

## GSERM – Ljubljana 2024: Analyzing Panel Data

### Exercise

January 16, 2024

For this exercise, we'll use “country-year” data comprising annual measurements (from 1945-2014) on several variables for approximately 180 countries in the international system ( $N \approx 180$ ,  $T = 70$ , unbalanced). The data are available on the course [github repository](#), in the “Exercises” folder, in the file named “GSERM-APD-Exercise-January-2024.csv”. The variables in those data are:

- `Country`: The name of the country for that observation;
- `CountryCode`: A three-digit country identifier;
- `Year`: The year of the observation;
- `PercentLiterate`: The percentage of the population of that country in that year who are literate;
- `UnivEnrollmentPerK`: University enrollment (per 1000 population) in that country during that year;
- `POLITY`: The country's [POLITY IV](#) score in that year, ranging from -10 (fully autocratic) to 10 (fully democratic);
- `GDP`: The country's Gross Domestic Product that year (at factor cost);
- `TotalTrade`: The value of imports + exports for that country in that year, per capita, in constant U.S. dollars;

Your assignment is relatively simple, in that it involves answering the following question:

**What, if anything, is the association between a country's degree of education (the “dependent variable,” measured in terms of literacy and university enrollment) and the extent of its involvement in the international economy (the central “independent variable,” defined as total trade)?**

Use the tools we learned in the January 15-16 class sessions (as well as any other techniques you find appropriate), and include control (other potential confounding) variables in your models as you see fit (though *you need not go outside the provided dataset* to do so).

This assignment should be submitted *electronically* via email at or before 11:59 p.m. CET on Friday, January 19, 2024. Your assignment should include both a written response to the question, empirical analyses to support your written conclusions, and the all code necessary to replicate your analyses. (Your code may be submitted as an appendix to the PDF file, or as a separate `.R` file, or you may submit the entire assignment as an `Rmd` document.) You should submit your homework by emailing it to Dr. Zorn ([zorn@psu.edu](mailto:zorn@psu.edu)) before the due date. This assignment is worth 300 possible points.