POLICY BRIEF

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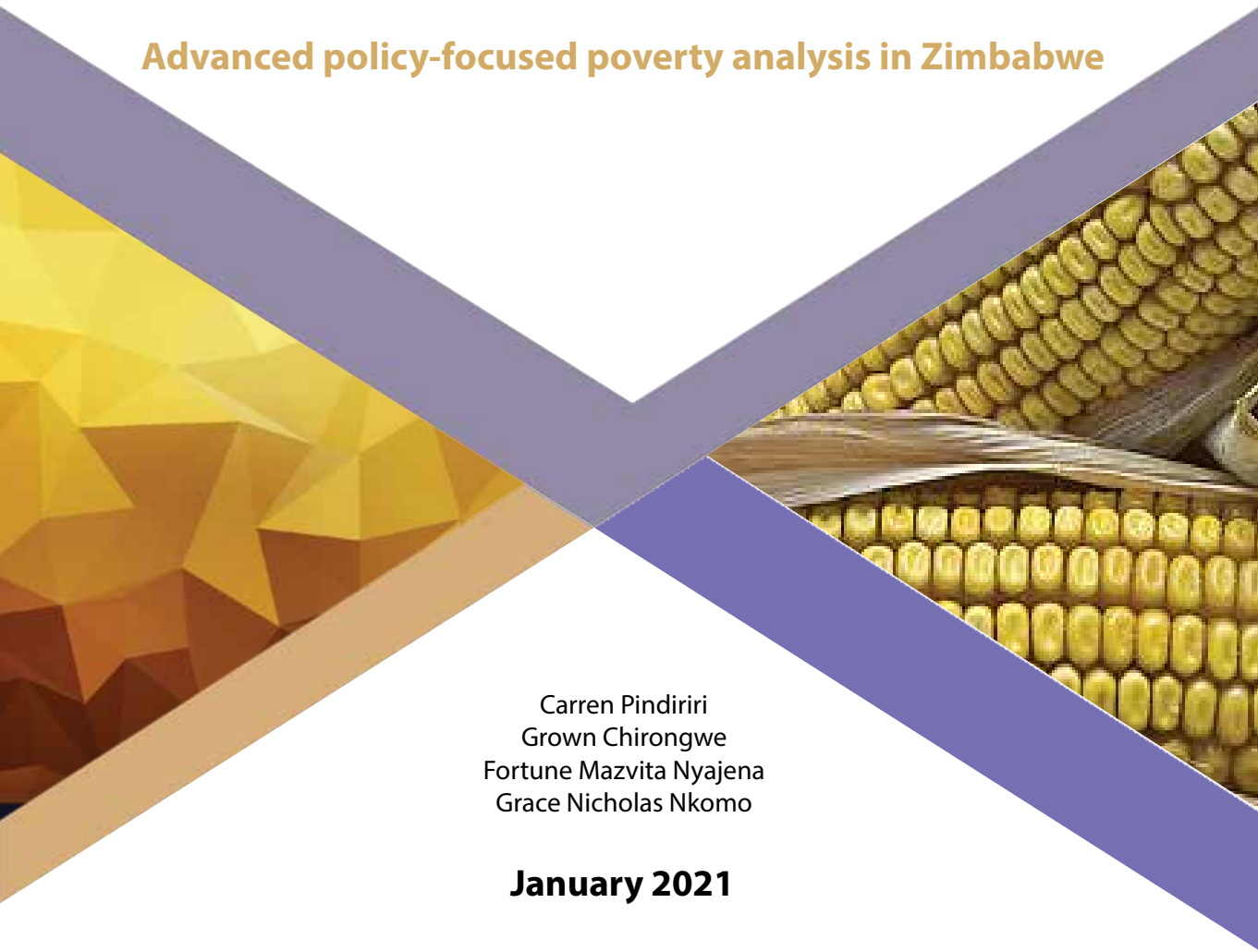
Zimbabwe Economic Policy Analysis and Research Unit
ZEPARU

Do agricultural free seed input support schemes reduce food insecurity and poverty in rural Zimbabwe?

Advanced policy-focused poverty analysis in Zimbabwe



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The Context

Since independence, agricultural input subsidies have been applied as a tool to increase input usage, enhance agricultural productivity and reduce poverty and food insecurity among rural households in Zimbabwe. Even the new Government dispensation of 2017, with strong liberal policies, has continued to pursue agricultural input subsidies. Budget allocation to agricultural input subsidies has been significant and extreme in some cases, contributing over US$900 million (over 50 percent) of Zimbabwe's domestic debt in 2018. For instance, in the 2016/17 agricultural season, the country spent an average of over US$554 million on agricultural crop input support (Ministry of Finance and Economic Development 2018). Furthermore, in the 2018/19 season, a total of US$130 million was allocated for agricultural input support programmes, targeting over one million vulnerable households (Ministry of Finance and Economic Development 2018) but the country still experienced a food production gap of over 50 percent of the required national consumption (Ministry of Finance and Economic Development 2019). Despite a consistent yearly provision of free input support such as the Presidential input scheme, poverty and food insecurity remain noticeably high among rural communities, with over 76 percent of households living below the poverty line (ZIMSTAT 2017).

The Problem

The Presidential input support and the input support for vulnerable groups aim to support agricultural recovery of vulnerable small scale and subsistence farmers to ensure food self-sufficiency and food security. However, poverty among the vulnerable rural households has remained high (over 70%) despite a consistent provision of free input support year after year. One of the major concerns with free input support strategy in Zimbabwe is the recipients who remain poor and food insecure after harvesting. This is an indication of an ineffective and inadequate input support design to drive vulnerable households out of poverty and food insecurity. Therefore, the question is whether these free input support schemes (the Presidential and input support for the vulnerable) achieve their stated objectives of enhancing productivity, improving food security and hence reducing poverty amongst the target populations. Generally, the policy concern is to understand whether the continuation of these subsidies in their current design is beneficial to communities, and if so, how can a more equitable regional distribution of subsidies' resources be achieved under devolution.

Relevance of the research issue

Attainment of the Sustainable Development Goals (SDGs) of poverty and hunger elimination (Goals 1 and 2) will largely depend on the effectiveness of Government policies targeting these rural communities. The effectiveness of such a rural poverty reduction strategy largely depends on its design properties such as targeting of recipients, regional sensitiveness of input type, input support quantities and on how recipients utilize the inputs. Targeting the most vulnerable groups of the community such as female-headed households may improve the effectiveness of poverty reduction strategies. A properly designed and sustainable

agricultural input support scheme is expected to drive the recipient poor household out of poverty just after harvesting, holding other things constant. Otherwise, the same poor household will continue to require the same support, giving the Government a permanent responsibility to support the same household. With a large number of poor households, free agricultural input support schemes may consume a significant portion of Government resources which may not be sustainable in the long term. Therefore, the design of free agricultural input support schemes has some implications on Government's future social spending.

Findings

The study applied the 2017 household level data from the Poverty, Incomes, Consumption and Expenditure Survey (PICES) and the Agricultural Productivity Module (APM) collected by the Zimbabwe National Statistics Agency (ZIMSTAT). Firstly, the study assessed the spatial distribution and targeting of free seed support schemes. Secondly, the association between free seed and poverty and food insecurity outcomes was estimated using treatment effects based on propensity score matching. In order to measure the impact of free seed support on food insecurity and poverty, we needed the potential outcome of the respondent when given free seed support (observed outcome) and the potential outcome of the same respondent in the absence of the subsidy (counterfactual outcome). The inference is therefore counterfactual, an outcome that would have happened if the respondent was not subsidized. We then used an econometric technique to generate the counterfactual outcome. Propensity scores were applied to match non-recipients (non-treated) with recipients (the treated) in order to have a sample of non-recipients (control group) to be compared with the recipients. Poverty was measured as dummy variable with a 1 indicating living below the poverty line (or surviving on less than US$1.25 per day) as well as a continuous variable in terms of consumption expenditures.

About 18% of the 13,681 surveyed plots received free seed input, averaging 9.5 kilograms per plot. The free seed input was largely directed to the poorest Districts with also the highest poverty prevalence and located in drier ecological regions IV and V. Over 50 percent of plots in dry areas such as Mbire, Rushinga, Muzarabani, Hwange rural, Umguza, Nkayi and Binga received the Presidential input support and input support for the vulnerable. These are also among the poorest Districts of Zimbabwe. There is evidence that free agricultural seed support in Zimbabwe properly target poor communities. However, proper targeting alone is insufficient to achieve the policy objectives of reducing food insecurity and poverty. The findings show that despite given free seed, vulnerable households remain poor and food insecure. Out of the 2,450 plots under free seed, about 60% of these plots were under the ownership of poor households. Generally, recipients of free seed are poorer and more food insecure (see Figure 1 and Table 1). Poverty level is higher and consumption per capita is lower for the free seed support beneficiaries. The Average Treatment Effects (ATE) in Table 1 shows that the probability of being food insecure is 9% larger for recipients of the free seed support than non-recipients. Participation in free seed input is positively associated with the probability of being poor and food insecure. Consumption per capita is

at least $2 lower in households which received free seed while the probability of being food insecure is at least 8% larger in these households than in non-participating households. The Average Treatment Effects on the Treated (ATET) in Table 1 shows that among the recipients, free seed exposes them to a food insecurity by an average probability of about 8%. This, however, may imply that free seed input targeted the poor and food insecure who remained also poor after harvesting.

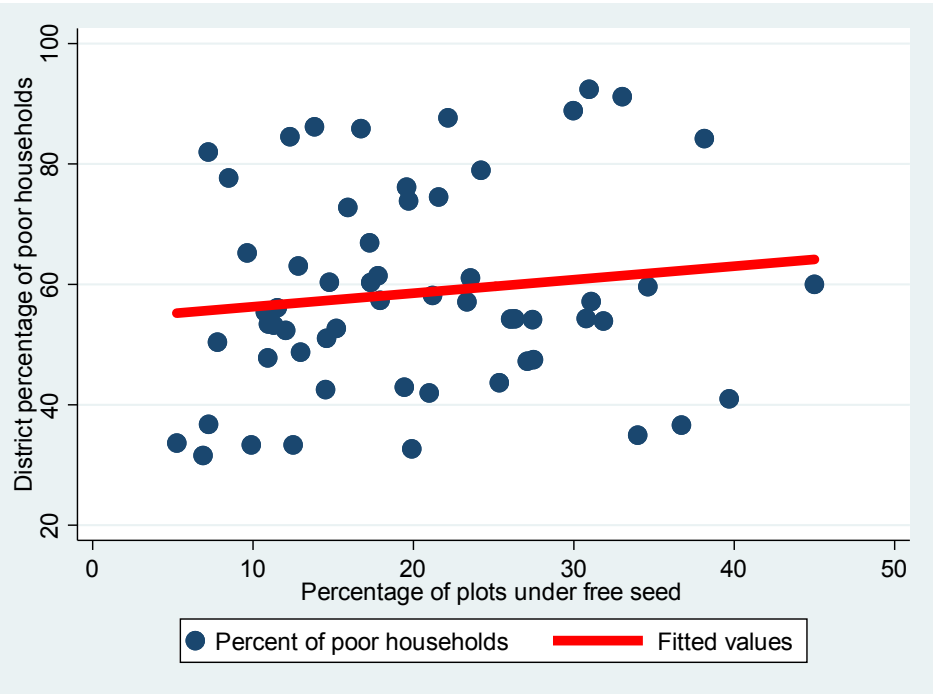
There are major gaps in the design of seed support for the vulnerable. Firstly, the provision of free seed is not gender sensitive as a larger proportion (56.4%) of plots under male-headed households receive free inputs than of female-headed households. Secondly, free seeds are not aligned with ecological regional suitability, for example, over 60% of free seed recipient plots in dry regions receive maize input but these regions are nationally regarded as not suitable for maize production. Thirdly, the quantities of free seed support (an average of 9.5 kilograms) also are inadequate to break the poverty cycle of rural households. The Government's free input support schemes only provide a 10kg of seed and some fertilizer of which an insignificant number of plots receive fertilizer. Given an average rural household size of 5 members in Zimbabwe, these insufficient free inputs can only keep the recipient households at most at the subsistence level if they rely on these free inputs. Like in the process of development, there is a minimum level of input support that is needed to help poor rural households to take-off.

Table 1: Impact of free seed on input use, poverty, food insecurity and income (ATE and ATET)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Input use (seed intensity in kg/Acre)	Expenditure	Food insecurity	Extreme poverty	Per capita consumption (US$)
Average Treatment	87.3	14.95	0.090***	0.028 **	-2.002***
Effects **(1 vs 0)**	(200.6)	(26.0)	(0.015)	(0.013)	(0.746)
Average Treatment	-36.6	55.1	0.082***	0.018	-1.913***
Effects on the Treated **(1 vs 0)**	(125.6)	(37.9)	(0.0001)	(0.010)	(0.541)

Standard errors in parentheses. *, ** and *** means the coefficient is statistically significant at 10 percent, 5 percent and 1 percent, respectively. The figures in the table show the difference between treated households (those receiving free seed) and the non-treated (those not receiving free seed but with otherwise very similar characteristics than treated households). The ZIMSTAT's 2019 rebased extreme poverty line was applied.

Figure 1: District poverty rate and district proportion of plots under free seed?



With the current design of input support for the vulnerable, the Government will continue to take responsibility of assisting the large number of poor households year after year. The design of seed support for the vulnerable provides a political dividend in the short term. However, supporting a larger number of poor households with inadequate free agricultural inputs cannot move rural households out of poverty and food insecurity. Hence, the political dividend can become an economic and welfare cost in the long run.

Policy options for improving input support for the vulnerable

- The research suggests that for input support schemes to reduce rural poverty and food insecurity in a sustained manner, these support schemes should be re-designed. Free agricultural input support schemes must be provided as a complete package. Input quantities must be large enough to allow a five-member household to produce a surplus in absence of climatic shocks. Because of limited resources, the scheme could

target a reduced number of households each year and also given adequate extension support. This policy option will improve the living conditions of the vulnerable and reduce government expenditures on procuring inputs for the vulnerable once a larger number is able to move out of poverty.

- In addition, targeting of recipients must be gender sensitive and the type of input support must be dependent upon agro-ecological characteristics.

- Recipients in dry regions such as regions IV and V must receive small grains seed while maize seed must only target farmers in regions II and III.

- Free input support should be combined with strengthened extension services.

- Last but not least, all the activities under the proposed new look scheme must be continuously monitored e.g. through rapid feedback loops from beneficiaries e.g. through telephone surveys and improved communication technologies.

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