



Poverty and food security impacts of sustainable intensification: Evidence from Ethiopia.

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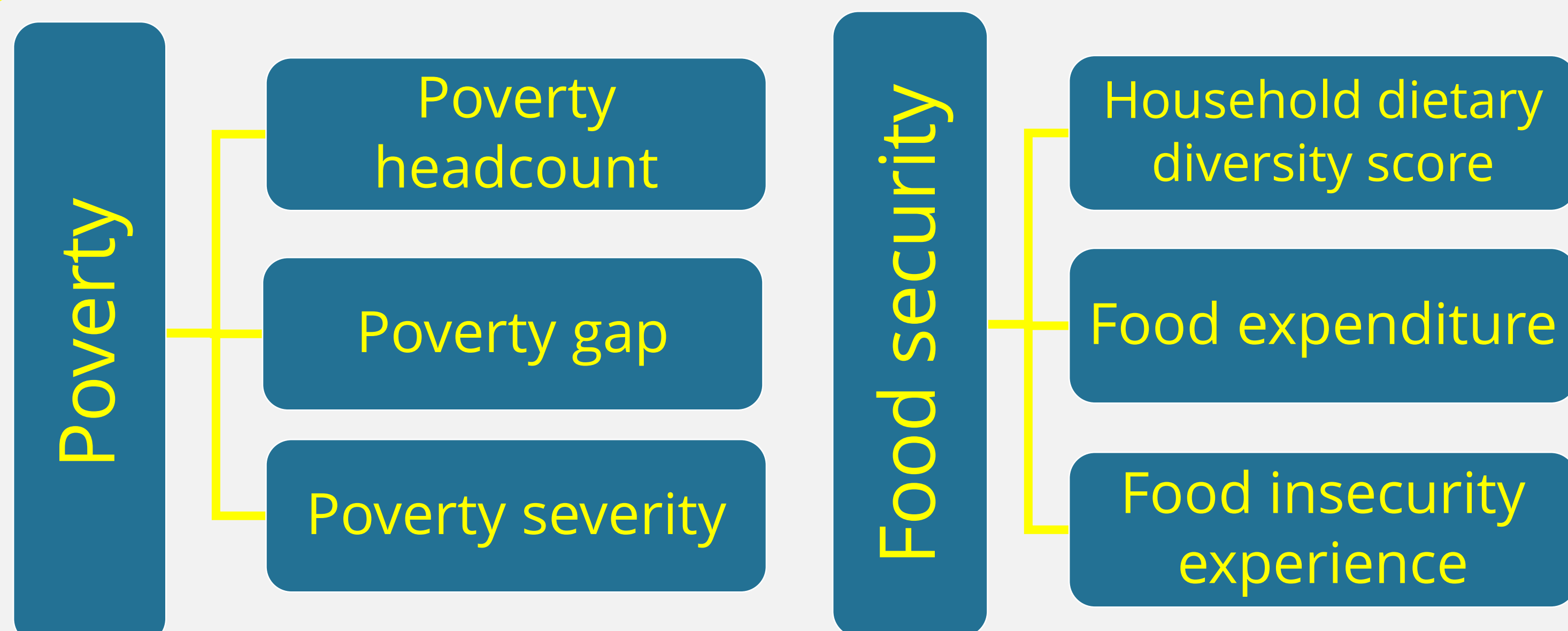
Background

- In sub-Saharan Africa, much of the productivity growth originates from the expansion of the area under cultivation [1].
- Sustainable Intensification (SI) is a “new paradigm for African agriculture” in the region [2].
- Integrated Soil Fertility Management (ISFM) is considered the leading pathway to the African Green Revolution, and Conservation Agriculture (CA) has received significant attention due to its potential to improve soil quality [2-3].
- The study contributes to the literature
 - by concentrating on ISFM practices and analyzing their adoption implications on poverty and food security outcomes;
 - by examining the joint effects of ISFM and CA adoption.

Data

- We employ household-level panel data collected from a random sample of farm households in 15 districts across 10 zones in southwestern Ethiopia.
- The survey was specifically designed for collecting data on smallholder farmers' risk management and innovation strategies and their impacts on poverty and resilience.
- Historical rainfall data between 1981 and 2018 extracted from the Climate Hazards Group InfraRed Precipitation with Station data [4].

Methods



To overcome potential endogeneity, we apply the multinomial endogenous switching regression (MESR) model and employ two instrumental variables:

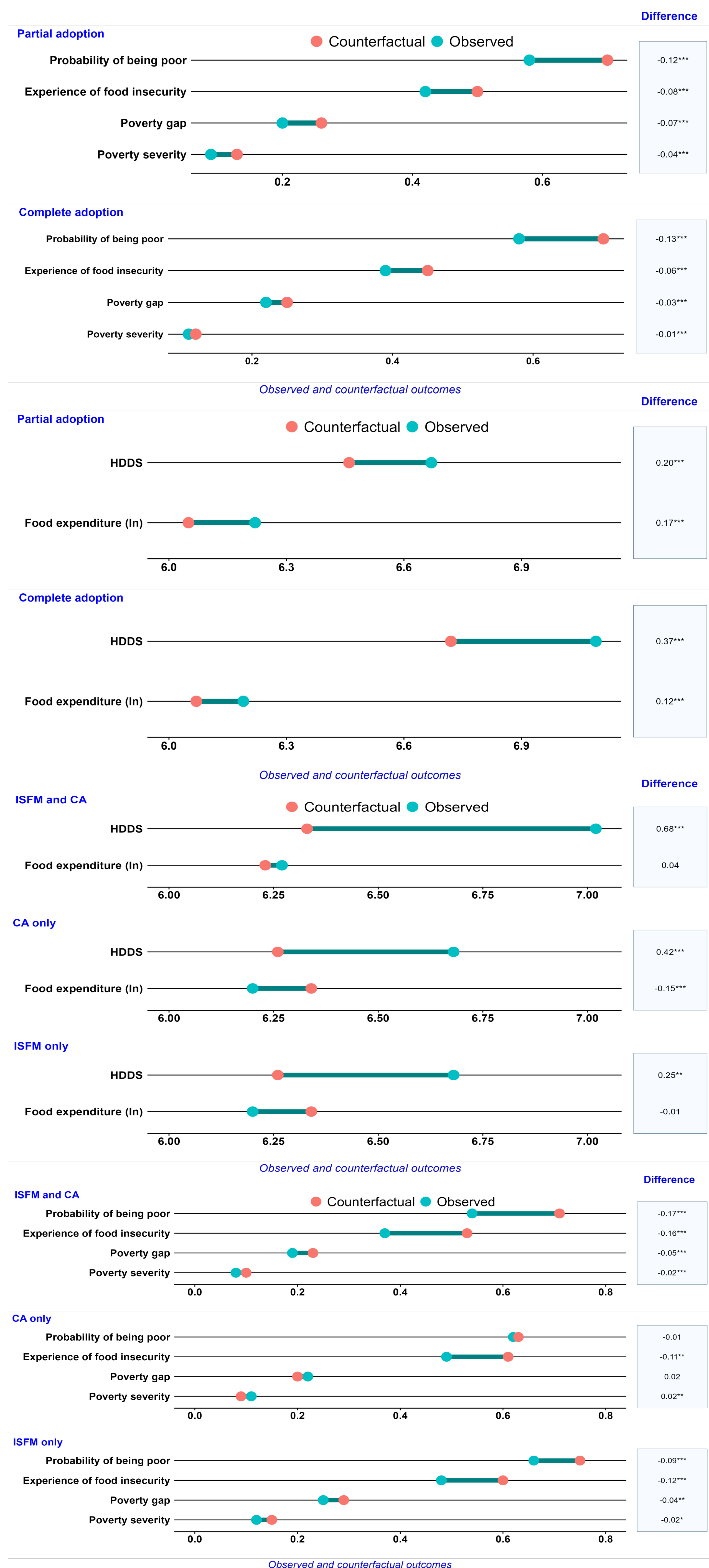
the standard deviation of rainfall between 1981 and 2018

the historical average of the rainfall between 1981 and 2018

Conclusions

- **ISFM technologies has positive implications for smallholder households in terms of poverty and food security, and these benefits are likely to gain a noteworthy boost if ISFM technologies are combined with CA practices.**
- **For most of the outcome indicators, we did not find any evidence of positive returns from CA adoption.**
- **CA practices should be complemented with ISFM technologies.**

Results



- [1] Jayne, T. S., & Sanchez, P. A. (2021). Agricultural productivity must improve in sub-Saharan Africa. *Science*, 372(6546), 1045–1047
- [2] Petersen, B., & Snapp, S. (2015). What is sustainable intensification? Views from experts. *Land Use Policy*, 46, 1–10.
- [3] Giller, K. E., Witter, E., Corbeels, M., & Tittonell, P. (2009). Conservation agriculture and smallholder farming in Africa: The heretics' view. *Field Crops Research*, 114(1), 23–34.
- [4] Funk, C., Peterson, P., Landsfeld, M., Pedreros, D., Verdin, J., Shukla, S., ... Michaelsen, J. (2015). The climate hazards infrared precipitation with stations—A new environmental record for monitoring extremes. *Scientific Data*, 2(1), 150066.

