To Target or Not to Target?
The cost efficiency of indicator-based targeting

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Introduction

- **Most development programs are poorly targeted at the population in need.**
- **Low targeting efficiency is an impediment to achieving the Millennium Development Goals.**
- **E.g. Malawi 2000/01 Starter Pack, 2006/07 Agricultural Input Subsidy Program (AISP).**
- **Is an indicator-based system more target- and cost-efficient than the current methods used for targeting development programs in Malawi?**

Research Objectives

- ***Develop & validate an indicator-based system for targeting Malawi´s poor.***
- ***Estimate the costs of targeting development programs using the system.***
- ***Compare the performances of the system to previous programs.***

Data and Methodology

- **Second Malawi Integrated Household Survey data (IHS2-2005).**
- **Poverty measured by consumption expenditures & national poverty line.**
- **Initial sample split into two: *67/33***
  - ***calibration sample* to estimate the model;**
  - ***validation sample* to predict the status of the poor.**
- **Estimation method: Quantile regression & stepwise selection of variables.**

$$y_i = \beta_j x_{ij} + e_i$$

Y_i the dependent variable, x_{ij} a set of poverty predictors; $ß_j$ a vector of parameter estimates; e_i the random error term.

Table1. Selected targeting ratios

Targeting ratios	Definitions
Poverty Accuracy	Number of poor correctly predicted, expressed as a percentage of the total number of poor.
Undercoverage	Error of predicting the poor as non-poor, expressed as a percentage of the total number of poor.
Leakage	Error of predicting non-poor as poor, expressed as a percentage of the total number of poor.

Source: Adapted from IRIS (2005).

- **Costs of targeting estimated following Besley and Kanbur (1993):**

$$T = P + NP + A + H$$

T: total program cost; P: value of transfers given to the poor; NP: value of transfers given to the non-poor (costs of leakage); A: administrative costs; H: hidden costs (private, indirect, social, and political costs).

- **Targeting efficiency measured by (Besley and Kanbur, 1993):**

$$F = P*100/(P + NP)$$

$$F_1 = (NP + A + H)/P$$

$$F_2 = P*100/(P + NP + A + H)$$

F: transfer to the poor as a % of total transfer; F1: costs of transferring one unit of resources to the poor; F2: transfer to the poor as a % of total cost.

Empirical Results

Table 2. Targeting performances of Starter Pack and AISP Vs. Indicator-based system

Program type	Poverty accuracy (%)	Undercoverage (%)	Leakage (%)
Starter Pack	65.02	34.98	61.81
AISP[1]	54.00	46.00	54.00
Indicator-based system	71.48	28.52	26.65

Source: Own results based on Malawi IHS2 data. [1]Estimates based on Dorward et *al.* (2008).

- **The new system is more target-effective: higher poverty accuracy (71%) and lower leakage (27%) compared to the Starter Pack and AISP.**
- **Nonetheless, the new system is not perfect at targeting the poor.**

Table 3. Cost and transfer efficiency of Starter Pack and AISP Vs. Indicator-based system

Costs / Programs	Transfer to the poor	Costs of leakage	Administrative & hidden costs	Total costs	F	F_1	F_2
Starter Pack	562.61	534.84	205.16	1302.62[1]	51.27	1.32	43.19
Starter Pack/ New system	649.97	242.33	410.33	1302.62	72.84	1.00	49.90
AISP	2777.51	2940.89	1069.02	6787.41[2]	48.57	1.44	40.92
AISP/ New system	3386.71	1262.67	2138.03	6787.41	72.84	1.00	49.90

Source: Own results based on Malawi IHS2 data. Cost estimates In million Malawi Kwacha (MK). [1]Cost of Starter Pack estimated based on Smith (2001). [2]Net cost of main fertilizer (Urea and NPK) subsidy estimated based on Dorward et *al.* (2008).

- **The new system transfers more resources: 73% of total transfer reach the poor compared to 51% and 49% under the Starter Pack and AISP, respectively.**
- **The new system is more cost-efficient: it costs MK1 for every MK transferred to the poor Vs. MK1.32 and MK1.44 under the Starter Pack and AISP, respectively.**
- **The costs of leakage are cut down by 50% under the new system.**

Conclusions

This paper develops an indicator-based system for targeting Malawi´s poor.

- **Although not perfect, the system is more target- and cost-efficient compared to previous development programs in the country.**
- **Under the system, more resources are transferred to the poor at lower costs.**
- **Implication for Malawi: better target development policies using an indicator based-system.**
- **This research can be applied in other countries with similar targeting problems.**

Selected References

1. Besley, T. and Kanbur, R. (1993). The Principles of Targeting: In Including the poor, eds. M. Lipton and J. Van Der Gaag, Conference Proceedings.
2. Dorward, A., Chirwa, E., Kelly, V., Jayne, T., Slater, R., and Duncan, B. (2008). Evaluation of the 2006/07 Agricultural Input Subsidy Programme. Final report, Malawi.
3. Smith, J. W. (2001). Spending on Safety Nets for the Poor: How much, for how many? The case of Malawi. Africa Region Working Paper No. 11. Washington D.C.: The World Bank.

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