



Tropentag 2013, Stuttgart, Germany
September 17-19, 2013

Conference on International Research on Food Security, Natural Resource
Management and Rural Development
organised by the University of Hohenheim

The Impact of Conditional Cash Transfer on Pastoral and Agro-Pastoral Livelihoods

Wondwosen Tefera^{a*}, Kwadwo Asenso-Okyere^b

a International Food Policy Research Institute (IFPRI), Ethiopia.

b International Food Policy Research Institute (IFPRI), Ghana

Introduction

In Ethiopia various poverty-related metrics pinpoint to an alarming level of poverty. According to FAO (2012), between the periods 2010-2012 about 40.2% of the total population of Ethiopia was undernourished. Relatedly, based on the 2011 Human Development Index of UNDP, Ethiopia ranks 174 out of 187 countries with average per capita income that is less than the average of Africa south of the Sahara. To mitigate such prevalence of poverty various interventions have been and are being carried out both by the government and development partners. One approach being followed is social protection programs of which cash transfer is the notable case in point. From a rural household perspective, cash transfer has the potential to improve the food security, resilience, and asset building capacities of households. Revitalizing Agricultural Incomes and New Markets (RAIN) was a program implemented over a three-year period (2009-2012) on households located in Somali region and East Hararge zone of Oromiya region. The program involved conditional cash transfer (CCT) among other interventions. The households involved in cash for work activities were primarily engaged in natural resource management and infrastructural development, such as community roads. The study was conducted to examine whether the CCT program addressed its objective of bringing long term impact by protecting and diversifying the productive asset base of the targeted households.

Material and Methods

Due to the nature of the program more than 15 interventions were implemented and some program participants were involved in more than one intervention. However, as the focus of this paper is specifically on the cash transfer intervention, households that took part in cash for work activity alone were considered. Data was collected from 214 households in 15 program districts using multi-stage random sampling approach. The variables used in selecting control districts were agro-climatic conditions, infrastructure, and the type of livelihood pursued that were similar to program implementing districts. Accordingly five control districts were identified and 683 households were surveyed. Thus, the total sample used in this study was 897 households.

* Corresponding author. Email: w.tefera@cgiar.org

Conducting impact assessment of a given intervention requires comparing the outcome of participating households with what would be there had they not participated in the program, that is, the counterfactual (Smith and Todd, 2005). Propensity score matching (PSM) was used to match the control with the treatment (participating) households. The benefit of PSM is that in a non-experimental environment it uses information from those that have not taken part in a given intervention to identify what would have happened to project participants in the absence of intervention (Heinrich et al, 2010). Then the average of the difference between the participants and the matched non participants is used as an estimate of the impact of the intervention.

All relevant covariates that relate to treatment status and outcome were used in estimating the propensity scores. These were socio-demographic variables and community characteristics such as agro-ecological and livelihood characteristics, as well as other location related variables. Furthermore, higher order and interaction terms were also included in order to arrive at an estimated propensity score that satisfies the balancing property and be used for matching (see table 1).

Table 1. t/chi square -test of the covariates used in estimating the propensity scores

Variable	Mean value		t/chi sq. value	Prob.-value
	Treated	Control		
Sex of the household head	0.9238	0.9190	0.18	0.857
Age of the household head	41.624	41.919	-0.24	0.807
Literacy of the head (1 literate and 0 otherwise)	0.2952	0.2809	0.3	0.767
Education level of the head	1.3333	1.3	0.48	0.629
Log of plot size	0.4258	0.3509	0.97	0.335
Log of livestock owned in TLU	1.2492	1.378	-1.3	0.195
Agro-climatic zone	3.6667	3.6571	0.21	0.837
Livelihood zone	2.2905	2.3571	-1.01	0.313
Dependency ratio	0.5075	0.4778	1.44	0.15
Education squared	2.2857	2.1762	0.34	0.733
Age squared	1893.5	1901	-0.07	0.946
Dependency ratio squared	0.3001	0.2746	1.46	0.146
Education x Gender	1.2333	1.1905	0.59	0.554

Logit model was used in the estimation where program participation (i.e., 1 if participate and 0 otherwise) was the dependent variable and those stated in table 1 were the explanatory variables. Testing the matching quality and the common support situation was also performed. In the process observations that are outside of the common support region were dropped. Following the approach of Gilligan et al. (2008), 5% of the deleted observations whose propensity score were closest to the common support region were added back on both sides. The logit model was re-estimated again on the sample that fall on the common support region to generate a new propensity scores that would be used for matching. Moreover, balancing property and common support conditions were re-checked. The estimation was performed using four matching algorithms: nearest neighborhood (with one and five) matching, kernel (normal density) matching, and local linear (tri-cube kernel) matching. This helped to check the robustness of the estimation and also to ensure that the results were not driven by the selection of a particular

matching algorithm. For each impact estimates standard errors are estimated by bootstrap using 100 replicates.

Results and Discussion

The impact evaluation focused on the following outcomes that are linked to the cash transfer program. The outcomes are (i) household level food expenditure and food aid status, (ii) household food security status, and (iii) the asset building and asset protection activities of households. Livestock purchase and sale were used to explain the asset building and protection endeavors of the pastoral and agro-pastoral households. Table 2 presents the average treatment effect on the treated (ATT) using the four matching algorithms.

Table 2. Estimation of the average treatment effect on the treated (ATT)

Outcome	NN (1)	NN(5)	Kernel (Normal density)	Local linear (tri-cube kernel)
Adult equivalent food expenditure	3194.7*** (1139)	3575.71*** (1010.23)	3563.75*** (1156.14)	3481.33*** (1083.74)
Adult equivalent non- food expenditure	745.18** (326.73)	848.83** (349.04)	818.03** (331.38)	829.69** (320.93)
Food aid/transfer	-0.067 (0.0458)	-0.059* (0.0403)	-0.057* (0.0349)	-0.05 (0.0435)
Household dietary diversity score- HDDS	0.3333** (0.1558)	0.2581** (0.1289)	0.1766** (0.1446)	0.2014** (0.1424)
Household food insecurity access scale- (HFIAS)	2.5314*** (0.9377)	2.0686*** (0.9941)	2.1714*** (0.8582)	2.603** (1.078)
Livestock sale	-0.04 (0.0952)	-0.1107 (0.0963)	-0.07 (0.0913)	-0.08 (0.0824)
Livestock purchase	-0.0335 (0.0609)	-0.0404 (0.0407)	-0.0408 (0.0529)	-0.04 (0.0473)

Notes: Bolded figures are estimated coefficients, standard errors are in parenthesis, * = significant at 10%, ** = significant at 5%, *** = significant at 1%.

Impact on expenditure and food aid: Food expenditure generated positive and significant result although both the significance and magnitude level were higher for food expenditure. On average, program participant households spend on food an adult equivalent of Birr 3,195 to 3,576¹ more than the non-participants. As the project targeted poor and destitute households, it is expected that the cash transfer would increase the spending of participant households. The impact of the program on reducing food aid was not found to be robust. Though beneficiary households recorded a significant reduction of food aid/transfer under two specifications, the significance diminished with the other two models making the result inconclusive. It can therefore be argued that the increase in food expenditure was not sufficient enough to result in significant reduction in

¹ The average exchange rate from 2009 to 2012 was Ethiopian Birr 15.2 per USD

food aid. It may also suggest the presence of persistent food shortage among the participant households that made them not to be significantly different from the control households.

Impact on food security status: Food security status evaluation was performed using two standard measurements: household food insecurity access scale (HFIAS) and household dietary diversity score (HDDS). While the HFIAS measures the access to food, the HDDS examines the presence of dietary diversity. The ATT results show the presence of a significant but marginal improvement in the dietary diversity aspect of participating households but this was not significant. Community conversations and social networking might have contributed to improving the awareness of program participant households of the need and importance of addressing their dietary status despite the fact that the households were in lower food access situation.

Impact on asset building and asset protection: The ATT results revealed that there was no significant difference between the participant and non-participant households in asset building (livestock purchase) or asset protection (livestock sale). Thus, the program has not significantly encouraged participant households to build their assets.

Conclusions and Outlook

The findings of the study indicate that the conditional cash transfer has at best helped the households to improve their food security status. However, program participants fall behind the control households in terms of access to food despite marginal improvement on dietary diversity aspect. The program has not helped households to engage in asset accumulation or asset protection. Major contributing factor to this could be the approach of the program that was characterized by a limited cash transfer per household as it involved large number of participants. In addition, participant households were involved in the program for only a few months of the year and as a result, the program did not provide enough opportunity for accumulating adequate cash that could be used beyond meeting their food and other immediate expenditure needs. Hence the program was limited with respect to short term impact. It therefore, has no sustainability (long term impact) for asset building and livelihood protection. Thus, we conclude that the program was not successful in achieving its objective.

References

- FAO. 2012. The State of Food Insecurity in the World. Rome.
- Gilligan, D., J. Hoddinott, and A. S. Taffesse. 2008. The impact of Ethiopia's productive safety net programme and its linkages. Discussion Paper 00839. Washington, D.C.: International Food Policy Research Institute.
- Heinrich, C., A. Maffioli, and G. Vázquez 2010. A Primer for Applying Propensity Score Matching, Impact Evaluation Guidelines, Strategy Development Division, Technical Notes No. IDB-TN-161, Inter-American Development Bank, Washington, D.C.
- Smith, J., and P. Todd. 2005. Does matching overcome Lalonde's critique of non-experimental estimators? *Journal of Econometrics* 125(1-2): 305-353.
- UNDP. 2011. Human Development Report 2011. NY USA