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Weather Shocks and Financial Adaptation: Making Unbanked Households Secure on Rainfall Derivatives Microinsurance in Nigeria

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Problem Statement 1/2

- Weather and climate-induced shocks have continue exposing local communities to the challenges of widening food gap and economic losses, thereby making income security very unpredictable from year to year (Swiss Re, 2010).
- The difficulties and costs involved in managing covariate risk such as weather shocks are especially challenging. *Rural communities typically cannot manage covariate shock without external assistance.*
- Financial service providers have limited their activities in the agricultural sector; input suppliers serve only the least risky clients while governments' assistance is even costly *(*NEST and GCSI, 2008).
- Poor households, being exposed to uninsured risks, tend to adopt low-risk strategies that may be economically inefficient *(for instance devoting most of their land to crop varieties that promise more reliable yet lower yields).*
- Due to limited or no access to financial services, farmers manage weather shocks by their own means, which further pushes rural households into the "poverty trap" (Syroka and Wilcox, 2006; Pelling, 2007).

Problem Statement 2/2

- USAID (2006) supported that savings, and credit can smoothen production and consumption over low-magnitude loss events but are adequate for high-magnitude loss events such as extreme natural events.
- Infrequent high-magnitude loss events require a more efficient *insurance mechanism* than savings and credit.
- The failures of subsidized crop insurance schemes; financial exclusions; and increasing bioclimatic intensities have increases farmers susceptibility to higher risks; *with ideal levels of adaptation, some residual impacts from weather shocks would still lead to economic losses.*
- There is need to find more efficient insurance instruments to transfer *weather* shocks impeding livelihoods of millions of poor farm households in developing economies including the Sub-Saharan Africa (World Bank, 2010).
- This study presents a bioclimatic assessment and examines the feasibility of demand for rainfall insurance derivatives as financial adaptation for unbanked rural households in central west Nigeria.

Methods

-The study involved a household survey of 264 maize producers in Kwara and Oyo States, southern guinea savannah of Nigeria. Daily historical climate data (1981-2013) of Shaki and Ilorin weather stations were obtained from the Nigerian Meteorological Agency (NIMET), Abuja.

-The FAO NewLocClim Local Climate Estimator used in numerical weather predictions was used for bioclimatic assessment.

-Hypothetical insurance scheme was presented to investigate the potential demand for rainfall index insurance policy.

-A double bounded dichotomous choice (DBDC) response approach was adopted for WTP elicitation.

-Heckman selection approach with a first stage ordered probit was used for WTI estimation

Key Results

- Early cessation in May. Monthly rainfall uncertainties keep expanding significantly between July and August. Dry season appears early in November till March (5 months) BUT absolute dryness of 4 months till January ending. Vegetation period is shrinking, evidence of increasing dry season than expected
- Radiation index of dryness of 1.394, at an evaporation rate of 949 mm/year and rainfall deficit of 366 mm/year, confirms the region is rapidly heading towards aridity.
- Rainfall delay and early cessation could trigger huge economic consequences (food deficits and income losses) arising from loss of standing maize crops, reduction in grain sizes, and drying of germinated seeds.

Key Results

- *Farmers' sex, level of education, farming as primary livelihood, access to seasonal weather forecast, awareness of agricultural insurance and confidence in insurance company* are likely factors that could increase WTI in index insurance *(farming experience, social networks, extension services on drought management, bank credits, production risk index and finance risk index negatively influence WTI decisions).*
- Increasing farm size have significant negative effect on WTI. Probabilities from marginal effects explained that farmers' distance to nearest NIMET station and households size have significant ($P<0.05$) positive effect to increase demand for WTI in rainfall index crop micro insurance in the sub-humid.

Conclusions/Recommendations

- In Central West Nigeria, climate has drastically changed with a fast-disappearing mild climate towards harsh conditions; capable of triggering huge economic losses arisen from loss of standing crops and reduction in grain sizes at crucial stages.
- Farmers will hold back production due to widening rainfall uncertainties (delay and early cessation); need financial adaptation to adapt to increasing drought risks.
- There is demand (two-third) WTI for crop microinsurance based on rainfall derivatives.
- Local-based policy development should give thought to farmers' distance to weather station, households size, farm size and risk-averse behaviour for successful rainfall crop insurance market