

Impactos a longo prazo de um subsídio temporário de insumos agrícolas em Moçambique

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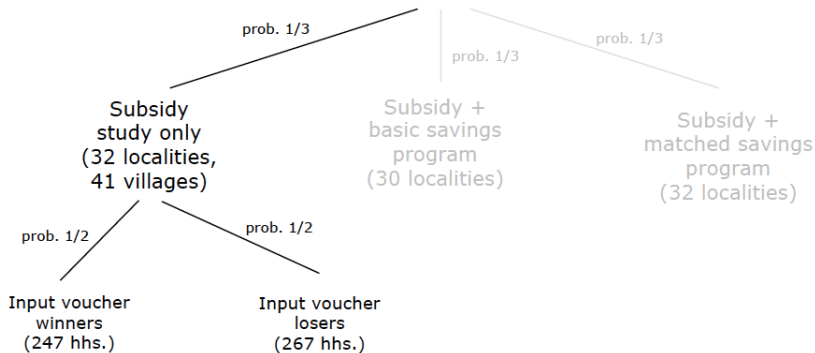
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- Voucher funds available for only 5000 maize farmers in Manica Province
- With the cooperation of the Ministry, 94 localities randomly assigned to one of three treatments:
 - ① Subsidy only (41 villages)
 - ② Subsidy plus basic savings program with BOM (30 villages)
 - ③ Subsidy plus plus 'matched savings' with BOM (31 villages)

Experiment Design



- Eligibility rules at household levels (0.5-5 hectares in maize; willing & able to make voucher co-pay)
- Subsidies assigned by random lottery to eligible households within 41 villages
- Losers of the lottery become the control group for the experiment
- Extension agents informed farmers who had won and lost the voucher lottery & distributed vouchers
- I will discuss the 41 “subsidy only” villages; Rachid will discuss matched savings results

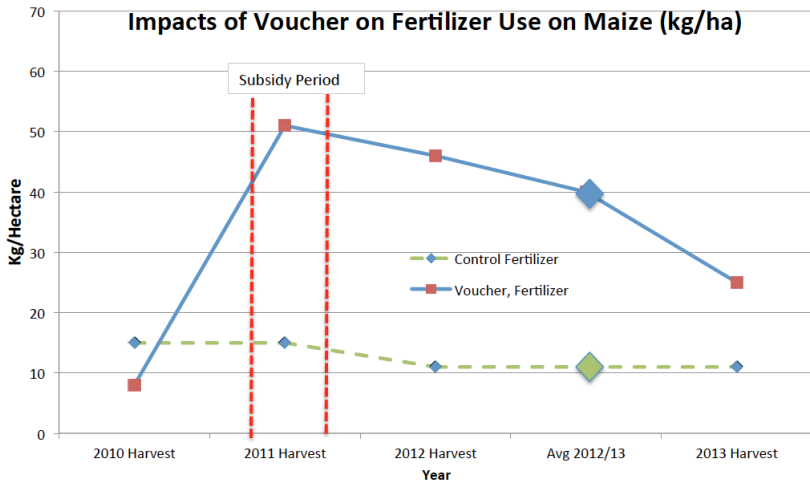
Uptake & Use of Vouchers

- Aniceto has explained how the vouchers worked
- Only about half of lottery winners picked up vouchers, and in the end, a slightly smaller number actually used the vouchers
- In addition, 13% of lottery losers ended up using vouchers
- In our analysis, we statistically take into account these deviations from the perfect experimental design
- The results we present today are all unbiased estimates of the average impact of the voucher program on those who were successfully 'treated' with the voucher
- Later I will talk briefly about how we might make voucher programs better so that more than 50% of farmers can benefit from them

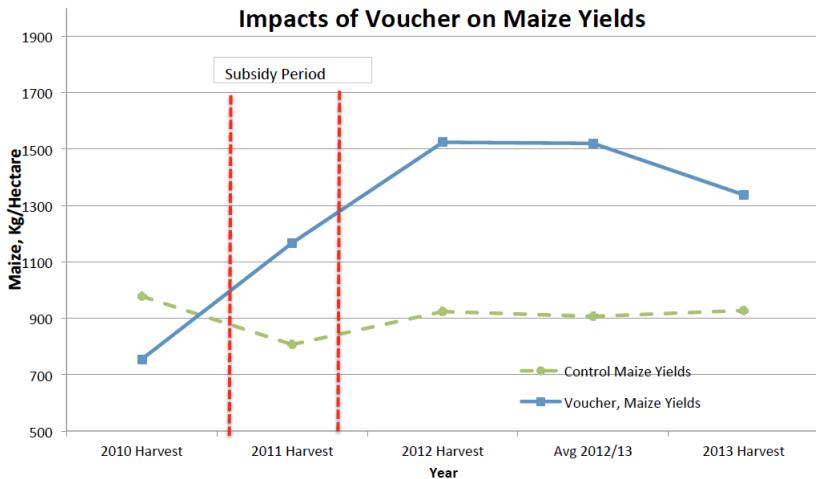
Short-term Impacts of Vouchers on Maize

- For the 2010-11 crop year, the average impact on *lottery winners* was a 67% (or 12 kg/hectare) increase in fertilizer use
- But the unbiased average estimate for those who took advantage of the program was a much larger impact of 186% increase in fertilizer use, or 33 kg/hectare
- On average, those that used the coupons experienced a yield increase of 58%, or 480 kilos/hectare (note that this figure averages across all maize fields, while the subsidy only provided inputs designed for a half-hectare)
- If the vouchers had been crowding out fertilizer purchases that would have already taken place, then these estimates would be zero
- In fact, we see that the vouchers genuinely increased fertilizer use over what it otherwise would have been

Short-term Impacts of Vouchers on Maize



Short-term Impacts of Vouchers on Maize



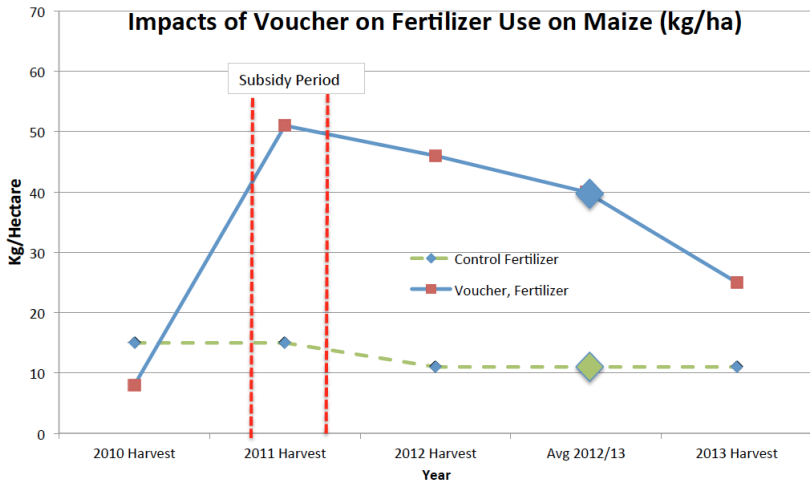
Long-term Impacts?

- But what happens when these voucher subsidies go away:
 - Do farmers return to their old ways and use little fertilizer and improved seed?
 - Do farmers use the extra earnings from the subsidy period to finance the purchase of fertilizers when the subsidy ends?
 - Do farmers learn from the subsidy that fertilizer is profitable and invest their own savings?
 - Are there long-term impacts on family living standards and assets?

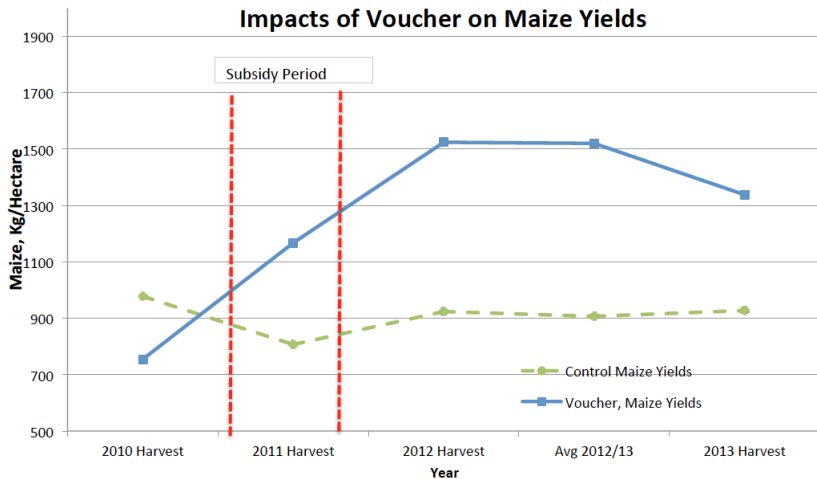
Long-term Impacts on Agricultural Production

- To answer these questions, surveys continued for 2 post-subsidy years (2011/12 & 2012/13)
- Modest differences in impact between the 2 years, but here we focus on impacts averaged across the 2 post-subsidy years
- *Maize:*
 - Yields are 613 kg/hectare higher than control group
 - Total maize production is 828 kg higher than control group
- *All agricultural production:*
 - Fertilizer use spills over to other crops and see an overall 48% increase in fertilizer use relative to control group
 - Value of production rose 41% (9631 MZNS, or \$US 357)
 - Sales of agricultural products increase by 3120 MZNS
- Evidence that vouchers put farmers on a transformational path to higher commercial production & incomes

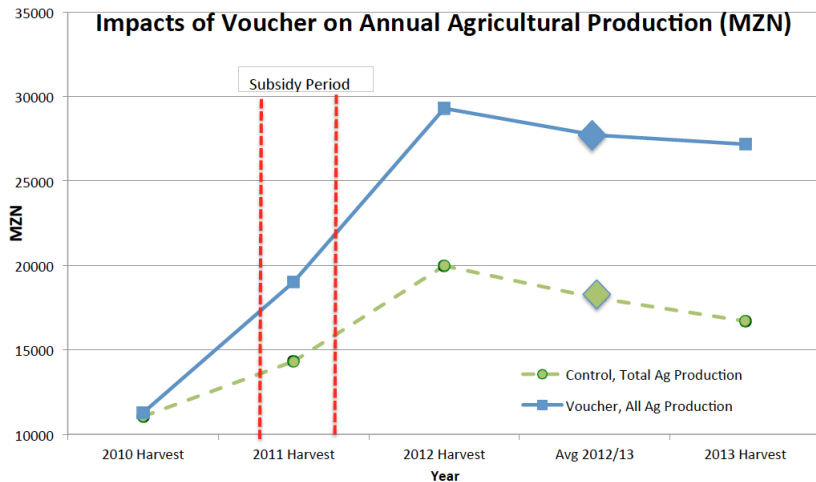
Long-term Impacts of Vouchers on Maize



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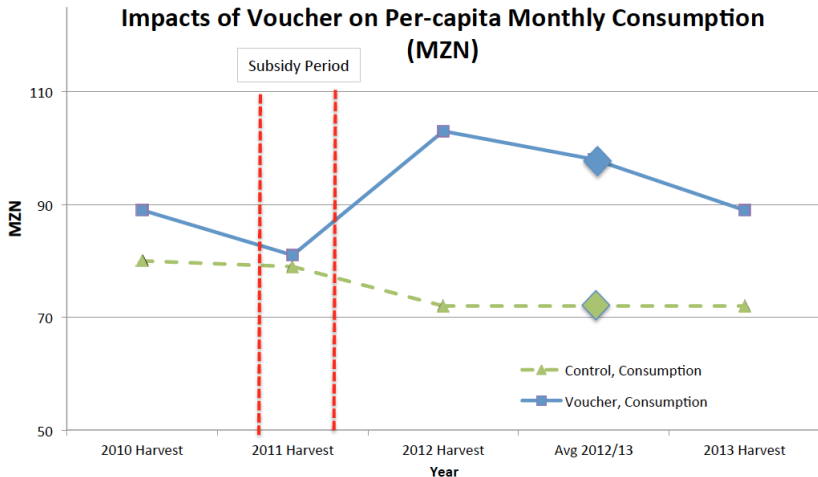
Long-term Impacts of Vouchers on Annual Production



Long-term Impacts on Economic Well-being of Farm Households

- Now for the most stringent test: Do these changes result in improved household living standards and reduced rural poverty?
- Initially (2011), no visible impact on total household consumption expenditures
- However, in the 2 post-subsidy years, see an increase in per-capita daily household consumption of 26 MZNS, or 36%

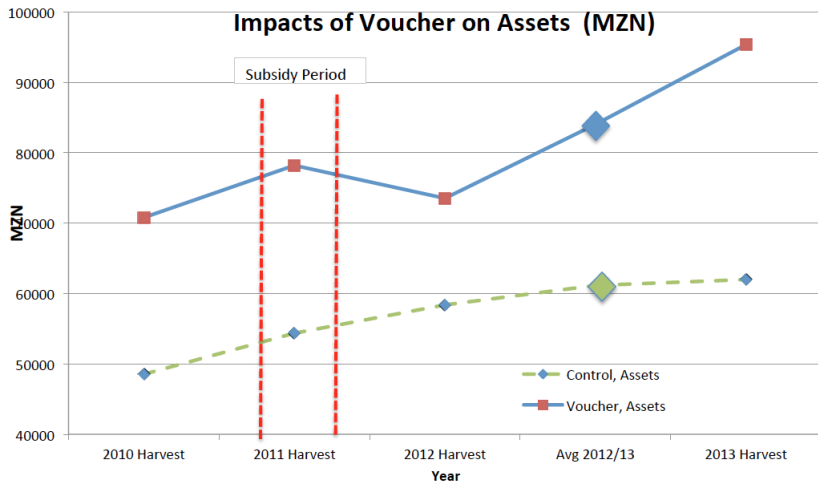
Long-term Impacts on Economic Well-being of Farm Households



Long-term Impacts on Economic Well-being of Farm Households

- With households on average just a bit above conventional poverty lines, an increase of this magnitude implies a substantial reduction in the incidence and depth of poverty
- Also see significant impacts on household assets, savings and food stocks
- Strong impacts, but let's not forget that uptake and usage rate of vouchers was under 50% of lottery winners

Long-term Impacts on Economic Well-being of Farm Households



- What explains these strong and persistent effect of a one-time intervention?
- We measured farmers' expected returns to fertilizer under different climatic conditions and found very strong learning impacts of the vouchers:
 - Relative to the control group's expectations in 2013, voucher farmers expect an improved seed/fertilizer package to yield on average 2828 kg of maize, which is 51% higher than what the control group expected in 2013
 - If we compare these expectations to baseline (2011) expectations of the control group, we see a 71% increase in expected returns to fertilizer

- Our analysis of the actual production data shows that on farmers' fields, 100 kg fertilizer would boost yields by 1660 kg/hectare or about 25% more than what farmers report
- This is good news in the sense that farmers' reported expectations are not unrealistic

Making Smart Subsidies Smarter

- In summary, we have evidence that temporary subsidies can be a wise investment that has sustained impacts
- Not clear if impacts are starting to dissipate after 2 years, but the answer appears to be that impacts last
- Strong learning effects seem to explain at least a large part of these sustained impacts
- Temporary subsidies can thus be smart policy—but can they be made even smarter & more effective?

Making Smart Subsidies Smarter

- We do not know if impacts would have been stronger if program had lasted longer (note that first year of program disrupted by drought)
- What could have been done to boost use of the vouchers (& learning) above the modest 50% level?
 - Suspect that for many families, the initial 27% co-investment in the voucher-subsidized package may have been too high or too risky
 - Would fully subsidized vouchers have helped?
 - Would additional financial interventions (credit &, or insurance) have helped?
- Fertilizer that was used was a 'standard' blend—could we have achieved larger impacts with more appropriate fertilizer blends?
- Both IFDC in Mozambique and BASIS in Kenya & Tanzania are researching this issue

Making Smart Subsidies Smarter

- Finally, we are finding strong evidence that the learning we measure spills over through social networks and influences input use
- Are there better ways to use social learning so that more of the benefits from the vouchers 'spillover' and help others?
- In addition to exploring our core results, these are the kinds of questions we hope we can explore together in our discussions today