

APPENDIX 5 Synergies

The analysis in the main body of the article reveals a story of complementarity between microinsurance and cover cropping. Here, we examine whether the strategies, when implemented together, lead to *synergistic* effects. We conceptualize a synergy as a situation in which “the sum is greater than the parts”. In this case, this represents:

$$Benefit_{both} > Benefit_{CC} + Benefit_{Ins}$$

where the “Benefit” is measured in the same way as shock absorption (Equation 1 in the main manuscript).

The results (Figure A5.1) reveal that the modeled strategies exhibit synergies with respect to shock absorption in the long-term. In the short term, however, the combined effect is less than the sum of its parts. This is mainly explained by cover cropping’s short-term detriment to shock absorption while soil organic matter (SOM) is being built. The long-term synergy is not surprising, given the structure of the model; each strategy operates through distinct mechanisms: cover cropping through the building of SOM and microinsurance through income stabilization. Each of these mechanisms enables the wealth-SOM feedback loop, consequently contributing to higher income. Due to this feedback, the combined effect of the strategies is heightened, and therefore synergistic.

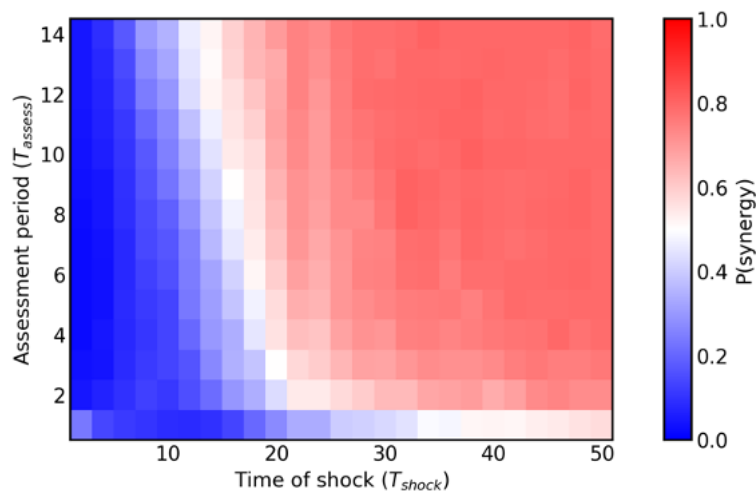


Figure A5.1: Probability that both strategies together provide larger benefits than the sum of both strategies separately. This represents the outcomes for a “middle” household and a 0.2 magnitude drought.