The Material Basis for Cooperation: How Scarcity Reduces Trusting Behavior

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ASSA Annual Meeting, January 2022

Introduction

"You cannot trust anyone with food when it is the time of hunger" (Phillips 2009)

This paper investigates **whether food scarcity reduces trusting behavior** through a pre-registered lab-in-the-field experiment that exploits exogenous variation in food scarcity generated by the harvest (Agneman et al. 2022). We show that material deprivation hampers trusting behaviour and we thus contribute to a growing literature on the behavioral consequences of poverty.

The Setting

The study was conducted in the Ikungi and Manyoni districts of Singida, a semi-arid region in central Tanzania with an economy heavily centered around crop farming.

Experimental Design

We measure trusting behavior through a **framed trust game** à la Berg et al. (1995) conducted in the *lean* and *abundant* season (before and after the yearly harvest). In the game, Player A chooses how much to invest in a joint venture with an anonymous Player B, who decides how to split the resulting profits (Fig. 1). Investment by Player A is conceptualized as "trusting behavior".

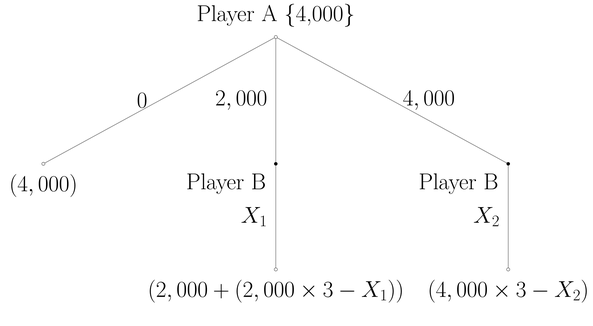

Fig. 1: Player A's Decision

We also embed two randomized primes to test two auxiliary hypotheses:

(i) mental salience of scarcity;
(ii) group identity of the interaction partner.

Sampling

In the pre-harvest round (early May 2020), we visited 12 random villages and invited 28-32 random adults in each village to take part in the experiment (half as Player A, half as Player B).

In the post-harvest round (mid-July 2020), we randomly sampled 10 new villages and re-visited 4 of the original ones, where we interviewed the same subjects a second time. Hence, the experimental design enables the use of both **between-subject and within-subject variation** in food scarcity and trusting behavior.

In total, we have 363 subjects in the role of Player A; 53 of them participated in both rounds.

Results

The harvest reduces scarcity. Our first result is that the prevalence of food shortages falls significantly after the harvest (Fig. 2). While 7 out of 10 households reported some degree of food scarcity before the harvest, only 3 out of 10 did so after the harvest.

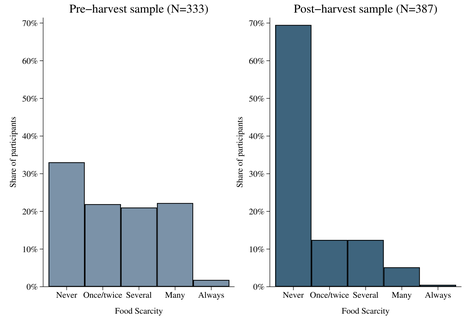

Fig. 2: Effect of the harvest on food scarcity

Trusting behavior is lower before the harvest. Our second and main result is that the amount sent in the trust game is 10% lower in the lean period that precedes the harvest (Col. 1, Table 1). The relationship is robust to excluding the second interview for subjects who participated in both rounds (Col. 2), stronger when leveraging within-subject variation (Col. 3), and even apparent when the measures are aggregated at the village level (Col. 4).

Table 1: Effect of the harvest on trusting behavior

Dep. Var.:	Amount sent in the trust game			
Sample:	Full	Restricted	Within	Village
	(1)	(2)	(3)	(4)
Pre-harvest	-258.8**	-218.6*	-583.3**	-259.7**
	(120.8)	(122.2)	(265.2)	(122.1)
Constant	3061.2***	3021.0***	4291.7***	3059.5***
	(59.60)	(61.99)	(336.9)	(63.94)
Observations	363	310	106	26
R-squared	0.0112	0.00762	0.550	0.167
Dep. Var. Mean	2942.1	2903.2	2849.1	2939.6
Individual F.E.	No	No	Yes	No

Cluster robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: Effect of the lean season on the amount sent in the trust game. *Restricted* excludes the second interview for subjects who participated in both rounds. *Within* only uses within-subject variation. *Village* aggregates at the village-level. Col. 1 and 2 report cluster-robust standard errors at the village-round level; Col. 3 and 4 report robust standard errors.

Food scarcity accounts for changes in trusting behavior. There is a strong negative relationship between food scarcity and trusting behavior (Fig. 3). When we control for food scarcity in the estimations above, the link between the harvest and trusting behavior disappears.

Using the harvest to instrument food scarcity confirms a strong causal impact of food scarcity on trusting behavior.

In line with the IV result, using **satellite imagery** we show that the increase in trusting behavior after the harvest is stronger in areas that are more reliant on crop farming for subsistence.

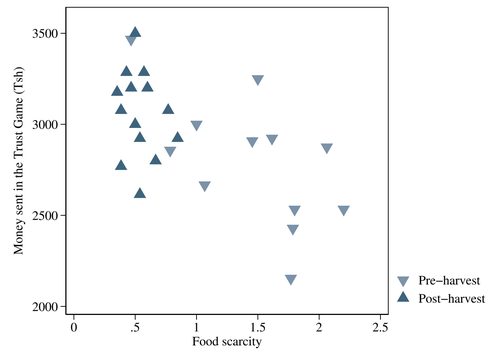

Fig. 3: Village-level food scarcity and trusting behavior

Finally, using experimental variation to test two auxiliary hypotheses, we find suggestive evidence that food scarcity reduces trusting behavior more when it is made **more mentally salient** and when the interaction partner is from **outside the local community**.

Robustness and Mechanism

We rule out potentially confouding influence from a range of factors that coincide with the harvest, such as adverse shocks, festivities, and the spread of Covid-19.

The main conclusion, that food scarcity reduces trusting behavior (and hence total welfare), is consistent with loss-averse agents being less willing to engage in risky cooperation when they are closer to subsistence level.

References

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