

Homework assignment #?

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MPP-C6: Statistics 2

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Project Description

You aim to reproduce the results of Stern and Common (2001) which sought to investigate the presence of an environmental Kuznets curve (EKC) for sulfur emissions. The EKC hypothesis “proposes that there is an inverted U-shape relation between various indicators of environmental degradation and income per capita” [1].

Dataset

The datasetdat contains country data from 1960-1990. The dataset contains the following variables

- *year* is the year in which the country was observed
- *country* gives a numerical code that uniquely identifies each country (see table ..)
- *pop* gives the population of the country in the given year
- *so* describes SO_2 emissions (unit???)
- *gdpppp* describes the GDP per capita (purchasing power parity) in real 1990 international dollars
- *sopc* describes SO_2 per capita
- *oe* is a dummy variable describing oecd membership where 1000 represents membership and 2000 represents non-membership

Questions

1. Use stata's `-import-` function to read the data.
2. Start by examining your data. What sort of distribution do our variables of interest display? What transformations could we apply to the data? If necessary, create new variables that are appropriately transformed.
3. Plot GDP per capita against sulphur emissions per capita (transformed if necessary). Describe the relationship you can see.
4. Write the equation for a model that could estimate an EKC for sulphur emissions. Create any extra variables that would be necessary to run this.
5. Carry out a pooled regression using the equation described in question 3. Interpret the coefficients.
6. Use stata's `rvfplot` command to visually inspect the results of your pooled OLS model for evidence of heteroskedasticity. Report your impression.
7. Perform a Breusch-Pagan test to establish whether the data suffer from heteroskedasticity problems. Interpret the result of the test.
8. If you do observe heteroskedasticity, describe what could be causing this.
9. Run a fixed-effects model and interpret the results.
10. Run a random-effects model and interpret the results.
11. Conduct a Hausman test to test whether it is appropriate to use the random-effects model and interpret the results.

References

- [1] David I Stern and Michael S Common. Is there an environmental kuznets curve for sulfur? *Journal of Environmental Economics and Management*, 41(2):162–178, 2001.