POLI706: Advanced Methods of Political Analysis

Problem set 8

This assignment allows you to explore and present your understanding of key concepts related to different types of variables and their interrelationships.

• First, run the following R codes and load necessary packages to use.

```
library(broom); library(tidyverse)
if (!require("devtools")) install.packages("devtools")
if (!require("vdemdata"))

         devtools::install_github("https://github.com/vdeminstitute/vdemdata")
vdemdata::vdem |> as_tibble() -> vdem_df
```

• Subset the sample as follows:

Collaborate and discuss extensively, write exclusively in your own voice. You can find readings from the learning module.

Exercise 1

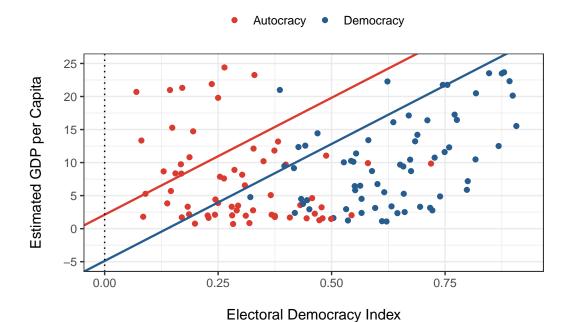
Aside from the ID variables (i.e., country_name, COWcode, year), explain what each variable is capturing, and its level of measurement (if numerical, explain whether it is discrete or continuous, and whether it is a ratio variable).

Hint: You will need the codebook. Googling the variable name takes you right to a useful webpage (https://v-dem.net/documents/38/V-Dem_Codebook_v14.pdf).

Exercise 2

Using the sample data, specify a regression model in the form of, $y=\beta_0+\beta_1x_1+\beta_2x_2+u$, where y is your outcome–GDP per capita (e_gdppc), and x_1 is Electoral Democracy Index (v2x_polyarchy) and x_2 is Dichotomous measurement of democracy (e_boix_regime).

- a. Explain the models in detail.
- b. Estimate the intercept, slopes, standard errors (all!), and variance of the error. Describe each item in a short write-up. Make all comparisons between these quantities that make sense.
- c. Describe what the plot below suggests. Do you really care what β_1 and β_2 are? How are they different?



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