Mock presentation and discussion:

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Confidence , Self-Selection, and Bias in the Aggregate

by Benjamin Enke (Harvard University, NBER)
Thomas Graeber (Harvard Business School)
Ryan Oprea (UC Santa Barbara)

American Economic Review 2023, 113(7): 1933-1966

Motivation

- **Behavioral economics documents r**
- **Economics often cares about aggre**
  - Market prices (e.g., stocks, housing prices)
  - Allocations (e.g., housing)
  - Group decisions (e.g., board members vote on in
- **How do individual errors affect aggregat**

  → limited effect (i.e., wealth effects, arbi
- **Psychological forces and beliefs may aff errors influence aggregate outcomes**

Research questions

- **Do social institutions filter out behavioral biases through self-selection?**
- **And why does filtering work for some biases but not for others?**
- **Why it matters?**
- We can predict when lab-measured biases are relevant for markets, auctions, and organizations.

Preview of results

- Institutional filtering is predicted by the confidence-performance correlation in the population *(not by the error frequency or average overconfidence)*
- Methodologically valuable → researchers can estimate institutional filtering in the laboratory of a given cognitive bias without implementing lab institutions merely by eliciting confidence levels

Related literature

- **Behavioral anomalies and market outcomes**
  (e.g., Russel and Thaler 1985; List 2003; Barberis and Thaler 2003, Charness and Sutter 2012)
- **Self-selection and excess entry**
  (e.g., Hollard and Perez 2021)
- **Confidence and average overconfidence**
  (e.g., Moore and Healy 2008; “bias blind spot” Scopelliti et al. 2015)

Theoretical framework

Key idea

- Aggregate outcomes depend on who participates more intensively
- Self-selection is driven by confidence in one's own decision

Simple framework

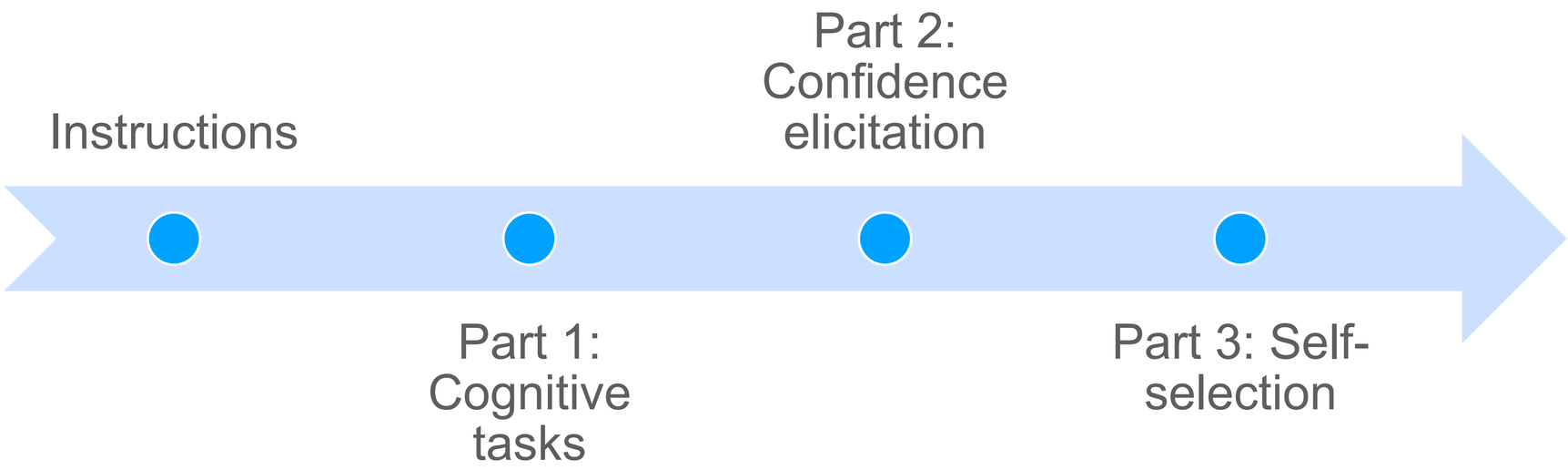
- Individuals differ in:
  - Task performance
  - Confidence
  - Participation intensity
- Institutions weight individuals by their participation

Main hypothesis:

- Biases are filtered if and only if confidence and performance are positively correlated

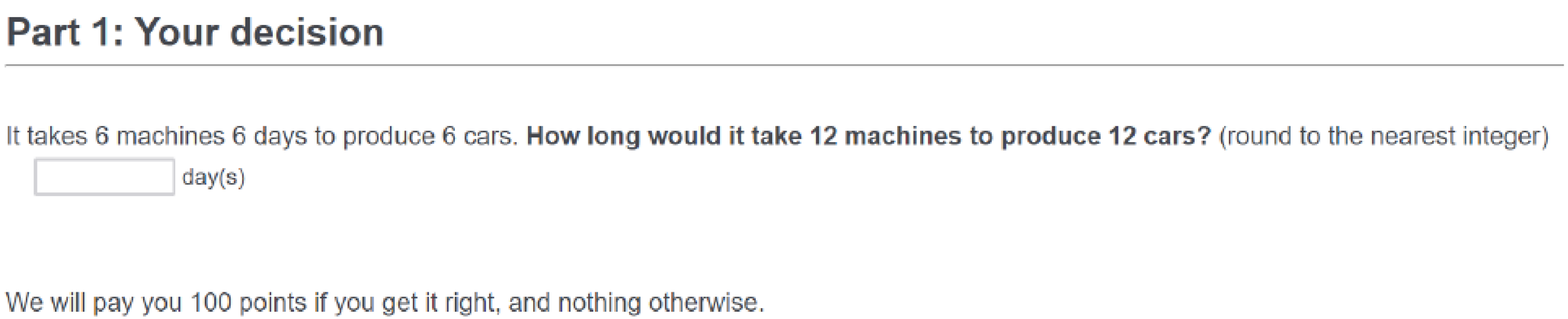
Experimental design: overview

- Online experiment in June 2021
  - Data collected via online platform *prolific*
  - Software: *Qualtrics*
  - Pre-registration: *aspredicted.org*
- Total of 2,100 subjects
- Average payments:
  $11.82 for 33 minutes



Experimental design: Part 1 – cognitive tasks

- 15 tasks about 15 **well-known behavioral biases**
  - Cognitive reflection test (intuitive thinking overwrites reflected thinking)
  - …



- Clear notion of an **objectively optimal answer**

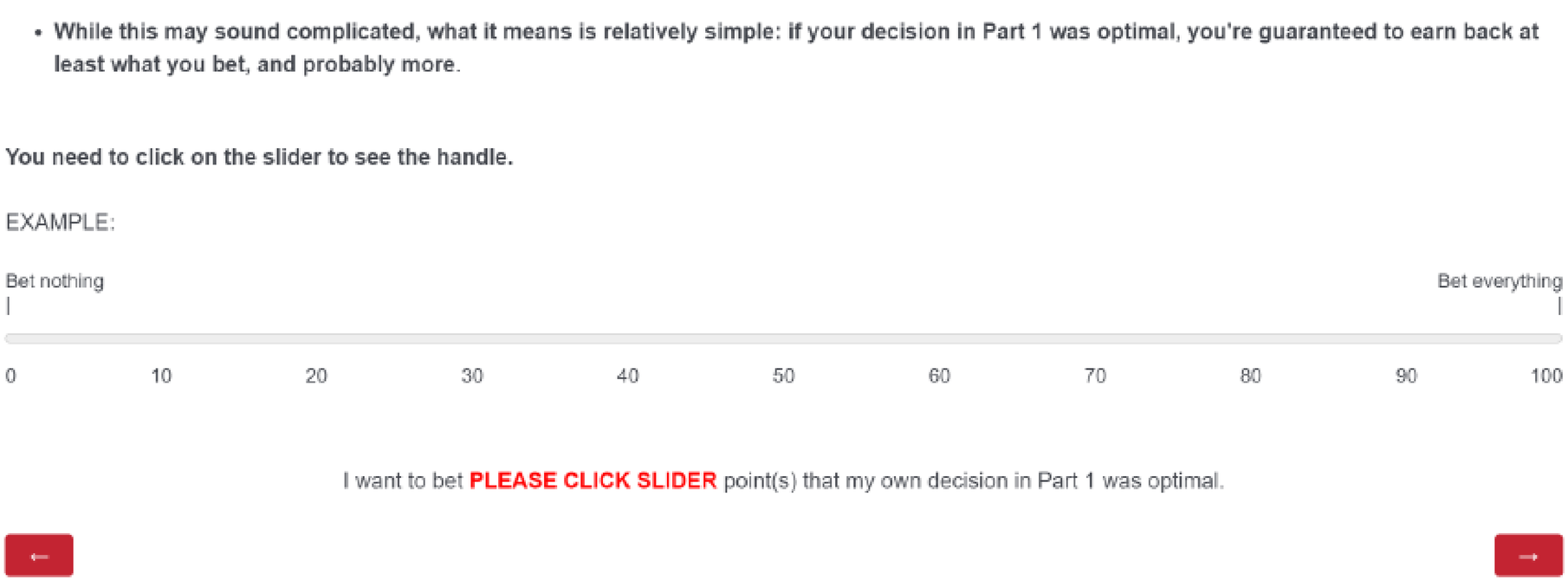
Experimental design: Part 2 – confidence elicitation

- Subjects report the **probability their decision was optimal**

- Used to compute **confidence–performance correlations**

Experimental design: Part 3 – self-selection

- Subjects interact in one of three institutional settings:
  - Betting-market (e.g., *horse-race betting)*
  - Auction
  - Committee voting

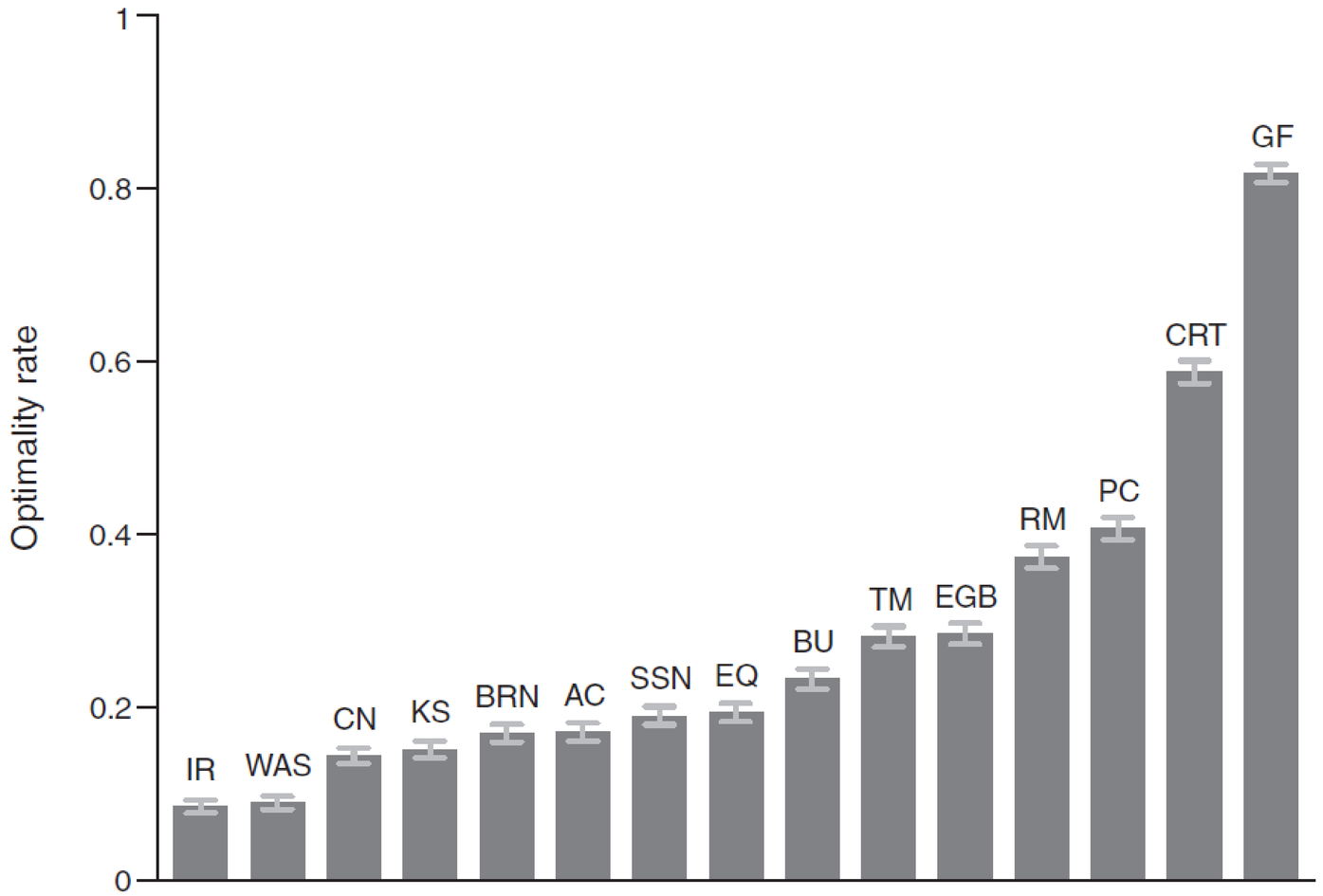


➢ Participation intensity reflects self-selection

Overview of Experimental Treatments

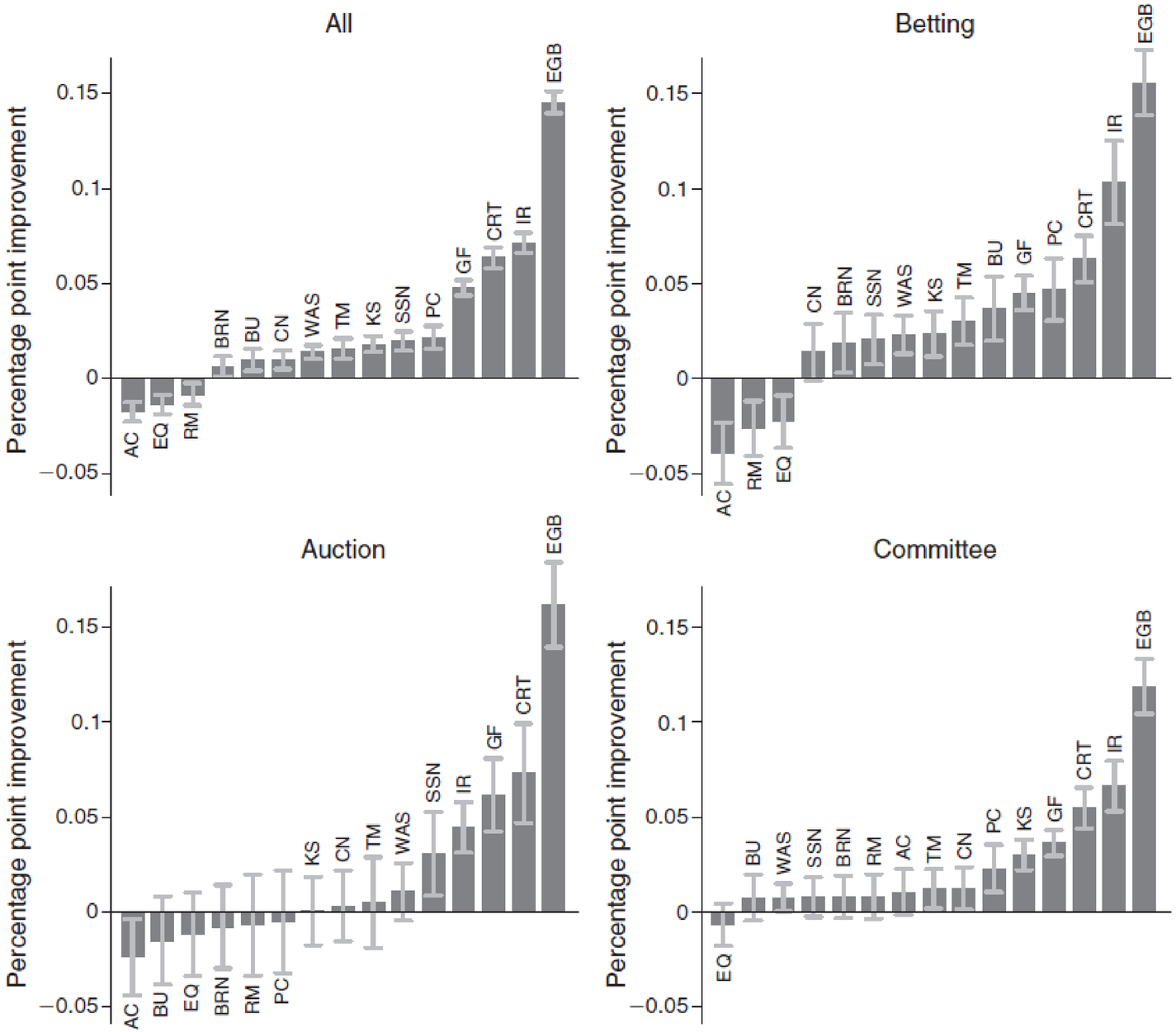
Treatment	Elicitations	No. of subjects
Betting	Cognitive task, parimutuel betting	387
Auction	Cognitive task, discriminatory auction	323
Committee	Cognitive task, committee voting	337
Confidence	Cognitive task, confidence	334
Betting Within	Cognitive task, confidence, parimutuel betting	105
Auction Within	Cognitive task, confidence, discriminatory auction	105
Committee Within	Cognitive task, confidence, committee voting	104

Result 1: Strong heterogeneity across optimality rates

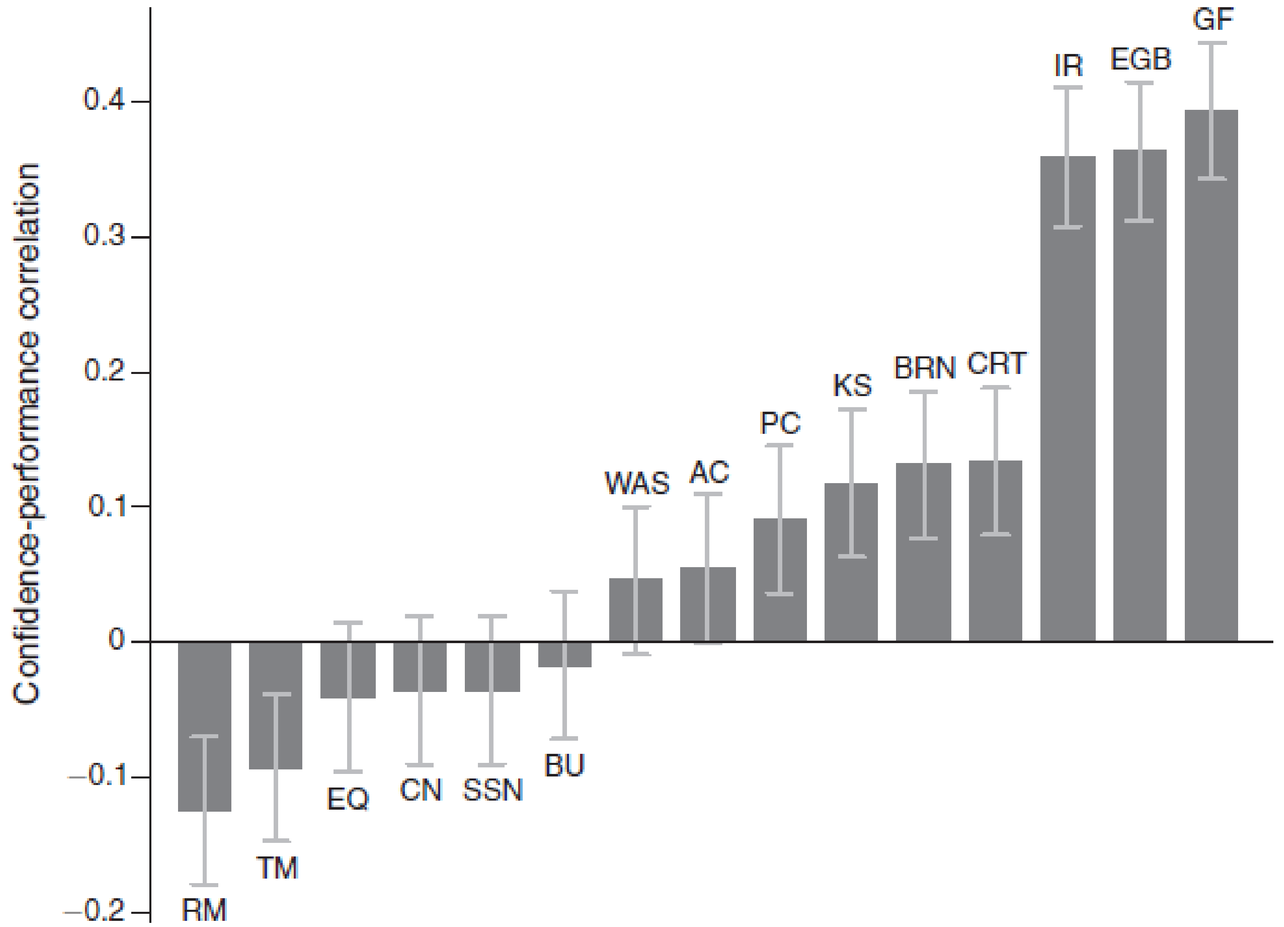


Result 2, 3 and 4

- **Heterogeneity in filtering**
  - Some biases are strongly filtered (e.g., exponential growth bias)
  - Others are barely affected (e.g., base-rate neglect)
  - Some are even amplified (e.g., winner's curse)
- **Similar effects across institutions**
- **Institutions reduce bias on average**
- Better performers
  - bet more in betting-market
  - bid more in auction
  - vote more in committee

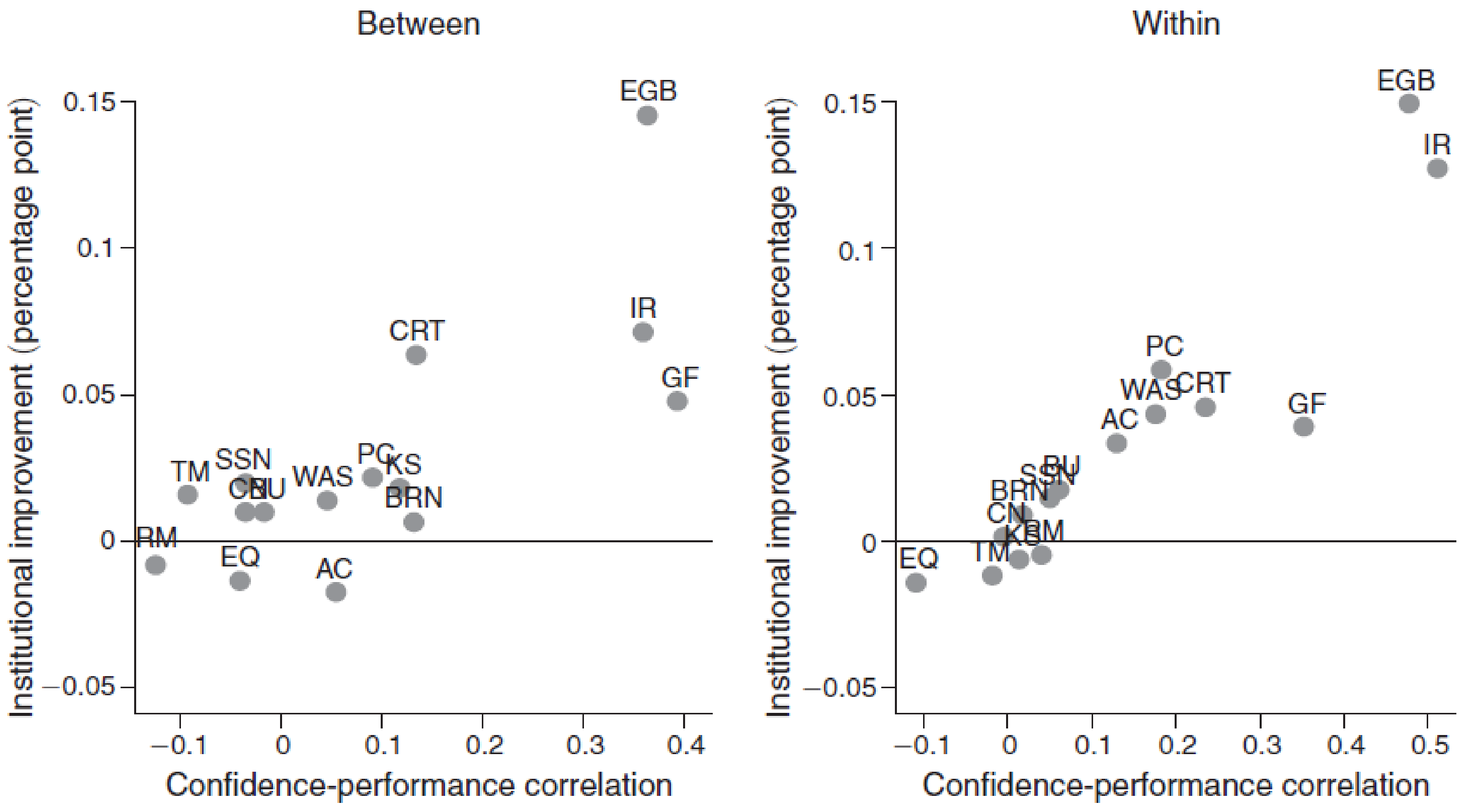


Result 5: Strong heterogeneity in confidence-performance correlation across biases



Result 6: Confidence–performance correlation predicts institutional improvement

- Correlation ranges from negative to strongly positive
- Strongly predicts institutional filtering (ρ ≈ 0.8–0.9)
- Average overconfidence or error rate have little explanatory power



Limitations

- Confidence elicitation is not incentivized
- Binary definition of “optimality” may be demanding in some tasks

→ we tried to explain well and controlled for this with comprehension questions

Conclusion

- This paper demonstrates which type of biases survive aggregation
- Identifies the confidence–performance correlation as the key statistic
- Average overconfidence is the wrong object
- Provides a portable diagnostic tool for future experiments

1. **Market efficiency depends on self-awareness, not just incentives**
2. **Helps predict when behavioral biases matter in real-world settings**

Discussion: *Confidence , Self-Selection, and Bias in the Aggregate*

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Published in American Economic Review 2023, 113(7): 1933-1966

Discussed by Frieder Neunhoeffer (ISEG Lisbon)

Discussion: *Confidence , Self-Selection, and Bias in the Aggregate*

This paper is about the **interplay between**

- **Cognitive biases in individuals** and **aggregate economic outcomes**

Authors propose the hypothesis that **confidence-performance correlation predicts institutional filtering** of individual biases

- If a population is aware of their cognitive biases, aggregate outcomes should suffer less from individual biases
- If a population is not aware, aggregate behavior is similarly or even more biased

Average overconfidence or error rates are wrong measure

→ Portable tool to gauge degree of institutional filtering by merely measuring confidence

Comment 1

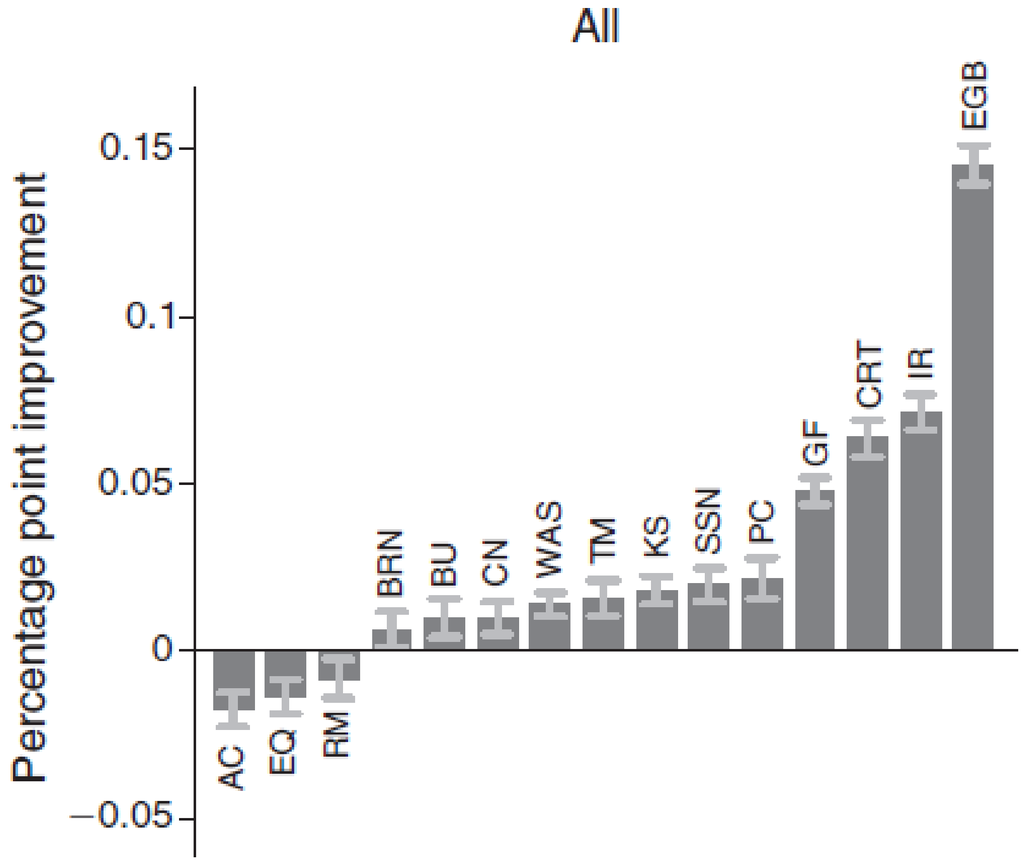
- Very demanding comprehension test

→possibly effects account for sub-sample of population

→**It's unclear how this will play out in real markets usually some share of players are confused and do not perfectly understand the market rules**

Comment 2

- Authors do not report the market sizes in Part 3
- **How much money is in the betting market?**
- **If very little money, nice finding but why should we care?**



Comments 3 and 4

- How relevant are these findings in the face of AI?

→**Good reasons to assume that ubiquitous availability of AI strongly reduces individual biases in human behavior**

- How do social biases compare to cognitive biases in this framework?
- **Experimental design**

	Control treatment	AI treatment	AI delegation treatment
Cognitive bias tasks			
Social bias tasks			

Structure for presenting a paper

1. **Title page**
   - Cite full title, authors and their affiliations
2. **Motivation & research question**
   - Discuss the motivation behind this study
   - Clearly state the main research question(s) & why it matters?
3. **Related literature**
   - Outline the literature fields that this question relates to
   - Highlight the gap in the literature the paper aims to fill
4. **Theoretical framework**
   - Explain the basic model, key concepts, and assumptions
   - Summarize the theoretical hypotheses
5. **Methodology**
   - Describe the research design (experiment, observational study, formal model, etc.)
6. **Results**
   - Explain the main empirical or analytical approach (regressions, qualitative analysis, simulations, etc.)
   - Present the main findings clearly
   - Highlight the most important tables, figures
   - Discuss whether the hypotheses were confirmed or rejected
7. **Discussion & contribution**
   - How do the findings contribute to the field?
   - Do they challenge or confirm previous studies?
   - What are the policy or practical implications, if any?
8. **Critique & limitations**
   - Discuss potential weaknesses (methodological, theoretical, or empirical)
   - Mention alternative explanations
   - Suggest ways the study could be improved or extended
9. **Conclusion**
   - Summarize the key takeaways

How to present methodology in Experimental Economics

- **Type, time, and place of experiment**
  - Lab experiment
  - Field experiment
  - Online experiment
  - Natural experiment
  - Where
  - When
- **Data collection tool**
  - Lab experiment → software
  - Field experiment → collaborator
  - Online experiment → platform
  - Natural experiment → policy
- **Subjects**
  - Number of subjects
  - Who are they
  - How recruited
  - Any exclusion criteria
- **Incentives**
  - Reward structure
- **Experimental design**
  - What are treatment and control conditions
  - Between-subject vs within-subject
  - One-shot vs repeated
  - Matching (perfect stranger, random…)
  - Timeline of the experiment (instructions, practice round, follow-up…)
  - …

Structure for discussing a paper

1. **Title page**
2. **Motivation & research question**
3. **(Theoretical framework)**
4. **(Methodology)**
5. **(Results)**
6. **Comments, critique, limitations, questions**
   - Discuss potential weaknesses (methodological, theoretical, or empirical)
   - Mention alternative explanations the authors might have overlooked
   - Suggest ways the study could be improved or extended

Presenting advice

- **Keep it concise:** Stick to the structure and avoid unnecessary details.
- **Use slides sparingly and keep content minimal:** Use visuals (figures, models) to help understanding.
- **Encourage discussion:** End with thought-provoking questions.

Grading policy

• Paper discussions	**30%**
• Attendance and classroom participation	**10%**
• Final Project	**60%**
	100%

Final project

- A paper (8-10 pages) on an original research topic of your choice. (PhD's single project, Master's in 2)
- Structured as a standard scientific article, with an introduction, literature review, theory and hypotheses, experimental design, procedures, results, discussion, and conclusion.
- Actual data is not required. The procedures section should contain a detailed plan on how data could be collected.
- The results section should contain a detailed plan on how such data could be analyzed.
- Projects will evolve throughout the semester and are subject to continuous feedback between the student, the instructor, and the class → brainstorm and refine ideas at multiple stages to guide students toward a meaningful research question and a well-designed experiment.
- Midway through the semester, students will "elevator-pitch" their research question in the form (3 minutes).
- This continuous engagement is intended to avoid situations in which the instructor first encounters a project only at the final submission stage.

Paper discussions

- A key objective of the course is to learn how to structure and engage in a constructive academic discussion of a research paper.

For each paper:

- Half of the students will be assigned the role of authors.
- Other half will be assigned the role of discussants/referees.
- One PhD student will serve as **corresponding author** and present “their” paper to the class (15 min).
- One PhD student will serve as **corresponding discussant** and prepare slides leading the discussion from the perspective of a referee, highlighting perceived shortcomings and possible ways to address them (5 min).
- Subsequently, the corresponding discussant is responsible for initiating and **moderating the discussion**, supported by the other discussants who contribute additional critiques.
- Corresponding author is given the opportunity to **defend their paper**, supported by the remaining students in the author group.

Paper discussions: assessments

Assessment of Authors

- 50% based on the quality of the paper presentation
- 50% based on the ability to respond to critiques

Assessment of Discussants

- 50% based on the correctness and completeness of the critical points raised
- 50% based on pedagogical quality, presentation skills, and the ability to lead and stimulate discussion

Students should not worry about producing a perfect discussion. Likewise, authors are not expected to have an answer to every critique; rather, they should demonstrate thoughtfulness and a willingness to engage with and understand the weaknesses of “their” paper. The overarching goal is to learn together.

For this reason, it is essential that all students—including those not presenting—come prepared and have read the paper in advance.