

We know less than we think: Heterogeneity, Economic Organization and Policy

Christopher Udry, Northwestern University

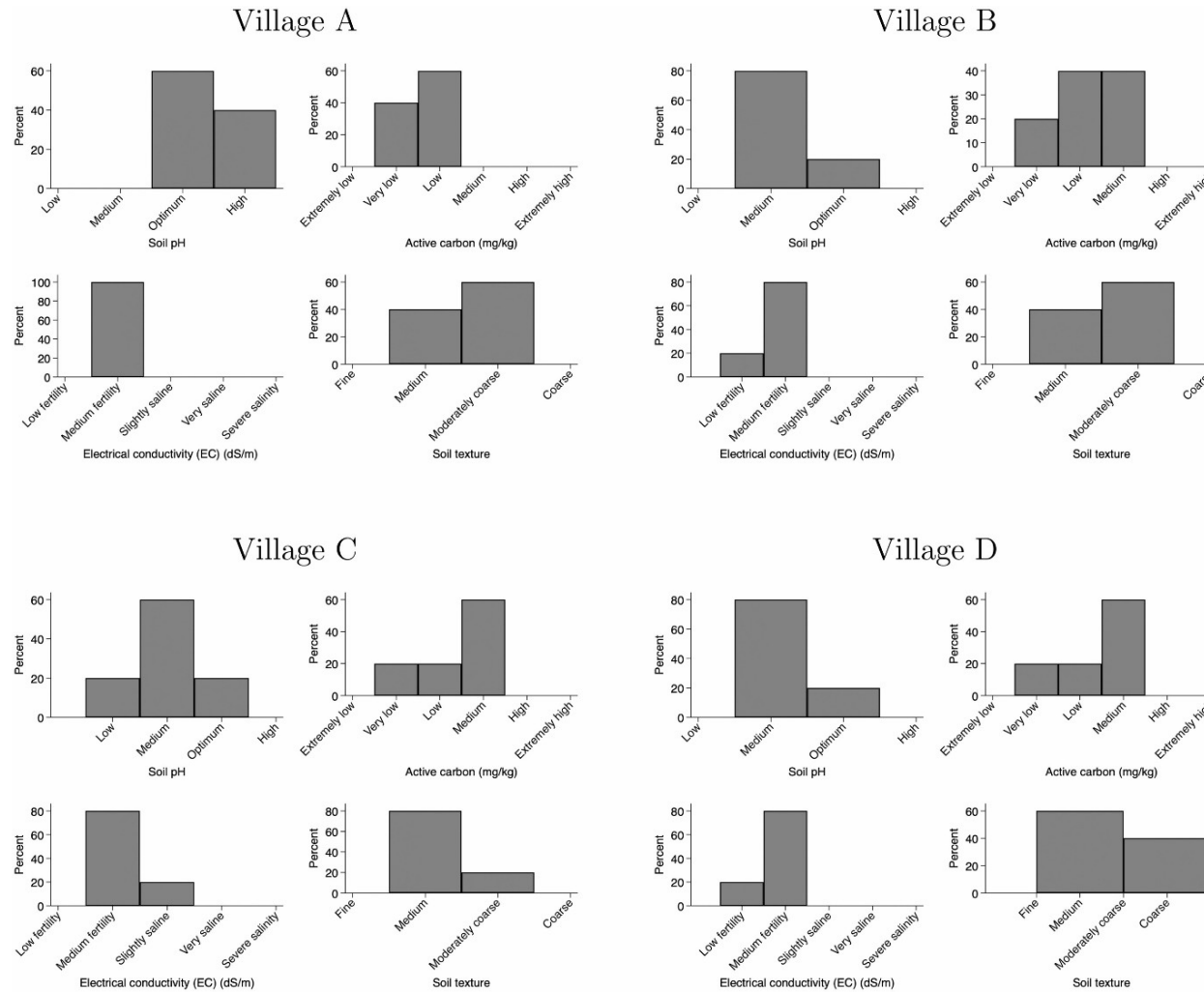
“External Validity”, bromides, and paths forward

- The past 20 years have seen a blossoming of credible estimates of causal effects of a wide range of interventions in multiple contexts
- Superb work illuminating economic organization
- But, external validity?
- The challenge is posed by apparent heterogeneity in treatment effects and behavior across individuals, geography, time and state.

Heterogeneity in Agriculture

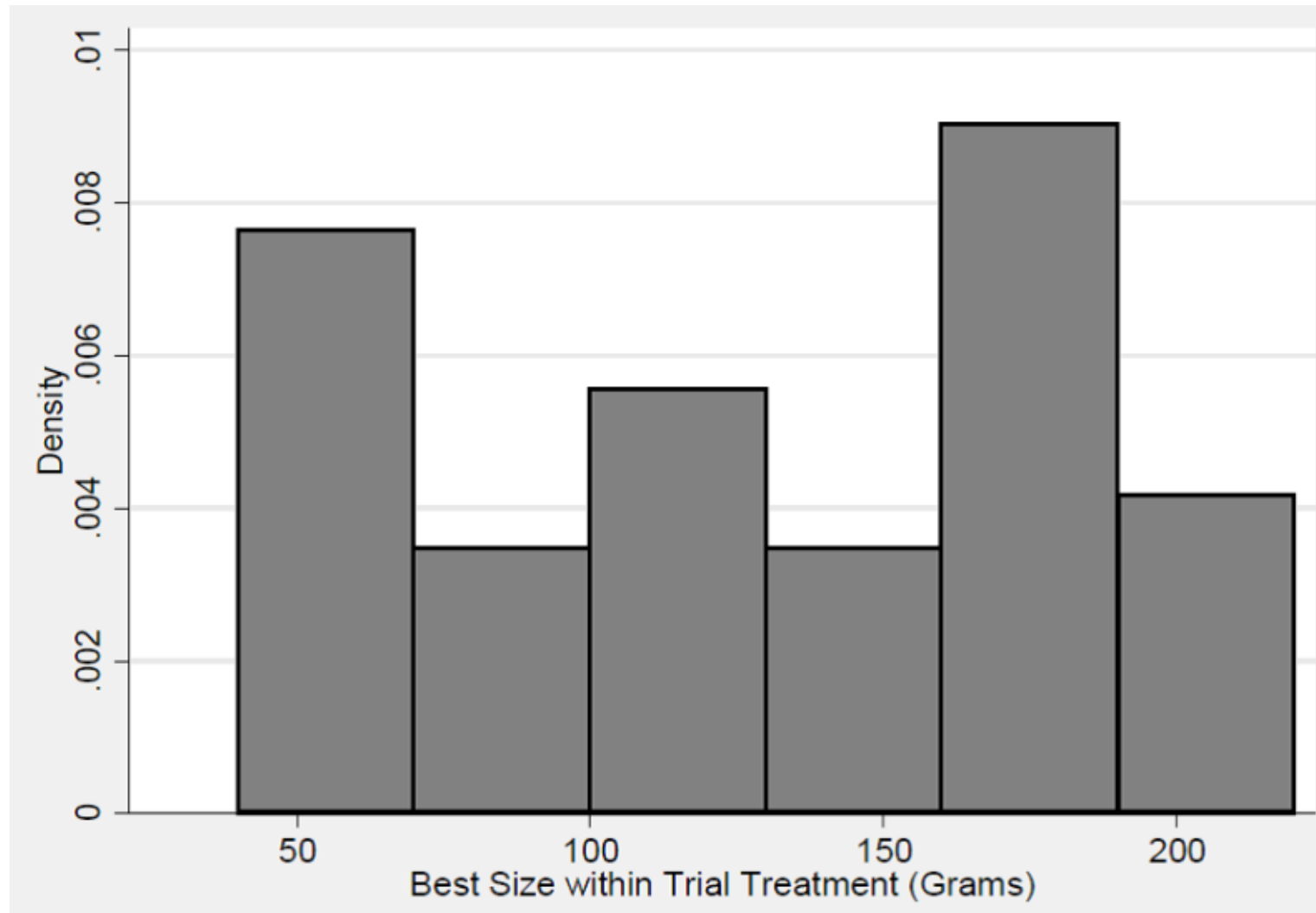
- See VoxDev, Agricultural Technology in Africa: Issue 2 (2024)
- Suri (2011) documents important heterogeneity across farmers in returns to improved seed/fertilizer in Kenya

- Soil varies within villages in Malawi

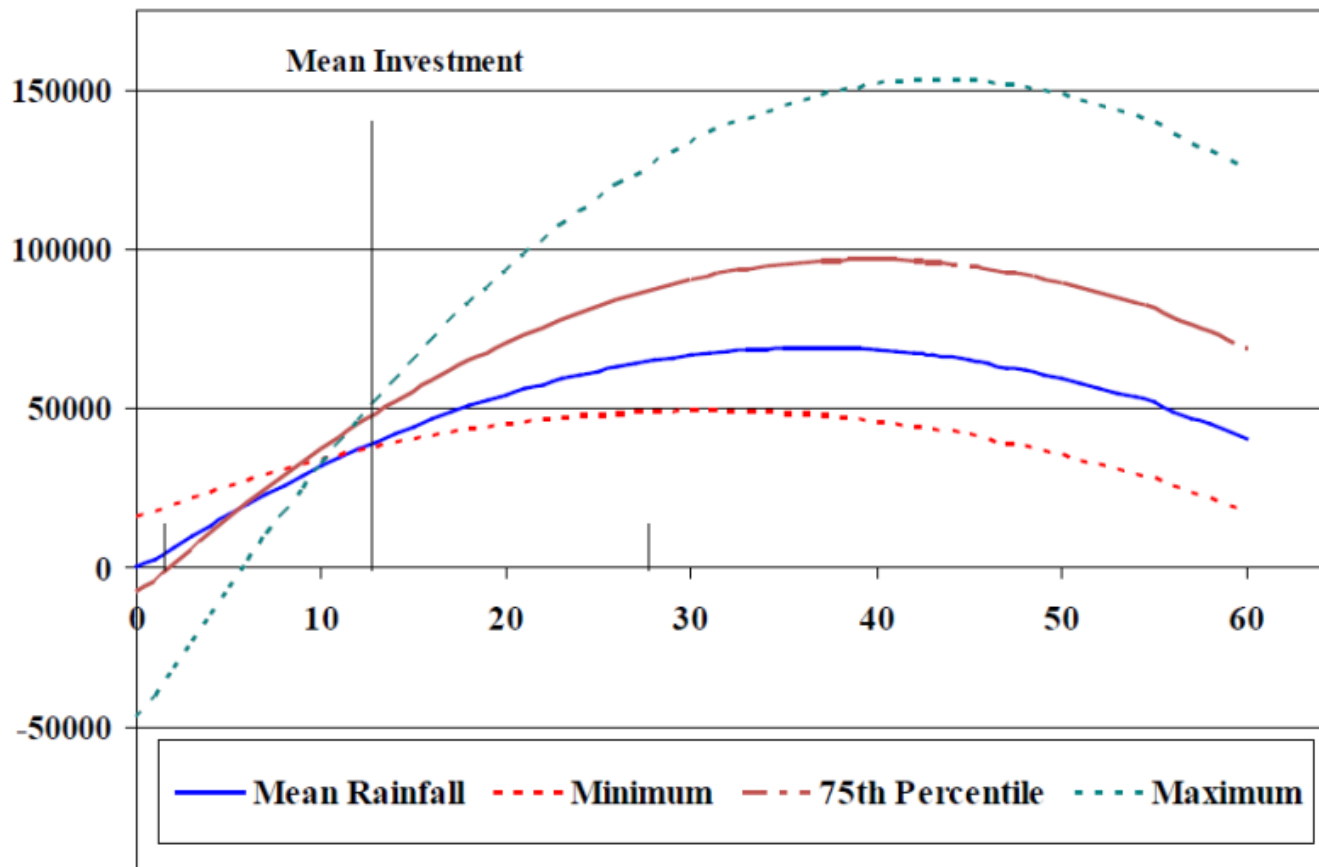


Julia Berazneva, Annemie Maertens, Wezi Mhango, Hope Michelson, 2023
 Paying for agricultural information in Malawi: The role of soil heterogeneity, *JDE*

- Hanna, Mullainathan Schwartzstein (2014) show dramatically different yield responses to input choices across farmers

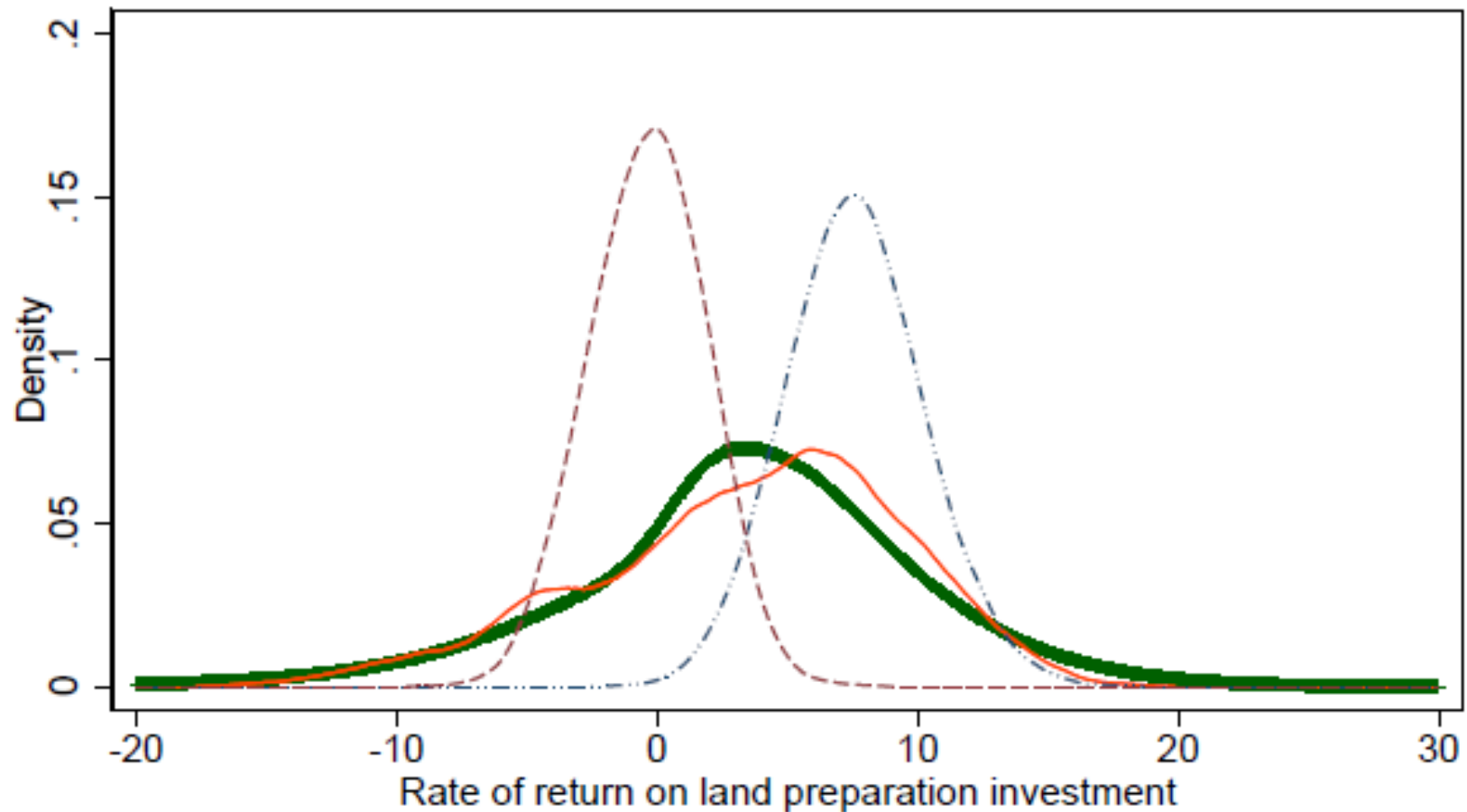


- Rosenzweig and Udry (2015) show, shockingly, that weather matters:



Just this one dimension of heterogeneity vastly increases uncertainty

Fig. 5: Distribution of Returns and Weather Shocks, Ghana



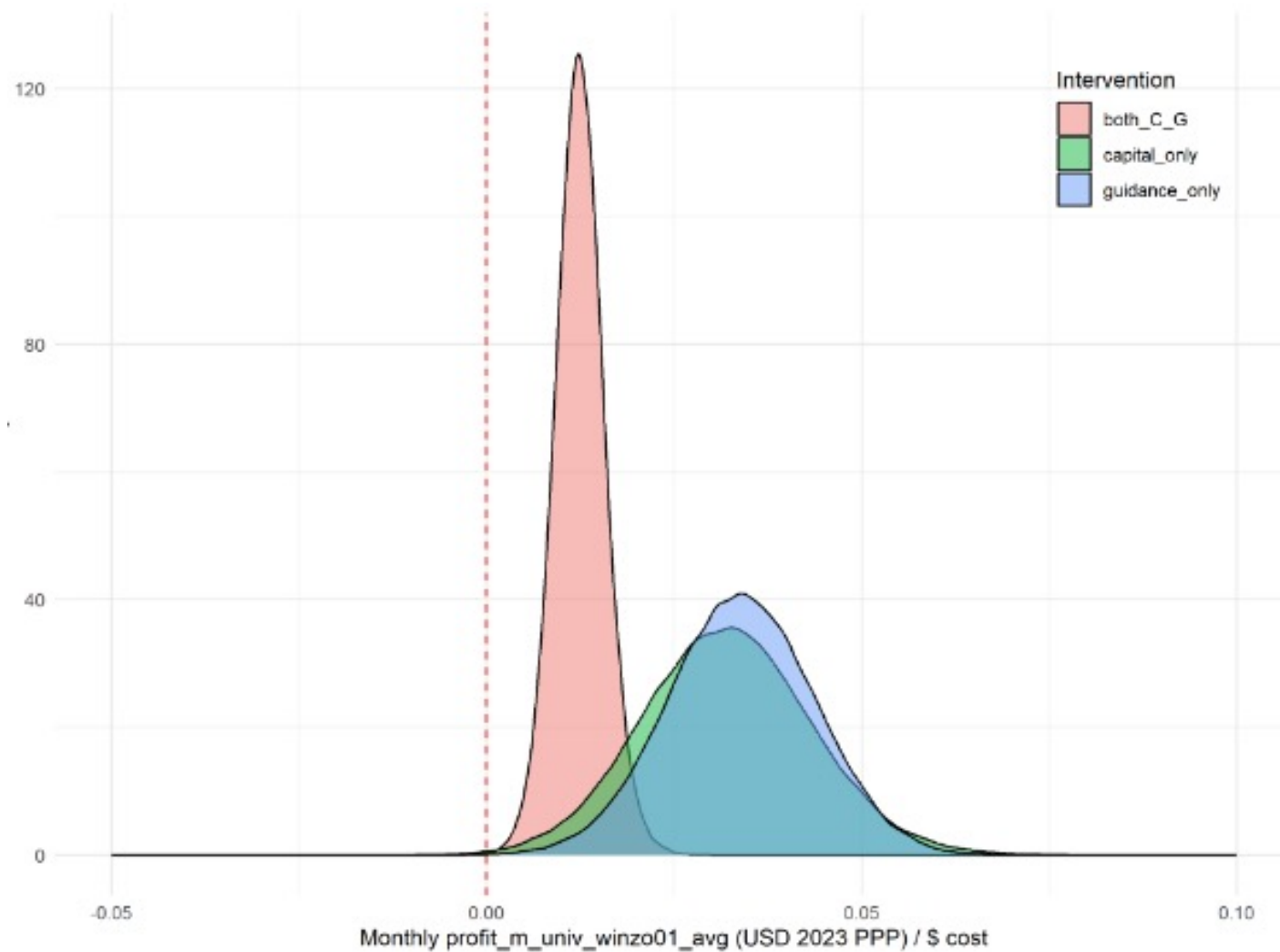
Coping with Heterogeneity

How to generalize in the face of this?

1. Expand the scope. Make the 'external' 'internal'. Replication, meta-analysis and statistical methods
2. Tell stories (make models).

Scope

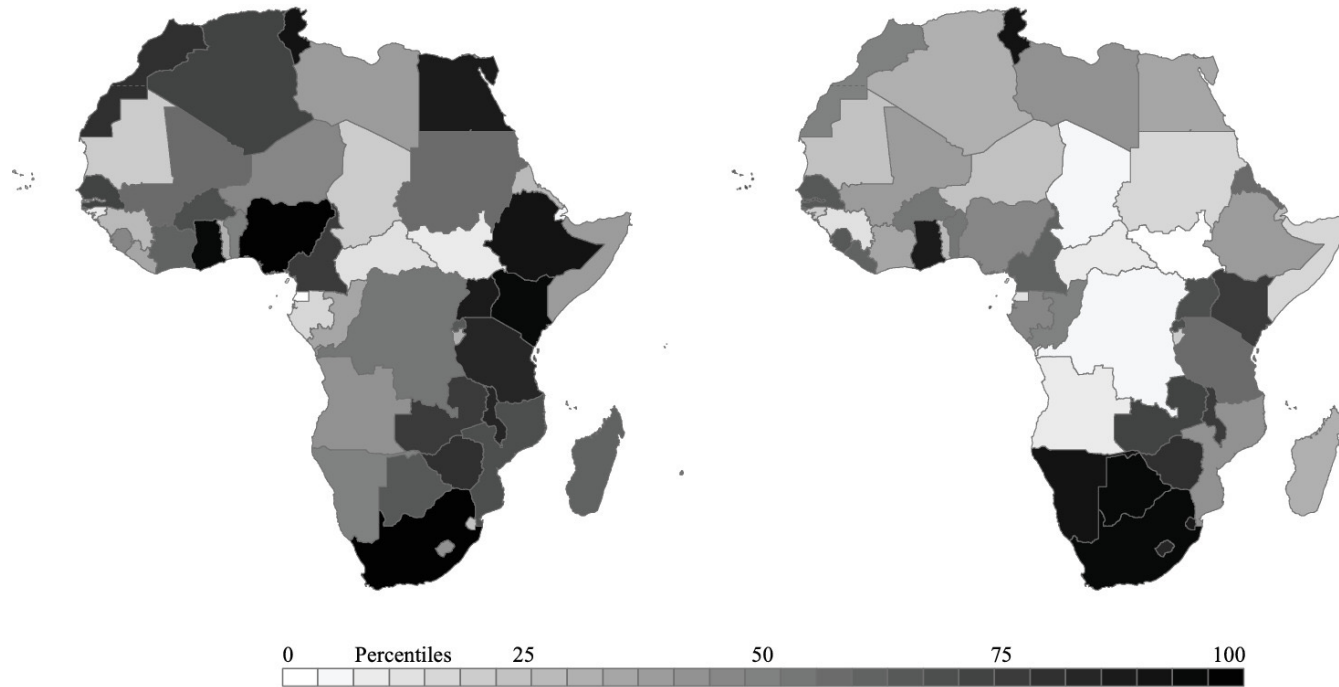
- Graduation coordinated evaluations (Banerjee et al., 2015)
- For some types of programs, more formal meta-analysis may be feasible.
- For example, De Bundel et al (2024)
 - Entrepreneurship programs
 - 47 studies (54 sites) 122,256 businesses.
 - BHM (as in Bandiera et al. 2021. "Do Women Respond Less to Performance Pay? Building Evidence from Multiple Experiments." American Economic Review: Insights)



mean	sd	2.5%	5%	50%	95%	97.5%	var	nb_rct
0.0320	0.0114	0.0101	0.0137	0.0319	0.0508	0.0549	capital_only	10
0.0339	0.0098	0.0146	0.0178	0.0339	0.0499	0.0529	guidance_only	17
0.0124	0.0034	0.0058	0.0070	0.0124	0.0179	0.0192	both_C_G	21

- For certain common policies/programs lessons from meta-analyses are coming
- For example, Crosta et al. (2024) – 114 studies of 73 UCTs
- Strong assumptions required
- More importantly, the density of existing work is orders of magnitude smaller than needed for most policy questions
- And the work is mal-distributed

Research Deserts and Oases: Evidence from 27 Thousand Economics Journal Articles on Africa*



Authorship of Papers on Africa

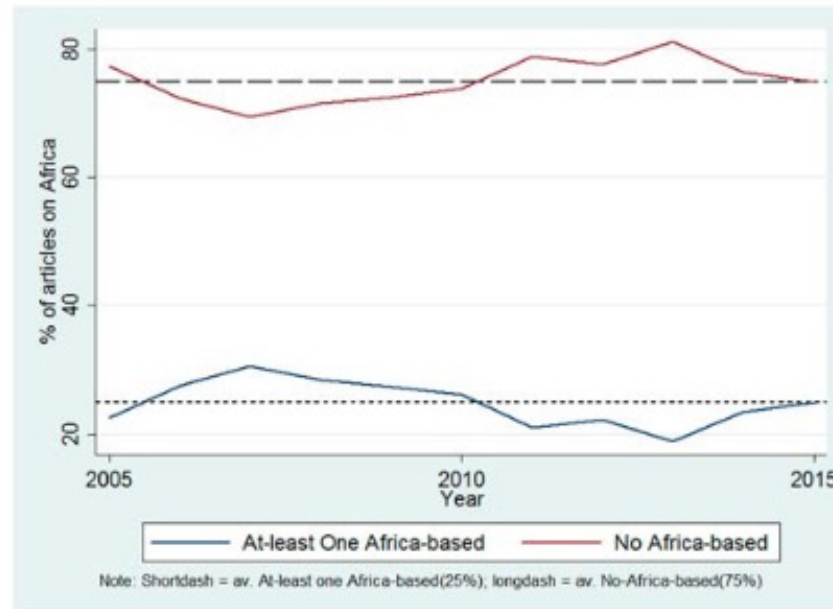


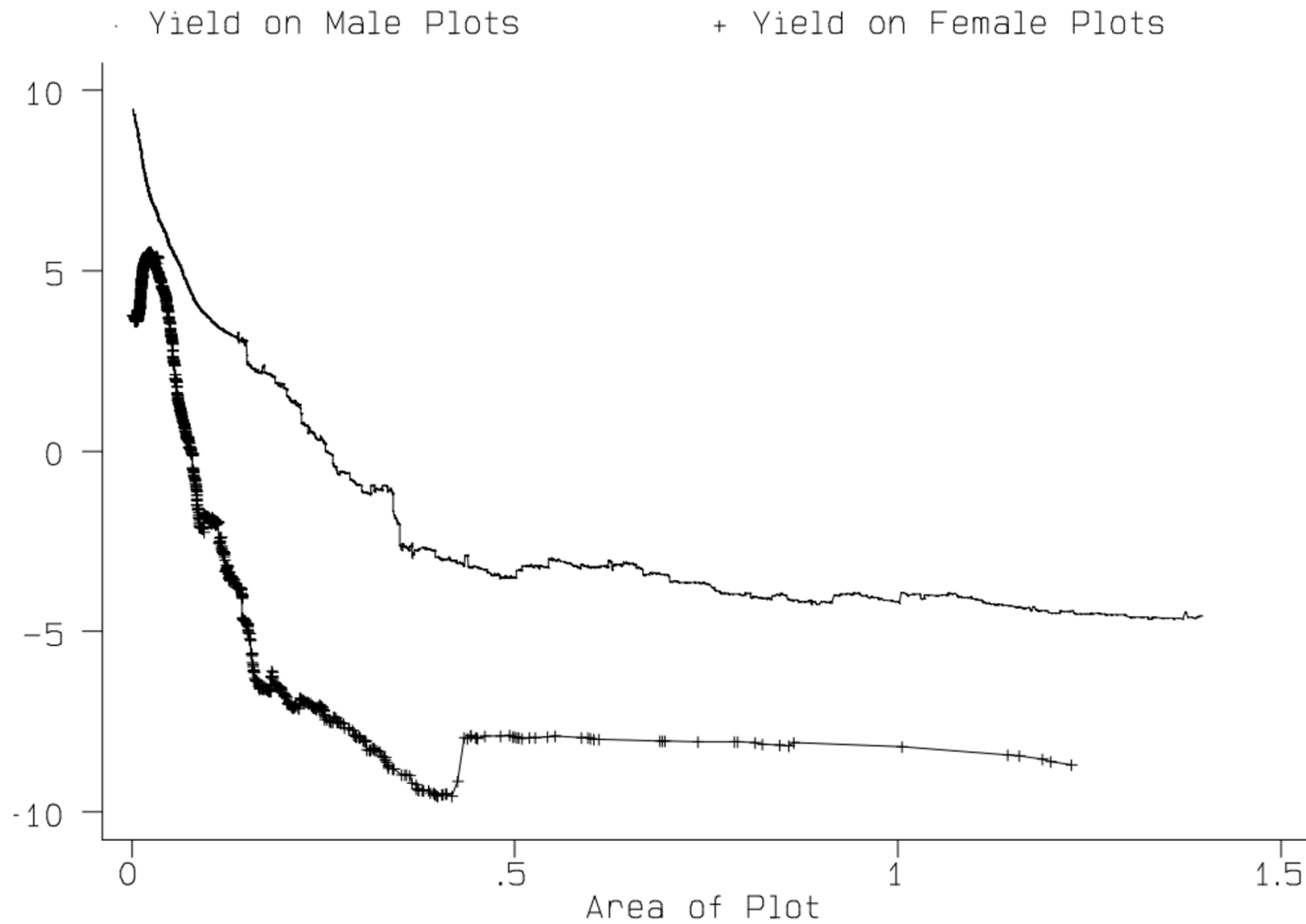
Figure 2 Representation of African-based scholars, 2005–2015

Grieve Chelwa. 2021. “Does Economics have an ‘Africa problem’? *Economy and Society* 50/1

Stories

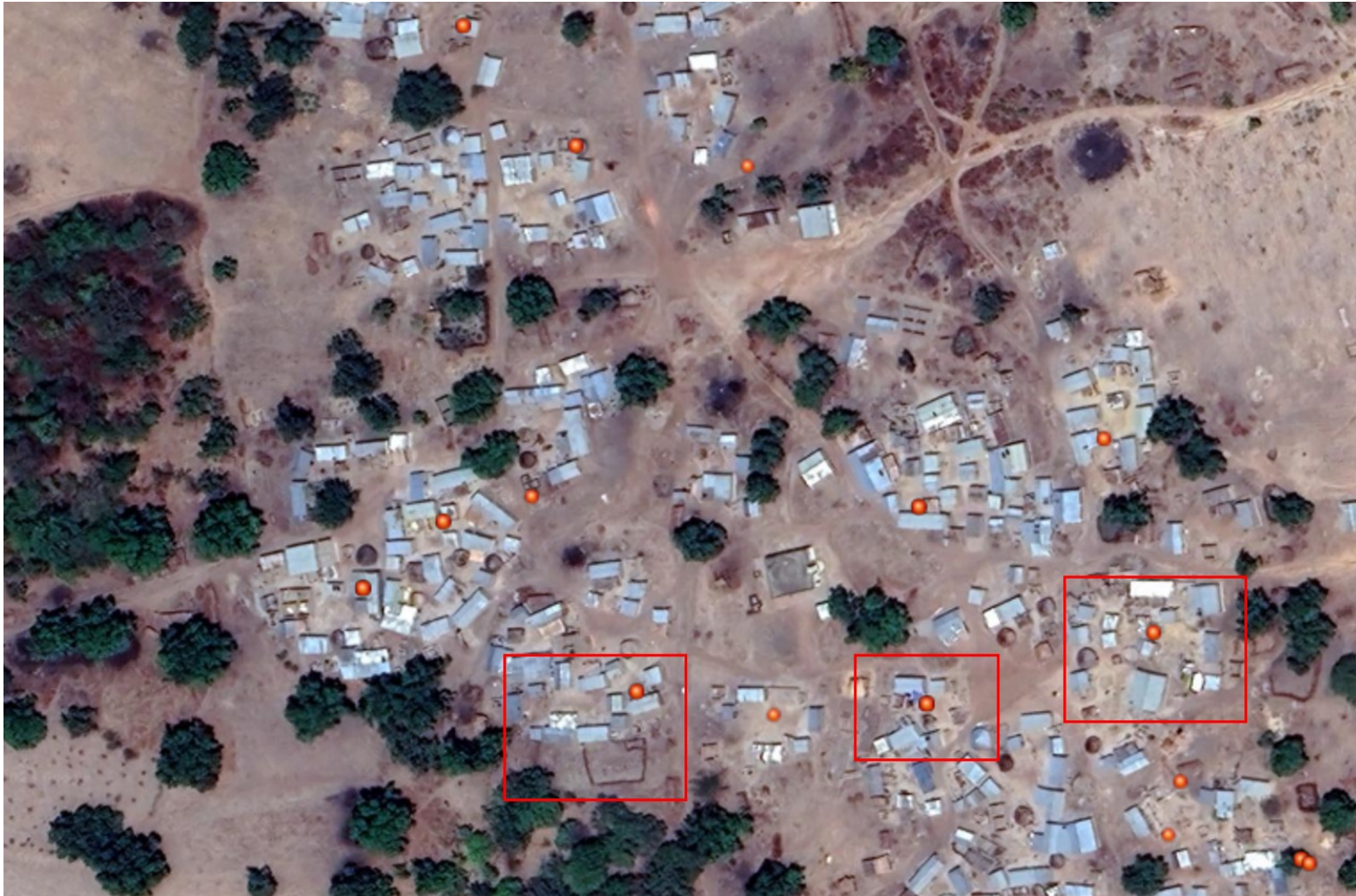
- General issue – irrelevant if RCT, specific program evaluation or other basic research
- Understand what is generalizable and what is context-specific from any given study. Drawing policy lessons from a body of literature requires a model of how the heterogenous environment affects how the policy works
- This is often not clear at first (at least to me). I'm going to provide some instances from my work. I suspect all of us could do this

1. Household organization





Local political power/land tenure security/fallowing/productivity



Again EHM fails, patrilocal extended family and labor obligations

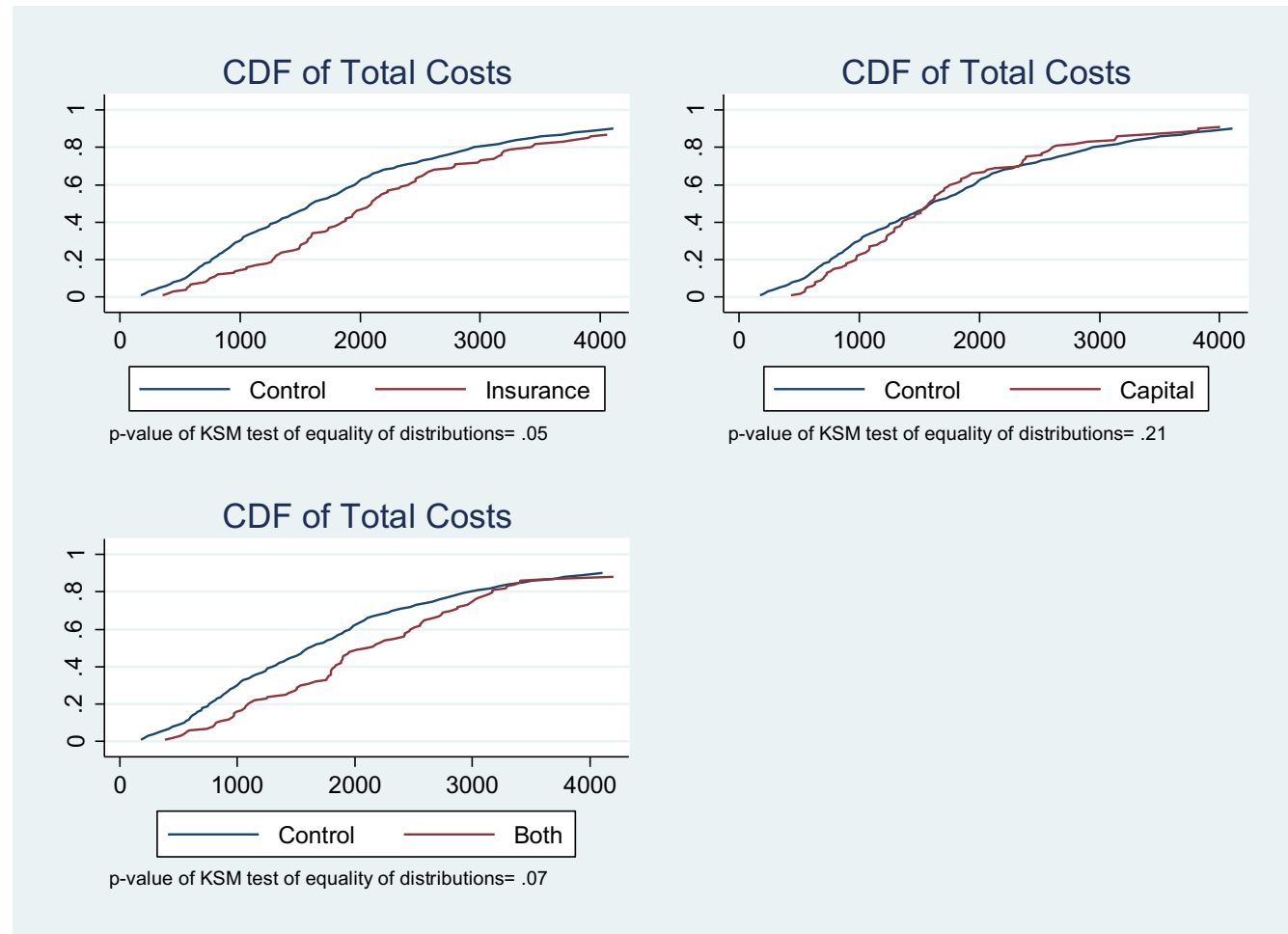
Story

- EHM insufficiently rich in many contexts.
- Mistake to expect the land tenure and inadequate following in Akwapim to be relevant in the north

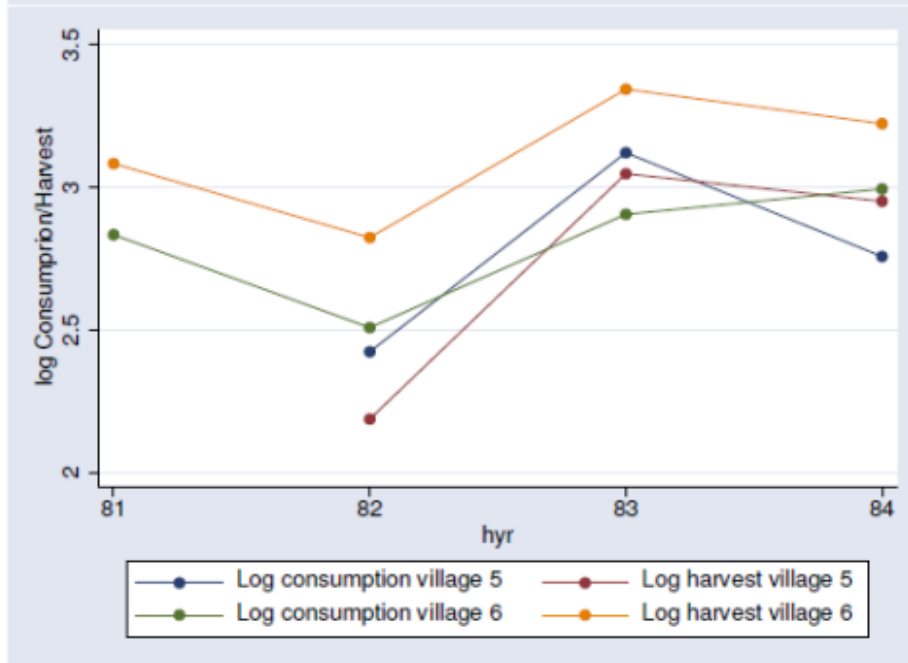
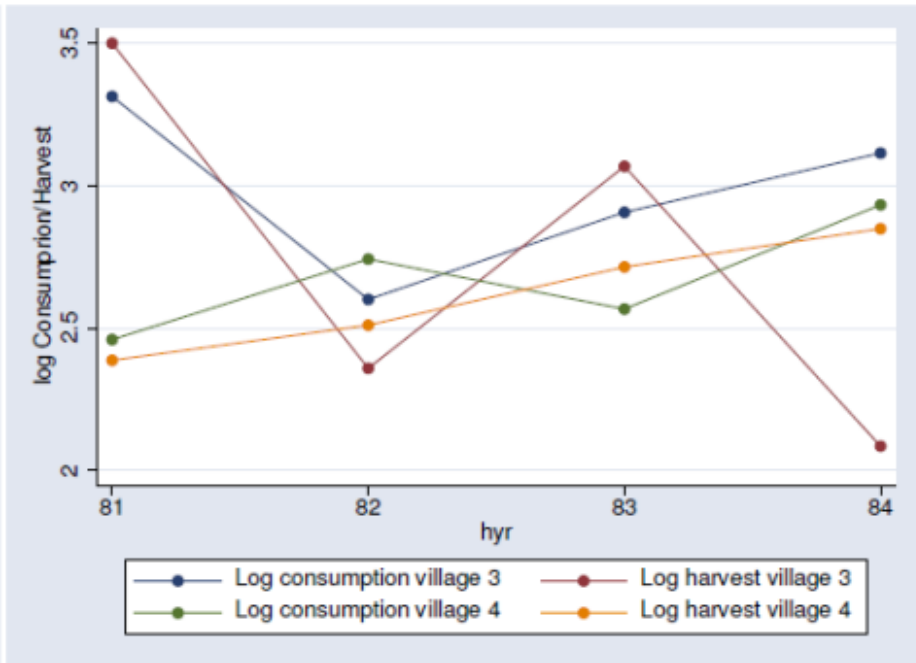
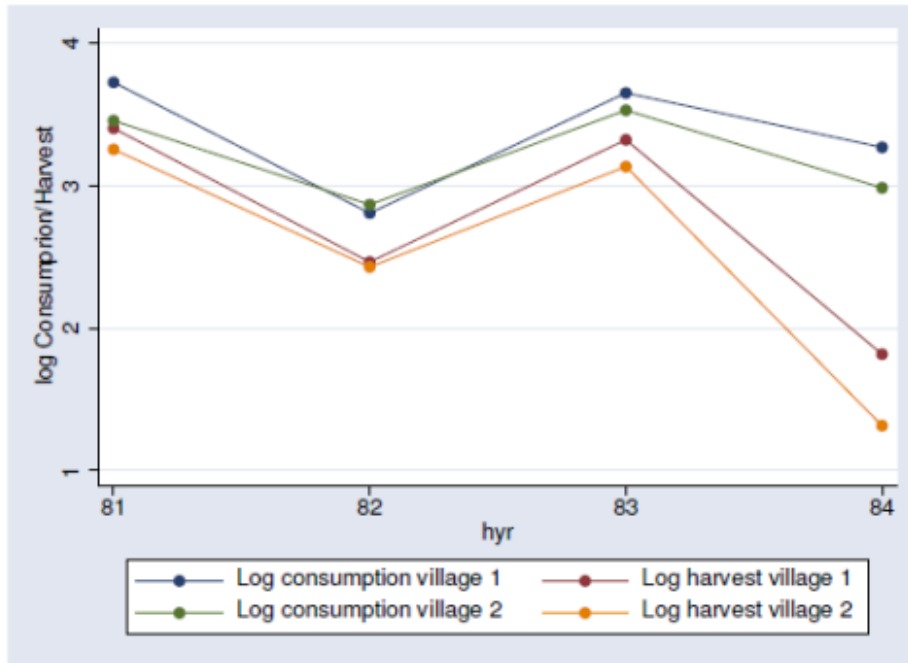
2. Rural Credit and Insurance

- Northern Nigeria - state-contingent insurance payments embedded in credit. A PE allocation of risk was not achieved, but substantial insurance was provided via these loans.
- Story – flexible financial markets supported by community-based enforcement, insurance against idiosyncratic transitory shocks

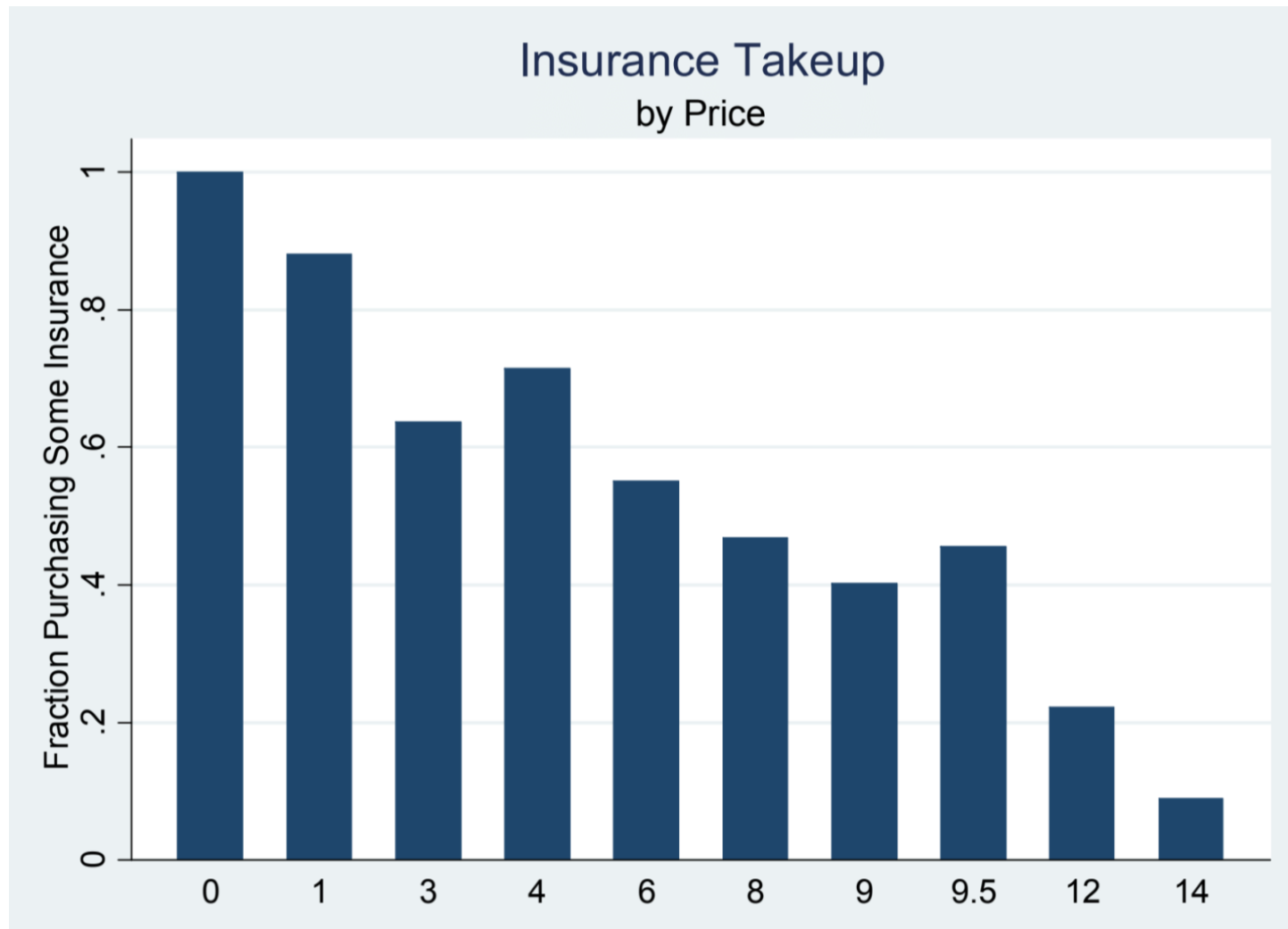
In northern Ghana, intertemporal transfers are effective



But in neighboring Burkina Faso,



3. Failures to Replicate



3. Failures to Replicate

Story -

Risk matters.

Farmers can put together resources for investment when insured against aggregate shocks

3. Failures to Replicate

3 years later, in the same area, we found no demand for and no impact of grants of a commercial rainfall index insurance product

- Product design
 - Basis risk
 - Trust
- Salience

Finding the right story is difficult