

GSERM 2017: Regression III

Exercise One

Overview

The data for this exercise comprises on “Article 177” references to the European Court of Justice (ECJ). Article 177 references are cases in which national judges call upon the ECJ to issue a ruling in a case in which European Community law is material to the issue at hand. Since the vast majority of these cases deal with economic and trade issues, we’ll examine the general effects of trade levels on the number of such references.

The data consist of annual observations on 15 EU nations for the period 1961-1995; missing data bring the total number of cases to 316.¹ They are available in the “Exercises” folder on the course github repository, as file `GSERM-2017-ExerciseOne.csv`. The primary variable of interest is the number of Article 177 references brought to the ECJ from that nation in that particular year (*Cases*). We’ll examine the effect of three key variables on that outcome:

- *Trade* – The annual sum of imports plus exports, in billions of (constant) U.S. dollars.
- *Trade Balance* – The difference between annual imports and annual exports, in billions of (constant) U.S. dollars.
- *Centralization* – Governmental centralization, coded 1 if the state is a unitary system, and 0 if a federal/decentralized one.

Part I

Begin by assuming a linear regression model that includes all three variables additively:

$$\text{Cases}_i = \beta_0 + \beta_1 \text{Trade}_i + \beta_2 \text{Trade Balance}_i + \beta_3 \text{Centralization}_i + u_i$$

For the first part of the assignment, assess the need (if any) for transformations of the variables to normality. More specifically, make decisions about whether and how to transform each of the variables in the model (both dependent and independent), discuss how you reached those decisions, and provide support for them.

¹For purposes of this exercise, you should ignore the fact that these are panel/time-series/cross-section data.

Part II

Quasi-constructivist scholars (e.g., Stone Sweet and Brunell 1998) would predict that higher overall levels of trade will increase the number of Article 177 claims. This general effect, however, could be mediated by two factors. First, the effect of overall trade levels on Article 177 references ought to be greater for states which have high negative trade imbalances (i.e., greater imports and fewer exports) than among those which have net trade surpluses. Second, one might expect that, because cases can be brought from any level of government, federal systems (with their higher number of potential “points of contact”) (a) will have absolutely higher numbers of references than will unified systems, and (b) that Article 177 references will exhibit greater responsiveness to trade levels in federal systems than in unitary systems.

Your assignment for this part is simple: to test the above hypotheses, using OLS regression. Once you have done so, briefly discuss your findings. Be sure to interpret your results both statistically and substantively, and to include discussion(s) of the uncertainty associated with your findings.

This homework is due at or before 8:00 p.m. local time on **Thursday, June 22, 2017**, and is worth a possible 50 points. Homeworks should be submitted as .PDF files, e-mailed to zorn@psu.edu.