The Farmer Input Subsidy Programme

Presented by
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18th March, 2015
FISP Background

“…..During the last 10 years, the agricultural policy framework has been very dynamic and the emphasis has been on a gradual disengagement of government. …..At the moment only 20% of the households access fertilizer, while only about 30% access improved seed in the country.

….In this regard Government has designed a 3-year program earmarked to improve access to smallholder farmers.“

Source: Agricultural Input support program implementation manual 2001/2002

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The FISP objectives:

- Household and national food security and incomes (production and productivity)
- Access to agricultural inputs by smallholder farm households
- Build the capacity of the private sector in input marketing (Importers and Agro-dealers)
- Help cushion smallholder farmers from adverse effects of unfavorable weather conditions

- **Poverty reduction** also a goal (34% of PRP)
FSP/FISP number of intended beneficiaries

Source: 2012/13 FISP Implementation Manual

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Fertilizer distributed through FSP/FISP

Source: MAL (2012)
Areas of Concern FISP Implementation?

- Poor targeting of farmers/beneficiaries
- Delays in input distribution
- Poor fertilizer use efficiency among targeted farmers
- FISP private sector participation not inclusive
- Long term concerns about the FISP sustainability
- Poor monitoring of programme effects
- Programme prone to leakages
### FISP fertilizer receipt by area cultivated category

<table>
<thead>
<tr>
<th>Area cultivated (ha)</th>
<th>% of total HHs</th>
<th>% receiving FISP fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.49</td>
<td>17.0</td>
<td>7.2</td>
</tr>
<tr>
<td>0.5-0.99</td>
<td>23.6</td>
<td>22.5</td>
</tr>
<tr>
<td>1-1.99</td>
<td>31.9</td>
<td>32.1</td>
</tr>
<tr>
<td>2-4.99</td>
<td>23.5</td>
<td>47.2</td>
</tr>
<tr>
<td>5-9.99</td>
<td>3.3</td>
<td>54.5</td>
</tr>
<tr>
<td>10-20</td>
<td>0.6</td>
<td>50.0</td>
</tr>
<tr>
<td>All HHs</td>
<td>100</td>
<td>35.5</td>
</tr>
</tbody>
</table>

Who is Eligible to Receive FISP?
- Area cultivated 0.5 - 4.99 ha
- Could afford farmer contribution
- Coop member
- Did not receive Food Security Pack

BUT 21% of recipients technically ineligible mainly due to:
- not being coop member
- cultivating more than 5 ha or less than 0.5 ha

Source: Own calculations (RALS 2012)
Fertilizer sources for maize production

Source: CFS 2014-2015
Fertilizer Sources by Type

Fertilizer Sources for smallholder farmers

- 54% Commercial
- 46% FISP

Source: CFS 2014-2015
“Market-Smart Subsidies” (Morris et al. 2007)

1. ISP is part of a wider strategy
2. Support market development / private sector investment
3. Promote competition
4. Pay attention to farmer demand
5. Insist on economic efficiency
6. Put farmers in the driver’s seat
7. Have an exit strategy
8. Pursue regional integration
9. Ensure sustainability
10. Promote pro-poor growth
Some Policy Options

Administering FISP through the Voucher

- Allows the farmers to select the inputs of his choice - diversification
- Reduces government involvement and spending on distributing of inputs
  - More time for the extension workers to concentrate on their core duties
    - Productivity
    - More funding channeled to key drivers of agricultural growth
- Promotes inclusive private sector participation
Improving the targeting

- Improve transparency in selection criteria (expand the CAC)
  - Stick names of beneficiaries
- Waive cooperative membership fees
- Strong monitoring and evaluation system
  - Rigorous audit – what was planned and what has been achieved
Key Questions

- Has FISP achieved its objectives of improving food security, raising incomes, reducing poverty, and reducing Government Fertilizer/FISP?
- Should government rethink what kind of input support is provided to farmers?
  - what kind of support is required
- Should government rethink who should receive these inputs?
  - Who should be target
  - How should it be targeted
- Should government rethink how the support should be provided?
- How can input support program be linked to other agricultural development objectives?
- How can this be delivered
Thankyou for your attention!

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Progression Fisp vs commercial
75% of smallholder HHs cultivate less than 2 ha

Source: Jayne et al. (2011) based on CSO/MACO 2010/11 CFS
Who receives FISP fertiliser?

Source: Jayne et al. 2011 based on CSO/MACO 20101/
Goals of FISP (FSP)

- “Improving household and national food security, incomes, [and] accessibility to agricultural inputs by small-scale farmers through a subsidy and building the capacity of the private sector to participate in the supply of agricultural inputs” (MACO, 2008)

- Poverty reduction also a goal (34% of PRP; 2013 statement by Min. of Ag. & Livestock)
FISP Programme Objectives

1. Expand markets for private sector input suppliers/dealers and increase their involvement in the distribution of agricultural inputs in rural areas, thereby reducing direct role of Government;

2. Ensure timely, effective and adequate supply of agricultural inputs to targeted small-scale farmers.

3. Improve access of small-scale farmers to agricultural inputs.

4. Ensure competitiveness and transparency in the supply and distribution of inputs.

5. To serve as a risk-sharing mechanism for small-scale farmers to cover part of the costs for improving agricultural productivity.

6. To facilitate the process of farmers' organization, dissemination of knowledge and creation of other rural institutions that will contribute to the development of the agricultural sector.
## How well did FISP target poor HHs? (2010/11 agricultural season)

<table>
<thead>
<tr>
<th>Ha cultivated</th>
<th>% of total HHs</th>
<th>$1.25/day poverty rate (%)</th>
<th>% of total HHs below $1.25/day</th>
<th>% of total FISP fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.49</td>
<td>17.0</td>
<td>78.4</td>
<td>17.7</td>
<td>2.5</td>
</tr>
<tr>
<td>0.5-0.99</td>
<td>23.6</td>
<td>83.2</td>
<td>26.0</td>
<td>13.0</td>
</tr>
<tr>
<td>1-1.99</td>
<td>31.9</td>
<td>80.6</td>
<td>34.1</td>
<td>29.7</td>
</tr>
<tr>
<td>2-4.99</td>
<td>23.5</td>
<td>65.8</td>
<td>20.5</td>
<td>41.0</td>
</tr>
<tr>
<td>5-9.99</td>
<td>3.3</td>
<td>37.9</td>
<td>1.7</td>
<td>10.7</td>
</tr>
<tr>
<td>10-20</td>
<td>0.6</td>
<td>14.8</td>
<td>0.1</td>
<td>3.2</td>
</tr>
<tr>
<td>All HHs</td>
<td>100</td>
<td>75.5</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Mason et al. (2013a)
Selection criteria for FISP beneficiaries

1. Capacity to **cultivate 0.5 ha of maize**
2. **Small-scale farmer** (cultivate <5 ha)
3. **Ability to pay** farmer share of inputs costs
   - K80,000 ($15.36) for 10 kg of hybrid maize seed
   - K200,000 ($38.40) for 200 kg of fertilizer
4. **Cooperative member**
5. **Not defaulter** under earlier loan-based programs
6. **Not receiving Food Security Pack**

*Will come back & evaluate how pro-poor*

Source: MAL (2012)
FISP fertiliser subsidy impacts

- 1.88 kg maize per kg of FISP fertiliser
  - Benefit/cost ratio to farmer
    - At FRA & FISP prices = 2.4
    - At FRA & commercial prices = 0.5
  - Does not include administrative costs of FISP, transport

- Additional maize via higher rate of fertiliser application, area expansion, and higher yields

- No evidence that FSP (through 2006/07) reduced area to other crops

- Positive spillovers on yields of other crops
Payment for the seed

- In Malawi seed is sold by agro-dealers on behalf of the seed companies.

- Agro-dealers are paid commission by the specific companies based on the volume of seed sold (number of packets sold).

- The e-voucher platform will enable seed companies to track seed uptake by farmers in real-time.

- This allows for accumulation of value for individual seed companies every day hence money transfers will be made daily to the account of the seed company.
E-voucher advantages:

- Allows the farmers to select the inputs of his choice - diversification

- Reduces government involvement and spending on distributing of inputs
  - More time for the extension workers to concentrate on their core duties
    - Productivity
    - More funding channeled to key drivers of agricultural growth

- Promotes inclusive private sector participation
Thank you for your attention! Questions?

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Food Security Research Project
http://fsg.afre.msu.edu/zambia/index.htm
Input subsidy programs (ISPs) in Africa

- Cornerstone of many countries’ agricultural sector & poverty reduction strategies
  - 2011: 10 SSA countries spent US$1 billion on ISPs (60% of population; 29% of public spending on ag) (Jayne & Rashid 2013a)

- Fertilizer, hybrid/IOPV seed at subsidized prices

- ISP objectives:
  - Increase access to and use of modern inputs
  - Raise crop yields and production
  - Improve food security and reduce hunger
  - Raise incomes and reduce poverty
Outline

- Zambia’s ISPs over last decade
  - Objectives, design, implementation, impacts
    - How do these compare to “smart subsidy” concepts and how has this affected outcomes?
  - How to redesign to better achieve objectives?
# Factors affecting receipt of FISP fertilizer

<table>
<thead>
<tr>
<th>HH/community characteristic</th>
<th>Panel data 99/00, 02/03, 06/07 (CRE Tobit)</th>
<th>X-section data 10/11 (Tobit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landholding</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Farm equipment</td>
<td>Not. stat. sig.</td>
<td>+</td>
</tr>
<tr>
<td>Livestock</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Distance to roads/towns</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Female-headed</td>
<td>Not stat. sig.</td>
<td>+</td>
</tr>
<tr>
<td>Const. won by ruling party</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Note: p<0.05 unless otherwise noted. Source: Mason et al. (2012, 2013a)
Zambia’s ISPs since 2002/03

1. 02/03-08/09: Fertilizer Support Programme (FSP)
   - 400 kg fertilizer, 20 kg hybrid maize seed
   - Uniform package
   - Farmers pay 20-50% of market price for inputs

2. 09/10-present: Farmer Input Support Programme (FISP)
   - 200 kg fertilizer, 10 kg hybrid maize seed
   - Rice, sorghum, groundnuts, cotton recently introduced (small quantities, few districts)

3. 00/01-present: Food Security Pack Programme
Rural poverty rates, Zambia: 1996 - 2010

Source: CSO (2009, 2011)
Input subsidy impacts on smallholder behavior & economic well-being
Targeting wealthier HHs → subsidized inputs crowd out commercial purchases

- Econometric estimates (panel data)
- 1 kg subsidized fertilizer → 0.87 kg increase in total fertilizer use by HH
  - 33% of fertilizer intended for subsidy diverted and resold on commercial market
  - gov’t injects 1 MT fertilizer for subsidy into system → 0.54 MT increase in national fertilizer use
- Similar for subsidized seed:
  - 1 kg subsidized seed → 0.51 kg increase in total hybrid seed use
- Crowding out less among HHs w/ less land

Source: Mason & Ricker-Gilbert (2013); Mason & Jayne (2013)
Fertilizer subsidy effects on fertilizer use & crop production

(econometric estimates – panel data)

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Average elasticity of outcome variable w.r.t. subsidized fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All HHs</td>
</tr>
<tr>
<td>Fertilizer application rate</td>
<td>0.11</td>
</tr>
<tr>
<td>Maize area</td>
<td>0.03</td>
</tr>
<tr>
<td>Maize yield</td>
<td>0.02</td>
</tr>
<tr>
<td>Maize output</td>
<td>0.05</td>
</tr>
<tr>
<td>Other crops area</td>
<td>Not stat. sig.</td>
</tr>
<tr>
<td>Area under fallow</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

Note: p<0.05 for all average elasticities unless otherwise noted.

- Positive effects on **maize production** but relatively **small** (1.88 kg/kg)

Sources: Mason et al. (2012); Mason et al. (2013a)
Why such low maize – subsidized fertilizer response rate?

1. **Crowding out** *(1 kg → 0.87 kg)* (Mason & Jayne, 2013)
2. **Late delivery** *(Xu et al., 2009)*
   - to 20-30% of beneficiaries
   - Late delivery *halves* AP & MP of N
3. **High soil acidity** *(Burke et al., 2012b)*
   - > 90%+ of maize fields have pH < 5.5
   - Fertilizer response rates *1/3* to *1/2* of those on less acidic soils (pH ≥ 5.5)
Subsidized seed impacts on indicators of economic well-being

- Econometric estimates (panel data)

- 10 kg subsidized seed (FISP qty) →
  - 106 kg ↑ maize production
  - 1.1% ↑ in HH income (US$32)
  - 0.7 p.p. ↓ in prob. that below US$2/day poverty line
  - 0.8 p.p. ↓ in severity of poverty (poverty gap squared)
  - 0.4% ↓ in relative deprivation (income “inequality”)

Source: Mason & Smale (2013)
Better to target larger farms because they produce more maize per kg? **No!**

<table>
<thead>
<tr>
<th>Farm size (ha)</th>
<th>AP of fertilizer (kg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.99</td>
<td>3.73</td>
</tr>
<tr>
<td>1-1.99</td>
<td>3.48</td>
</tr>
<tr>
<td>2-4.99</td>
<td>3.52</td>
</tr>
<tr>
<td>5-9.99</td>
<td>3.68</td>
</tr>
<tr>
<td>10-20</td>
<td>3.46</td>
</tr>
</tbody>
</table>

Also **little effect on equilibrium maize prices**: doubling MT/district $\rightarrow$ retail price $\downarrow$ by $<3\%$

Sources: Burke et al. (2012a), Ricker-Gilbert et al. (2013)
Do FISP benefits outweigh the costs?

- **Costs** = farmers costs + net costs to government

- **Benefit-cost ratios:**
  - Profitable if BCR > 1 \( \Rightarrow \) (B > C)
  - **Fertilizer** (Jayne et al., 2013)
    - Benefits = value of additional maize
    - 5-yr avg, 2006/07-2010/11
      - Financial: 0.52 (not >1 in any individual year)
      - Economic: 0.90 (>1 in 2 of 5 years, much <1 in other 3)
  - **Seed** (Mason & Smale, 2013)
    - Benefits = additional income
    - 2006/07, financial: 1.09-2.18 (depends on seed price used)
Does FISP win votes for ruling party?

- No, but ruling party’s share of votes increases with reductions in:
  - Poverty
  - Income inequality
  - Unemployment

- Econometric analysis of 2006 & 2011 elections

Sources: Mason et al. (2013b)
**Policy implications: incorporate other “smart-subsidy” principles**

- Fertilizer component of FISP not cost-effective,
  - Crowding out, late delivery, and soil acidity reduce maize-subsidized fertilizer response rates
- Support market development/private sector investment; promote competition; pay attention to farmer demand; insist on economic efficiency; put farmers in the driver’s seat
  - Better targeting to reduce crowding out
  - E-voucher to crowd in private sector, potentially improve timeliness of delivery
  - Open up e-voucher to other crops, livestock, fish
Policy implications: is FISP most cost-effective way to achieve objectives?

- Some key objectives of FISP are: improving food security, raising incomes, reducing poverty

- Need to consider other means of achieving these goals (empirical evidence needed!)

- No empirical evidence that FISP wins votes … but program is unlikely to be eliminated

→ How can Zambia’s ISPs be redesigned/reformed to better achieve their objectives?
Policy implications: how to make Zambia’s ISPs more pro-poor?

- Persistently high rural poverty despite heavy spending on input subsidies
  - Fertilizer going disproportionately to better-off HHs, reduces impact on poverty
- Focus FISP on HHs cultivating 0.5-2 ha (60.1% of HHs below $1.25/day poverty line)
- Scale up Food Security Pack to target <0.5 ha
- **Note:** AP of fertilizer similar across farm sizes → targeting smaller farms shouldn’t jeopardize national food production (Burke et al., 2012a)
Policy implications: incorporate other “smart-subsidy” principles (cont’d)

- FISP as part of wider strategy; promote regional integration
  - Incorporate/promote lime, other complementary technologies/management practices through FISP, improved extension, more ag R&D
  - Invest in infrastructure to reduce farmgate prices for inputs and increase farmgate prices for output, promote regional integration
  - Reduce FISP (and FRA) budget to create fiscal space
- Need an exit strategy & increased emphasis on program sustainability
ISPs = large share of gov’t spending

Smart subsidy red flags?

- 2011: US$184 million (0.8% of GDP)

Sources: MFNP (2012), IMF (2012)
References


Economic arguments for fertilizer subsidies

1. “Kick-start fertilizer markets”

2. “Stimulate adoption”

3. “Overcome missing or imperfect credit or insurance markets”

4. “Generate [positive] environmental externalities”
Social welfare rationale for ISPs?

- E.g., improve food security, raise incomes
- Yes, if ISPs are the most cost-effective option
- Often they are not

Photo credit: Evelyn Hockstein for The New York Times
FISP barriers to entry

1. Capacity to cultivate 1+ ha of maize → immediately excludes 41% of HHs

2. Cooperative membership + cooperative share

3. Farmer share of input costs (now 20%, orig. 50%)

→ 2 + 3 = 20% of gross income for 60% of HHs

- 2006/07: 50% of non-recipients cite not a cooperative member or could not afford farmer contribution

Source: Burke et al. (2012a)
Data

- Administrative data – Ministry of Ag. & Livestock
- Nationally-representative HH survey data
  - Crop Forecast Surveys & Post-Harvest Surveys
    - Annual. 13,500+ HHs.
  - Supplemental Survey
    - 4,286 HHs in balanced panel
  - Rural Agricultural Livelihoods Survey
    - 2010/11
    - 8,839 HHs
Prevalence of poverty: percent of smallholder households living on per capita income of less than $1.25/day (2005 ppp exchange rate), Province, 2011

Source: 2012 CSO/MAL/IAPRI Rural Agricultural Livelihoods Survey