

Self-targeted fertilizer subsidies

Chimwemwe Banda, Joachim De Weerd, Jan Duchoslav and Aubrey Jolex

If Malawi's fertilizer subsidy program aims to increase food security in the country, it should strive to target the most productive farmers. Subsidy levels can be set to self-target this group of farmers. This would maximize output achieved with subsidized fertilizer and eliminate the need for costly and error-prone top-down targeting.

Maximizing the productive capacity of the AIP

In a previous policy note, we argued that by setting the farmer contribution to fertilizer subsidized under that Affordable Inputs Programme (AIP) so that farmer demand matches what the program can supply, the government can maximize the total amount of fertilizer available for distribution under the program ([Banda et al., 2022](#)). In this note, we argue that a second advantage of this pricing strategy is that it ensures that each subsidized bag of fertilizer has the largest possible yield response, thus maximizing the additional amount of food produced through the program.

Targeting for food security

Malawi has experienced significant declines in maize yield response to fertilizer in the past decade. For an increasing share of farmers, the cost of the subsidy is higher than the additional harvest they can generate with it ([Burke et al., 2021](#); [De Weerd and Duchoslav, 2022a](#); [McCullough et al., 2022](#)). This problem of negative economic returns on the fertilizer subsidy is exacerbated by the exceptionally high fertilizer prices this year.

A major concern is, therefore, to ensure that the available fertilizer is allocated in such a way that it has the largest possible effect on total production. With fertilizer availability in the country at an all-time low, the country can ill-afford the little fertilizer it has to be used unproductively. A subsidy program that aims to increase food security in the country should target those farmers who can make most productive use of the fertilizer.

But how? The current practice through farmer clubs does not take productivity into account at all. Geographical targeting, categorical targeting or community-based targeting can be prone to substantial errors and every such error will decrease total maize production. We have argued before that although an external observer cannot easily and cheaply know which farmers are productive and which are not, farmers themselves have a good idea about their own productivity. They can, and continuously do, weigh off the cost of additional Kwacha of inputs against the expected additional Kwacha of outputs ([De Weerd and Duchoslav, 2022b](#)). Similarly, when deciding whether or

not to buy subsidized fertilizer the farmer weighs off benefits and costs. Unproductive farmers will only buy at very low fertilizer prices, while productive farmers can afford to pay more. Once the total amount of fertilizer available under the AIP is known, the government can set the price such that the total tonnage available clears through this market mechanism. In a companion policy note, we have argued how this way of pricing maximizes the total amount of fertilizer that can be distributed through the AIP at any given budget level ([Banda et al., 2022](#)). In this policy note, we argue that it is also an efficient way of self-targeting the most productive beneficiaries.

Willingness to pay

We phoned 1,390 farmers to ask them how many bags of NPK and urea they would buy at a number of different price points, ranging from MK 5,000 to MK 110,000 (current market prices lie around MK 75,000). Table 1 shows, for each price level, the estimated number of Malawian households who report that they would buy fertilizer, the average number of bags these households report to want to purchase and the total tonnage of fertilizer needed in the subsidy program to fulfill that demand. This last column represents demand unrestricted by the current rule that each household buy just 2 bags of subsidized fertilizer. To ensure that each bag of fertilizer produces the maximum amount of maize, very productive farmers should be allowed to buy more than 2 bags (except at very low prices very, few say that they would buy more than 3 or 4 bags).

Table 1: Demand for fertilizer

Farmer contribution (MK)	Number of households buying	Average number of bags bought per household	Total amount of fertilizer demanded (MT)
5,000	3,903,106	5.30	1,035,068
10,000	3,580,567	3.84	688,350
20,000	2,764,589	2.87	397,336
30,000	1,990,854	2.47	246,236
40,000	1,414,922	2.21	156,458
50,000	960,481	2.10	100,899
60,000	724,023	2.06	74,430

Source: Authors

Armed with that information, we can now ask at what price level the total demand for fertilizer from farmers would equal exactly the total tonnage the government has for distribution. This year, the government is hoping to distribute 247,000 MT, which would automatically clear on the market if the farmer contribution were set at MK 30,000 per bag. At this price point, just under 2 million farmers would be willing to buy the fertilizer. At a lower price, the government would need to decide who to target and who not as demand outstrips supply. Any system put in place will be error-prone, but the farmer himself does make that tradeoff and will only buy if he believes that he can turn a bag of fertilizer into at least MK 30,000 worth of maize. Those who believe they cannot, the unproductive farmers, will not be willing to buy fertilizer at that price.

Concluding discussion

The parameters (fertilizer price, AIP budget, and farmers' willingness to pay) will change in coming years, but the same principles can be applied to determining the most efficient manner of

implementing the AIP in the future. For example, if the recent commitments by the government to phase out the AIP materialize ([Sabola, 2022](#)), yearly budget reduction could be agreed upon and then farmer contributions set accordingly ([Banda et al., 2022](#)).

The implementation of this proposal will see some farmers opt out of the subsidy program. As these are the least productive farmers, they are also likely to be poor. The AIP currently conflates two aims: increasing agricultural production and providing social protection. We have argued elsewhere the need to disentangle those two aims and assist the least productive farmers in other ways, potentially even diverting part of the AIP budget to this goal ([De Weerd and Duchoslav, 2022b](#)). Giving fertilizer to unproductive farmers is a very inefficient and costly social protection mechanism that hurts productivity and lowers the amount of food produced in Malawi. Social protection of unproductive farmers would be better – and more efficiently – ensured through dedicated programs such as cash transfers and public works, at least until the productivity of these farmers is raised by investment in soil health, agricultural extension and research, as has been discussed at length by [Chadza and Duchoslav \(2022\)](#), [De Weerd and Duchoslav \(2022b\)](#), and [Nyondo et al. \(2022\)](#).

Our analysis comes with a few important caveats. First, we cannot be entirely sure that the farmers we interviewed are completely representative of the country. Secondly, we have used *stated* willingness to pay data, which can be different from *actual* willingness to pay. Given these caveats it will be important for the exact level of subsidy to be independently verified, taking into account the principles that underpin the analysis in this note: the subsidy level should be set so that the amount of fertilizer available for distribution is cleared by the market. This will not only maximize the amount of fertilizer that the AIP can distribute, but also avoid any top-down targeting and ensure that available fertilizer is used by Malawi's most productive farmers, thus maximizing yields—and harvest.

ABOUT THE AUTHORS

Chimwemwe Banda is a Research Analyst with the Development Strategy and Governance Division (DSGD) of the International Food Policy Research Institute (IFPRI) based in Lilongwe.

Dr. Joachim De Weerd is a Senior Research Fellow with the Development Strategy and Governance Division (DSGD) of the International Food Policy Research Institute (IFPRI), and the leader of IFPRI's Malawi Strategy Support Program, based in Lilongwe.

Dr. Jan Duchoslav is a Research Fellow with the Development Strategy and Governance Division (DSGD) of the International Food Policy Research Institute (IFPRI) based in Lilongwe.

Aubrey Jolex is a Research Analyst with the Development Strategy and Governance Division (DSGD) of the International Food Policy Research Institute (IFPRI) based in Lilongwe.

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IFPRI Malawi, Area 14 Office, Plot 14/205, Lilongwe, Malawi | Mailing Address: PO Box 31666, Lilongwe 3, Malawi

T +265-1-771-780 | Email: IFPRI-Lilongwe@cgiar.org | <http://massp.ifpri.info>