subsidies instrumental in Mutharika’s 2009 landslide victory in Malawi (Chinsinga, 2012; Mpesi & Muriaas, 2012)
   ▪ Little (no?) quantitative empirical evidence to date:
     Do targeted input subsidies win votes ceteris paribus?

Research questions

RQ1. How do past election outcomes affect HH-level targeting of subsidized fertilizer?
   ▪ Closer look for Zambia; robustness checks
   ▪ HHs in const. won by ruling party get more; ↑ in margin of victory
   ▪ Robust to model specification, dataset

RQ2. How do changes in the scale/coverage of targeted fertilizer subsidies affect presidential election outcomes?
Fertilizer subsidies & timing of elections

Source: MAL (2012)

RQ2: Do fertilizer subsidies win votes in Zambia?

No! But reducing poverty, inequality, & unemployment does.

Source: STR / Reuters
Conceptual framework

- **Poli. sci. literature on voting in Zambia & SSA**
  (Bratton et al., 2011; Posner & Simon, 2002; many others)
  - Demographics (ethnicity, gender, age, rural vs. urban)
  - Economic voting (overall economy – income levels/poverty rates, inequality, unemployment)
  - Own economic situation, private goods from government (e.g., subsidized fertilizer)

- → **Reduced form model of voting behavior**

Methods

- **Dep. var.:** *district-level share of votes won by incumbent*
- **Key expl. vars.:** scale/coverage of fertilizer subsidy program
  1. % of smallholder HHs receiving
  2. Mean kg/smallholder HH
  3. Total district allocation (MT)
- **Other controls:** demographic/economic variables, year dummy

- 2-wave district-level panel (72 districts; 2006, 2011 elections)
- Correlated random effects fractional response probit
  (Papke & Wooldridge, 2008)
Methods (cont’d)

- **Subsidized fertilizer may be endogenous**

- **Control function approach** (Rivers & Vuong, 1988; Papke & Wooldridge, 2008)
  - **Instrumental variable**
    - % of smallholders with 1+ ha in 2002
    - Strong IV (positive, p<0.001)
    - Should be uncorrelated with error term
      - Not stat. sig. in vote share equation
  - **Fail to reject exogeneity** (p>0.70)

Results

Dep. var.: share of district votes won by incumbent

<table>
<thead>
<tr>
<th>Key explanatory variables</th>
<th>APE (pct. pt.)</th>
<th>Sig.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidized fertilizer</td>
<td>Not. sig.</td>
<td></td>
<td>p&gt;0.50</td>
</tr>
<tr>
<td>Unemployment rate (%)</td>
<td>-10.0</td>
<td>***</td>
<td>0.00</td>
</tr>
<tr>
<td>Poverty rate (%)</td>
<td>-2.7</td>
<td>***</td>
<td>0.01</td>
</tr>
<tr>
<td>Gini coefficient (0-100 scale)</td>
<td>-2.5</td>
<td>***</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: *** p<0.01, **p<0.05, *p<0.10. Bootstrapped standard errors (500 replications).

- **Economic variables**: stat. sig. & large in magnitude
- **Subsidized fertilizer**: no stat. sig. effect
Why no subsidized fertilizer effects?

- Relatively few farm HHs benefit
  - 2010/11: ~30% get subsidized fertilizer
  - 2006/07: ~10%

- Benefits highly concentrated
  - 27% of HHs = 55% of subsidized fertilizer
  - Recipients relatively better off

Why does GRZ continue to subsidize fertilizer if no effect on vote share?

- Conventional wisdom vs. empirical evidence
- Winning votes not the only objective of subsidies
- Our results: marginal changes
Conclusions

1. MMD targeted subsidized fertilizer to areas with strong support

2. Fertilizer subsidies had no effect on MMD’s share of votes in 2006 & 2011 elections

3. poverty, inequal., & unemploy. wins votes

Policy implications

1. Is politically-motivated subsidy allocation a problem? If so, how to it? e.g., rules-based, transparent, & audited allocations

2. Politicization may be achievement of stated objectives. Could depoliticizing ‘more bang for the buck’?
Policy implications (cont’d)

3. **ing effectiveness of subsidies as poverty- & inequality-reduction, employment-creation tools = good politics!** (e.g., target the poor, e-voucher to crowd-in private sector/create jobs)

4. **>30% ag spending → fertilizer subsidies.** Shifting some funds to investments that **poverty, inequality, and/or unemployment = good politics!** (e.g., roads, irrigation, electrification, ag R&D, improved extension, health, education, etc.)

Thank you for your attention! Questions?

Nicole M. Mason  
Assistant Professor, AFRE, MSU  
masonn@msu.edu

MSU Ag, Food, & Resource Econ. (AFRE) [http://www.afre.msu.edu/](http://www.afre.msu.edu/)

MSU Food Security Group  
[http://fsg.afre.msu.edu/index.htm](http://fsg.afre.msu.edu/index.htm)

Indaba Agricultural Policy Research Institute  

Food Security Research Project  
[http://fsg.afre.msu.edu/zambia/index.htm](http://fsg.afre.msu.edu/zambia/index.htm)