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Pol 640 -- Data Assignment  
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For this assignment, I assess the relationship between natural resource dependence, economic growth, ethnolinguistic fractionalization, and economic development on the level of democracy. The indicator for natural resource dependence, economic growth, and economic development are from the World Bank’s World Development Indicators. I choose the total percentage of natural resource rents by GDP as the indicator for natural resource dependence, although the dataset has other indicators (e.g. percentages of fuel exports and metal exports, and percentages of forest rents, natural gas rents, oil rents, and mineral rents by GDP) that might be useful for more specific research questions in the future. I choose GDP per capita measured at purchasing power parity (PPP) in the format of constant 2017 international dollar to be the indicator for economic development. The indicator for economic growth in this paper is the percentage of GDP growth. The level of ethnolinguistic fractionalization is developed by Drazanova (2019), relatively continuous, and ranging from 0 (least) to 1 (most). The assessment of the effects on democracy will be presented in 4 models with the level of democracy from 4 data sets.

I use linear regression models to fit the data in all 4 models. This is not suitable for serious analysis in many ways. For example, the first model uses the binary democracy score of 0 and 1 constructed by Cheibub, Gandhi, and Vreeland (2010) from multiple measures. A non-linear model (e.g. logit or profit model) should be used in future analysis. Model 2 and 4 might also be better analyzed using an ordered logit model. I also did not include fixed effects or time effects in the models.

In Model 2, I use the Executive Index of Political Competitiveness score from the World Bank’s Database of Political Institutions to measure democracy. The measure ranges from 1 to 7 with some data points jumping in half steps (e.g. 3.5). The measure for level of democracy in Model 3 is the total freedom score from Freedom House, ranging from 1-100. In Model 4, the democracy score is from Polity V data set and ranges from 0 to 10 as a 11-point scale. Given the time limit, I did not go in-depth on how they construct each measure although it will be necessary in future analysis to ensure that we correctly interpret the results.

In all 4 models, I found that the percentage of natural resource rents by GDP has a negative relationship with the level of democracy at the significant level of 0.001. GDP per capita has a positive correlation with the level democracy at the significant level of 0.001 in Model 1, 3, and 4 while at the significant level of 0.05 in Model 2. Model 2 and 3 show that ethnolinguistic fractionalization has null effects on the level of democracy while Model 1 and 4 suggest that a more ethnolinguistically diverse country is less likely to be democratic, controlling for the aforementioned economic factors. Model 1 and 2 suggest that GDP growth has null effects on the level on democracy while Model 3 and 4 show that controlling for natural resource rents, GDP per capita, and ethnolinguistic fractionalization, countries with lower GDP growth tend to be more democratic.

**TABLE 1**: Linear regression of ethnolinguistic fractionalization, natural resource rents,   
GDP per capita, and GDP growth on different measures of democracy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***βi*** *(Standard Errori)* | ***MODEL1*** | ***MODEL 2*** | ***MODEL 3*** | ***MODEL 4*** |
| *Indicator of democracy* | Binary democracy score of 0 or 1 | EIEC score from 1 to 7 | Total freedom score from 1 to 100 | Democracy score from 0 to 10 |
| *Intercept* | 0.7642049\*\*\* (0.0220341) | 6.413378\*\*\* (0.087046) | 62.81277\*\*\* 1.67989 | 6.718592\*\*\* 0.150721 |
| *EF index from 0 to 1* | -0.2850618\*\*\* (0.0372775) | -0.192458 (0.142652) | 0.04376 2.73107 | -1.603188\*\*\* 0.247232 |
| *Percentage of natural resource rents by GDP from 0 to 100* | -0.0175413\*\*\* (0.0008773) | -0.066948\*\*\* (0.003008) | -0.96950\*\*\* (0.05155 | -0.151158\*\*\* 0.005475 |
| *GDP per capita in thousand dollars* | 0.0042930\*\*\* (0.0005289) | 0.005019\* (0.002119) | 0.51155\*\*\* (0.03548) | 0.062334\*\*\* 0.003646 |
| *Percentage of GDP growth* | -0.0005865 (0.0015632) | 0.001769 (0.005535) | -0.41093\*\*\* (0.10572) | -0.024072\* 0.011660 |
| *Adjusted R-squared* | 0.236 | 0.1806 | 0.4009 | 0.3401 |
| *Degree of freedom* | 2306 | 2584 | 1027 | 2795 |
| *Year of data* | 1960-2008 | 1975-2012 | 2006-2013 | 1960-2013 |

Note: \*\*\* = p-value < 0.001 and \* = p-value < 0.05