Design of the Randomised Control Trial Impact Assessment

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We randomise the assignment of a free crop-insurance to 832 farmers belonging to 40 farmer groups, conditional on uptake of certain quality seeds. The seeds include improved varieties of maize, sorghum, soya and sunflower. After a lottery assigning participants to a treatment (40%) or control group, treatment subjects are awarded a free insurance on the land they farm using certified improved seeds. If they do not buy any improved seeds they do not get the insurance—even if they have won the lottery.

Of 832 farmers correctly reached by the intervention, 366 won the insurance lottery and 466 did not. Table 1 shows that the randomization worked as expected; there are no significant differences across the two groups.

Table 1. Summary statistics by lottery outcome

Variables	Lost N	Lost Mean	Won N	Won Mean	Δ
Age	455	46.215	358	45.617	0.598
Female	466	0.908	366	0.904	0.003
Education	466	6.328	366	6.470	-0.142
HH size	466	5.652	366	5.751	-0.099
Income generating members	466	2.167	366	2.164	0.003
Mpesa account	466	0.811	366	0.836	-0.025
Bank account	466	0.253	366	0.290	-0.036
Plan to borrow	466	1.3e+04	366	1.3e+04	-570.729
Land under 4 crops in study	466	3.798	366	3.809	-0.010
Total land (acres)	466	9.485	366	9.232	0.253
Produced maize last year	466	0.989	366	0.973	0.017
Produced sorghum last year	466	0.067	366	0.087	-0.021
Produced sunflower last year	466	0.021	366	0.014	0.008
Produced soya last year	466	0.006	366	0.011	-0.004
Likely drought	466	0.442	366	0.415	0.027
Likely excessive rain	466	0.247	366	0.311	-0.065*
Likely pest	466	0.685	366	0.678	0.007
Risk game investment	466	59.227	366	64.809	-5.581
Openness	466	0.003	366	-0.004	0.006
Conscientiousness	466	-0.027	366	0.034	-0.061
Extraversion	466	0.018	366	-0.023	0.040
Agreeableness	466	0.001	366	-0.001	0.003
Neuroticism	466	0.021	366	-0.027	0.048

* $p < .05$, ** $p < .01$, *** $p < .001$.

The main objective of the project is to see to what extent the presence of free insurance increases the appeal of improved seed varieties (conditional crowding-in) as well as other inputs (unconditional crowding-in), and to what extent this leads to different farming decisions and outcomes. It is possible to conduct an intention to treat (ITT) analysis, taking all lottery winners as if they had indeed benefitted from the insurance and vice versa (as the insurance is conditional on purchasing quality seeds, this is not necessarily the case). This will yield conservative estimates of the impact. It is also possible to conduct LATE and TOT estimates.

By design, it is expected that the presence of insurance may induce some farmers that otherwise would not have purchased improved seeds do to so. Indeed, 434 farmers purchased at least one packet of quality seeds: 46% of the control group and 59% of treatment. The difference in uptake may mean that "worse" farmers are taking up improved seeds that they would not otherwise have purchased. This may downwardly bias the estimates with respect to average productivity and income when comparing these two groups. To measure this effect, in 28 out of 40 farmer groups we also provided a random subsample of control farmers a surprise lottery (40%) in case they had previously decided to purchase quality seeds

independently of the project. The insurance is based on the amount of seeds purchased within three days after participation to the surprise lottery, allowing everybody to increase the amount of packets purchased regardless of its outcome. This allows for differences in total input purchases between surprise lottery winners and losers. In total 228 free crop insurances conditional on quality seeds were awarded.