Extended Abstract
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Paper/Poster Title	Can weather shocks give rise to a poverty trap? Evidence from Nigeria

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Abstract	***200 words max***
As extreme weather events are becoming more frequent, the chronic poor, being overly exposed to these shocks, risk suffering the highest price. The 2012 flood in Nigeria was the worst in 40 years and hit more than 3 million people. Using nationally representative panel data from LSMS project, I study households' asset dynamics over about a decade. I find that households hit by the flood converge to multiple equilibria consistent with the poverty trap narrative. In particular, households whose assets fell below the threshold converge to a low-level equilibrium point, whereas better endowed households converge to a high steady state. This is consistent across several empirical methods, ranging from parametric to non-parametric methods, as well as panel threshold estimation. Robustness checks further examine the validity of the finding, testing different asset indexes and flood definitions, as well as controlling for conflict-related events. Identifying a poverty trap is crucially helpful for designing poverty alleviation policies and fostering a country's development.	

Keywords	poverty traps; flood; climate shocks; asset poverty; Nigeria; poverty
JEL Code	**Q540** Climate; Natural Disasters and Their Management; Global Warming **O120** Microeconomic Analyses of Economic Development see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	***100 – 250 words***

Worldwide extreme poverty persists despite recent improvements, yet COVID-19 is expected to push 68-100 million people in extreme poverty (Mahler et al., 2020; Valensisi, 2020). This situation is further aggravated by climate change which increases the frequency of extreme weather hazards. The poor, disproportionately exposed, lack the means to cope with large shocks, and traditional and informal insurance mechanisms fail when shocks hit communities simultaneously.

The aim of this paper is to study the relationship of climate shocks and poverty persistence within the framework of poverty traps. The medium-term consequences of an extreme weather shock can be different for households depending on their initial assets. Households starting with lower asset levels risk falling below the threshold and remain trapped there, while better-off households might suffer temporary drawbacks but recover in time (Carter et al., 2007). The research questions ask the following: Whether and to what extent do extreme weather events induce poverty traps? How does the coping strategy choice affect post-shock recovery?

This paper contributes mainly to two strands of the literature: the empirical literature that tests for poverty traps and the literature on climate shocks and poverty. In particular, it extends

available empirical evidence on poverty traps to the case of Nigeria, which suffered in 2012 the worst flood in 40 years, with almost 4 million people displaced.

Methodology

100 – 250 words

Some methodological choices are needed to identify the relevant groups (flooded and non-flooded) and define a wealth index. I identify flooded areas with satellite image data from NASA's MODIS Near Real Time Floodmap products. To represent household wealth, I build an asset index using information on households' durables, agricultural tools, livestock, dwelling characteristics, land owned, aggregated with principal components extraction (Sahn and Stifel, 2003, 2000).

Testing empirically for a poverty trap is no easy task. In the literature, different methods have been used: the most common way is to measure the development of wealth over time, modelling the relationship of current with past asset holdings. Given the non-linearities, non-parametric techniques are used (Adato et al., 2006; Barrett et al., 2006; Lybbert et al., 2004). To allow for covariates, complementary parametric approaches are needed, modelling non-linearities with polynomials of lagged assets (Giesbert and Schindler, 2012; McKay and Perge, 2013; Naschold, 2013). Both have their drawbacks but combined they can provide useful insights. I further test for convergence and look at post-shock growth with a panel threshold model, which is able to identify structural breaks in panel data (Carter et al., 2007; Hansen, 2000; Wang, 2015). Then it can be tested whether below-threshold households have the same asset patters as above-threshold households. I provide comparisons for the flooded and non-flooded samples for different subperiods.

Results

100 – 250 words

Parametric regressions, looking at the asset change using lagged assets and a series of controls, show that for the whole sample after the shock convergence is found while for flooded households it is rejected. Predicting the dependent and using it for nonparametric regression shows how flooded households indeed have three equilibria, of which one is the poverty trap. The asset recursion function has the usual S shape of poverty traps. Non-flooded households, on the contrary, have a flat curve and only converge to a high equilibrium.

Panel threshold estimations confirm the existence of a mildly significant threshold among flooded households. I also find, in accordance with the previous results, that households that suffered the flood hazard differ in their growth dynamics depending on the initial asset holdings. All these findings provide empirical evidence for the creation of a poverty trap after the flood. Some robustness checks are carried out: the variation of the buffer for flood definition, using alternative asset measures, controlling for conflict and violence escalation. These validate these findings and improve the identification of the flood-affected households.

Finally, coping with a shock is highly dependent on which strategies the households can adopt. Extending the parametric regression to a series of binary variables shows some interesting correlations: non-farm wage (negative but not significant), remittances (positive and significant), borrowing (negative and significant) and assistance programmes participation (mixed sign, not significant).

Discussion and Conclusion

100 – 250 words

Most studies on poverty traps have concentrated on more homogeneous settings; Nigeria is a more complex and heterogeneous case, which requires nontrivial asset aggregation. Another major difficulty has been the limited duration of the panel and the partial refreshment which further reduced the sample size. Nevertheless, the availability of data from before and following the shock offers a valuable opportunity to study the impact of the shock on households along the distribution of wealth.

In order to determine whether the 2012 major flooding event created a poverty trap in Nigeria, this analysis used a combination of methods: the bivariate nonparametric regression, the parametric regressions and panel threshold model. The identification of a thresholds provided the basis for an analysis of the different growth patterns according to the initial asset holdings, whether they were below or above the threshold. These findings provide empirical evidence for the creation of a poverty trap after the flood. Robustness checks confirmed the general findings, while highlighting the limitations of the sample size.

By definition, absent any other (positive) shock, these households are still in poverty, in a low-level stable equilibrium. They may still be in need of recovery assistance programmes, which were probably insufficient. Moreover, their situation is likely to have been exacerbated by the current Covid-19 crisis. Adequate social protection programmes, credit availability and insurance programmes are among the most important measures that need to be implemented, as well as investing in infrastructure to reduce the impact of future floods.