Detecting manipulation of each individual case is difficult:

- Search through massive order submissions and cancellations;
- Establish the manipulation intent behind trading activities.

**Financial market manipulation** refers to the practice of submitting spurious orders to mislead other traders’ beliefs and make profits.

**Market settings**:
- Fundamental shocks
- Observation noise
- Degree of cloaking $K$
- Presence of manipulation

**Experiments and Results**
- Spurious orders to mislead other traders’ beliefs.
- **Market Model**

**Agent-Based Market Model**
- **Background Traders** [Wang & Wellman 2017]
  - Heuristic belief learning (HBL) [Gjerstad & Dickhaut 1998] learns from the exposed order book to approximate the probability of an order being accepted and chooses a price to maximize expected surplus.

**Exploiter**
- Accepts any sell order at price lower than a certain threshold; manipulates or waits; accepts any buy orders at higher prices.
- “Safe” manipulation: maintains a large volume of buy orders at a tick behind the best visible bid, aiming to push price up.
- “Risky” manipulation: probes the market by submitting a series of orders at slightly higher prices to reveal the cloaked bids, and manipulate at a higher visible price.

**Stage 1**: Cloaking entails a tradeoff between preserving information and reducing the incentive to manipulate.

**Stage 2**: The benefit of cloaking’s improved robustness to manipulation can outweigh its associated efficiency costs in markets with moderate shocks.

**Stage 3**: The effort and risk of probing a cloaking mechanism in highly dynamic markets usually exceed the gains.