INNOVATION LAB FOR FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE

Do Input Subsidies in Malawi Affect the Outcomes of Younger and Older Farmers Differently?

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Introduction

Countries in the south of the Sahara, Malawi inclusive, have been investing vast amounts of their resources in agricultural subsidies to increase smallholder farmers' access to inputs, and boost food production. Prior to the 2020/21 season, Malawi invested over 10% of its national budget (roughly 60% of the Ministry of Agriculture (MoA) budget) in the Farm Inputs Subsidy Program (FISP), annually. Through the FISP, between 0.9 to 1.6 million smallholders, farmers accessed subsidized inputs for maize and grain legumes production countrywide. Local authorities recruited these beneficiaries into the program with the help of front-line extension officers. This decentralized approach to input distribution gave local authorities significant control over who finally got the inputs. Those who eventually got recruited were eligible to receive vouchers for all inputs in the program (i.e., fertilizer, maize seed, and a flexible voucher for a choice of grain legumes seed).

Specifically, the fertilizer voucher guaranteed access to 100kgs of subsidized fertilizers (50kg NPK and 50kg Urea), the maize seed voucher to 5kg hybrid or 7kg Open Pollinated Varieties (OPV), and a Flexi-voucher to a choice of grain legume seed (i.e., 3kgs of either groundnut, soya beans, pigeon peas, cowpeas or sugar beans). The FISP ran between the 2004/05 and 2019/20 agricultural seasons before being replaced by the Affordable Inputs Program (AIP), a larger (i.e., roughly 20% of the national budget) but more narrowly focused program subsidizing inputs for maize production. The AIP initially supported the population of smallholder farmers (estimated at 3.7 million households) with subsidized maize inputs before scaling down to 2.5 million farm households in the 2022/23 season.

One of the reasons governments promote subsidies is that they boost agricultural productivity by making investments in agricultural technologies, such as inorganic fertilizers and improved seeds more attractive to farmers[i]. In the Malawian context, subsidies are thought to increase maize productivity and household income. Consequently, authorities generally see subsidies as a potential way to enhance rural productivity and structural transformation.

Understanding whether agricultural subsidies can be catalysts for rural transformation and whether their effects are different for different beneficiary households is the motivation of this analysis.

Key Facts

- In the Farm Inputs Subsidy Program in Malawi, older farmers are more likely to receive coupons for all inputs than younger farmers

- However, on average, older farmers realize lower output, per unit of input used than their counterparts. The program increases the relative productivity of the youth more than that of the non-youth. It does not have any effect on the incomes of the beneficiaries

- The productivity increase in the youth is likely driven by their ability to utilize inputs more efficiently on smaller landholdings

- Policymakers should consider age and ways to make the program more equitable

What we did

We investigated the program's effects on the productivity and income of households headed by young farmers (i.e., 10 to 35) and old farmers (over 35s). Clarifying how the program affects households in these two age categories is important for several reasons. First, youth constitute roughly two-thirds of the national population[ii]. Second, Malawi is an agro-based economy; the agriculture sector contributes between 28 to 30% to the Gross Domestic Product (GDP). Third, the country has a high labor-force growth rate, due partly to high fertility rates,[iii] but it has limited non-farm employment opportunities to provide jobs to the youth and non-youth entering the job market[iv]. Fourth, the youth face critical entry barriers into the agriculture sector, including limited access to prime agricultural land, farm labor, farm inputs, agricultural credit, remunerative output markets, and extension services[v].

While some experts believe that the Malawian FISP has raised maize productivity[vi,vii] others contend that its contribution has at best been underwhelming because evidence shows a lower-than-potential productivity growth attributable to the program, and stubbornly volatile and high maize prices across the years of FISP[viii,ix,x,xi]. Then again, consensus largely points to the fact that subsidies contribute negligibly to household incomes[xii,xiii,xiv,xv].

We commence our analysis by first investigating the extent to which the youth participate in the FISP. Thereafter, we investigate the program's effect on the productivity and incomes of young and old farmers, and whether these are different and causal. Our analysis focuses on the period between 2010 and 2019.

What we found

Our results show no age difference between beneficiaries and non-beneficiaries during the period under review. However, among beneficiaries, a larger share of the non-youth group was more likely to receive coupons for all the inputs in the program. Also, the overall share receiving all coupons averaged 25% during the period under review.

Also, for individual survey waves, the share fell steadily, roughly 30% from 2010 to 2019 (see, Table 1). The fall was sharper for the non-youth, falling roughly 32%, from 47% in 2010 to 15% in 2019. The youth's share fell roughly 28%, from 36.5% in 2010 to 9.0% in 2019. The fall coincides with

the period government was reducing allocations to the program.

The study further finds that the non-youth had better access to productive inputs (i.e., land, and fertilizer) and support services (agricultural extension and credit), signifying their greater resourcefulness and social connectedness. Consequently, non-youth were generally able to commit more land to crop production and use cumulatively more fertilizer (i.e., 57kgs more). However, they generally generated lower outputs per unit of input used. Access to subsidized inputs increased the relative productivity of the youth by 34% and that of the non-youth by 29%.

This notwithstanding, the redemption rate for those receiving the full program was very high, ranging between 88 and 98% (see, Table 1). Also, conditional on receiving any coupon, the share that received NPK and urea coupons was high, averaging roughly 76% and 78%, respectively. The program was skewed towards providing fertilizer rather than seed coupons, and the high fertilizer redemption rates were principally driven by high overall redemption rates. Unsurprisingly, the redemption rate for maize coupons (not shown in Table 1), rarely surpassed the 50% mark, and for Flexi-coupons only ranged between 4 and 25%. This does not necessarily imply farmers' lack of reception of the other components of the program. It suggests that farmers prioritize fertilizer redemptions over other inputs, most likely due to liquidity constraints. Earlier distribution of subsidized inputs would mitigate this effect.

Despite the targeting criteria emphasizing targeting "productive" and "low-income" farmers, our study reveals a strong influence of social status on local leaders' decisions on whom to include in the program. The program targeted a relatively larger share of households in monogamous unions, followed by those who were widowed or polygamously married. Only a negligible share of those that had never been married was included across the survey years (Table 1).

When we estimate the effect of FISP on productivity, as well as the age of the household head, time (survey waves), and space (regional dummies) without considering the effect of other factors that affect productivity , in the analysis, we find that the program increases the relative productivity of

Table 1: Characteristics of households in the FISP

Variable	Survey years				
	2010	2013	2016	2019	All
Share of households that received coupons	42.3	33	24.7	12.4	25.3
Share of households that redeemed coupon	97.8	95	91.8	87.6	93.7
Coupon receipt by age-category					
Share of the youth that received coupons	36.5	23.9	17.9	9.0	19.7
Share of the non-youth that received coupons	47.2	39.8	29.4	14.9	29.5
Conditional on receiving any coupons:					
Sex of coupon recipient					
Female	47.3	50.2	49.8	55.3	50.1
Male	52.7	49.8	50.2	44.7	49.9
Share of households that received NPK coupon	71.8	77.6	79.2	75.4	76
Share of households that received UREA coupon	74.6	80	79.6	74.9	77.5
Share of households that received Maize coupon	32.8	52.4	46.0	43.8	43.6
Share of households that received Flexi-coupon	5.8	34.5	28.4	31.4	24.0
Age group of coupon recipient					
Marital status of coupon recipient in the household					
Monogamous, married or non-formal union	72.9	72.2	67.2	74.3	71.5
Polygamous, married or non-formal union	5.3	4.4	5.7	2.3	4.6
Separated	4.9	3.7	7.4	3.1	4.9
Divorced	4.4	5	3.7	7.6	4.9
Widowed or widower	11.8	14.1	11.4	11.2	12.2
Never married	0.7	0.6	4.7	1.5	1.9

Source: Authors' computations based on IHPS data for the period 2010 to 2019.
Notes:
- The first part of the table shows the overall share of coupon recipients and redeemers across the survey years
- The second (middle) part of the table presents the same information disaggregated by age
- The last part presents the overall socio-dynamic structure of the sample conditional on receiving the coupon
- The fertilizer coupon is a composite coupon that gave farmers access to NPK and UREA fertilizer.
- The maize and Flexi-coupons were separate coupons for accessing subsidized seeds for improved maize varieties and grain legumes, respectively.

the younger farmers more than that of the non-youth (Column 1, Table 2). We also find, for older farmers, a positive but insignificant association between benefiting from FISP and increases in agricultural productivity. For younger farmers, the association is positive and significant and also larger in magnitude by roughly 16%. That is a marginal increase of MK 20,324.85 per hectare over the mean value of the excluded group (MK 130,665.900 (see the lower part of Table 2).

When we include additional factors that affect productivity in the analysis (column 2), we find that participation in FISP is associated with a positive and significant increase in farm productivity of roughly 11% for older farmers , and roughly 17% (MK 22,790.70) for younger farmers.

These results suggest that despite older farmers being more likely to be recruited into the program, they are generally less productive than younger farmers. However, an earlier study on the Malawian FISP program has shown that local leaders target inputs to households with the potential to generate higher returns from the allocated inputs rather than on need[xvi]. If the older farmers are equally productive, the analysis may be underestimating its productivity effect on them. Thus, we further estimated the effects, adjusting for any potential bias in the results, to give our results a causal

interpretation. The results reveal an even larger marginal effect of the program on the productivity of the youth than previously estimated (column 3). That is, the youth in the FISP increased their productivity by roughly 34% (MK44,642.05) relative to the non-beneficiary older households, and 40% over the mean for the non-recipient youth. The participating older farmers also substantially increased their productivity by roughly 29% (MK37,627.35). However, the program does not contribute to household income for both the youth and non-youth. This is consistent with current empirical evidence[13, 15].

Table 2: FISP participation and agricultural productivity (2010 – 2019)

	(1) Value of output per hectare	(2) Value of output per hectare	(3) Bias adjusted effect, $\partial = 1$
Coupon (=1)	11,320 (7,087)	13,988** (7,106)	37,627.35
Youth (=1)	-10,806 (12,039)	-11,204 (12,038)	-14,734.46
Coupon x Youth (=1)	9,004 (12,424)	8,803 (12,358)	7,001.21
Youth marginal effect (coupon + coupon x youth)	20,324.85*	22,790.70**	44,642.05
Mean dependent variable (excluded group)	130,665.90	130,665.90	130,665.90
Number of observations	6,455	6.455	6.455
R-squared	0.341	0.353	

*** p<0.01, ** p<0.05, * p<0.1 (Robust standard errors clustered at household ID level)

Notes:
- The standard errors are in parentheses.
- The mean dependent variable is the mean reference value of the productivity for the non-youth-headed households that did not benefit from the program during the period under review.
- Column 3 contains the estimates of the bias-adjusted effect of FISP when selection in unobservables is assumed to be proportional to selection on observables (i.e., delta = 1)

Recommendations

Make subsidized inputs available from the second quarter of the year when farmers are harvesting and selling their produce. This will mitigate the effects of the liquidity constraints, encourage high uptake of inputs, reduce the recycling of grain for seed, and improve the program's contribution to household outcomes.

Improve the targeting of beneficiaries. Unbundle the program objectives to narrowly focus on the productive objectives. This will facilitate the effective identification of *Incentivize youth to redeem and use the inputs* provided under the subsidy to increase the programs' contribution to household outcomes.

Integrate agricultural extension into future programs that seek to integrate grain legumes to strengthen farmer sensitization about the importance of quality seed (both

beneficiaries, by local leaders, as well as improve its overall performance.

Facilitate access by the youth to productive resources and extension services. Establishing initiatives to facilitate access to productive resources by the youth (e.g., a special revolving fund for the youth, concessionary access to land, etc.,) and extension services to further boost their productivity.

maize and legumes) in production. This could improve the reception and uptake of the program.

Improve the distribution of seed coupons in future programs instead of overly focusing on the fertilizer component.

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