

SPEC REU R Resources: Visualizing & Analyzing Regressions

Results – Groupwork

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For this group work, we will continue working with the `IDC_training_2021.rds` dataset to explore the relationship between ethnic political power, political participation, and democratic outcomes.

The goal of this assignment is to practice constructing simple and multivariate regression models (both linear and binomial), generating preliminary visualizations to better understand the data, and formatting professional-quality tables. Your task will be to estimate four regression models—two simple regression models and two multivariate models—plot the results, and present them in a table using the `texreg` package.

Initial Setup

Before we begin, ensure that your working directory is set up correctly and that you have loaded the required libraries and the `IDC_training_2021.rds` dataset.

For reference, the IDC Powersharing Dataset was introduced in the research paper “*De Jure Powersharing 1975–2019: Updating the Inclusion, Dispersion, and Constraints Dataset*” by Ziff, Barnum, Abadeer, Chu, Jao, Zaragoza, and Graham (2024). You can find the research paper and the online appendix [here](#).

Exercise 1: Exploring the Relationship Between Ethnic Political Power and Democracy

How does ethnic minority political power influence democratic outcomes? In this group work, we will explore whether ethnic minority political power influences democratic outcomes, using two different measures for democracy as dependent variables: a continuous electoral democracy index and a binary classification of democratic status.

Exercise 1.1: Preliminary Plots

Before running any regressions, plot the distribution of electoral democracy scores and the frequency of democratic (1) and non-democratic (0) observations. These preliminary visualizations will help identify skewness, outliers, and patterns that could impact the regression results.

Bonus Exercise

As a bonus question, visualize the distribution of electoral democracy scores across countries based on whether ethnic minority groups have political power (`cntrl_relevance_binary_EP`). The goal of this plot is to reveal potential differences in democracy levels based on ethnic political power and provide an initial understanding of the relationship before running regressions.

Exercise 1.2: Running Simple Regressions

Now, to begin the regression analysis, estimate two simple regression models, one for each measure of democratic outcome, using the binary measure for whether ethnic minority groups have political power as the independent variable. Save the output of these models as objects with clear and appropriate names.

Given the different types of dependent variables (continuous and binary), what statistical models are appropriate?

Exercise 1.3: Estimating Multivariate Models

Next, since we are interested in the effects of ethnic politics on democracy, let's deepen the analysis by introducing control variables that might shape the relationship between ethnic politics and democratic outcomes. Two potentially relevant factors are institutional constraints on ethnic political participation (whether rules exist banning the formation of ethnically-based political parties) and the economic development level of a country (measured by GDP per capita).

Adjust your models in Exercise 1.2 to include these controls and assess whether they alter the initial findings.

Helpful Hint Instead of using GDP per capita directly, transform it using the natural logarithm to reduce skewness, improve linearity in regression models, and better capture diminishing returns in economic effects on democracy.

Exercise 2: Creating a Publication-Grade Table

Now that we have estimated our four models, present all the results in a well-structured table in HTML format.

Note: Make sure you save your output file in the appropriate folder on your device with a clear filename.

Exercise 3: Interpreting Results

Lastly,, in a few sentences, interpret the results displayed in your table. What do the coefficients suggest about the relationship between ethnic political power and democracy? How do the results change when adding control variables? Do these results align with our initial predictions?

Conclusion

In this group assignment, we explored the relationship between ethnic political power and democracy using both simple and multivariate regression models. The preliminary visualizations helped us identify patterns in the data, while the regression analysis allowed us to evaluate the role of ethnic political power in shaping democratic outcomes.

In the next homework assignment, we will continue practicing these concepts, refining our regression models and professional-quality tables, and further improving our interpretation of statistical results.