

DA4 Assignment: 2: Panel practice [individual, 12p]

Example: CO₂ emission and GDP

- ▶ To what extent does economic activity cause CO₂ emission?
- ▶ Importance
 - ▶ CO₂ emission may be the most important channel through which human activity leads to climate change
- ▶ Two flow variables
 - ▶ GDP: produced goods and services in a country over a year
 - ▶ CO₂: produced CO₂ in a country over a year

CO₂ emission and GDP Data

- ▶ World Development Indicators
 - ▶ Time series by country, 1992 to last available year
- ▶ GDP per capita
 - ▶ Measured in PPP USD at constant prices
- ▶ CO₂ emission per capita
 - ▶ Get total emission and divide by population
- ▶ Analyze log changes in different countries in various panel data models

Estimate and interpret

- ▶ Run these models and interpret coefficients for each of them
 1. Cross-section OLS for the year 2005
 2. Cross-section OLS for the last year
 3. First difference model, with time trend, no lags
 4. First difference model, with time trend, 2 year lags
 5. First difference model, with time trend, 6 year lags
 6. Fixed effects model with time and country fixed effects

Tasks

- ▶ Download data and describe it (1p)
- ▶ Consider coverage (missing values), drop countries with poor coverage document it (2p)
- ▶ Estimate and discuss coefficients for each model (5p)
- ▶ Think of a potential confounder, add to models 1,4,6 and discuss your finding (2p)
- ▶ Summarize your finding in a paragraph (2p)

To submit

1. Submit a pdf report
 1. could be markdown .html
2. Code and data should be either
 1. submitted
 2. Link provided / hosted in public repo such as github

AI policy

- ▶ You can use AI at every step. But you must check it.
 - ▶ I suggest use it to improve language and presentation and do coding yourself
 - ▶ Warning. Pay attention to precision of interpretation that AI might not get you!
- ▶ I'll expect a high quality very pretty submission