



Improving the efficiency targeting of Malawi's farm input subsidy programme: Big pain, small gain?



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ARTICLE INFO

JEL codes:

Q12
Q18
O12

Keywords:

Input subsidies
Targeting
Agricultural efficiency
QUAIDS
Cash transfer
Malawi

ABSTRACT

The Farm Input Subsidy Programme (FISP) in Malawi was introduced in the 2005/2006 season against a background of bad weather affecting production and prolonged food shortages. Vouchers are distributed empowering eligible farmers to exchange them for fixed quantities of inputs at subsidized prices. Since its inception, there has been a debate at national level about whether the FISP's potential has been fully exploited, with policy makers exploring options to improve the programme. Proposals include targeting efficient and productive farmers to maximize returns. In this paper, we evaluate the effectiveness of these proposed changes to the existing FISP design by utilizing two waves of the LSMS-ISA survey merged with climatic data. We estimate how the national demand for agricultural inputs varies according to a variation in the targeting criteria by means of a two-stage demand system. Then, we identify more efficient farmers by means of a stochastic frontier approach. We observe a mismatch between voucher recipients and efficiency, with approximately 60% of vouchers being allocated to the three bottom quintiles of efficiency. This mismatch is observed also at the spatial level with more vouchers going to districts characterized by less efficient production. While concerns on the distributional impacts of the new criteria are discussed together with some suggestions for spatially diversifying the structuring of the policy and incentivizing crop diversification, our results highlight a high substitutability of commercial with subsidized inputs by new eligible farmers. Consequently, simulating the targeting policy variation we obtain an outcome that would lead only to a limited increases in predicted food expenditure ranging from 0.27% to 0.8% and maize production from 0.2% to 1.3. Scope for analysing different adjustments in the functioning of FISP are, thus, proposed to policy makers.

1. Introduction

Historically, the adoption of agricultural inputs has exhibited minimal rates in sub-Saharan African (SSA) countries and remains the lowest worldwide (Otsuka and Larson, 2012). Among the causes of low adoption, structural market frictions, such as high transportation costs, price fluctuations or a weak delivery system, play a major role in preventing farmers from having access to quality inputs or credit for financially sustaining modern agriculture (Collier and Dercon, 2014; Liverpool and Winter-Nelson, 2010; Conley and Udry, 2010). Agricultural input subsidies have been often utilized in SSA to develop the agricultural systems and increase food security since they allow market frictions to be reduced by modifying relative prices and incentivize farmers to increase the use of fertilizers and hybrid/modern seeds

(Holden and Lunduka, 2014; Kelly et al., 2003; Crawford et al., 2003).

The Farm Input Subsidy Programme (FISP) in Malawi was introduced in the 2005/2006 season against a background of weather shocks affecting productivity, food security and high input prices. The primary purpose of the programme was to increase resource-poor smallholder farmers' access to improved agricultural farm inputs in order to achieve food self-sufficiency and increase income through enhanced maize production. To this end, vouchers are distributed throughout the country, thereby empowering eligible farmers to redeem them at subsidized prices in exchange for fixed quantities of improved maize seeds or chemical fertilizers. While maize productivity shifted on average from 1480 kg/ha in 2006 to 2100 kg/ha in 2013 and the prevalence of undernourishment decreased from 27% to 20.8% (FAOSTAT, 2015), there is still concern about the stability of food

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security as well as the distributional impacts of the FISP. There has been increasing debate at national level and in academic literature on the FISP potential that has not been fully exploited yet. In particular, the targeting criteria used to define eligible farmers has been highlighted as one of the main structural crux to review in order to improve programme effectiveness (Chibwana et al., 2012; Dorward and Chirwa, 2011). Eligibility for obtaining vouchers was originally based on the status of individual vulnerability. Targeted farmers had to be smallholders and/or female-headed households that were severely cash constrained or had limited wealth endowments (Lunduka et al., 2013). These potentially “productive poor” have been defined as farm households with the necessary land, labour and skills to use the subsidized inputs, but without the financial capital to purchase inputs at commercial prices (MoAFS, 2008).

Nevertheless, the disregarding of these targeting guidelines at local level often led to confusion in allocation procedures and widespread ambiguity on the real impact of the targeting criteria. Many studies have highlighted the FISP as concentrating on rural middle-income or higher-income households at the expense of poor productive farmers (Ricker-Gilbert et al., 2011; Fisher and Kandiwa, 2014). Moreover, whether the aforementioned criteria are actually able to identify efficient farmers needs to be discussed, as well as whether ultra-poor farmers can really exploit the potential benefits arising from receiving vouchers. For farmers who are severely cash constrained, the purchase of subsidized inputs will not be a feasible option (Croppenstedt et al., 2003) and it is not surprising to see farmers that sell the vouchers in exchange for cash for basic needs such as food (Chibwana et al., 2012).

Within this context, unconditionally targeting farmers can curb the overall efficiency of the subsidy programme because the objective of increasing agricultural production falls far from the potential frontier that can be achieved by targeting those who can maximize returns by using the inputs (Bravo-Ureta, 2014; Minviel and Latruffe, 2017). These do not necessarily correspond to high-income households. Thus, while the objective is still to help vulnerable farmers, within this broad rural class, differences in the productive potential can be identified and utilized to enhance the overall efficiency of the FISP (Dorward and Chirwa, 2011). Yet to limit the distributional impacts of the programme, excluded ultra-poor farmers should be compensated with alternative safety-net programmes (Miller et al., 2011). The compensation is expected to be given in a way that helps them building human and capital assets to overcome their current statuses (Sabates-Wheeler and Devereux, 2010; Ellis and Maliro, 2013). On the other hand, the crowding out of the commercial sector is a main concern that should be considered if we expect that efficient farmers to substitute part of the purchased commercial inputs with the subsidized ones with a potential reduced impact on the overall consumption of inputs (Ricker-Gilbert et al., 2011).

There has been extensive study on the FISP regarding its opportunity costs (e.g., Dorward et al., 2013; Arndt et al., 2016; Lunduka et al., 2013), the effect on land allocation, crop and dietary diversification (e.g., Chibwana et al., 2012; Jones et al., 2014) and the impact on rural gender gap (e.g., Fisher and Kandiwa, 2014). In this paper, we investigate the impact of modifying the FISP targeting criteria to favour inclusion of the more efficient farmers. We also account for the distributional impacts of the proposed targeting policy by analysing the effects on ultra-poor farmers. In order to address these issues three methodological steps are implemented by exploiting two waves of the living standard measurement survey (LSMS-ISA) conducted in Malawi in 2010/2011 and 2012/2013. In a two-stage budgeting process, we recover expenditure and price elasticities for agricultural inputs by means of a simultaneous and multi-stage demand system. We employ an ideal demand system (QUAIDS) model, opportunely adapted to account for both the constrained consumption quota allowed by voucher ownership and the endogenous selection of being included in the FISP, to estimate expenditure, price and quota elasticities, thereby obtaining the elements needed to evaluate how different targeting criteria affect

input consumption. Subsequently, we use a stochastic frontier framework to identify the marginal effects of inputs on maize production, the socio-economic characteristics of farmers who are more efficient, and the agro-ecological conditions that affect the efficiency distribution. This allows us to depict an ideal profile of farmers who are candidates for overall FISP efficiency enhancement. Both analyses allow for policy simulations at spatially disaggregated micro scale, in which new eligible farmers and those losing the eligibility face a new vector of prices for agricultural inputs and from which we can recover a welfare measure, which should be highly informative to policy makers of the convenience of applying the desired targeting variation. Our results identify potential gaps both in the current programme implementation as well as in the investigated FISP proposed reform. Findings could be highly revealing not only for Malawian policy makers, but also for those developing countries looking at the FISP as an impressive national programme to push agricultural modernization and improve food security.

The paper is organized as follows. The next section presents a brief overview of farm input subsidy programme design in Malawi. The conceptual background that motivates the analysis is presented in Section 3 whereas Section 4 illustrates the empirical methodology. Section 5 presents data and Section 6 illustrates results. Discussion and policy implications are presented in Section 7.

2. Overview of farm input subsidy programme in Malawi

The Malawian FISP started within the context of the national strategy for the development of agriculture and targeted almost half of the rural population by aiming to improve smallholder farmers' access to agricultural inputs and ameliorate crop maize productivity and food self-sufficiency. Eligibility to the FISP guarantees that different types of vouchers, entitling farmers to a constrained quota of agricultural inputs at subsidized prices, can be redeemed from governments outlets (ADMARC or SFFRFM). The types of voucher have changed throughout the years but as of the 2009 season, only four types exist, allowing beneficiaries to redeem vouchers for a 50-kg bag of chitowe maize (basal) or urea fertilizer both for a base price of MK500; either a 5-kg bag of hybrid maize seed or a 10-kg bag of open pollinated varieties (OPV) maize seed for a price up to MK150, and a flexy voucher which can be exchanged for a free 1 kg bag of legumes or groundnut seeds. In 2012 about 155,000 tonnes of fertilizers have been distributed and from its inception the total FISP cost has ranged from 9% to 14% of the total government expenditure (Lunduka et al., 2013).

Officially, the targeting criteria for voucher eligibility was oriented to the provision of inputs to vulnerable and marginalized smallholders (Lunduka et al., 2013; Dorward et al., 2013) with a formal allocation process structured in three steps. First, the Ministry of Agriculture and Food Security (MoAFS) distributes vouchers at district-level with criteria related to an estimate of the local rural population. Second, the district authority allocates the vouchers across villages and third, the village traditional authority identifies beneficiary households. Nevertheless, a lack of defined, standardized and structured targeting criteria has been observed with many village focus groups reporting that more coupons are distributed in a district in which a member of the governing party resides or are allocated on payment of a bribe. Moreover, redeeming prices above the official suggested threshold have been observed (Lunduka et al., 2013).

3. Conceptual background

Since the main aim of the FISP is to promote maize production and food security, our objective is to evaluate the impact on these measures of a different targeting criteria. We assume that the impact of changing the targeting will depend on two elements. The first is the variation in the consumption of agricultural inputs, both by farmers who lose eligibility to the FISP and those who become eligible. The second is how

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