Panacea or Pandora's Box?

Fertilizer Subsidy Impacts and Recommendations for Improving Subsidy Performance

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Presentation Overview

- Background: fertilizer promotion and subsidies
- Recent evidence on subsidy implementation and impacts
- Evidence from pre-subsidy experience (Kenya)
- Lessons and implications for Feed the Future

Background: Fertilizer Promotion and Subsidies

Fertilizer Promotion: Increasing Demand

- Research and extension
- Improving the affordability of fertilizer
- Managing farmers' price and production risk
- Promoting more effective producer organizations
- Improving the coverage and quality of rural education

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Fertilizer Promotion: Improving Supply

- Reducing fertilizer sourcing costs
- Reducing fertilizer distribution costs
- Improving the environment for business financing and risk management
- Improving the environment for supply chain coordination
- Proactive role of government

Prior "State of the Art" on Fertilizer Subsidies

- 2006. *Alternative approaches for promoting fertilizer use in Africa, with particular reference to the role of fertilizer subsidies.*
  - Crawford, Jayne, Kelly (World Bank)
- 2007. *Policies and actions to stimulate private sector fertilizer marketing in sub-Saharan Africa*
  - Kelly, Crawford (FAO)
- 2007. *Fertilizer Use in African Agriculture: Lessons Learned and Good Practice Guidelines*
  - Morris, Kelly, Kopicki, Byerlee (World Bank)
- 2008. *World Development Report*, Chapter 6

Reasons for Interest in Fertilizer Subsidies

- Recent/proximate factors:
  - Enthusiasm at the African fertilizer summit in Nigeria (2006)
  - Political sensitivity of food shortages → urban riots following the world food price crisis of 2007/08
  - Sharp fertilizer price hikes from 2007 to 2008

Reasons for Interest in Fertilizer Subsidies

- Earlier and continuing factors:
  - Broad agreement that fertilizer is underused in Africa yet critical for improving productivity and food security
  - Viewed as visible, popular, and politically beneficial
  - Perceived as providing rapid production and food security impacts
  - Budgetary support from donors enables financing of subsidies

Why Do We Care?

- Trade-offs between subsidies and public goods investments
- Subsidy impacts on output markets and trade policy
- Inadequate monitoring and evaluation of subsidies
- Politicization of agricultural statistics
- Inability of subsidies to reduce poverty sustainably

Recent Evidence on Subsidy Implementation and Impacts

Subsidy Objectives

- Multiple dimensions: financial, economic, social, political, environmental
- Often poorly defined, open to multiple interpretations, and conflicting
- Implementation problems often traceable to lack of clear, agreed objectives

Subsidy Objectives: Specific Examples

- Increase yields, aggregate production, food self-sufficiency
- Provide a safety net or alleviate poverty
- Keep urban food prices low
- Compensate for factors that make fertilizer too expensive
- Nurture development of private sector input systems

Subsidy Program: Design/Implementation

- Are vouchers used? If so, how distributed?
  - By government staff, village committees, producer organizations
- Copay by farmers required?
  - Range 10%-70%
- How is the fertilizer procured?
  - Openness, timeliness, number of importers
- How is the fertilizer distributed?
  - Government services vs private traders

Types of Farm-Level Impacts

- Who gets access?
- Timeliness of delivery?
- What effects on yield?
- What effect on output markets/sales?
- Effect on prices, incomes, agricultural wages?

Farm-Level Impacts (Access): Malawi

- Four program years: 2005/06 to 2008/09
- Households with more land and assets get more subsidized fertilizer
- Female-headed households are much less likely to receive subsidized fertilizer
- These targeting “errors” were reduced between 2006/07 and 2008/09
- Subsidized fertilizer appears significantly related to districts in which members of parliament live

Farm-Level Impacts (Outcomes): Malawi

- Subsidized fertilizer has positive and significant effects during the subsidy year on recipients' :
  - Maize production
  - Area planted to maize,
  - Life satisfaction
- ↑ maize area offset by ↓ area in other crops
- Positive and significant longer-term effect on maize production in subsequent years.

Farm-Level Impacts (Access): Zambia

- In 2007, only 11 % of all crop-growing smallholders received subsidized fertilizers:
  - 1% of the poorest households; 7% of the richest
- Only 5% of the subsidized fertilizer went to the poorest third of households
- 76% went to the richest third of households, with 9 times more assets and 2.5 times more area cultivated
- Similar patterns of access in other years

Farm-Level Impacts: Senegal and Mali

- Access to subsidy:
  - Both countries: only farmers with cash or credit
  - Mali: government facilitated credit in 1st year
- Timeliness: Later than desirable
- Yield impacts not monitored:
  - Senegal: Perceptions of favorable yield impact
  - Mali: Complaints about poor fertilizer quality
- Impact on prices/incomes/wages:
  - Senegal: unknown
  - Mali: No change in consumer rice prices; hypothesis of higher farm incomes unconfirmed

Types of Government/National Impacts

- Impact on government budgets
- Impact on national crop yields and production
- Overall benefit-cost relationship

Government/National Impacts: Malawi 2006/07

Costs = $74 million (net budget); $92 million (economic)

Assuming 1 kg Nitrogen gives 15 kg grain: a/

	Displacement 40% Market Price ($/ton)		Displacement 25% Maize Price ($/ton)
	148	160	160
BCR b/	1.02	1.10	1.10
NPV ($m)	$1.53	$9.09	$11.50

a/ At grain:N ratio = 12, all scenarios are unprofitable

b/ BCR = Benefit-Cost Ratio; NPV = Net Present Value

Govt/National Impacts (Budget): Zambia

- Budget projections 2010:
  - MACO poverty reduction budget is 45% of total agriculture budget
  - FSP subsidy program is 78% of poverty reduction budget
  - So fertilizer subsidy is 45% x 78% = 35% of total agriculture budget
  - (historical range is 35% to 40%)
- Incremental production due to subsidy has not been established

Government/National Impacts: Senegal/Mali

- Finance and budget impacts:
  - Governments pay more than market rates
    - Mali: 4.7 billion FCFA loss reported by Bureau du Vérificateur, of which 2.3 b for fertilizer overcharges
    - Senegal: farmers in Senegal River valley able to get better prices
  - Inadequate funding → late payments to suppliers → higher interest costs → higher fertilizer costs in the following year to compensate
- Incremental production unknown or disputed

Types of Impacts on Input Supply System

- Displacement effects (do subsidies “crowd out” commercial fertilizer sales?)
- Expansion/contraction of outlets, sales, investments by type of actor
- Serving remote areas
- Professionalism
- Competition/collusion

Definition of “displacement”

- **Displacement**: Some farmers who would have bought commercial fertilizer obtain/use subsidized fertilizer instead.
- Hypothetical example (‘000 tons):
  - Before: Subsidized = 0, commercial = 100, total use = 100
  - After: Subsidized = 50, commercial = 75, total use = 125 (not 100 + 50 = 150).
  - **Displacement** = (100 – 75)/100 = 25%

Evidence on Displacement: Malawi (2006/07)

- In 2006/07:
  - The subsidy reduced HH commercial purchases by 29% relative to 2002/03 without the subsidy
  - Displacement was lowest (24%) for the poorest 1/5 of farmers and highest (37%) for the richest 1/5.
- Implications:
  - Smaller net increase in total fertilizer use
  - Greater program costs per ton distributed than with zero displacement
  - Less business for private fertilizer dealers
- Suggests that targeting the subsidy to poor farmers could increase incremental fertilizer use

Input System Impacts: Zambia (2003)

- Of 73 communities with no subsidy in 2000:
  - 47 got subsidies in 2003; private sales declined by 47%
  - in 14 communities, private sector completely dissolved
- Overall, 1 kg of subsidized fertilizer increased total use by 0.93 kg (some displacement occurred)
- Effects depend on extent of private sector activity:
  - Low activity: 1 kg of subsidized fertilizer ↑ total use by 1.06 kg on average, and 1.7 kg in poorest areas
  - High activity: 1 kg subsidized fertilizer ↑ total use by only 0.01 kg, and lowered use in some areas.

Input System Impacts: Senegal/Mali

- Displacement by design
  - 1st objective was to avoid decline in fertilizer use due to 50% increase in price
  - 2nd objective was expansion of production
- *Wait and See* behavior of importers
- Distribution impacts
  - Mali: done by local government
  - Senegal: using some of existing network

Evidence from Pre-Subsidy Experience: Kenya

Kenya Experience: Favorable Factors

What factors explain the increase in fertilizer use in Kenya?

- Liberalization in 1990 eliminated:
  - Import licensing quotas
  - Foreign exchange controls
  - Retail price controls
- Stability in fertilizer market policy

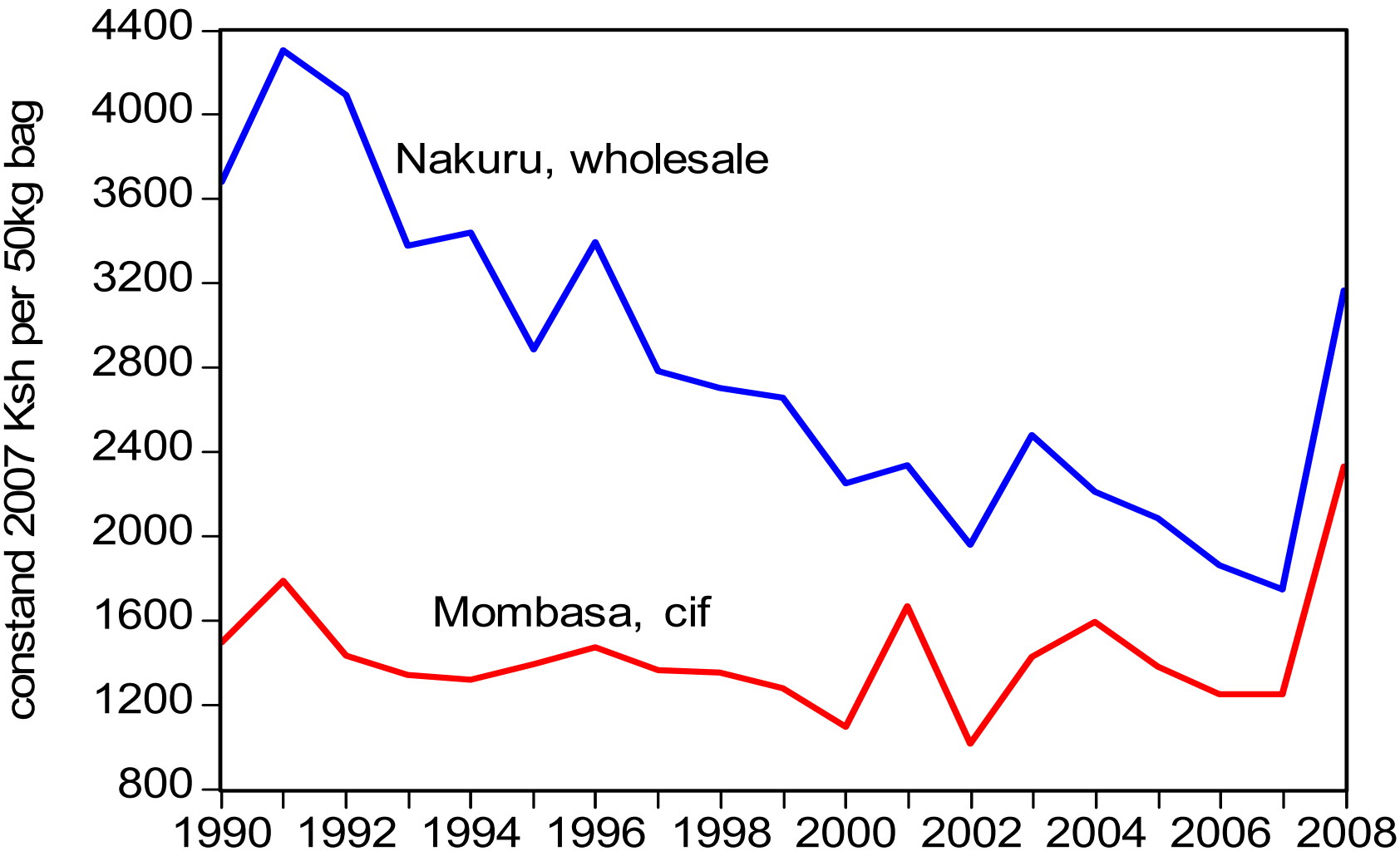
Kenya Experience (2): Response

- Expansion in distribution
  - 10-11 importers
  - 500 wholesalers
  - 8000 retailers
- Reduction in distance from farm to supplier:

1997	2000	2004	2007
7.4	5.6	3.7	3.2 km

- Investment in farmer training (FIPS, KMPD)
- Increased competition and reduced margins

Kenya Experience (3): Margins



Kenya Experience (4): Maize Stats 1996-2007

- 70% of farmers fertilized maize in 2007
  - Up from 56% in 1996
- No increase in average dose (56-59 kg/ha)
- Correlation between average yield increase of 20% and rise in share of maize fields fertilized
- Location is dominant factor:
  - > 90% use fertilizer in high potential zones
  - Less than 30% elsewhere
- Intercropping also important.

Lessons for Feed the Future

Lessons: Best Practices (1)

- Evidence shows that subsidies are likely to be:
  - Inefficient
  - Costly
  - Fiscally unsustainable
- Fertilizer support strategies need to be broader than subsidies
- Benefits/costs of alternative uses of public expenditures must be considered.

Lessons: Best Practices (2)

- Subsidy "do's":
  - Clear, non-contradictory objectives
  - Part of a wider strategy
  - Favor markets if they promote competition
  - Pay attention to sustainability of demand
  - Empower farmers
  - Strive for economic efficiency
  - Devise an exit strategy
  - Pursue regional integration
  - Promote pro-poor growth, BUT don't treat fertilizer as a safety net

Lessons: Subsidies are “Messy”

- Highly politicized
- Highly popular
- Difficult to design
- Difficult to implement
- Lack of supporting investments
- Difficult to evaluate
- Gluts → negative spillovers to output markets.

Lessons: Alternatives to Subsidies Unattractive

- Alternatives are slow to show impacts
- Impacts diffuse…not as easily seen by general public
- Don't provide government with public image they are looking for
- Ineffective in emergency situations
- Difficult to introduce once subsidies in place
- Yet, Kenya case shows alternatives do have long-term benefits

Implications for Feed the Future

Implications: General

- FTF will be in countries that have or want input subsidy programs.
- FTF will need to engage constructively with Governments on this issue
- FTF will need to work within the subsidy environment.
- Given Pandora's Box, direct support not recommended BUT
- FTF can improve outcomes.

Implications: Priorities for Support

- Data collection
  - Basic agricultural statistics
  - Subsidy M&E and Impact Assessment
- Policy analysis units
  - Short term training for analysts in subsidy issues
  - Longer-term training when needed
- Stakeholder consultations
- Experimentation on…
  - Types of targeting
  - Risk-sharing instruments to make non-subsidy approaches more attractive to governments

Implications: Design and Implementation

- Keep direct involvement at a minimum
- Promote learning from past experience
  - Exchange visits
  - Research/synthesis of cross-country results
- Help shed light on difficult issues
  - Conflicting goals
    - Poverty alleviation
    - Increased marketed surplus
  - Targeting vs universal subsidy
  - Roles for government vs. private sector

Implications: Farm-Level Priorities

- Address deficiencies in fertilizer research and extension to improve profitability of input use
- Research updating needed
  - Fertilizer response, including micro-dosing
  - Costs of production to improve subsidy targeting
- Extension
  - Farm management and marketing skills
  - Producer organization capacity building for group marketing and procurement of inputs

Implications: Input Supply Priorities

- Improve understanding of:
  - Complementarities and trade-offs between private and government distribution systems
    - When and where does government have a role?
  - Contribution of different supply structures to product supply and knowledge/skill transmission
    - Independent agro dealers à la CNFA and IFDC
    - Vertically integrated distributor networks

Thank You