Introduction research and data analysis

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NYU

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NEW YORK UNIVERSITY

Things to keep in mind

- Come to recitation.
- Book my office hours.
  - Identify problems with your question.
  - Identify problems with your research design.
  - Provide guidance on data, statistics, Stata, R and Python.
- Ask me questions via email.
- Make progress during winter break.
- Don't forget the deadlines!
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Statistical software

- You will need Stata.
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- NYU's computer labs.
- Forums, youtube, ask google.
  - Stata list: `https://www.statalist.org/`
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We are interested in causal questions

What is the impact of D (your independent variable, the treatment) on Y (the outcome of interest or dependent variable)?

or...

Does D (your independent variable, the treatment) cause Y (the outcome of interest or dependent variable)?

What does this mean?

$$D \longrightarrow Y?$$

Lay out a hypothesis: Define D and Y.

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- How are you going to test your hypothesis:
  - What data would you use?
  - What tool will you use to test this hypothesis?
  - How are you going to convince people of your findings?

Developing a Research Question

Choose a topic, define an issue, ask a question, state a hypothesis:

- Topics are general:
  - Civil conflict.
  - Democracy/autocracy.
- Issues are the small components:
  - Climate shocks and unrest in Sub-Saharan Africa.
  - Aid and autocrat survival in developing countries.
- Questions are narrower elements of an issue:
  - Do climate shocks cause conflict?
  - Why does aid help autocrats?
- Propose an educated explanation:
  - Farmers' incomes fall, reducing the cost of rebellion.
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- Causal question: Does aid cause corruption in countries with weak institutions?
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- When institutions are weak it is hard to hold leader accountable.

Choosing a good research question

1. Identify a question that's interesting.
   - Ask a causal question.
   - Elevator pitch. You want to communicate and idea/lesson to the reader.
2. Identify a question that you are passionate about.
3. Read the existing literature.
   - We are standing in the shoulders of giants.
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4. It is better to be a bit narrow than too broad.
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- Google Scholar (Check citations).
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Tracking and organizing your references:

- Mendeley desktop: `https://www.mendeley.com/`
- JabRef: `https://www.jabref.org/`
- Google scholar cite button.

Important considerations in practice

Variables you need to think about:

- Dependent variable (Y): the outcome.
- Indepedent variable/treatment (D): the cause of the outcome.
  - It can be binary (received a cash transfer or not).
  - The amount of government transfers.
- Confounders: cause both the treatment and the outcome - sources of bias.
  - Observable? Can it be measured?
  - Unobservable - problematic.

$$D\text{: Aid} \longrightarrow Y\text{: Corruption}$$

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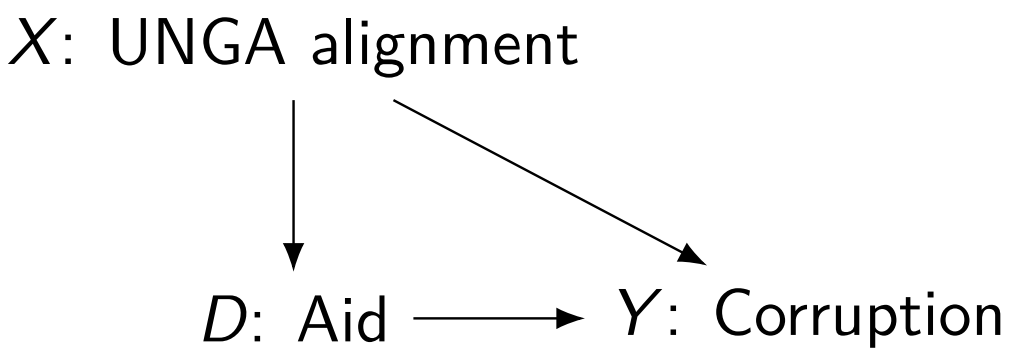

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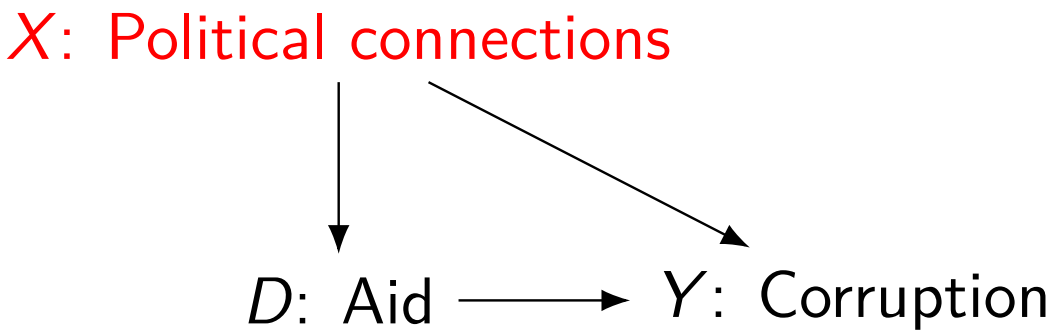

Very important considerations

Make sure the project is feasible:

- Identify your unit of observation (countries? individuals? counties?).
- Y and D need to vary accross your units of observation.
- If there is a time dimension, Y and D need to vary over time!
- Does your data exist? Can you get it on time?
  - Absence of data breaks a project.
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- World Values Survey, Afro/Latino/Euro/Asia/Arab-Barometer, European Social Survey.
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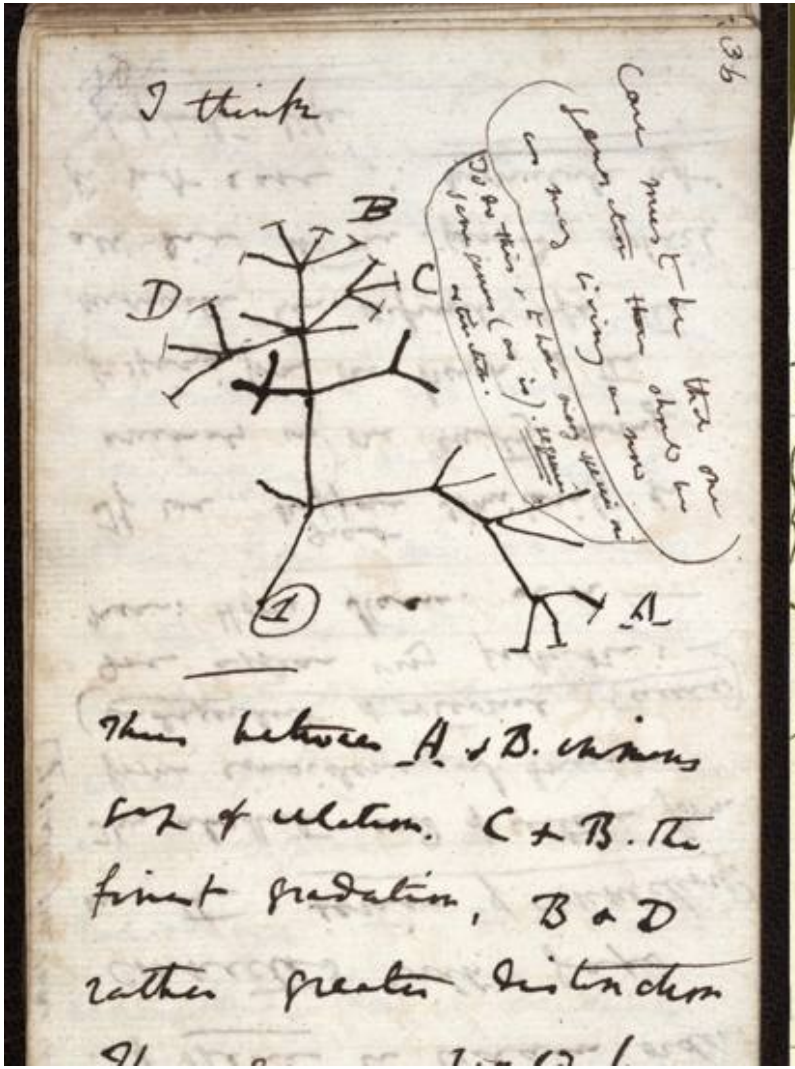
Before using any data:

- What is the source of this data? Is it likely to be accurate? What kinds of biases might there be?
- Read the manuals and codebooks first and check where and how the data previously was used.

A research notebook will save you headaches



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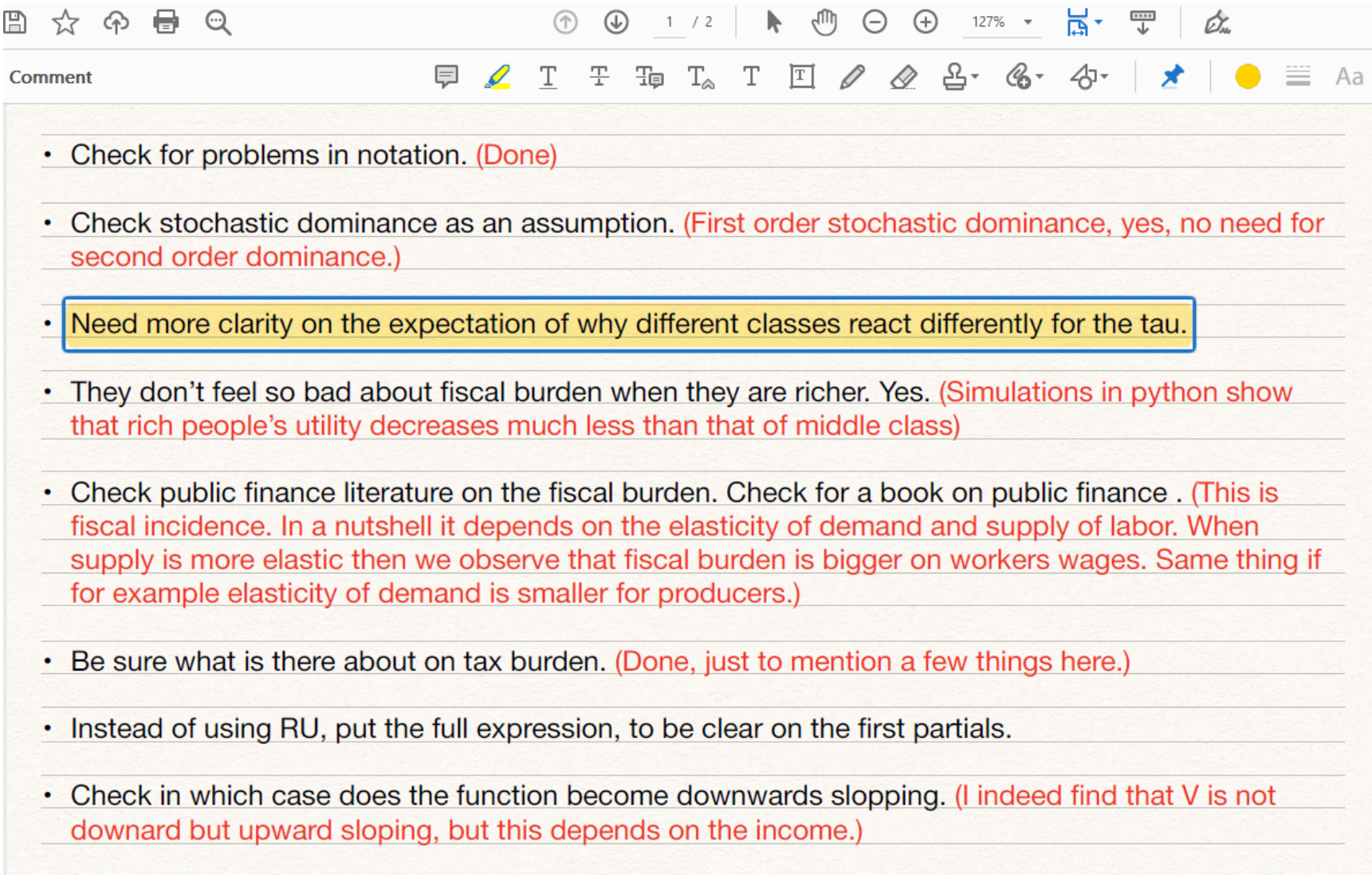

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- Document preparation system, designed for production of scientific and technical docs
- What-You-See-Is-What-You-Get style of document editing (Word etc.) vs. LaTeX
- LaTeXseparates presentation from content $\rightarrow$ LaTeXeditors save us!

Overleaf

1. www.overleaf.com
2. Below "Get started" now, click "Register"
3. To start a new project from scratch, in the main page click the "New Project" $\rightarrow$ "Blank Project"
4. Enter the name $\rightarrow$ "Create"
5. Edit .tex file now & to view the changes click Recompile

Goal: First paragraph of your paper in LaTex!

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