

DO FERTILIZER SUBSIDIES CROWD OUT ORGANIC MANURE? *CASE OF MALAWI*

By

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Introduction

Subsidies a controversial issue in developing countries

- Inefficient resource use
- Pollution
- Government budgetary deficit
- Distorted prices and terms of trade

However fertilizer use = key to increasing productivity

The soil fertility problem

Two major causes

- Nutrient mining
- Soil erosion

Inorganic fertilizer replace lost nutrient

- Mainly N, P, K

Organic manure increase organic matters

- Improve soil moisture, CEC,

The fertilizer subsidy

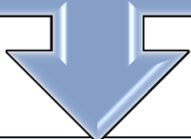
Fertilizer subsidy reduce the cost faced by farmer

Organic manure have huge labour costs

Hence cheap fertilizer can be used as a substitute for manure

Research question

Is plot level probability of fertilizer application enhanced by access to subsidies?



How is the probability of fertilizer application correlated with probability of manure application

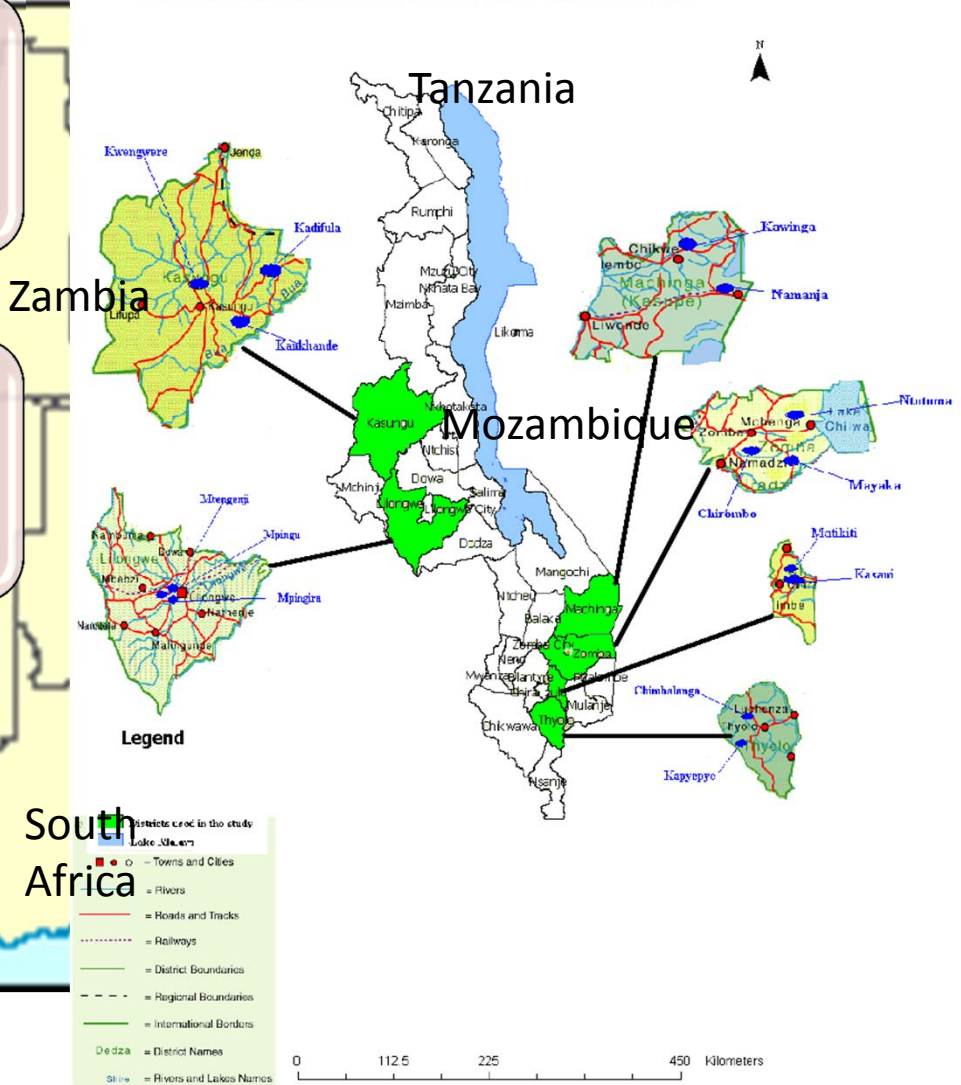


Does fertilizer application crowd in or crowd out manure application at farm plot level

DATA SOURCE FOR THE STUDY

<p>Central Region</p>	<ul style="list-style-type: none"> • Kasungu • Lilongwe
<p>Southern Region</p>	<ul style="list-style-type: none"> • Thyolo • Zomba • Chiradzulu • Machinga
<p>Total Sample</p>	<ul style="list-style-type: none"> • 2006 • 2007 • 2009

Figure 4: Map of Malawi showing districts and sites sampled for this study



Methodology

Probability of using fertilizer and manure

- Panel probit model
 - Assuming independent decisions to use
- Bi-variate probit models
 - Assuming simultaneous decision

Intensity of using manure

- Tobit model

Linear probability model to predict access to subsidy

- Predicted to access and access - **subsidy 11**
- Predicted to access but no access- **subsidy 01** (errors of exclusion)
- Predicted not to access but accessed – **subsidy 01** (errors of inclusion)
- Predicted not to access and did not access – **subsidy 00**

Household farm plot level decision on fertilizer and manure use

Variable	Panel probit		Bi variate Probit	
	Fertilizer	Manure	fertilizer	Manure
Fertilizer dummy		0.404****		
Manure Dummy	0.408****			
Subsidy 01	-1.670****	0.054	-1.419****	-0.184
Subsidy 00	-1.607****	0.008	-1.413****	-0.152
Subsidy 10	2.066	-0.002	1.891	0.02

Fertilizer and manure intensity – panel tobit model

Variable	Fertilizer		Manure	
	Actual subsidy	Predicted subsidy	Actual subsidy	Predicted subsidy
Log manure	0.091****	0.092****		
Log fertilizer			0.582****	0.541****
Actual subsidy dummy	5.186****		-0.044	
Subsidy 01		-4.030****		1.248
Subsidy 00		-3.960****		-1.564*
Subsidy 10		1.627****		-1.051

Conclusion

No negative effect from fertilizer subsidy on manure use

Manure use still limited to 50% of all maize plot

Manure use and fertilizer used as complements

Fertilizer subsidy does not crowd out manure use