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Topic 1. Thinking like an economist

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Outline

1. What is Economics and why does it matter?
2. How to *do* Economics
3. How economists think

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What comes to mind when you hear the word "*Economics*"?

- Economics goes well beyond money: it studies human choices as long as they involve pros (incentives) and cons (costs).
  - Sometimes the incentive/cost is monetary....

    Examples: how much to spend on rent, whether to get a loan, etc.
  - But not always... (i.e. time, effort, etc.).

    Examples: which degree to study, who to vote for, whether to get married.

What is Economics about?

- Economics studies the allocation of scarce resources:

  If a resource is scare (money, time, attention, others?), using in it for a purpose implies it cannot be used for something else.

- Economics studies how individuals and groups make their decisions

  Individual versus collective decision making.

- Economics helps us understand markets

  How individual decisions come together, and what outcomes result from their interaction.
  For example: price setting.

- Economics studies how to design public policies and institutions:

  How to create incentives that align individual behavior with broader collective objectives.
  For examples: taxes, public spending, monetary policy, or labor regulation.

Why should you study Economics?

- Economics gives you tools to compare options and pick the one that makes the most sense
  - You'll all need to make choices regarding resources that are limited, and Economics provide you with tools to better compare the different alternatives.
- Economics helps understand people and organizations' behavior
  - We respond to incentives and costs, and Economics will give you an intellectual structure to think about how these affect our choices helping you to predict other's behavior.
- Economics trains you to make sense of data
  - Data-related skills are increasingly important in all professions and Economics will help you turn numbers and charts into meaning insights.

Why should you study Economics?

- Economics allows you understand many real-life situations
  - Understanding how markets work or how different policies affect individuals and organizations will help you make better personal and professional decisions.
- Economics help forming your own informed opinion about politics/policies
  - Economics helps you cut through slogans and understand the real effects of political decisions helping you understand debates on taxes, public spending, or environmental policy.
  - It's OK having ideology (we all have), but it cannot hide your ignorance.

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The challenge of comparisons

- In science, observation is not enough... comparison is the key learning tool.
  - Without comparison, we can observe reality, but we can't explain it.

    If we only observe tigers, would we really know what a tiger is?
  - What we learn critically depends on what we compare it with.

    If we compare Germany and France, we cannot understand how to skip poverty.
- To understand X, we need to compare what we observe (factual) with what we would have observed in the absence of X (counterfactual).
  - Counterfactual: What would the outcome Y have been if the factor X we want to study had been absent?

The challenge of comparisons

- Counterfactuals are not observed so we need to approximate them: the better the approximation, the cleaner our conclusions.
  - What is the effect of winning the Christmas lottery on labor supply?

    We cannot observe the same individuals, at the same moment, having and not having won the Christmas lottery.
  - What is the effect of raising income taxes on GDP growth?

    We cannot observe the same economy, at the same moment, with high and low income taxes.
- We do so with the control group: a set of observations (individuals, firms, families, countries) that look like the ones we want to study but that are not affected by factor X.

The challenge of comparisons

- To study the effect of a factor X (winning the lottery, being married, etc.) on an outcome Y (labor supply, amount of savings, etc.), we compare:

$$\text{Effect of } X \quad = \quad \underbrace{(Y \text{ with } X)}_{\substack{\text{FACTUAL} \\ \text{(TREATMENT)}}} \quad - \quad \underbrace{(Y \text{ without } X)}_{\substack{\text{COUNTERFACTUAL} \\ \text{(CONTROL)}}}$$

  where:

  - The treatment group is the set of observations that are affected by factor X.
  - The control group is the set of observations that are not affected by factor X.

    This approximates the counterfactual.

- To measure the effect of X with (perfect) precision, we need the control group to be (exactly) equal to the treatment group except for X, but in Economics this is nearly impossible

Limitations of comparisons in Economics

1. Our object of study is continuously evolving:
   - Individuals (or firms) and societies change overtime: the circumstances under which agents make choices are not fixed and many times are very difficult to isolate.
2. Our object of study is rarely appropriate for experiments:
   - Economics is about choices, and thus, about humans, so we face ethical constraints.
   - We often rely on observed data, which limits our ability to find appropriate control groups.
3. Our object of study is many times unobservable/unmeasurable:
   - Variables like welfare, happiness, satisfaction, etc., are hard to measure.
   - Questions like “what would happen if” refer to a world that does not exist.

Example: a new teaching methodology

- Imagine a teacher that teaches math to groups ADE-A and ADE-B, and decides to introduce a new methodology to teach math in group ADE-A. Is the new methodology better?
- Three steps:
  1. How do we measure whether a methodology is better? Final grades.
  2. How do we define the control group? Students in ADE-A last year.
  3. How do we measure the effect of the methodology? Compare average grades.
- Imagine, we observe that students in ADE-A got higher grades than those in ADE-A last year.
- Conclusion: the new methodology is better than the previous one... WAIT!!!

Example: a new teaching methodology

- Students in ADE-A got higher grades than those in ADE-A last year, but...
  - Maybe this year's students are stronger... so part of the difference in grades could be due to the higher skills of this year's students, not to the new methodology.
  - Maybe the test was easier... so part of the difference in grades could be explained by the exam, not by the new methodology.
  - Maybe students this year had more time to prepare... so part of the difference in grades may be explained by preparation time, not by the new methodology.
- Previous' year students in ADE-A may not be a good control group if they are very different from this year's students.
- Better counterfactual: If students are randomly assigned to ADE-A and ADE-B, students in ADE-B may be a better control group: same professor, same year, same exam, similar characteristics (on average), etc.

What do you think about this statement?

"The government lowered working hours and unemployment fell.
So cutting hours reduces unemployment."

- The statement compares the economy now (with shorter working hours) with the same economy before the policy (with longer hours).
- Is the same economy before the policy a good counterfactual? Does it respond to *"how would the economy look like in the absence of the policy?"*
- Would unemployment have fallen if working hours had not been modified?

  In the absence of the decrease in working hours, unemployment may have decreased even more, so the effect of the policy on employment would be negative.

What do you think about this statement?

"The government cut taxes and revenues rose.
So cutting taxes increases revenue."

- Again, the statement compares the economy now (with lower taxes) with the same economy before the policy (with higher taxes).
- Is the same economy before the policy a good counterfactual for the economy after the policy? Does it respond to *"how would the economy look like in the absence of the policy?"*
- Would public revenues have risen if taxes had not been cut?

  In the absence of the tax cut, public revenues may have risen even more, so the effect of the tax cut on public revenues would be negative.

Models in Economics

- On top of these limitations, economic and social reality is so complex that we cannot study it with full precision. We need models to help us understand and analyze it.

  A model is a simplified mathematical representations of reality.

  "All models are wrong, but some are useful" (George E. P. Box)

- Two types of models:
  - Reduced-form models: focus on the relationship between variables.
    - Useful for measuring/estimating the effect of one variable on another.

      How much does unemployment increase when GDP falls?
  - Structural models: focus on the underlying behavior of economic agents.
    - Useful for understanding why things happen and for simulating "what if" scenarios.

      Why do Americans work longer hours than Europeans?

Models in Economics

Reduced-form models:

- These models focus on the (quantitative) relationships between variables.
- An example of a reduced-form model is:

$$\text{Unemployment} = a + b\,\text{GDP} + \text{other factors} + \text{error term}$$

  - In this model, the value of b tells us how much unemployment changes when GDP increases (we expect $b < 0$: when GDP goes up, unemployment falls, and vice-versa).
  - We use data on unemployment and GDP to "find" the value of b that best fits the observed data — this is the process of estimation.
- We use these models to answer "how much" type of questions.

Models in Economics

Structural models:

- These models focus on on underlying behaviors (the “why” of what we observe).
- An example of a structural form model is:

$$\begin{aligned} \text{Demand} \quad & \text{Cars demanded} = a - b \text{ Price of cars} \\ \text{Supply} \quad & \text{Cars supplied} = c + d \text{ Price of cars} \\ \text{Equilibrium} \quad & \text{Cars supplied} = \text{Cars demanded} \end{aligned}$$

  - The demand is decreasing in the price: if the price goes up, we want to buy fewer cars.
  - The supply is increasing in the price: if the price goes up, firms would like to produce more.
  - In equilibrium, the number of cars demanded is equal to the number of cars produced
- We use these models to answer “why” type of questions and to simulate “what if” scenarios.

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How economists think

1. Focus on Incentives and Trade-offs

- People respond to costs and benefits, not just intentions. Every choice involves opportunity costs — something else you give up.

2. Ask Counterfactual Questions

- Instead of just “what happened?”, economists ask: “what would have happened otherwise?”. This helps isolate causes from coincidences.

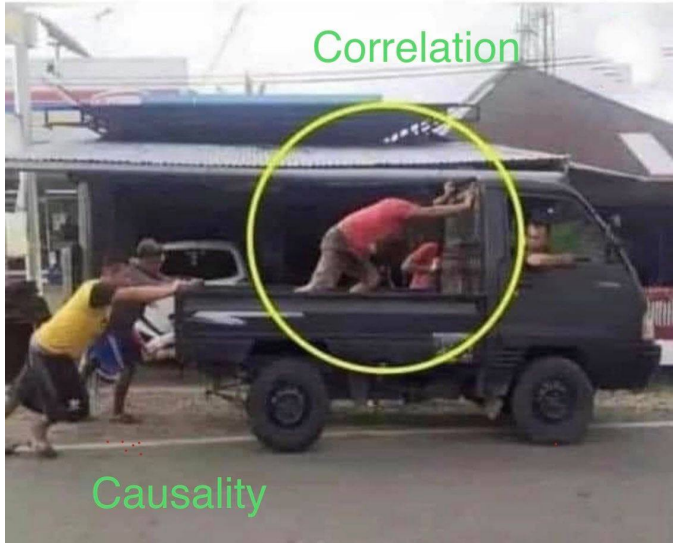
3. Think at the Margin

- Decisions are often not all-or-nothing but about small changes.

4. Separate Correlation from Causality

- Two things moving together doesn’t mean one caused the other.

Correlation Vs. Causality



How economists think

5. Think of the underlying assumptions

- Think on what are the assumptions that should be met for the statement to be true.
- Simplify reality and keep just what matters.

6. Be Skeptical of obvious answers

- Policies often have unintended consequences.
- Example: A price cap on rent might make housing more affordable — but also reduce the incentive to build new housing.

7. Don't trust one-size-fits-all solutions

- Different problems require different solutions: don't trust those who say "we should rise government spending" or "we should lower taxes" as a solution to different challenges.

Questions?