

# Introduction to Experimental and Behavioral Economics

## Lecture 1: Introduction

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# Outline of Lecture 1

1. Introduction of the Course
2. Why do we Need Experiments?
3. What is Behavioral Economics?
4. What is an Economic Experiment?
5. Overview of Experimental Research

# Who am I?

- ▶ **Position:** Assistant Professor, Masaryk University
- ▶ **Ph.D. in Economics:** University of Mannheim
  - ▶ *Title: Destructive Behavior in Competitive Settings: Motives and Mitigation Mechanisms*

## Research Interests *[[see my website]]*

- ▶ **Behavioral and Experimental Economics**
  - ▶ "Disclosure Policy in Contests with Sabotage and Group Size Uncertainty"
  - ▶ "Social Norm Perceptions in Third-Party Punishment"
  - ▶ "Spite in Litigation"
  - ▶ "Fraud and Motivated Reasoning in Competition"
- ▶ **Public Economics**
  - ▶ "Institutional Factors and the Extraction of Limited Health Resources"
  - ▶ "Meritocracy and Social Cohesion"

**Contact:** jonathan.stabler@econ.muni.cz

# Who are you?



# Course Organisation

- ▶ **Lectures and Seminars:** Thu 10:00–11:50, VT203 (first 6 weeks)
- ▶ **Student hour (by appointment via email):** Fri 12:50–13:50, Room 426 or online

No lectures or seminars on Thu 03 April, 1st May, and 8th May

- ▶ **Midterm:** 10 April
- ▶ **Final Project Deadline:** 12 June

# Evaluation

You can earn up to **100 points** in total. You need **50 points** to pass the course.

- ▶ Up to **20 points** for the seminar group presentation.
- ▶ Up to **20 points** for the written final group project.
- ▶ Up to **60 points** for the midterm.

# Lecture Syllabus

| <b>Lecture Topic</b>   | <b>Date</b>   |
|--|---------------|
| 1 Introduction to Behavioral and Experimental Economics          | 20th February |
| <i>Seminar: Kick-off Meeting Presentations and Final Project</i> | 27th February |
| 2 Theoretical Foundations of Experimental Economics              | 6th March     |
| 3 Failures of Expected Utility Maximization                      | 13th March    |
| 4 Social Preferences   | 20th March    |
| 5 Cooperation, Punishment, and Competition                       | 27th March    |
| <b>Midterm</b>   | 10th April    |
| <i>Seminar Presentations</i>                                     | 17th April    |
| <i>Seminar Presentations</i>                                     | 24th April    |
| <i>Seminar Presentations</i>                                     | 15th May      |
| <b>Group Project Deadline</b>                                    | 12th June     |

# Lectures: Expectations and Structure

## Lecture structure:

- ▶ Combination of presenting facts and concepts and playing games and experiments.
- ▶ Interactive.

## Preparation:

- ▶ Please come prepared to class.
- ▶ After each class, I will inform you about the readings for the next week.

## Engagement:

- ▶ Ask questions whenever you want.
- ▶ There are no stupid questions.
- ▶ Interact with your classmates (if helpful for you).



# Seminars: Expectations and Structure

## Organization

- ▶ Seminars will be based on scientific paper presentations (in groups) and discussions.
- ▶ You are expected to read all papers to be able to actively participate.
- ▶ The first 50 minutes of a seminar are for your paper presentations. The second 50 minutes are for working in class on your group project.

## Group Paper Presentations:

- ▶ You will be randomly assigned to a group of 3 and one of the papers.
- ▶ Read and discuss the paper within your group.
- ▶ Prepare a 15 minute presentation.
- ▶ Presentation dates and groups will be provided next week.

# Group Project

## Organization

- ▶ The group project will be in the same group of 3 as the seminar presentation.
  - ▶ **Goal:** Design a small economic experiment!
  - ▶ Maximum of 3 pages of text.
  - ▶ Due on 5th June.
- 
1. **Topic:** Identify a research topic, look for research gaps, and justify its relevance.
  2. **Research Question/Hypothesis:** Clearly define the research question(s) and make theory-based predictions.
  3. **Experimental Design:** Design an economic experiment, discuss the important variables and planned analyses. Apply your knowledge from this class!

# Textbooks

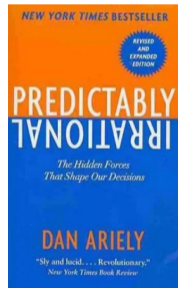
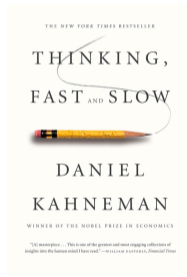
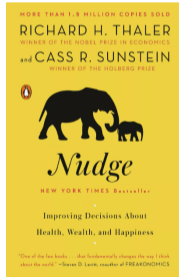
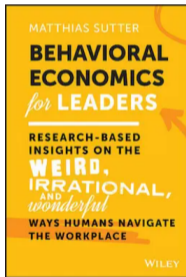
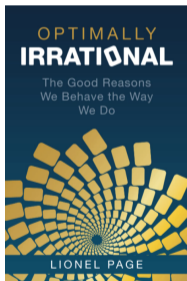
No main textbook – the lecture draws on many different materials, textbooks, slides, etc.

## Most frequently used textbooks:

- ▶ Cartwright (2014): *Behavioral economics*
  - Some copies available at the library.
  - Online available as an E-Loan ([Click this link!](#))
- ▶ Jacquemet and L'Haridon (2018): *Experimental economics*
  - Online available as an E-Book ([Click this link!](#))

# Popular-Science Books

There are many popular-science books about Experimental and Behavioral Economics, which can be a fun addition to the lecture slides and textbooks.



## Reading List Seminar Presentations 1/2

| Topic                          | Reading List  |
|--------------------------------|---|
| <b>Discrimination</b>          | <p>Evsyukova, Yulia, Felix Rusche, and Wladislaw Mill. "LinkedOut? A field experiment on discrimination in job network formation." <i>The Quarterly Journal of Economics</i> 140.1 (2025): 283-334.</p> <p>Gottschalk, Felix, Wanda Mimra, and Christian Waibel. "Health services as credence goods: A field experiment." <i>The Economic Journal</i> 130.629 (2020): 1346-1383.</p>  |
| <b>Tax Evasion and Honesty</b> | <p>Burgstaller, Lilith, and Katharina Pfeil. "You don't need an invoice, do you? An online experiment on collaborative tax evasion." <i>Journal of Economic Psychology</i> 101 (2024): 102708.</p> <p>Bicchieri, Cristina, Eugen Dimant, and Silvia Sonderegger. "It's not a lie if you believe the norm does not apply: Conditional norm-following and belief distortion." <i>Games and Economic Behavior</i> 138 (2023): 321-354.</p> |

## Reading List Seminar Presentations 2/2

| Topic                               | Reading List  |
|-------------------------------------|---|
| <b>Social Norms</b>                 | Bursztyn, Leonardo, Georgy Egorov, and Stefano Fiorin. 2020. "From Extreme to Mainstream: The Erosion of Social Norms." <i>American Economic Review</i> 110 (11): 3522–48.  |
| <b>Altruism/ Social Preferences</b> | Falk, Armin, and Nora Szech. "Morals and markets." <i>Science</i> (2013): 707-711.<br><br>Andreoni, James, Justin M. Rao, and Hannah Trachtman. "Avoiding the ask: A field experiment on altruism, empathy, and charitable giving." <i>Journal of Political Economy</i> 125.3 (2017): 625-653.<br><br>Regner, Tobias. "Reciprocity under moral wiggle room: Is it a preference or a constraint?." <i>Experimental Economics</i> 21.4 (2018): 779-792. |
| <b>Fairness Views</b>               | Andre, Peter. "Shallow meritocracy." <i>Review of Economic Studies</i> (2024)   |
| <b>Macroeconomics</b>               | Duersch, Peter, and Thomas A. Eife. "Price competition in an inflationary environment." <i>Journal of Monetary Economics</i> 104 (2019): 48-66.   |

**Do you have questions?**

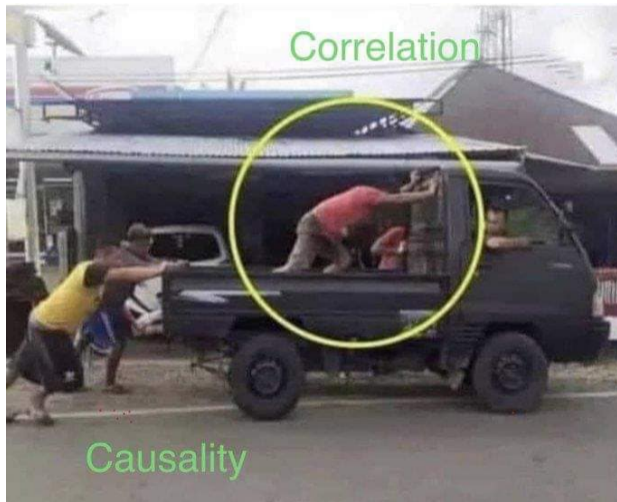
Let's explore what Experimental and Behavioral Economics is about!

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# The Fundamental Problem of Empirical Research



- ▶ Correlation does not imply causation!
- ▶ Just because two variables move together does not mean one causes the other.

## Endogeneity Examples

**Correlation is not Causation!** Just because two variables move together does not necessarily mean one causes the other.

- ▶ **Babies and Storks:** Do more storks in a region increase the number of babies that are born?
- ▶ **Global Warming:** Does global temperature rise because the number of pirates has decreased?
- ▶ **Crime and Police:** Do more police increase crime, or do cities with high crime naturally hire more police?
- ▶ **Education and Earnings:** Do more years of schooling increase wages, or do high-ability people choose more education?

**Solutions:** econometrics or experiments.

# Causality in Economics

## Econometrics: Detecting Causality in the Wild

- ▶ The world is messy—no randomization, just observational data.
- ▶ Use econometric tools (IV, DiD, RDD): try to mimic experiments.
- ▶ But there's always a risk: Are we really capturing causality, or just a clever correlation?



# Causality in Economics

## Experiments: The Gold Standard

- ▶ You keep all other factors constant and change one factor (the treatment) to measure its effect.
- ▶ *Example:* you give two identical plants different amounts of water, while keeping soil, pot size, and light exposure the same.  
→ Compare how well the two plants grow (height, leaves) to see the effect of the treatment.
- ▶ How to do that (well) in Economics? That's what we will discover in this course!!

# Observational versus experimental approach

## Observational "real world" data

- ▶ Provides information on the actual behavior of economic agents in their natural habitats.
- ▶ Provides information on the actual performance of specific markets in "real life".
- ▶ Problems and limitations:
  - ▶ Correlation does not imply causation.
  - ▶ Data can be imprecise, incomplete, biased, ...
  - ▶ Maybe even be impossible or impractical to get relevant data at all.
    - E.g., how do individuals use private information?
    - Insufficient independent variations in explanatory variables.
  - ▶ Does usually not allow strong conclusions about causal relationship between variables.
  - ▶ Does usually not allow strong conclusions about the mechanics "behind the scenes".

# Observational versus experimental approach

## Experimental research

- ▶ Make observations under controlled conditions (lab), and thus separate cause and effect.
- ▶ Accurate measurements of important theoretical benchmarks (e.g., efficiency).
- ▶ Generate data as needed to answer a particular research question.
- ▶ Can create counterfactual settings – what would have happened under different circumstances.
- ▶ Problems and limitations:
  - Uncertainty about external validity – do the results generalize to the overall population?
  - Artificiality may affect behavior.
  - Practical limitations: e.g., large scale field experiments are too costly or may be unethical.

# Observational versus experimental approach

## So, which is the better approach?

- ▶ That's the wrong question! It's not a competition!
- ▶ Experimental data is superior to observational data in some respects and inferior in others.
- ▶ For specific research questions either method may be more suitable.
- ▶ Overall, correlational and experimental research are complements. Ideally, we want to study economic phenomena using both approaches.

# Historical Development of Experiments in Economics

- ▶ "Economics is a nonlaboratory science. It is rarely if ever possible to conduct controlled experiments with the economy." (Richard G. Lipsey (1971). *An introduction to positive economics*)
- ▶ "One of the weaknesses in the claim that social sciences are sciences at all is their inability to conduct controlled experiments. Physicists can create vacuums, chemists can establish sterile environments, even doctors can conduct blind trials. But economists, sociologists, political scientists and those who study management find their subject matter will never stand still." (Financial Times, 2 January 1997)



# Historical Development of Experiments in Economics

- ▶ "In just a few decades, economics has been transformed from a discipline where the experimental method was considered impractical, ineffective and largely irrelevant to one where some of the most exciting advancements are driven by laboratory data." (Francesco Guala (2000) in *The New Palgrave Dictionary of Economics*)
- ▶ "Controlled laboratory experiments have emerged as a vital component of economic research." (Financial Times, 2 January 1997)

# Nobel Price Laureates in Experimental and Behavioral Economics

- ▶ Daniel Kahnemann (2002): "for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty".
- ▶ Vernon L. Smith (2002): "for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms."
- ▶ More to follow: Elinor Ostrom (2009), Alvin E. Roth (2012), Robert J. Shiller (2013), Richard H. Thaler (2017), Abhijit Banerjee, Esther Duflo and Michael Kremer (2019)

**Do you have questions?**

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# Foundations of Economic Theory

## Some questions

- ▶ How do people deal with situations characterized by risk and uncertainty?
- ▶ How do people think and decide about future events?
- ▶ How do people take the welfare of others into account?
- ▶ How do people reason and take decisions?

## Standard answers from traditional microeconomics:

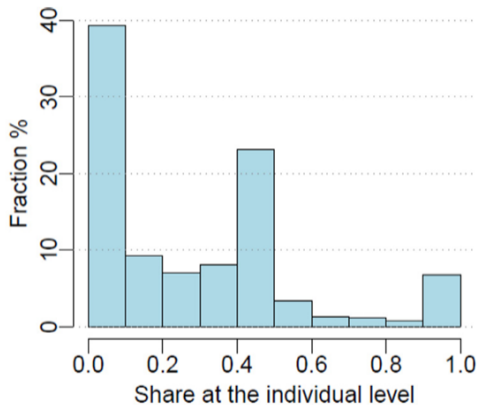
- ▶ People maximize their expected utility.
- ▶ People discount future events exponentially.
- ▶ People are selfish.
- ▶ People behave logically consistently and always choose the best available option (rationality).

# Dictator Game

Let's all play the dictator game! You can earn real chocolate balls!

# Dictator Game

- ▶ Two players: **Dictator** and **Recipient**.
- ▶ Dictator is given a fixed amount of money (e.g., \$10).
- ▶ Dictator decides how to split the money between themselves and the Recipient.
- ▶ Recipient has no influence over the outcome and must accept the division.
- ▶ Selfish player prediction: Dictator gives nothing to the Recipient.



Source: Meta analysis Doñate-Buendía et al. (2022)

**Take-Away:** Players are not perfectly selfish. Instead, they have a preference for fairness or norm adherence, or are motivated by altruism and other **social preferences**.

## Risk Aversion

I also elicited your risk aversion!

So not all of you seem to be risk-neutral expected utility maximizer. Otherwise, you would all have been indifferent between playing a 50% lottery for 50 EUR and receiving 25 EUR with certainty.

Expected payoff of the lottery:  $\mathbb{E}[\textit{lottery}] = 0.5 * 50 \text{ EUR} = 25 \text{ EUR}$

**Take-Away:** Not all players are perfect risk-neutral expected utility maximizers. Instead, many are risk averse and some are risk-seeking.



# Foundations of Economic Theory

## Some questions

- ▶ How do people deal with situations characterized by risk and uncertainty?
- ▶ How do people think and decide about future events?
- ▶ How do people take the welfare of others into account?
- ▶ How do people reason and take decisions?

## Answers from our in-classroom game:

- ▶ Not all people are always selfish.
- ▶ Not all people are risk-neutral.

# Foundations of Economic Theory

## Behavioral Economics

- ▶ Asks whether (and when) these foundations are correct or at least approximately correct (and when not).
- ▶ Attempts to develop new theoretical concepts that produce more accurate answers.
- ▶ It's not a unified field: Various competing theories and approaches.

## Broad Goals

- ▶ Ambition: Describe it as it really is (or at least move in this direction).
- ▶ Put economic theories on firmer psychological foundations.
- ▶ One aspect: Add insights from the field of psychology.

# Behavioral Economics

## Behavioral Economics = Psychology?

- ▶ Or Psychology of economic decision making?
- ▶ No, not quite: Behavioral economics is formulated in the economics framework.
  - Relating to notions of equilibrium or efficiency (which plays no major role in psychology).
  - More focus on application to markets and economic institutions.
  - Result: Novel behavioral research (theory & empirics), focused on questions relevant to economics.
- ▶ Also differences in methodological approaches between behavioral economics and psychology.

## Historical Development

- ▶ Behavioral economics as a more organized research field gathered momentum only in the 1980s.
- ▶ Nowadays increasingly influential even in mainstream economics and certainly in public policy debates ("nudging").

# Behavioral economics

## Extending or replacing conventional economics?

- ▶ No general replacement of standard economic theory in sight for the foreseeable future.
- ▶ Moreover: Most behavioral economists would reject the idea that this is the goal.
- ▶ But general extensions:
  - e.g. heterogeneity in social preferences (selfishness as a special case).
  - e.g. models of bounded rationality (unlimited rationality as a special case).
- ▶ And some suggested replacements for specific cases:
  - e.g. exponential versus hyperbolic discounting.
  - e.g. evaluating outcomes as gains or losses against some reference point.
- ▶ Natural consequence of this development: Some methodological pluralism.

# Do we want a new approach in how we do economics?

## Some resistance against the 'behavioral revolution'

- ▶ Opposition to pluralism. Celebrate the unified framework we had thus far.
- ▶ A weakness of psychology, a strength of traditional economics: generality.
  - Worry about ending up with various situation-specific theories.
- ▶ Is behavioral economics compatible with conventional economic paradigms?

## The traditional way of theorizing in economics:

- ▶ Not concerned about 'psychological realism' or realistic model assumptions more generally.
- ▶ For example, standard utility theory is a technical concept, designed to represent preferences.
- ▶ Core assumption: rationality (completeness, transitivity of preferences; forward-looking behavior; etc.).
- ▶ Task of economics: Looking at the world through special economics glasses.

# Do we want a new approach in how we do economics?

## **Thus, rise of BE is quite a notable development**

- ▶ Broader understanding of what economics is about (not just a theory of rational choice).
- ▶ Increased interest in accuracy of assumptions.

## **Accompanied (and to some degree caused) by the rise of experimental economics**

- ▶ Allowed rigorous testing of economic models and their assumptions.
- ▶ Evidence of "anomalies" was building up.
  - Failures in predicting outcomes even when most model assumptions hold.
  - Refutation of underlying behavioral assumptions, in particular the rational choice model.

**Do you have questions?**

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# What is an Economic Experiment?

## A general definition of an experiment

- ▶ An experiment is a procedure to generate controlled data.
- ▶ Such procedures are repeatable.
- ▶ Controlled variation allows causal inferences
  - Factors which influence the outcome are held constant as much as possible.
  - Only one factor of interest is varied at a time.
- ▶ If the outcome of the experiment changes systematically with the variation of the factor, we have a strong reason to believe that the factor is the cause of the change.

# What is an economic experiment?

## Experiments in economics

- ▶ Economists are interested in how people make decisions and in the outcomes that arise from the interaction between individuals in particular environments.
- ▶ How experimental research comes in.
  - Take actual human beings, and expose them to a situation that economists are interested in.
  - Observe what they do and how this impacts on important variables.
  - Change some aspect in the situation and observe again.
- ▶ The researcher creates the situation. Data is being **generated**, not just collected.

## Example: Project STAR

- ▶ Let's consider a real-world example of an economic field experiment: Project STAR (Student-Teacher Achievement Ratio), a large-scale randomized experiment in education.
- ▶ Kindergarten students and their teachers were randomly assigned to one of three groups starting in the 1985-1986 school year:
  - Small classes (13-17 students per teacher)
  - Regular-size classes (22-25 students)
  - Regular/aide classes (22-25 students) which also included a full-time teacher's aide
- ▶ Over four years, about 11,600 students from 80 schools participated.
- ▶ By comparing the Stanford Achievement Test scores at the end of kindergarten, the experiment generated data about the causal effect of class size and teacher aides on student achievement.

# Evolution of Laboratory Experiments

- ▶ Early years: Reliance on **pen-and-paper experiments** with convenient university student samples.
- ▶ Recent advancements:
  - ▶ Shift to **computerized experiments** in specialized labs with purpose-designed software (oTree, z-Tree, Qualtrics, etc.)
  - ▶ Enabled by rapid improvements in **computing facilities**.
  - ▶ Researchers now generate **large datasets**.
- ▶ Expansion of subject pools:
  - ▶ Increasing use of **field experiments**.
  - ▶ Participants sometimes include adult members of society or specialized groups for better representativeness.
  - ▶ Online experiments on Amazon Turk or Prolific.

# Conducting Experiments and Ensuring Neutrality

- ▶ Participants often arrive at a classroom or computer lab.
- ▶ Instructions for the experiment:
  - Provided using **abstract, context-free language**.
  - Goal: Prevent participants from inferring the researcher's objectives.
- ▶ Key concern: **Experimenter Demand Effects**.
  - Participants may adjust behavior based on perceived research goals.
  - Neutral language minimizes this influence.



## Elicitation vs. Experiment

- ▶ At the beginning of the class, you played an economic game, so I elicited your behavior under specific conditions to test the validity of a specific theory (selfishness, risk-neutrality).
- ▶ In an experiment there would be a treatment variation.
  - Part of you would have played under one specific condition.
  - Another part of you would have played under another specific condition.
  - By comparing the average behavior of the two groups, we could identify the causal effect of the specific condition.

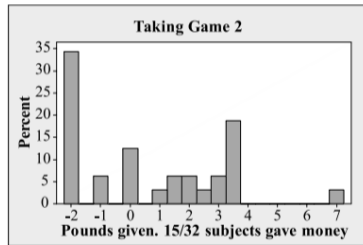
## Example: Dictator Game Treatment

Show-up fee 4\$ for both and 7\$ endowment for dictator.

- ▶ T1 (Control): Dictator can only give money.
- ▶ T2: Dictator can both give or **take** money from the other player.



T1



T2

Source: Bardsley (2008)

⇒ *Causal effect*: When dictators have the opportunity to also take money, they give less.

⇒ *Conclusion*: That remains interpretation: e.g., context-dependent social norms, experimenter demand, etc.

**Do you have questions?**



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# Experimental research: A rough overview

## Market experiments

- ▶ Oligopoly markets. Monopoly settings. Market entry.
- ▶ Asset markets. Behavioral finance.
- ▶ Comparison of market mechanisms. Market design.
- ▶ Auctions
- ▶ Bargaining

## Social Preferences

- ▶ Social dilemma games. Trust games.
- ▶ Altruism, fairness, moral behavior, norm-following behavior, reciprocity, etc.
- ▶ Antisocial preferences, spitefulness, etc.

# Experimental research: A rough overview

## Individual choice

- ▶ Decision-making under risk and uncertainty.
- ▶ Rationality? How do individuals discount future payoffs? Are people time-consistent? How are decisions affected by how tasks are framed? How do individuals process new information?

## Experimental game theory

- ▶ Principles of strategic behavior, when there are other players.
- ▶ Is there convergence to an equilibrium? If so, which equilibrium?
- ▶ If equilibrium theory fails, why does it fail?
  - ▶ Lack of rationality?
  - ▶ Lack of common knowledge/ beliefs about rationality?
  - ▶ Nash equilibrium vs. other equilibrium concepts.

# Experimental research: A rough overview

## **Experimental personnel economics**

- ▶ Effects of various remuneration schemes on behavior.
- ▶ Extrinsic versus intrinsic motivation.
- ▶ Teamwork: Cooperative versus competitive incentives.
- ▶ Fraud and destructive behaviors.

## **Public Goods and Cooperation**

- ▶ Incentives, reward mechanisms.
- ▶ Punishment.
- ▶ Experimental environmental economics.

# Experimental research: A rough overview

## Other areas of experimental research

- ▶ Political economics. Voting.
- ▶ Macroeconomics. Monetary economics. International trade.
- ▶ Behavior under asymmetric information.
- ▶ Discrimination.
- ▶ Effects of different forms of communication.
- ▶ ...

## Summary:

### **Behavioral Economics**

- ▶ Questions traditional microeconomic model assumptions.
- ▶ Examine economic behavior in experiments and empirical field research.
- ▶ Develop new theories based on psychologically more grounded assumptions.
- ▶ Typically seeks to extend more conventional models.
- ▶ Seeks to compete with more conventional models in terms of predictive power.

### **Experimental Economics**

- ▶ Generating data under controlled conditions.
- ▶ Separate cause and effect.
- ▶ Key tool for behavioral economics research.
- ▶ Has limitations, e.g., types of questions that can be studied and external validity of some results.

## Goals for Next Week

**Seminar Preparation:** Review today's slides. Think of topics that you are interested in and potential research questions for the group project. Next week you will meet your group and start discussing the project.

Thank you and see you next week!  
Jonathan.Stabler@econ.muni.cz



## References I

- Bardsley, N. (2008). Dictator game giving: altruism or artefact?, *Experimental economics* **11**: 122–133.
- Cartwright, E. (2014). *Behavioral economics second edition*, Routledge.
- Doñate-Buendía, A., García-Gallego, A. and Petrović, M. (2022). Gender and other moderators of giving in the dictator game: A meta-analysis, *Journal of Economic Behavior & Organization* **198**: 280–301.
- Jacquemet, N. and L'Haridon, O. (2018). *Experimental economics*, Cambridge University Press.