

# Meso-level insurance: Overcoming basis-risk and cost impediments of micro-level weather index insurance?

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## Abstract

*Purpose* – Using yield and weather data for a country in central Asia, we investigate the magnitude of weather induced revenue losses for different risk accumulators (e.g., producer organizations, agribusiness, government institution) in the agricultural sector. We then design weather index insurance products adequate to compensate these revenue losses and analyze their hedging effectiveness.

*Design/methodology/approach* – We design the weather insurance as a put-option on a cumulated precipitation index to compensate drought induced revenue losses. The insurance product is modeled for different aggregation levels of yield data reflecting the respective yield risk of different risk accumulators, but also the differences of rainfall and yield data availability.

*Findings* – We find that aggregated yield data and a low number of weather stations allow for designing index based weather insurance products with highest hedging effectiveness on aggregated, i.e., meso-level.

*Practical implications* – Our findings suggest that meso-level insurance products bear a large risk mitigation potential for risk accumulators but also for farm households if the contract design allows for transferring insurance payouts.

*Originality/value* – We are the first investigating the potential of weather index insurance for different risk aggregation levels in the agricultural sector.