Experimental Design for Market Unraveling in Climate Insurance

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Research Objective

This project explores how asymmetric information between buyers and sellers in index-based climate insurance markets can lead to market unraveling, where high-quality sellers exit due to misinformed buyer choices. Building on insights from contract theory and behavioral economics, we aim to test whether targeted information interventions can improve welfare for both sides and reverse adverse selection dynamics.

My Contribution

- Designed and programmed a multi-round oTree experiment simulating buyer–seller interactions under varying information conditions.
- Developed a probabilistic threshold interface for sellers to select rainfall-triggered payout levels, shaping both expected value and buyer perception.
- Built randomized buyer assignment and visual framing treatments to manipulate perceived contract quality and inferential noise.
- Ensured scalable backend data collection with round-level role logic, enabling future econometric estimation of strategic responses to transparency.

Experimental Structure

- **Sellers** choose a rainfall threshold that determines the contract's risk–return profile.
- **Buyers** receive fixed-price contracts without access to the threshold, mimicking real-world information asymmetries.
- Treatments consist of the type of information the buyers receive: raw probabilistic data, advertising, or general information about climate change.
- Outcome metrics include contract uptake, seller strategy, buyer payoff, and total market efficiency.

Research Relevance

Unlike standard models predicting mutual welfare loss under adverse selection, this project aims to show that improved information design can lead to Pareto improvements. By giving buyers limited but interpretable insight into contract structure, the experiment tests whether high-quality sellers can remain competitive while improving buyer confidence and market stability.

Demo Access can be found HERE