**Assignment:**

**Bubbles in Financial Markets**

# 1. Background

**In a bubble in financial market experiment** subjects trade a finite-lived asset in a continuous double-auction market over multiple periods. In each period, every share pays a dividend with known expected value, and the asset expires worthless at the end. The **fundamental value** at any period is the expected dividend multiplied by the number of remaining periods. Subjects begin with cash and shares; they trade by posting bids/asks in double auctions, and profits equal final cash plus total dividends received.

**Standard economic prediction.** In theory, with common knowledge of payoffs and fully rational, risk-neutral, profit-maximizing traders, no trade should occur in equilibrium. All agents already agree on the asset’s fundamental value, which is simply the expected present value of its remaining dividends. If trade does occur, it can only take place at that fundamental value. Prices should therefore equal fundamentals period by period, declining deterministically as the asset’s remaining life shrinks. Under this benchmark, bubbles and persistent overpricing cannot arise.

**Experimental results.** The seminal experiments of Smith, Suchanek, and Williams (1988) directly contradicted the no-trade theorem. In their laboratory markets, subjects actively traded despite full information and common knowledge of fundamentals. Prices systematically rose above fundamental values and then crashed as the asset’s life approached its end — creating pronounced “bubbles and crashes.” This pattern has been replicated in numerous follow-up studies, establishing bubbles in laboratory asset markets as a robust and well-documented phenomenon.

# 2. New Research Question

Are bubbles a result of inexperience? If bubbles reflect confusion, misunderstanding of fundamental values or lack of familiarity with trading in a lab experiment, then repeated exposure should allow subjects to learn and converge toward fundamental pricing as predicted by theory.

**Hypothesis.** Experienced traders will anchor prices closer to fundamentals, and bubbles should diminish or disappear.

# 3. Two Experiments

**Experiment A**

* 72 subjects recruited among undergraduate students, divided into 6 sessions of 12 subjects.
* In each session, subjects trade in **5 consecutive markets**.
* Each market has **15 periods** of continuous double‐auction trading.
* Each asset pays a random dividend each period (0, 8, 28, or 60 francs, each equally likely); asset expires after period 15.
* At the start of each market, **each subject receives 600 francs in cash and 4 assets**.
* **No short selling or borrowing**; all trades must be cash/position feasible.
* After each period: last price, volume, and order book snapshot are displayed.
* At the end of the experiment, subjects are paid their total earnings (cash + dividends – purchases) with the following exchange rate **100 francs = $1**.
* In the first 3 session the **fundamental values are displayed** on the subjects’ screen each period. In the last 3 sessions the **fundamental values are not displayed** (subjects only know the dividend rule).

**Experiment B**

* 96 subjects combining undergraduate students and professional traders on the NY stock exchange, divided into 8 sessions of 12 subjects.
* Each market has **15 periods** of continuous double‐auction trading.
* Each asset pays a random dividend each period (0, 8, 28, or 60 francs, each equally likely); asset expires after period 15.
* At the start of each market, **each subject receives 600 francs in cash and 4 assets**.
* **No short selling or borrowing**; all trades must be cash/position feasible.
* After each period: last price, volume, and order book snapshot are displayed.
* At the end of the experiment, subjects are paid their earnings (cash + dividends – purchases) with the following exchange rate **100 francs = $1**.
* Treatments vary the proportion of professional traders in the session. Two sessions are conducted with 3 professionals and 9 students; two sessions are conducted with 6 professionals and 6 students; two sessions are conducted with 9 professionals and 3 students; two sessions are conducted with 12 professionals.

# 4. Your Task

1. **Describe the game:** In your own words, explain what the game is, what standard economic theory predicts, and what the early experiments actually found. Explain why an economist may be interested in testing the new hypothesis.
2. **Compare the two experiments with respect to their ability to properly test the new hypothesis:**
   * What are the strengths and weaknesses of each experiment?
   * Which design do you prefer, and why?
3. **Analyze data:**
   * Conduct statistical analysis on the dataset associated with your chosen experiment.
   * State clearly which tests you use and the assumptions required.
   * Report your results and explain whether they support or reject the hypothesis.
4. **Critical reflection:** Based on your analysis, discuss whether the experiment you studied was well designed to test the hypothesis. Can you think of things you would have designed differently to the test the hypothesis?
5. **For Master Students Only: Propose a new hypothesis, design, and data analysis plan:**
   * **Hypothesis:** State a new hypothesis. Specify the expected outcome(s) and direction based on theory (or intuition).
   * **Design:** Treatment(s), rounds, sessions, assigned roles, feedback etc.
   * **Data analysis plan:** detailed discussion (including assumptions, power, pros and cons) of tests, statistical techniques to be used.

# 5. Deliverables & format

* **10–12 slide deck** for a 15 minutes presentation.
* **3–5 page memo** (clear, concise): design, methods, results, critique.
* **Code + data**.