POLI 281 Final Paper

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Introduction

This paper aims to provide insight into the relationship between regime and corruption levels world-wide. We take a multidimensional approach to this question in order to produce original findings on these relationships. In addition to this, we will also examine the impact of education level on that relationship. We first hypothesize that an increase in democracy leads to a decrease in corruption. This hypothesis is built upon the idea that if constituents have more opportunities to criticize and change their government, the government will be less corrupt. We are particularly interested in how this relationship changes when adding the context of education levels. Our second hypothesis contends that this relationship will be strengthened when the state is more educated. This hypothesis is based on the idea that people who have higher levels of education are more likely to be knowledgeable about their state's political situation and the ways in which they can participate in the political process.

Many previous studies examine factors that could influence corruption, and specifically how democracy could reduce corruption. Past research has also looked into the benefits of education on political outcomes and processes. Our study aims to add unique conclusions to this literature by examining the effect of education on the relationship of regime and corruption. This specific question could inform efforts to reduce corruption across regimes.

A significant body of previous works informed our theories for this paper. We begin by summarizing these works and their relevance to our research question. Then, we use those findings to justify our two hypotheses. After explaining the theories we are testing, we outline the methods and data we used to make our conclusions. Our paper used data from a widely available dataset, VDem. We subsetted all of the data down to information on the most recent ten years of four specific variables of interest. We performed three regressions on this data to determine the strength and direction of the relationships we hypothesized. Lastly, we described the meaning and importance of our findings.

Theory and Hypotheses

Our paper provides an insight into the relationship between regime and education on political corruption. First, we believe there is an association between regime and corruption because previous research indicates that as a government becomes more democratic, there tends to be less political corruption (Jetter and Parmeter, 2018). Next, we examine the relationship between regime and political corruption by level of education because educated citizens are both likely to be more aware and less tolerable of corruption within politics and are generally more politically involved (Castelló-Climent, 2008).

A study by Amparo Castelló-Climent contends that while "more education is related to a greater degree of democracy," equal distribution of education is the relevant variable to be studied (Castelló-Climent, 2008). Castelló-Climent establishes the relationship between

education and democracy. We look further to understand the relationship between education and political corruption. A study by Michael Jetter and Christopher F. Parmeter concludes that in developing or non-OECD countries, education has a specific impact on corruption (2018). Their findings indicate that a higher level of basic education leads to lower levels of political corruption (Jetter and Parmeter, 2018). This is because educated populations are likely to be more aware of a corrupt government (Jetter and Parmeter, 2018). Additionally, to further bolster our claim that educated citizens are more likely to be aware, Juan Botero et al. performed a study explaining the relationship between education and corruption. Their study finds that the mechanism that explains this relationship is citizens' complaints (Botero et al., 2013). For example, they find that "better-educated citizens are indeed more likely to complain" about corruption and this leads to "greater accountability and a higher quality government" due to officials' fear of being punished. (Botero et. al, 2013). Combining the results found in these studies, it can be concluded that there will be a distinct correlation between higher education and lower levels of political corruption.

Furthermore, to understand the relationship between regime and political corruption we draw on additional studies. One example comes from John Gerring and Strom C. Thacker, who performed a multinational analysis that examines levels of unitarism and parliamentarism on political corruption (2004). Our analysis builds off this idea because this previous literature informs the theory that the organization and characteristics of a government at a larger scale will have an influence on levels of corruption. In the case of Gerring and Thacker, even a small difference in these factors were correlated to a change in corruption levels. We theorize that our study will produce similar results, indicating that regime does have an influence on corruption levels. Additionally, a study performed by Hanne Fjelde and Håvard Hegre examines the relationship between political institutions and political corruption, arguing that "political corruption is an informal institution that … extends the longevity of non-democratic regimes" (2014). Their findings show that "democracies are much more likely to decrease corruption than autocratic and hybrid regimes" (Fjelde and Hegre, 2014). Although this study focuses on stability within regimes that involve corruption, the literature provides an additional basis for our argument that more democratic governments are likely to have less political corruption.

We establish two hypotheses:

Hypothesis One: We predict that as democracy increases, political corruption will decrease.

Hypothesis Two: We predict that increased education levels will strengthen the negative relationship theorized in Hypothesis One.

Data and Analysis

The dataset we are using is the VDem dataset. It contains political survey data dating from 1789 to 2020 regarding a wide number of countries and information about their democratic indices, levels of freedom, political corruption, suffrage by gender, GDP statistics, population, urbanization level, and more. We have chosen to look at 5 variables: v2x_corr (political corruption index, renamed corr in our code), v2x_regime (Regime of the World measure,

renamed regime), e_peaveduc (average years of education for citizens older than 15, renamed educ), year (the year the data is from), and e_migdppc (GDP per capita, renamed GDP). We chose these variables because we wanted to see the nature of the relationship between the type of regime and the level of political corruption when we look at countries with higher versus lower levels of education. Regime is our independent variable and the political corruption index score is our dependent variable. We included GDP per capita as a control variable in our linear regression because we theorized that the economic prosperity of a country may be correlated to both regime and the levels of corruption in that country, making it a potential confounding variable. In order to look at the most relevant information, we decided to use data from only the most recent 10 years available in the dataset. Due to unavailable data in the years 2019 and 2020, the most recent 10 years were 2008-2018. After subsetting, 1,474 observations remained in our sample.

We did not recode our corruption variable, corr, because the scale of 0 to 1 is very indicative for the purposes of this analysis — 0 representing the least corrupt states and 1 representing the most corrupt. We did not recode our regime variable. It is a categorical integer variable ranging from 0 to 3 that has a purpose assigned to increasing values — lower values correspond to more authoritarian regimes while higher values correspond to more liberal democracies. In our regression, both the main independent and dependent variables were treated as continuous variables. However, in our figures, we turned the categories of regime into factors in order to make the x-axis more readable. Our education variable is represented by numerical values ranging from 0.01 to 13.61. While we did not recode the education variable, we used these values to break our data into two subsets (states with higher average levels and lower average levels of education) based on the median value of the variable for the years we considered.

Our control variables are the year variable and GDP per capita. We did not recode either of these variables. We used year to subset the data because we believe that looking at data from too far in the past may not be relevant. Additionally, the changes in regimes and levels of corruption in the same countries over time may skew the data. For these reasons, we used only the most recent 10 years of data available. We are using the GDP per capita variable to account for any impact that it may have on corruption and regime. A country with a higher GDP per capita might correspond to lower corruption and a more democratic regime.

To test our hypothesis, we used an ordinary least squares regression to determine the relationship between regime and corruption. We ran three separate models, one that included all levels of education without subsetting, one conducting a regression on countries with average levels of education lower than 7.918 years (median for the data), and one conducting a regression on countries with average levels of education higher than 7.918 years. For our linear regressions, we will simply be incorporating GDP per capita as one of the variables in the model to control for its impact.

Results

For all of our regressions, we plotted regime on the x-axis and corruption level on the y-axis. For our first regression, we plotted the mean corruption levels for each regime in the form of a bar plot. We included all education levels in this plot to show the general trend of how regime impacts the corruption level. In our regression model, we included regime and GDP as the independent variables. Figure 1 shows our bar plot and Table 1 shows the results of our regression model.

Figure 1: Mean Corruption Levels by Regime

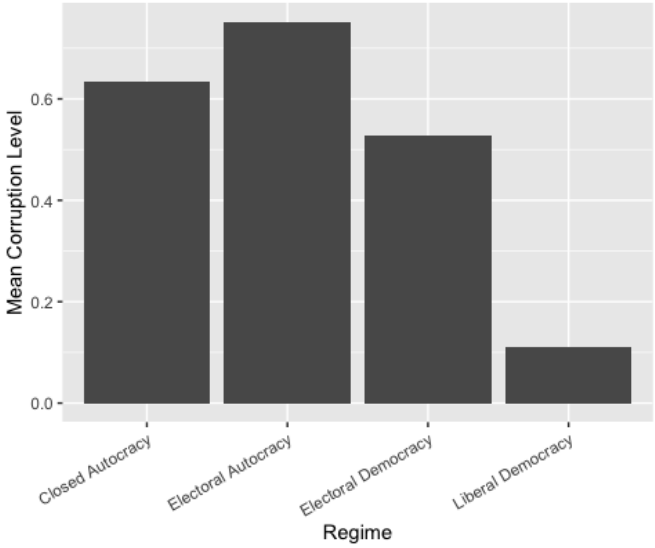


Table 1: Regression for Corruption Level by Regime

Relationship Between Corruption and Regime

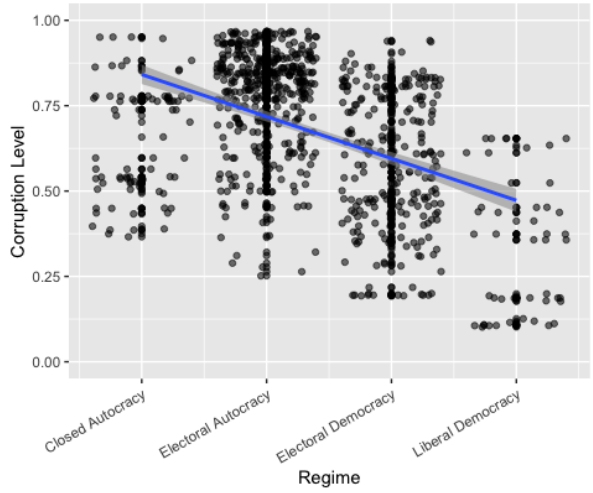
	Dependent variable:
	Corruption Level
Regime	-0.150***
	(0.006)
GDP Per Capita	-0.00001***
	(0.00000)
Constant	0.920***
	(0.010)
Observations	1,474
R^2	0.670
Adjusted R^2	0.670
Residual Std. Error	0.182 (df = 1471)
F Statistic	1,493.296*** (df = 2; 1471)
Note:	*p<0.1; **p<0.05; ***p<0.01

From Figure 1, we clearly see a negative relationship between regime and mean corruption level, which matches our hypothesis. Table 1 shows us that the coefficient on our regime variable is negative (-0.150) and statistically significant as the p-value is below .01. As a state transfers into a more democratic regime, corruption levels are expected to decrease by .150. The regression also has an R^2 value of 0.670, displaying the strength of our model. All this further supports our hypothesis: states that are more democratic are more likely to see lower levels of corruption in their governments, while states that are more authoritarian are more likely to see higher levels of corruption.

For our second and third regressions, we plotted the corruption levels for all entries we chose from our dataset. We used the median education level (7.918 years of education) of all entries to divide the dataset into entries with higher levels of education and lower levels of education. Figure 2A only looks at entries with average education measures below 7.918 years, and Figure 2B only looks at entries with average education measures above 7.918 years. We used the geom_jitter function available in ggplot to make the many data points visible; the x-axis only has 4 categories, and the many overlapping data points at each x-value would not provide a good representation of how much data truly lies at corruption levels in each regime. However, the overall trends are clearly shown by the regression line in blue.

Figure 2: Corruption vs. Regime

A: Lower Education



B: Higher Education

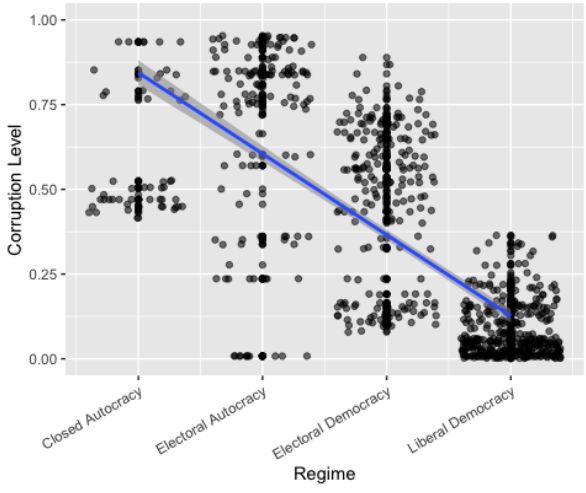


Table 2: Corruption vs. Regime, Higher and Lower Education

Relationship Between Corruption and Regime

	Dependent variable:	
	Corruption Level	
	Low Education	High Education
	(1)	(2)
Regime	-0.111***	-0.175***
	(0.009)	(0.008)
GDP Per Capita	-0.00001***	-0.00001***
	(0.00000)	(0.00000)
Constant	0.878***	0.911***
	(0.015)	(0.016)
Observations	740	734
R^2	0.240	0.686
Adjusted R^2	0.238	0.685
Residual Std. Error	0.185 (df = 737)	0.173 (df = 731)
F Statistic	116.316*** (df = 2; 737)	797.733*** (df = 2; 731)
Note:		*p<0.1; **p<0.05; ***p<0.01

From Figures 2A and 2B, we can clearly see that the relationship between corruption and regime has a much higher slope for regimes with higher levels of education. States that had higher levels of education had many more data points in the liberal democracy category, as we expected, and more data points with corruption levels closer to 0. The regression shown in Table 2 further supports this hypothesis — the coefficient on our regime variable is -0.111 for low education and -0.175 for high education, so high education is steeper. In other words, countries with lower levels of education are expected to see an average decrease in corruption by only .111 as the state becomes more democratic, compared to a .175 decrease in corruption for countries with higher education levels. Both these coefficients are statistically significant at the $p < 0.01$ level. The model for high education had an R^2 value of 0.686, which was much higher than the R^2 value of 0.240 for low education. This suggests the negative relationship between corruption and regime is stronger for countries with higher levels of education, and weaker for countries with lower levels of education.

Our final plot displays the average corruption levels by regime, but splits the data up by education level and displays the values side by side in bar plot form. This makes it easier to view the comparison of higher and lower education.

Figure 3: Mean Corruption Levels vs. Regime, by Education Level

From Figure 3, it is easy to see that, on average, higher educated countries have overall lower levels of political corruption than lower educated countries, and the steepness of the slope is much greater for higher educated countries, indicating a much stronger relationship between the variables.

Conclusion

Our analysis of the data provides support for both of our hypotheses. Our first hypothesis predicted that, as the regime gets more democratic, the level of corruption would decline. Our regression model supported this hypothesis strongly. This finding was found to be statistically significant. This indicates a fairly strong relationship between regime and corruption. Upon further examination, this conclusion remained clear. Regardless of education level, liberal democracies consistently had lower levels of corruption. When subsetting our regression for education, the relationship between regime and corruption levels remained negative and got significantly steeper when looking at highly educated populations. This offers strong support for our second hypothesis: highly educated populations would show a stronger relationship between the main variables of interest than populations with lower levels of education. When comparing each regime's corruption level, the effect of an educated population remains clear. States in the highly educated category consistently have lower corruption across the spectrum of regimes, but especially in more democratic ones.

These conclusions have useful policy implications. Solidifying the relationship of corruption between both education and regime provides insight on how corruption operates in certain contexts. For example, education has the largest effect on corruption levels in democracies. Highly educated liberal democracies had extremely low levels of corruption, whereas liberal democracies in the low education category had significantly higher levels of corruption. This emphasizes the importance of education as a factor in how effective regime changes are in reducing corruption levels. Conversely, closed autocracies have almost equivalent levels of corruption in both education categories. This elucidates the power non-democratic regimes have to continue corruption. This information could inform anti-corruption advocacy on where to focus their efforts depending on regime type. For instance, in more democratic states – such as an electoral democracy – it would be most effective to focus on educating the populace.

Our study also leads to many other questions worth exploring in future research. An interesting finding that came out of our study was the consistently high corruption levels in electoral autocracies. In all of our models, electoral autocracies remained the regime with the highest levels of corruption – higher than even closed autocracies. This was also the case in both educational categories. We recommend future researchers investigate this pattern, as it was inconsistent with our overall hypothesis and findings. Furthermore, the low-educated elected autocracy regime was significantly higher than all other groups. Determining the factors that lead to this outcome could further inform our results and the policy recommendations that may follow. Additionally, our study only controlled for GDP per capita. Economic prosperity and education levels were the only variables we controlled for because we found those to be the most

salient variables available to us. However, variables such as political ideology, geographhraphical region, and the past regime type may also affect both corruption and current regime. All of these variables would be useful to either control for or look into as moderators for the relationships we examined.

References

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