# Lecture 1: Introduction

## EC2303: Intermediate Development Economics

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# Today

- Course logistics
- What is this class about?
- How do we measure poverty?
- Randomized Controlled Trials (RCTs): Analysis and interpretation
- How to read academic papers like a pro

# Welcome Remote Student Exchange students!


# Read the course website / syllabus

https://haushofer.ne.su.se/ec2303

# Sign up for the course email list

https://www.freelists.org/list/ec2303

Important: All class updates from me will be communicated through this email list. There will be no updates on Athena.

# Send me your consent for video recording

https://haushofer.ne.su.se/ec2303/consent

# About the data project

See updated syllabuys on the course website!

# USA

## Peter Menzel: Material World

# Mali

## Peter Menzel: Material World

# This class is about understanding and alleviating poverty

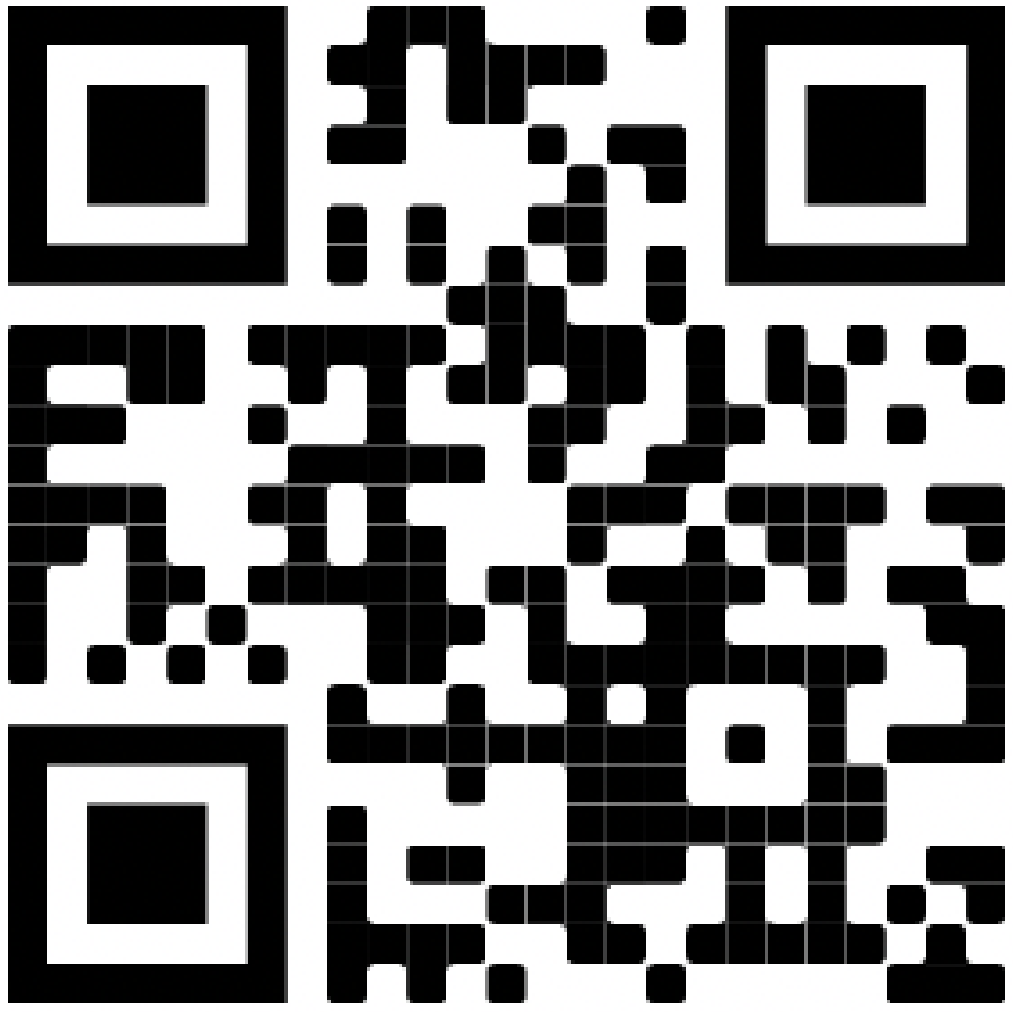
1. Understanding: Learn about the economic (and related) challenges faced by people experiencing poverty, and by poor countries
2. Alleviating: Learn what can be done about poverty: which interventions work, which don't, in which contexts, and why?
3. Learn how development economics thinks about these problems:
   - Theory: Simple models provide a coherent framework to understand the problem. $\rightarrow$ Get to know some of these.
   - Empirics: (i) Test the theoretical predictions to inform better theories and (ii) evaluate policies. $\rightarrow$ Learn to think critically about data.

   We will try to connect the two.

NB: Not the only, or the only valid, approach to understanding poverty and development. Political science, sociology, anthropology, psychology, engineering...

# Breakout rooms: Define "poverty" using the 1000 most common English words

https://splasho.com/upgoer5/



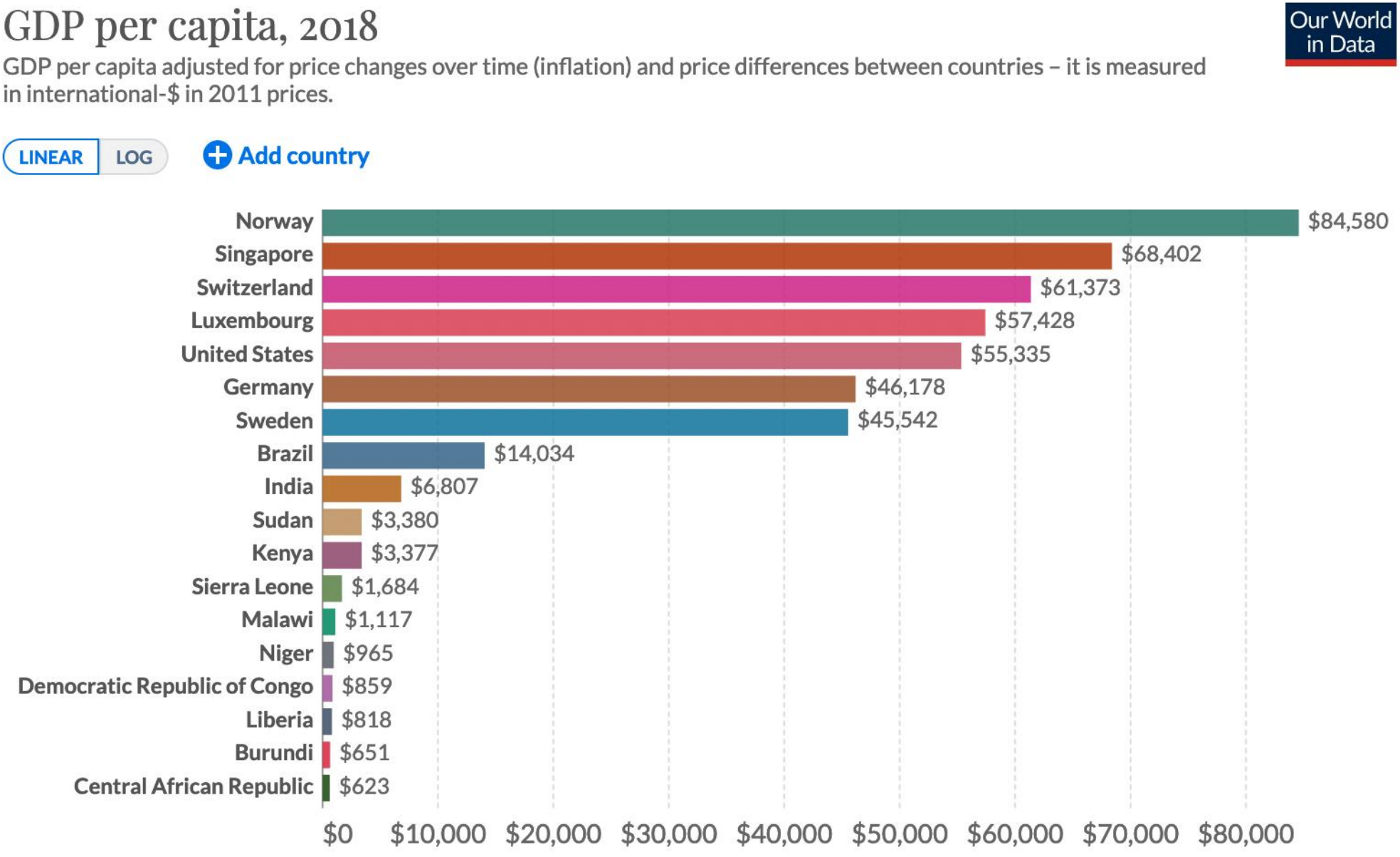
# How do we measure poverty?

- Especially at the macro level, we often use average GDP per capita. What is that?
  - Quantity of good i produced in country $j$ in year $t$: $x_{ijt}$
  - Price of that good in that country in that year: $p_{ijt}$
  - Number of inhabitants of that country in that year: $N_{jt}$
- Average GDP per capita is:

$$\sum_i p_{ijt} x_{ijt} / N_{jt}$$

- Another way to say this: "GDP is the value of all goods and services produced."
- We often use GDP adjusted for purchasing power parity (PPP): calculate GDP in the local currency, and then use not the nominal exchange rate, but the relative price of a consumption basket, to compare to another country
- Example: Consumption basket costs KES 440 in Kenya, USD 10 in the US $\rightarrow$ PPP exchange rate is 44 LCU (local currency units) per USD.

# There are large differences in GDP across the world

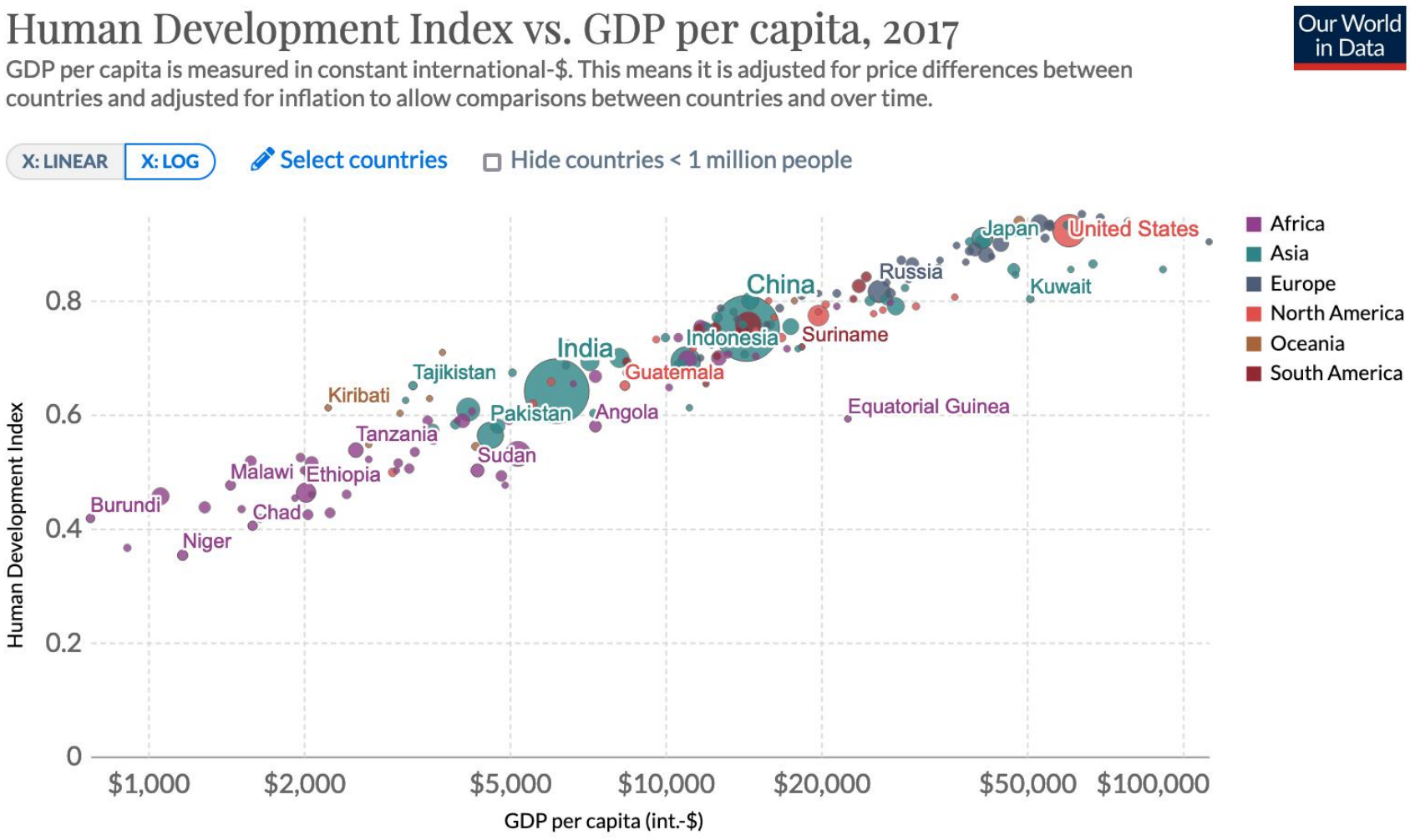


# Problems with GDP per capita as a measure of poverty

1. Does not capture all aspects of production: informal sector, home production
2. Market prices might not exist, or be a good measure of social value
3. Prices and goods might not be comparable across time and space
4. Does not account for resource depletion, e.g. air quality, oil reserves
5. Doesn't measure distribution of income (inequality)
6. Other things matter: health, education, happiness

# The Human Development Index (HDI)

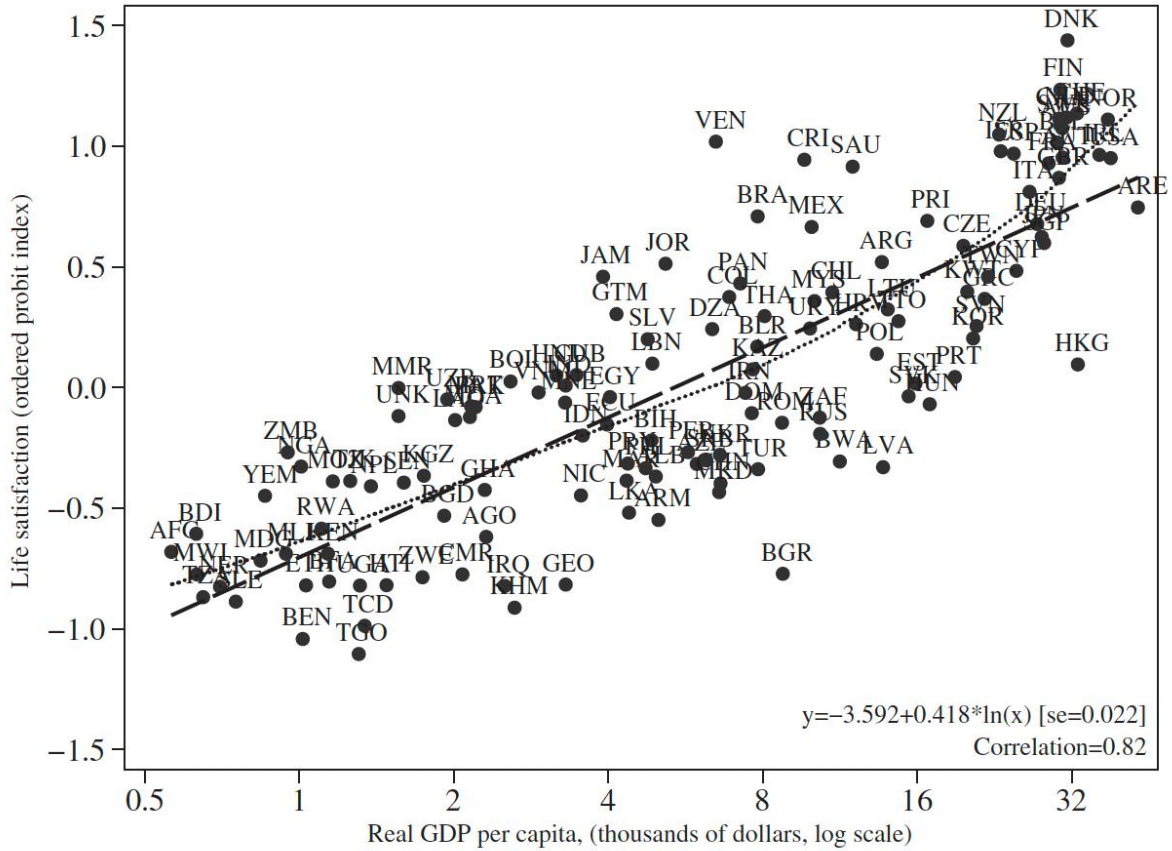
Combines three measures: life expectancy (measure of health); educational attainment; and GDP per capita.



# Life satisfaction and GDP

## Stevenson & Wolfers, 2008

**Figure 4.** Life Satisfaction and Real GDP per Capita: Gallup World Poll[a]




Sources: Gallup World Poll, 2006; authors' regressions. Sources for GDP per capita are described in the text.

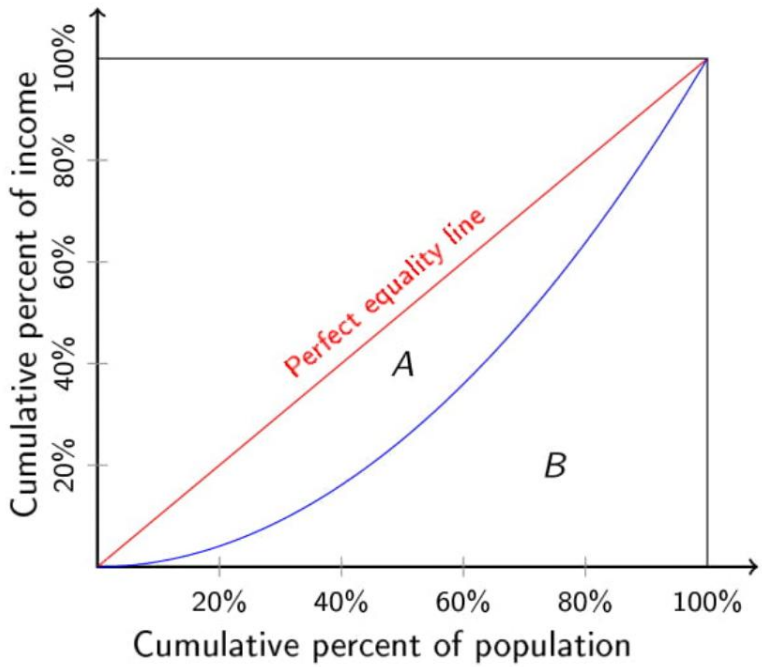
a. Sample includes 131 developed and developing countries. Respondents are asked, "Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" Dashed line is fitted from the reported ordinary least squares regression; dotted line is fitted from a lowess estimation. GDP per capita is at purchasing power parity in constant 2000 international dollars.

GDP has many problems, but it's also very highly correlated with many important welfare measures, like health, education, and life satisfaction.

What graph on Our World in Data did you find most interesting, and why?

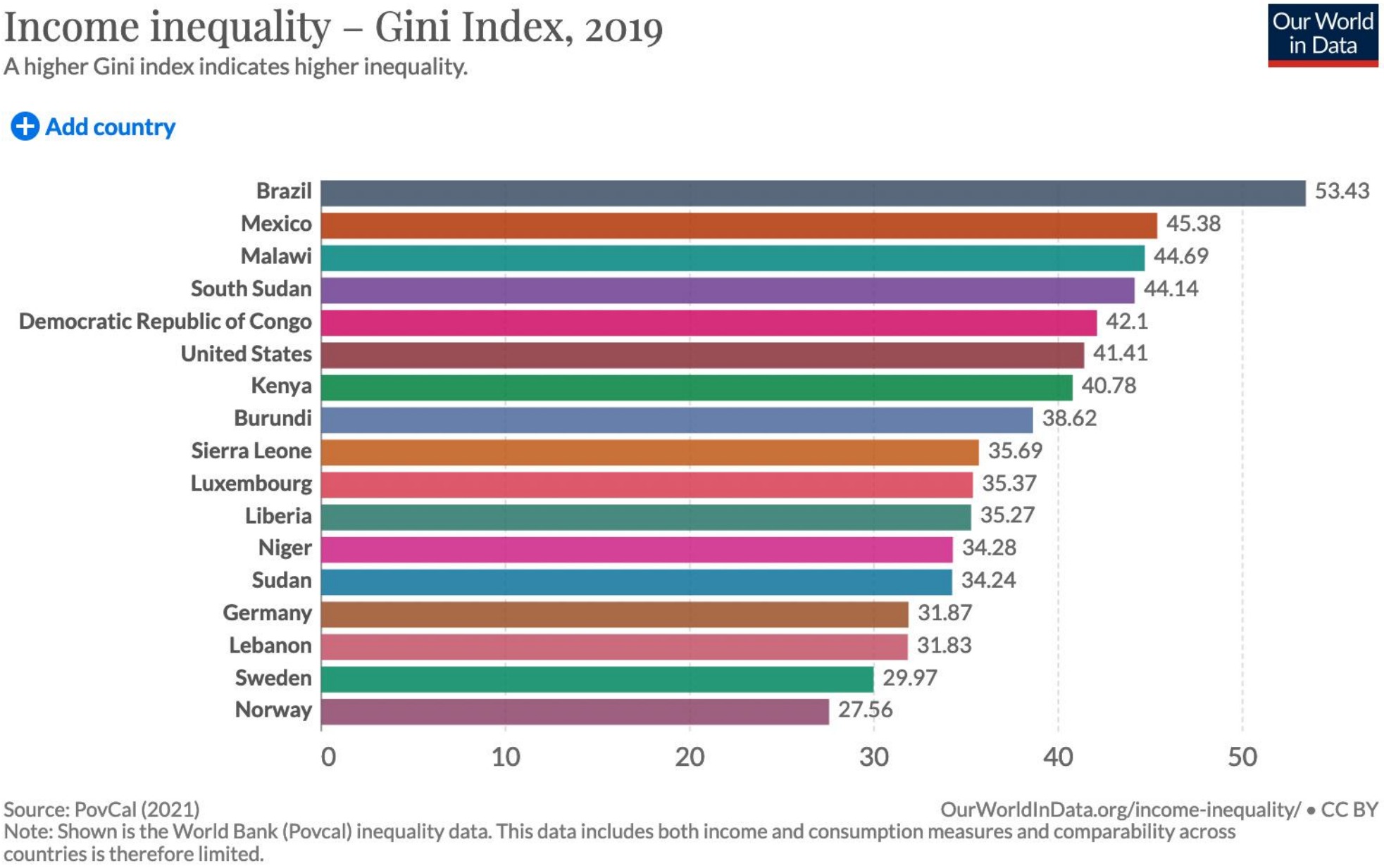
# Inequality

- Many measures, but a classic one is the Gini coefficient
- Graphical intuition: x-axis represents is the "bottom" x% of the population; y-axis plots the % of the total income that is cumulatively earned by that bottom x% of the population. This is called the Lorenz Curve.
  - Example: If the bottom 20% of the population together earn 1% of the total income, we'd have a point at x=20%, y=1%.




- Gini $= A/(A+B)$. Higher Gini $\leftrightarrow$ higher inequality

# There are large differences in inequality around the world

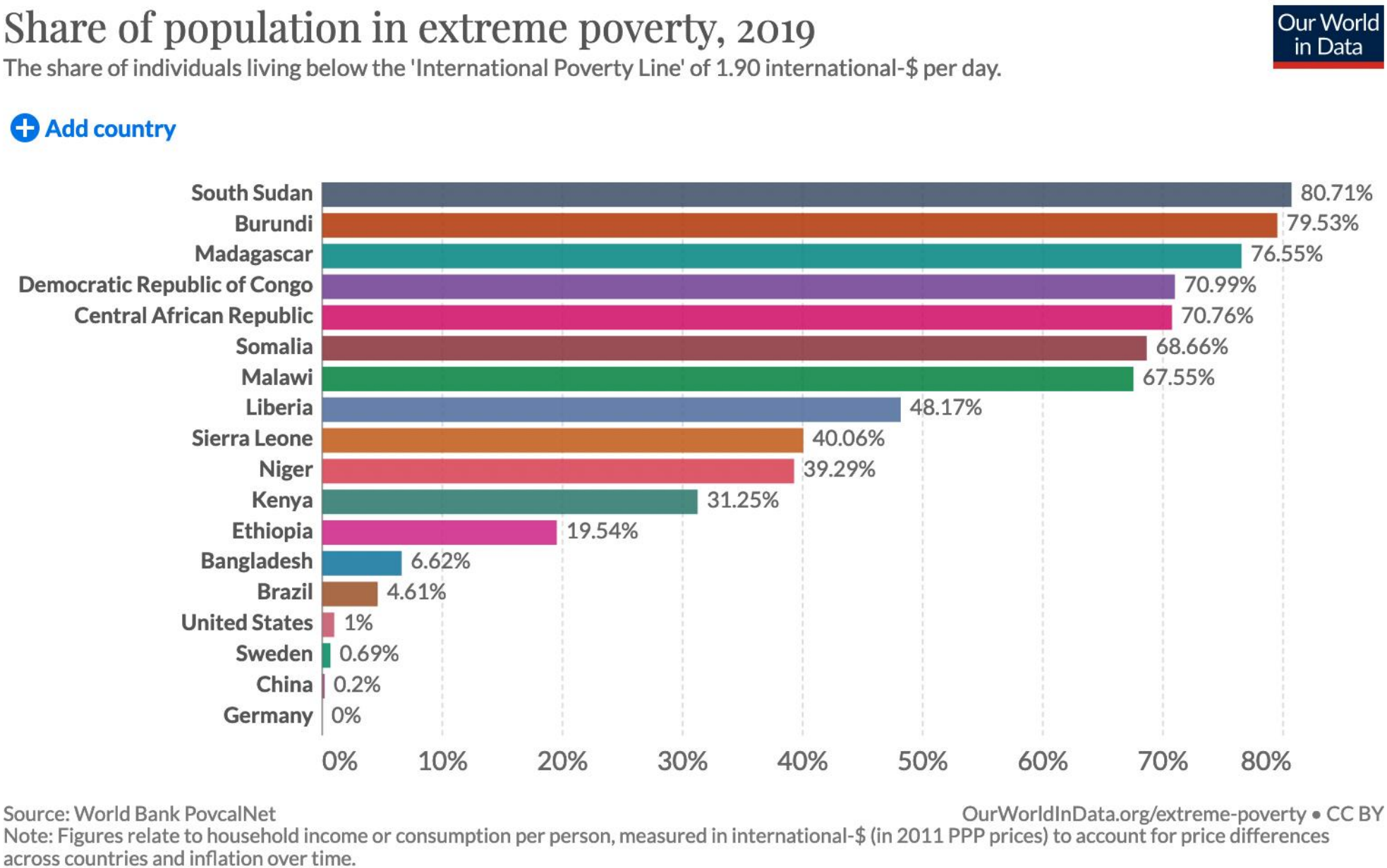


# Poverty headcount ratio

- When there is a lot of inequality, measures based on average income (like per capita GDP) may not be very meaningful: a few very rich people can obscure the fact that many people are poor
- One way of dealing with this problem is the poverty headcount ratio: the share of the population living below a certain income level (e.g. USD 1.90 per day).

# Poverty headcount ratio

## A poverty measure more robust to inequality



# Interim summary

- Despite much progress, many people around the world still live in extreme poverty
- Income poverty is highly correlated with other bad welfare outcomes, including short life expectancy and low life satisfaction
- There's not one perfect way to measure poverty, but different measures tell similar stories; e.g., many countries in Sub-Saharan Africa are still very poor compared to the rest of the world

# Poverty measures used in modern field studies

- Modern field studies in development economics use both multi-faceted and problem-specific measures of poverty and well-being
- For example, the impact of broad interventions (e.g. cash transfers) is measured using many different outcomes: consumption (incl. temptation goods), asset holdings, food security, income/revenue, labor supply, education, health, psychological well-being, intimate partner violence... even biomarkers like cortisol levels!
- The impact of interventions that are more narrowly focused on a specific problem is measured using outcomes which reflect that problem; e.g., malaria net distribution: share of children with malaria; school attendance.

Breakout rooms: What measures of poverty/well-being are used in Esther Duflo's TED talk, and in the chapters from Poor Economics that you read?

# Randomized controlled trials

- Many of the papers we will read report the results of randomized controlled trials (RCTs)
- In an RCT, a treatment/intervention is randomly assigned to some people (treatment group), but not to others (control group)
- Random assignment implies that the treatment and control groups are "identical in expectation" on all outcomes
  - This includes both observable and unobservable outcomes!
- Therefore, any differences between the two groups can be attributed to treatment
- RCTs therefore tell us about the causal effect of an intervention on outcomes
- RCTs are not the only way to get causal answers; there are econometric methods, such as instrumental variables, that can be used for observational data. But RCTs are an important part of the modern development economics toolbox.

# Analysis of RCTs

- Typical RCT regression: $y_i = \beta_0 + \beta_1 T_i + \delta y_{iB} + \gamma' \mathbf{X_i} + \varepsilon_i$
  - $y_i$: Outcome at endline
  - $T_i$: Treatment status (0=control, 1=treated)
  - $y_{iB}$: Outcome at baseline (included as a control variable to increase precision)
  - $\mathbf{X_i}$: Vector of other control variables (e.g. gender, age, education)
- The coefficient on $T_i$, $\beta_1$, measures the treatment effect. That's the difference in the average outcomes of the treatment and control groups, holding constant the other variables. Due to random assignment, it has a causal interpretation.

# How to read a regression table

## Haushofer & Shapiro, 2016

TABLE II

TREATMENT EFFECTS: INDEX VARIABLES

| | (1) Control mean (std. dev.) | (2) Treatment effect | (3) Female recipient | (4) Monthly transfer | (5) Large transfer | (6) $N$ |
|---|---|---|---|---|---|---|
| Value of nonland assets (US$) | 494.80 (415.32) | 301.51*** (27.25) [0.00]*** | [illegible] (50.38) [illegible] | [illegible] (45.92) [0.28] | [illegible] (49.09) [0.00]*** | 940 |
| Nondurable expenditure (US$) | 157.61 (82.18) | 35.66*** (5.85) [0.00]*** | −2.00 (10.28) [0.92] | −4.20 (10.71) [0.99] | 21.25** (10.43) [0.22] | 940 |
| Total revenue, monthly (US$) | 48.98 (90.52) | 16.15*** (5.88) [0.02]** | 5.41 (10.61) [0.92] | 16.33 (11.07) [0.59] | −2.44 (8.87) [0.84] | 940 |
| Food security index | 0.00 (1.00) | 0.26*** (0.06) [0.00]*** | 0.06 (0.09) [0.92] | 0.26** (0.11) [0.13] | 0.18 (0.10) [0.25] | 940 |
| Health index | 0.00 (1.00) | −0.03 (0.06) [0.82] | 0.10 (0.09) [0.72] | 0.01 (0.10) [0.99] | −0.09 (0.09) [0.72] | 940 |
| Education index | 0.00 (1.00) | 0.08 (0.06) [0.43] | 0.06 (0.09) [0.92] | −0.05 (0.10) [0.99] | 0.05 (0.09) [0.84] | 823 |
| Psychological well-being index | 0.00 (1.00) | 0.26*** (0.05) [0.00]*** | [illegible] (0.08) [0.43] | [illegible] (0.08) [0.99] | [illegible] (0.08) [0.00]*** | 1,474 |
| Female empowerment index | 0.00 (1.00) | −0.01 (0.07) [0.88] | 0.17* (0.10) [0.51] | 0.05 (0.12) [0.99] | 0.22** (0.11) [0.22] | 698 |
| Joint test ($p$-value) | | .00*** | .11 | .04** | .00*** | |

*Notes.* OLS estimates of treatment effects. Outcome variables are listed on the left, and described in detail in Appendix Table A.2. Higher values correspond to "positive" outcomes. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. FWER-corrected $p$-values are shown in brackets. Column (1) reports the mean and standard deviation of the spillover group, column (2) the basic treatment effect, that is, comparing treatment households to control households within villages. Column (3) reports the relative treatment effect of transferring to the female compared to the male; column (4) the relative effect of monthly compared to lump-sum transfers; and column (5) that of large compared to small transfers. The unit of observation is the household for all outcome variables except for the psychological variables index, where it is the individual. The sample is restricted to cohabitating couples for the female empowerment index, and households with school-age children for the education index. The comparison of monthly to lump-sum transfers excludes large transfer recipient households, and that for male versus female recipients excludes single-headed households. All columns include village-level fixed effects, control for baseline outcomes, and cluster standard errors at the household level. The last row shows joint significance of the coefficients in the corresponding column from SUR estimation. *denotes significance at 10%, **5%, and ***1% levels.

"Treatment increases the value of non-land assets by US$ 301.51 relative to a control group mean of US$ 494.80 (a 61% increase)."

Treatment effect

Standard error of the treatment effect

FWER p-value (adjustment for multiple comparisons)

"Treatment increases a psychological well-being index by 0.26 standard deviations [of the control group]."

# How to read academic papers like a pro

Everybody does this differently – do what works for you!

How I read papers:

1. Start with title and abstract; try to understand:
   - The intervention/change being studied
   - The main results (i.e. which outcomes were affected, and how strongly)
2. Then look at the figure or table that shows the main result. Look for:
   - How is the outcome measured?
   - How large is the effect
     - relative to the comparison group mean?
     - in absolute terms?
     - Statistical vs. economic significance

# How to read academic papers like a pro

3. Then, look at the methodology:
   - How was treatment assigned?
     - If randomized controlled trial, was the program delivered successfully?
     - If natural experiment, is the assignment plausibly random?
   - How large is the sample / how large are the standard errors? Are they clustered appropriately? Are the results "just" statistically significant ($p = 0.049$)?
   - Was there a pre-analysis plan?
   - Was there a lot of attrition (i.e. people dropping out of the study between baseline and endline)? Is it differential between treatment and comparison groups? How is it dealt with? (E.g. Lee bounds, Manski biounds)
   - Do the authors correct for multiple hypothesis testing?
4. Then read the rest of the paper, and think about the big picture. What do we learn from the study? Has your thinking about the topic changed? How does our understanding of poverty/development change? What are the policy implications?

# Next week

- Lecture 2: Mon 6/9 08:00–10:00, Auditorium 8, Södra huset hus D
  Capital Accummulation and Returns to Capital
- Lecture 3: Thu 9/9 08:00–10:00, Auditorium 4, Södra huset hus B
  Credit Markets and Microfinance