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SODA 496: Multiple Regression Assignment

April 22, 2020

The purpose of this ordinary least regressions analysis is to replicate Howard and Roessler’s and Donno’s analysis on the continuous dependent variable democracy. Utilizing the Varieties of Democracy, WDI, DPI, and Mass Mobilization datasets, I merged these tables with my own table measuring coalition to complete the dataset for this analysis.

The dependent variable is a continuous measure of democracy from the Varieties of Democracy V9. The independent variables included in this multiple regression are prior liberalization, misconduct intensity, coalition, government vote share, GDP growth, foreign aid, and foreign direct investment. In order to analyze the dependent variable at t, t+1, and t+4, I used the variables for prior liberalization at the given time intervals from Varieties of Democracy in the merged dataset assignment. In order to ensure I was only using country-election-years, rather than all country-years for these values of t, I removed rows that had NA for coalition because I collected that dataset using only country-election-years.

|  |  |  |  |
| --- | --- | --- | --- |
| **Multiple Regression of Democracy** | | | |
|  | | | |
|  | Dependent variable: | | |
|  |  | | |
|  | Democracy | | |
|  | t | t+1 | t+4 |
|  | | | |
| Prior Liberalization at t | -0.001 |  |  |
|  | (0.015) |  |  |
|  |  |  |  |
| Prior Liberalization at t+1 |  | 0.043\*\*\* |  |
|  |  | (0.013) |  |
|  |  |  |  |
| Prior Liberalization at t+4 |  |  | 0.062\*\*\* |
|  |  |  | (0.014) |
|  |  |  |  |
| Misconduct Intensity | -0.066\*\*\* | -0.067\*\*\* | -0.053\*\*\* |
|  | (0.022) | (0.020) | (0.019) |
|  |  |  |  |
| Coalition | 0.061\*\* | 0.042 | 0.046\* |
|  | (0.028) | (0.026) | (0.023) |
|  |  |  |  |
| Gov. Vote Share | 0.005\*\*\* | 0.004\*\* | 0.004\*\*\* |
|  | (0.002) | (0.002) | (0.001) |
|  |  |  |  |
| GDP Growth | 0.00002 | -0.00000 | 0.00000 |
|  | (0.00003) | (0.00003) | (0.00002) |
|  |  |  |  |
| Regime Openness | 0.054\*\*\* | 0.010 | -0.008 |
|  | (0.017) | (0.020) | (0.019) |
|  |  |  |  |
| Foreign Aid | 0.000 | 0.000 | 0.000 |
|  | (0.000) | (0.000) | (0.000) |
|  |  |  |  |
| FDI | -0.002 | 0.0001 | -0.0003 |
|  | (0.003) | (0.003) | (0.002) |
|  |  |  |  |
| Constant | 0.279\*\*\* | 0.315\*\*\* | 0.278\*\*\* |
|  | (0.088) | (0.078) | (0.072) |
|  |  |  |  |
|  | | | |
| Observations | 57 | 57 | 58 |
| R2 | 0.509 | 0.605 | 0.652 |
| Adjusted R2 | 0.428 | 0.539 | 0.595 |
| Residual Std. Error | 0.096 (df = 48) | 0.086 (df = 48) | 0.080 (df = 49) |
| F Statistic | 6.227\*\*\* (df = 8; 48) | 9.195\*\*\* (df = 8; 48) | 11.480\*\*\* (df = 8; 49) |
|  | | | |
| Note: | \*p\*\*p\*\*\*p<0.01 | | |

The results show that the estimates for prior liberalization at t-1 and t-4 have more of a significant impact on democracy than prior liberalization at t. At t, we only see a slight decrease of .001 unit change in democracy. However, for t+1 and t+4, as prior liberalization changes, we see a 0.043 and 0.062 increase per unit in democracy respectively; additionally the p-value for prior liberalization at t+1 and t+4 at their resulting magnitude across repeated values is low enough in relation to the rest of the results because we statistically hypothesized this value to be 0.

We see for prior liberalization at t, as the estimate for coalition changes it results in a 0.061 increase in the dependent variable. While we can say that coalition at t and is statistically significant with a p-value of 0.05, the magnitude of misconduct intensity and government vote shares are more significant across all values of t than other independent variables in this analysis. This tells us that while coalition has an effect on democracy stronger than GDP growth, foreign aid, and FDI, misconduct intensity and government vote shares have a stronger impact. All of the p-values for misconduct are less than .01 therefore, while a change in misconduct intensity results in a decrease of ~0.6 units of democracy at all values of t, their resulting magnitude across the table is statistically significant because we predicted a value of 0. We find this to be true for the p-value of government vote shares as well, even though as it changes, it has almost 0 change in units of democracy.

Additionally, I noticed that foreign aid, FDI, and GDP growth all had p-values greater than 0.8 for t+1 and t+4, and while they were lower for prior liberalization at t, we can conclude that the impact of these variables on democracy is not significant because we statistically hypothesize these values to be 0, but their magnitude from 0 is too high for our convention for p-values.