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Democracy and Corruption

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Abstract: I examine the relationship between democracy and the perceived risk of corruption in a panel of 130 countries. My panel model controls for country fixed effects and enables the estimation of a within-country relationship between democracy and corruption. My main finding is that democracy significantly reduces the risk of corruption, but only in countries where ethnic fractionalization is low. In strongly fractionalized countries a transition from autocracy to democracy does not significantly reduce corruption. One explanation for these findings is that the corruption-reducing effect of greater accountability of politicians under democracy is undermined by the common pool problem; fractionalization increases the severity of the common pool problem.

Keywords: corruption; democracy; fractionalization; common pool problem

JEL Classification: H1; P0

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1. Introduction

There exists a large empirical literature that has documented significant negative effects of corruption on the economy. Examples of empirical papers, that date back to the 1990s and 2000s, are Mauro (1995), Rose-Ackerman (1999), Fisman and Svensson (2007), Reinikka and Svensson (2004, 2005), and Olken (2006). Examples of more recent empirical papers include Dincer (2019), Gruendler and Potrafke (2019), and Keita and Laurila (2021). Theoretically, a compelling reason for why corruption reduces a country's welfare is that corruption leads to a misallocation of resources and entrepreneurial talent (Murphy et al. 1991, 1993; Shleifer and Vishny 1993).

Is there less corruption in democracy than autocracy? Consider the following principal–agent problem: political leaders may allocate tax revenues to public spending, and they may use public office to appropriate resources for private gains. Free and fair elections and political competition are two important characteristics of democratic institutions that make political leaders responsive to the demand of citizens. In democracies, politicians are less corrupt because being corrupt significantly increases the probability of losing office. I will refer to this throughout the paper as the accountability effect of democracy.

The experience of the 1990s has shown that not all episodes of democratization were associated with a significant reduction in the risk of corruption. For instance, in some countries—such as Russia after the end of the Soviet Union, or the Democratic Republic of Congo—there was, according to Political Risk Services data, no significant reduction in the perceived risk of corruption following democratization.

I argue that whether there is less corruption in democracy than autocracy crucially depends on fractionalization. The reason why fractionalization matters for the relationship between corruption and democracy is that in countries where populations are strongly fractionalized the politicians who get voted into office differ in their policy platform. In democracies, politicians cater to the demands (i.e., preferences) of their constituency. In an autocracy, the ruler may also cater to a specific group of the population that supports him. However, in an autocracy it is less likely that there exist members of government who represent the interests of the other groups of the population; and even if such members of

government do exist, it is unlikely in an autocracy that these members of government have any significant de facto power over the government budget. The main point is this: there is more heterogeneity of politicians in a democracy than in an autocracy.

In a fractionalized country with democratic institutions, each politician has a strategic interest in over-extracting resources (i.e., so that in sum, considering all politicians, more resources are extracted than one single central planner would extract) for private gain, because doing so reduces the amount of resources left to the government budget from which public goods are financed. A politician who extracts resources for private gain does not take into account the negative externalities associated with resource extraction from a particular industry or group in the presence of positive demand complementarities. I will refer to this throughout the paper as the common pool problem. The severity of the common pool is increasing under fractionalization.

More ethnic fractionalization, by definition, means that the population of a country is more heterogenous along ethnic lines. The heterogeneity of the population along ethnic lines implies greater heterogeneity of politicians, especially so under democracy. This is why fractionalization attenuates the corruption-reducing effect of democracy. India is a perfect example that illustrates this point. According to the Polity IV project, India has been a democracy for a long period of time: dating back as far as 1950 to 2018, the polity score that the Polity IV project assigns India has been, consistently, above 6 during the 1950–2018 period. This puts India in about the top one-quarter of countries in the world with regard to the polity score. India, however, ranks poorly in terms of corruption: the country is at about the bottom one-quarter of countries in the world according to data provided by Political Risk Services. Corruption in India is very high by international comparison.[1] An explanation for why corruption is so high in India, despite the country having democratic institutions, that is consistent with the argument developed in this is paper is provided by ethnic fractionalization: India is among the most ethnically fractionalized countries in the world.

In the empirical part of the paper I provide estimates of the effects that democracy has on corruption in a panel of 130 countries. My econometric model controls for country fixed effects, which is important: estimates of an econometric model with fixed effects provide a within-country effect. It is the within-country effect that is relevant from a policy point of view; not the across-country effect. From a policy point of view, the question that one would like to have an answer to is: what happens to corruption in a country when moving from autocracy to democracy (or vice versa). This requires estimates of a within-country effect. Such a within-country effect is obtainable from a panel model that includes country fixed effects; but it is not obtainable from a panel model that does not control for fixed effects.

My first main finding is that, on average, increases in countries' polity scores are associated with a significant reduction in the risk of corruption. This is consistent with the view that in a democracy there is less abuse of public office for private gains, because in a democracy there is greater accountability.

My second main finding is that the effect of democracy on corruption is significantly attenuated by fractionalization: in countries with high ethnic fractionalization, democracy has no significant effect on corruption. This finding is highly relevant from a policy point of view. It implies that efforts to promote democracy in countries which are strongly fractionalized will not have much of an effect: Corruption will remain high in strongly fractionalized countries even if there are free and fair elections.

The remainder is organized as follows. Section 2 provides a conceptual framework that clarifies why in a fractionalized country corruption is not much lower under democracy than autocracy. Sections 3 and 4 discuss the estimation strategy and data. Section 5 presents the main results. Section 6 presents robustness checks. Section 7 concludes.

2. The Effect of Democracy on Corruption: Accountability vs. the Common Pool Problem

One of the key features that distinguishes democracy from autocracy is that political leaders are elected by the people. Democratic elections ensure that the most preferred candidates hold office and hence political power inherently has a principal–agent problem attached. A common view in the literature is that political competition reduces political corruption: competition acts as a disciplining device on politicians who are tempted to abuse office for private purposes (see for instance Przeworski et al. 1999). Because in democracy politicians are faced with the threat of not being re-elected (or impeached) due to corrupt behavior, elections create political accountability that reduce the overall pay-offs to corruption. In autocracy, on the other hand, the likelihood of a dictator losing political power due to corrupt behavior (or policies that are generally disliked by the public) is much smaller since the costs of replacing the dictator are usually very high (e.g., Padro i Miquel 2007). From an accountability point of view, the incentives to not engage in corrupt behavior are therefore much stronger in democracy than they are in autocracy.

There exists, however, a countervailing channel that not received as much attention in the literature: the common pool problem. In the political economy literature on debt stabilization, it is well understood that financing a reduction of public debt is associated with externalities that are not internalized by the politicians who hold office when there are multiple parties contesting for political power (see for instance Persson and Tabellini 2000).[2] In a dynamic setting there will be overspending by the party in charge because doing so reduces the possibility for other parties (i.e., the competitors) to implement their preferred policy platform due to intertemporal budget constraints. Likewise, in a static model, there is an incentive for a politician leader—who caters to regional preferences—to overspend if spending is financed from a common pool (i.e., from taxes collected in the entire country). This is because the political leader of a region only pays a fraction of the total expenditure.

For corruption, a similar line of reasoning applies. If a politician who is in power today has the option of engaging in corrupt activity but is faced with the possibility of having to hand over political power in the next period to another politician—who is substantially different in his preferred policy platform—then there are strong incentives for the political leader holding office today to be excessively corrupt. This is because by being excessively corrupt he not only increases his current utility in terms of collecting bribes (or, say, by stealing directly from the budget), but also reduces the possibility for future politicians to implement their preferred policy platform.[3] In a static setting a similar logic applies: a political leader of a region does not internalize externalities of his corrupt activities on economic activity in other regions. Since corruption is usually carried out in secrecy it is also unlikely that there exists a Coasian solution to the problem because claims cannot be settled in court (e.g., Shleifer and Vishny 1993).

Hence, in a democracy, where leaders are elected in each period and where different parties may hold political power in different regions, there exists a common pool problem that undermines the accountability channel. In an autocracy, in contrast, the presence of a single ruler (dictator) does not create such a common pool problem since the dictator fully internalizes externalities. The key question therefore is which of these two forces—the accountability or common pool problem—is likely to be more relevant. While this is difficult to answer per se, more ethnic diversity in the population, and hence influencing the preferred policy platform of different political leaders, will exacerbate the common pool problem due to the $1/n$ problem emphasized by Weingast et al. (1981).[4]

One can interpret $1/n$ as the probability that a partisan political leader from group n will be re-elected. The incentives not to be excessively corrupt while holding political power diminish as the number of different groups, n, increases. Hence, the partisan politician from group n holding political power will be more excessively corrupt the larger the fractionalization of the country. A similar line of reasoning applies to the static common pool problem. Interpreting n as the number of different districts, if districts' expenditures are financed by a common pool, then the incentives of elected politicians

to not engage in corrupt activities decrease as the number of districts increases. This is because each politician only has to bear *1/n* of the costs—in terms of foregone resources from which to finance public goods provision—that are due to his corrupt behavior. Hence, as fractionalization of a country increases, the severity of the common pool problem increases.

3. Estimation Methodology

To explore empirically and hence quantify the link between democracy, ethnic fractionalization, and corruption I estimate the following econometric model:

$$\text{Corruption}_{c,t} = \alpha_c + \beta_c{}^*t + \gamma_t + \theta_1\text{Democracy}_{c,t-1} + \theta_2\text{Democracy}_{c,t-1}{}^*\text{Frac}_c + \varepsilon_{c,t} \quad (1)$$

where α_c are country fixed effects, $\beta_c{}^*t$ are country-specific time trends, and γ_t are year fixed effects. $\varepsilon_{c,t}$ is an error term that is clustered at the country level to allow for arbitrary serial correlation. Note that democracy enters with a one-year lag and hence the identifying assumption made is that future changes in corruption do not have systematic effects on current political institutions. Equation (1) will be estimated by least squares. To reduce concerns of endogeneity bias I will also present estimates of a dynamic version of Equation (1), which I estimate using system-GMM (Blundell and Bond 1998).

4. Data

Corruption. Country-year level corruption data were obtained from Political Risk Service (PRS). The PRS corruption data are available from 1984 onwards and cover a total of 139 countries. They yield a total of 2898 country–year observations, covering a much longer time period than any other comparable corruption dataset. According to PRS the corruption data capture the likelihood that government officials will demand special payments and the extent to which illegal payments are expected throughout government tiers. PRS corruption scores range between 0 and 6, with higher values indicating less corruption. As a robustness check, estimates will also be presented based on the corruption scores provided by Kaufmann et al. (2008) and Transparency International. These alternative corruption scores are available from 1996 onwards only, and therefore cover a much shorter time-period than the PRS corruption score. A more detailed discussion of the above corruption measures can be found in Svensson (2005).

Democracy. My main measure of democracy is the revised combined Polity score (Polity2) of the Polity IV database (Marshall et al. 2005). The measure ranges from −10 to +10, with higher values indicating more democratic institutions. The Polity IV database also provides data on so-called concept scores for political competition and the openness and competitiveness of executive recruitment. While political competition measures the extent to which alternative preferences for policy and leadership can be pursued in the political arena, openness and competitiveness of executive recruitment measures the extent to which the politically active population has an opportunity to attain the position of chief executive through a regularized process and the degree to which prevailing modes of advancement give subordinates equal opportunities to become super-ordinates. The political competition variable ranges from 1 to 10; the openness and competitiveness of executive recruitment variable ranges from 1 to 8. Higher values denote more political competition.[5] In my empirical analysis I will also consider the use of a democracy indicator variable following Persson and Tabellini (2003, 2006, 2008). The democracy indicator variable takes on a value of 1 if the Polity2 score is strictly positive and zero in all other cases.

As a further robustness check I will also consider the use of the political rights score from Freedom House, which ranges from 1 to 7 with greater values denoting less political rights.[6] The Freedom House political rights variables are rescaled by −1 so that higher values denote stronger democratic institutions.

Ethnic Fractionalization. I obtain data on ethnic fractionalization from Alesina et al. (2003), who constructed a comprehensive dataset of fractionalization for more than 190 countries. Ethnic fractionalization of a country is calculated as:

$$Frac_i = 1 - \sum_{j=1}^{N} s_{ji}^2$$

where s_{ij} is the share of ethnic group j in country i's total population. An important property of the fractionalization index is that it strictly increases along with the number of ethnic groups. This contrasts to polarization measures which capture how close the distribution of groups is from a bipolar distribution (see for instance Esteban and Ray 1994, or Montalvo and Reynal-Querol 2005). Intuitively, the fractionalization index measures the probability that two randomly selected individuals in a country will not belong to the same ethnic group.

Other Control Variables. Other control variables included in the empirical analysis are real per capita GDP and the share of mineral exports in total exports which are taken from the World Bank (2009); data on the share of Muslims in the population, Socialists, and French legal origin are from Treisman (2007). For summary statistics on these variables, see Tables 1 and 2.

Table 1. Descriptive Statistics.

	Mean	Std. Dev.	Min	Max	Obs.
Corruption (Political Risk Service)	3.095	1.391	0	6	2898
Democracy (Polity2 Score, Polity IV)	2.402	7.210	−10	10	2637
PPP per capita GDP (World Bank 2009)	10,804	12,167	136.83	72,345	2761
Ethnic Fractionalization (Alesina et al. 2003)	0.453	0.264	0.002	0.930	2857
French Legal Origin (Treisman 2007)	0.486	0.500	0	1	2829
Socialist Legal Origin (Treisman 2007)	0.120	0.325	0	1	2829
Share of Muslims in Population (Treisman 2007)	0.251	0.367	0	0.998	2876
Share of Mineral Exports in Total Exports (World Bank 2009)	0.086	0.151	0	0.881	1753

Table 2. Correlation Matrix.

	Corruption	Democracy	GDP	Ethnic Fract.	French Origin	Socialist Origin	Muslims in Pop.	Mineral Exports
Corruption	1							
Democracy	0.416	1						
GDP	0.481	0.232	1					
Ethnic Fract.	−0.341	−0.364	−0.379	1				
French Origin	−0.229	−0.145	−0.297	0.163	1			
Socialist Origin	−0.047	0.047	−0.108	−0.177	−0.333	1		
Muslims in Pop.	−0.200	−0.586	−0.076	0.187	0.155	−0.178	1	
Mineral Exports	0.096	−0.107	−0.012	0.087	−0.035	−0.017	0.004	1

5. Main Results

Column (1) of Table 3 shows estimates of the effect that the polity2 score has on corruption, obtained from a pooled panel regression which does not control for time-invariant country unobservables (country fixed effects). The regression controls for a set of cross-sectional variables such as ethnic fractionalization, indicators of Socialist membership or French legal origin, the share of Muslims in the population, the share of mineral exports to total exports, a per capita GDP. The main result is that the estimated coefficient on the Polity2 score is positive and significantly different from zero at the 5% level. Thus, a pooled panel regression suggests that more democratic countries have lower levels of corruption.

Table 3. Democracy and Corruption (Average Relationship).

	PRS Corruption				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	LS	LS	LS	LS	SYS-GMM
Polity2, $t-1$	0.027 **	0.022 *	0.023 **	0.013 **	0.024 ***
	(2.52)	(1.85)	(2.11)	(2.23)	(3.43)
Polity2, $t+1$			−0.005		
			(−0.60)		
Corruption, $t-1$				0.651 ***	0.736 ***
				(32.55)	(28.53)
Per Capita GDP	0.106				
	(0.62)				
Ethnic Fractionalization	−1.109 *				
	(−1.70)				
French Legal Origin	−0.349 *				
	(−1.90)				
Socialist Legal Origin	−1.137 ***				
	(−4.19)				
Share of Muslims in Population	−0.003				
	(−1.29)				
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE and Trends	No	Yes	Yes	Yes	Yes
Observations	2586	2586	2466	2472	2472
Countries	130	130	130	130	130

Note: The method of estimation in columns (1)–(4) is least squares, column (5) system-GMM; t-values shown in parentheses are based on Huber-robust standard errors that are clustered at the country level. The dependent variable is the PRS corruption score, with higher values indicating *less* corruption. * Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Regarding the other variables in column (1) of Table 3, the pooled panel regression shows that countries with higher levels of ethnic fractionalization have on average higher levels of corruption. Countries which are Socialist and of French legal origin, and countries that have a larger share of mineral exports in GDP are more corrupt on average. Corruption is not systematically higher in countries with a larger share of Muslims in the population. I included these variables as controls in the model, following early empirical literature that dates back to the 2000s, e.g., Treisman (2007). In the estimates that follow, I will include country fixed effects as controls. Inclusion in the model of country fixed effects accounts for any country-specific, time-invariant variable. Hence, the control variables of column (1) in Table 3 are no longer included in the model; these variables are perfectly collinear with the country fixed effects.

To examine whether the corruption-reducing effect of democracy is also present at the within-country level on average, I show in column (2) of Table 3 estimates of a panel model that controls for country fixed effects. The panel fixed effects regression yields a positive coefficient on the Polity2 score that is slightly smaller than the coefficient on the Polity2 score that is obtained from the pooled panel regression (see column (1) for comparison). The estimated coefficient on the Polity2 score in column (2) is significantly different from zero at the 90 percent level (p-value 0.067). Hence, panel fixed effects estimates show that a within-country increase in the polity2 score leads, on average, to a significant decrease in corruption.

In column (3) a false experiment is carried out by including as an additional right-hand-side variable the $t+1$ Polity2 score. Including the Polity2 score in year $t+1$ has little consequence on the estimated coefficient on the $t-1$ Polity2 score. In column (3) the estimated coefficient on the $t-1$ Polity2 score is positive and significantly different from zero at the 5% significance level. In column (3) the estimated coefficient on the $t-1$ Polity2 score is around 0.023 and has a standard error of around 0.011. The estimated coefficient on the $t+1$ Polity2 score is quantitatively small, around −0.005, and has a standard error of

0.008. One cannot reject at the conventional significance levels that the estimated coefficient on the $t + 1$ Poltiy2 score is equal to zero.

Columns (4) and (5) of Table 3 report estimates of a dynamic panel model that includes the $t - 1$ corruption score as a right-hand-side control variable. The dynamic panel fixed effects regression shows that there is a significant proportion of persistence in corruption. The estimated AR (1) coefficient is about 0.7 and implies a half-life in the PRS corruption score of about 2 years. OLS, see column (4), yields an estimated coefficient on the $t - 1$ Polity2 score of 0.013 with a standard error of 0.006. Sys-GMM, see column (5), yields an estimated coefficient on the $t - 1$ Polity2 score of 0.024 with a standard error of 0.007. In dynamic panel models with fixed effects, least squares estimates are biased; the sys-GMM estimator, developed by Blundell and Bond (1998), is unbiased.

Quantitatively, the estimated average effects that the polity2 score has on corruption are economically meaningful. The estimates in column (5) of Table 3 imply that a one standard deviation (7.2) increase in the $t - 1$ Polity2 score decreases the corruption score in year t by about 0.18 units; this is equivalent to about 0.1 standard deviations. The long-run effect is larger, amounting to around 0.5 standard deviations.

In Table 4, how cross-country differences in ethnic fractionalization affect the relationship between democracy and corruption are examined. The regressions continue to control for country fixed effects, country-specific time trends, as well as year fixed effects (which are all jointly significant at the 1% level). The main result from estimating this interaction model is that: [i] there is a significant positive linear effect of democracy on corruption; and [ii] the interaction effect between ethnic fractionalization and democracy is significantly negative. Taking derivatives of Equation (1) with regard to Polity2 and using the estimates in column (1) yields:

$$\frac{d(Corruption)}{d(Polity2)} = 0.106 - 0.151 * EthnicFractionalization$$

Table 4. Democracy, Ethnic Fractionalization, and Corruption (Heterogeneity).

	PRS Corruption				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	LS	LS	SYS-GMM	LS	SYS-GMM
Polity2, $t - 1$	0.106 ***	0.048 ***	0.047 ***	0.047 ***	0.050 ***
	(4.51)	(4.55)	(4.57)	(4.40)	(4.75)
Polity2, $t - 1$ * Ethnic Fractionalization	−0.151 ***	−0.061 ***	−0.050 **	−0.060 ***	−0.048 **
	(−3.87)	(−3.33)	(−2.31)	(−3.25)	(−2.28)
Corruption, $t - 1$		0.641 ***	0.713 ***	0.639 ***	0.704 ***
		(31.60)	(26.37)	(32.12)	(26.47)
Polity2, $t - 1$ * Polity2, $t - 1$				0.001	0.001
				(0.90)	(0.51)
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE and Country Trends	Yes	Yes	Yes	Yes	Yes
Observations	2586	2472	2472	2472	2472
Countries	130	130	130	130	130

Note: The method of estimation in columns (1), (2), and (4) is least squares; columns (3) and (5) system-GMM. t-values shown in parentheses are based on Huber-robust standard errors that are clustered at the country level. The dependent variable is the PRS corruption score, with higher values indicating *less* corruption. * Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Hence, while there is a significant positive average effect of democracy on corruption, at higher levels of ethnic fractionalization this effect goes towards zero and turns statistically insignificant. Columns (2) and (3) of Table 4 show that this result continues to hold when a dynamic panel model is estimated, either by OLS or sys-GMM. Columns (4) and (5) of Table 4 show that the result is also robust to inclusion of a quadratic term of the polity2 variable as a control.

Quantitatively, the estimates from the interaction model imply that the within-country effect of democracy on corruption is substantially different between countries with low fractionalization and countries with high fractionalization. Recall from the descriptive statistics in Table 1 that the ethnic fractionalization index ranges from 0.002 to 0.930. Consider now the estimates in column (5) of Table 4. At the sample minimum ethnic fractionalization, a one standard deviation increase in the $t-1$ Polity2 score decreases corruption in year t by about 0.05 units; this is equivalent to about 0.25 standard deviations. The long-run effect is larger, amounting to about 0.8 standard deviation (0.25/(1–0.704)). In contrast, at the sample maximum ethnic fractionalization, a one standard deviation increase in the $t-1$ Polity2 score decreases corruption in year t by only about 0.005 units, which is equivalent to about 0.02 standard deviations. The long-run effect is also small, amounting to about 0.07 standard deviations. Hence, in the most ethnically homogenous country democratic institutions are about ten times more effective in reducing corruption than in the ethnically mostly fractionalized country.

Figures 1 and 2 provide a graphical illustration of the nonlinear effect of democracy on corruption by plotting local polynomial estimates separately for countries with above and below median ethnic fractionalization. The nonparametric local polynomial estimates are computed using an Epanechnikov kernel, with bandwidth selection based on cross-validation criteria. Figure 1 shows that there is a strong upward sloping relationship between the Polity2 score and PRS corruption score in countries that are relatively ethnically homogeneous. In particular, the nonparametric estimates reported in Figure 1 show that in ethnically homogeneous countries democratic improvements are particularly effective in reducing corruption at very low Polity2 scores (e.g., in deep autocracies). On the other hand, Figure 2 shows that in ethnically heterogeneous countries the relationship between democracy and corruption is flat and not significantly different from zero at the conventional levels; this is true regardless of whether countries are deep autocracies or partial autocracies.

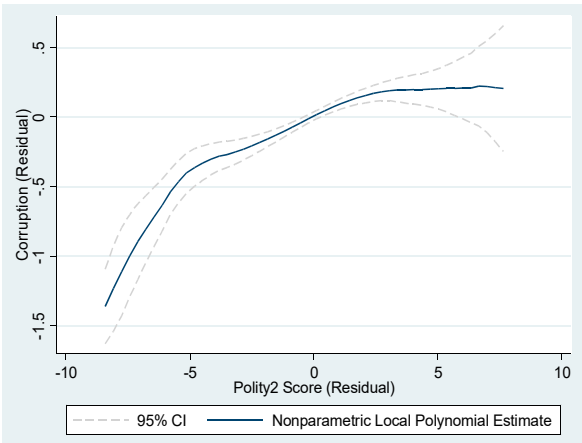

Figure 1. Countries' Polity Scores and the Risk of Corruption in Ethnically Homogeneous Countries. Note: Nonparametric local polynomial estimates are computed using an Epanechnikov kernel and are based on the residuals of the corruption and Polity2 score after country fixed effects, country-specific time trends and year fixed effects have been partitioned out. Higher values in corruption scores indicate less corruption. The regression is done for countries that have ethnic fractionalization scores below median. Dashed lines indicate 95 percent confidence bands.

To provide some specific country examples that fit the results from the regressions, Figures 3–5 plot the time-series of the Polity2 score and the PRS corruption score for three selected countries with low, intermediate, and high levels of ethnic fractionalization. Both the Polity2 score and the PRS corruption score have been normalized to range on the 0 to 1 interval. Higher values of the normalized Polity2 score denote stronger democratic institutions. Higher values of the normalized PRS corruption score denote less corruption.

Figure 3 shows that for the three selected countries with low ethnic fractionalization, which are Bangladesh, Haiti, and the Philippines, increases (decreases) in the Polity2 score were followed by reductions (increases) in corruption. Figure 4 shows that for three selected countries with intermediate ethnic fractionalization, which are Ghana, Mexico, and Thailand: there is no systematic change in corruption following changes in the Polity2 score. Figure 5 shows that for three selected countries with high ethnic fractionalization, which are Kenya, Nigeria, and Uganda, increases (decrease) in the Polity2 score are followed by increases (improvements) in corruption.

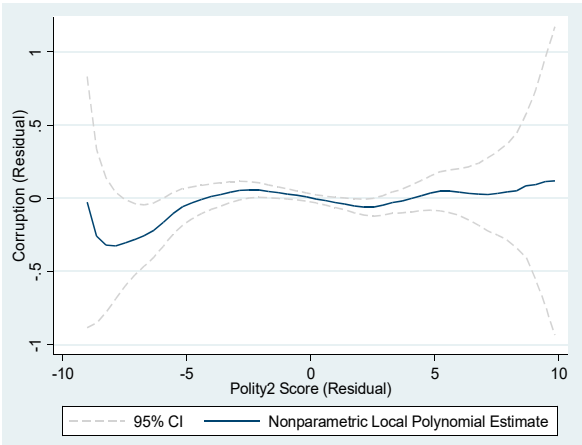

Figure 2. Countries' Polity Scores and the Risk of Corruption in Ethnically Heterogeneous Countries. Note: Nonparametric local polynomial estimates are computed using an Epanechnikov kernel and are based on the residuals of the corruption and Polity2 score after country fixed effects, country-specific time trends and year fixed effects have been partitioned out. Higher values in corruption scores indicate less corruption. The regression is done for countries that have ethnic fractionalization scores above median. Dashed lines indicate 95% confidence bands.

Figure 3. Democracy Reduces Corruption. Note: The figure plots the time-series evolution of the Polity2 score and the PRS corruption score. Both scores are normalized to range between 0 and 1. The ethnic fractionalization score for Bangladesh is 0.05, for Haiti 0.1, and for the Philippines 0.23.

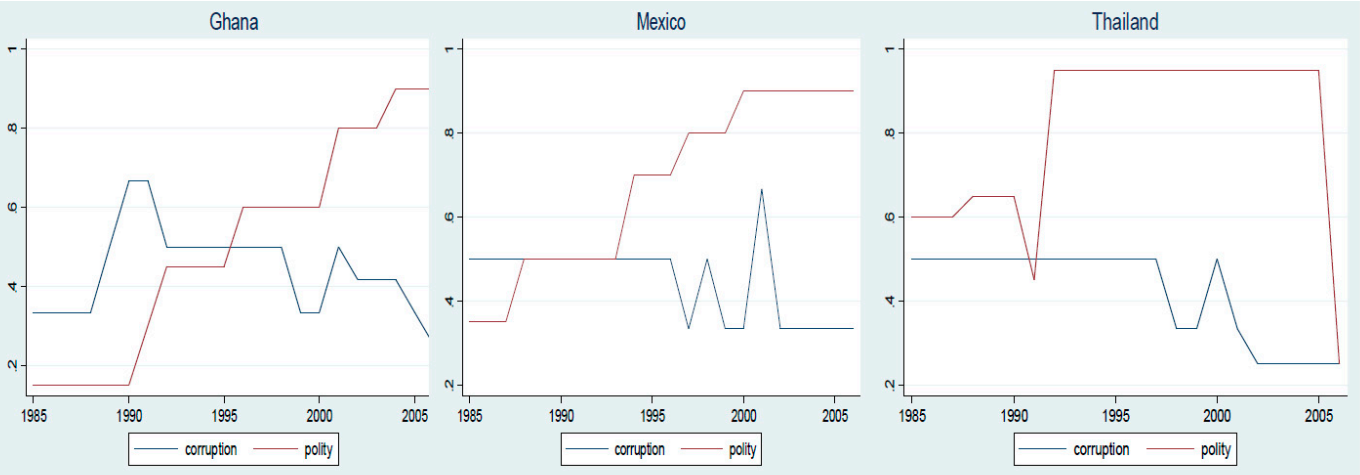

Figure 4. Democracy has no Effect on Corruption. Note: The figure plots the time-series evolution of the Polity2 score and the PRS corruption score. Both scores are normalized to range between 0 and 1. The ethnic fractionalization score for Ghana is 0.61, for Mexico 0.54, and for Thailand 0.63.

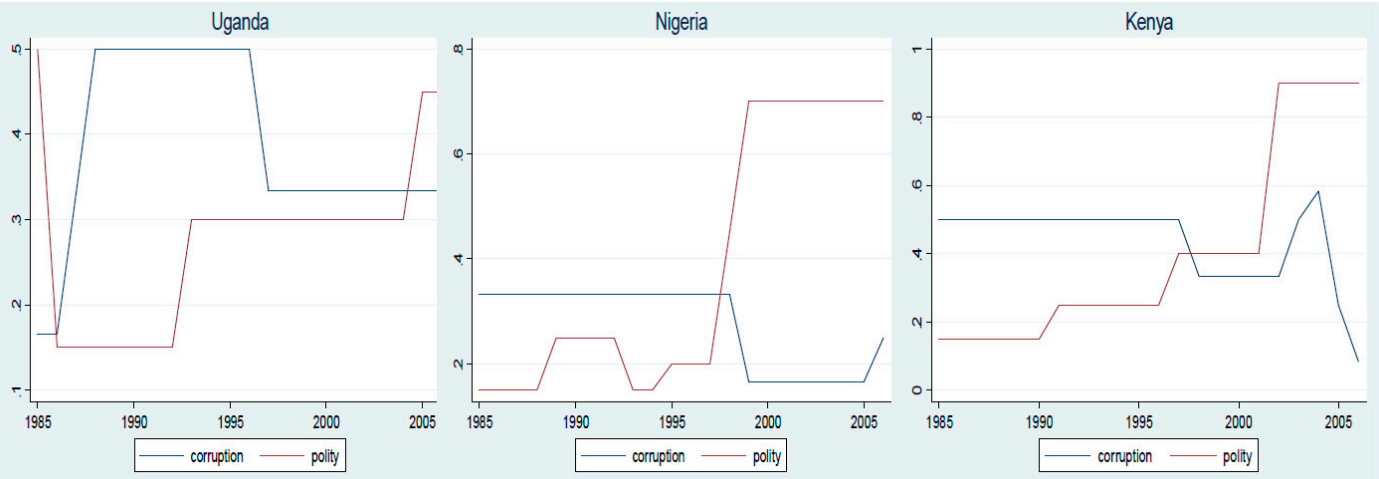

Figure 5. Democracy Increases Corruption. Note: The figure plots the time-series evolution of the Polity2 score and the PRS corruption score. Both scores are normalized to range between 0 and 1. The ethnic fractionalization score for Uganda is 0.93, for Nigeria 0.85, and for Kenya 0.86.

6. Robustness Checks

Table 5 documents that the results of the previous section are robust to controlling for various interaction terms. Column (1) includes as an additional control variable an interaction term between the Polity2 score and an indicator variable for Socialist origin; column (2) includes as an additional control variable an interaction term between the Polity2 score and an indicator variable for French legal origin. Both the interaction between the Polity2 score and the Socialist origin indicator as well as the interaction between the Polity2 score and the French legal origin indicator are insignificant. The interaction between ethnic fractionalization and the Polity2 score remains statistically significant at the 1% level. Column (3) reports estimates that control for an interaction between the Polity2 score and the share of Muslims in the population. Column (4) reports estimates that control for an interaction between the Polity2 score and cross-country differences in per capita GDP. Column (5) reports estimates that control for an interaction between the Polity2 score and indicators of unity for sub-Saharan African countries. The main result is that, in these robustness checks, the estimated coefficient on the interaction between the Polity2 score and ethnic fractionalization is negative and significantly different from zero at the 1% level.

Table 5. Democracy, Ethnic Fractionalization, and Corruption (Robustness to Alternative Interactions).

	PRS Corruption				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Polity2, $t-1$	0.088 ***	0.112 ***	0.105 ***	0.105 ***	0.106 ***
	(3.13)	(5.25)	(4.59)	(4.68)	(4.37)
Polity2, $t-1$ * Ethnic Fractionalization	−0.129 ***	−0.150 ***	−0.149 ***	−0.150 ***	−0.156 ***
	(−2.95)	(−3.86)	(−3.84)	(−4.15)	(−3.16)
Polity2, $t-1$ * Socialist Legal Origin	0.036				
	(1.47)				
Polity2, $t-1$ * French Legal Origin		−0.011			
		(−0.55)			
Polity2, $t-1$*Share of Muslims in Population			−0.001		
			(−0.13)		
Polity2, $t-1$ * Average Per capita GDP				−0.001	
				(−0.32)	
Polity2, $t-1$ * Africa Indicator					0.004
					(0.15)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE and Country Trends	Yes	Yes	Yes	Yes	Yes
Observations	2586	2586	2586	2586	2586
Countries	130	130	130	130	130

Note: The method of estimation is least squares; t-values shown in parentheses are based on Huber-robust standard errors that are clustered at the country level. The dependent variable is the PRS corruption score, with higher values indicating *less* corruption. * Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

To check on the robustness of the results to the specific democracy measure used, and to document the political competition channel discussed in Section 2, columns (1) and (2) of Table 6 report estimates when ethnic fractionalization interacts with the Polity IV political competition and competitiveness of executive recruitment score. The main result is that, for the average country, political competition reduces corruption and ethnic fractionalization significantly attenuates the corruption-reducing effect of political competition towards zero, so much so that in very ethnically fractionalized countries the effect of political competition on corruption is not significantly different from zero.

Column (3) of Table 6 shows results for a democracy indicator variable that takes on the value of 1 for strictly positive Polity2 scores (democracy) and zero else (autocracy). Consistent with the previous results that were based on variations in the Polity2 score, the estimates in column (3) of Table 6 suggest that, on average, a transition from autocracy to democracy reduces corruption. Ethnic fractionalization significantly attenuates this effect towards zero. In strongly fractionalized countries, a transition from autocracy to democracy has no significant effect on corruption.

Column (4) of Table 6 shows results for the Freedom House political rights score. One can see from column (4) of Table 6 that the estimated coefficient on the political rights score is positive and the coefficient on the interaction between the political rights score and ethnic fractionalization is negative. (The original political scores from Freedom House were multiplied by −1 for the regressions, so that higher values denote stronger political rights.) Each of the estimated coefficients in column (4) of Table 6 is significantly different from zero at the 1 percent level. The interpretation of the estimates in column (4) of Table 6 is that stronger political rights are associated with a reduction in corruption, but only so in countries with low ethnic fractionalization. In strongly fractionalized countries, political rights have no significant effect on corruption.

Table 7 reports results for corruption variables from other, alternative datasets. Columns (1) and (2) of Table 7 report estimates where the dependent variable is the Control of Corruption variable from Kaufmann et al. (2008). Columns (3) and (4) of Table 7 report estimates where the dependent variable is the Corruption Perception Index from Transparency International. Because the time-period that these alternative corruption variables cover (1996–2007) is considerably shorter than the time-period covered by the PRS corruption

indicator (1984–2007), columns (1) and (3) report baseline estimates that control for year fixed effects only, and as a further robustness check columns (2) and (4) report estimates that control also for country fixed effects.

Table 6. Democracy, Ethnic Fractionalization, and Corruption (Robustness to Alternative Democracy Indicators).

	PRS Corruption			
	(1)	(2)	(3)	(4)
Political Competition	0.144 *** (2.65)			
Political Competition, $t-1$ * Ethnic Fractionalization	−0.169 ** (−1.98)			
Executive Recruitment, $t-1$		0.249 *** (4.41)		
Executive Recruitment, $t-1$ * Ethnic Fractionalization		−0.336 *** (−3.56)		
Democracy Indicator, $t-1$			1.042 *** (4.26)	
Democracy Indicator, $t-1$ * Ethnic Fractionalization			−1.293 *** (−3.70)	
Political Rights, $t-1$				0.293 *** (3.91)
Political Rights, $t-1$ * Ethnic Fractionalization				−0.376 *** (−2.96)
Country FE	Yes	Yes	Yes	Yes
Year FE and Country Trends	Yes	Yes	Yes	Yes
Observations	2427	2427	2587	2720
Countries	130	130	130	130

Note: The method of estimation is least squares; t-values shown in parentheses are based on Huber-robust standard errors that are clustered at the country level. The dependent variable is the PRS corruption score, with higher values indicating *less* corruption. * Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 7. Democracy, Ethnic Fractionalization, and Corruption (Robustness to Alternative Corruption Indicators).

	KKM Corruption		TI Corruption	
	(1)	(2)	(3)	(4)
Polity2, $t-1$	0.076 *** (5.39)	0.056 *** (3.62)	0.112 *** (5.04)	0.041 (1.35)
Polity2, $t-1$ * Ethnic Fractionalization	−0.083 *** (−3.39)	−0.058 ** (−2.16)	−0.161 *** (−4.67)	−0.070 (−1.59)
Year FE	Yes	Yes	Yes	Yes
Country FE and Trends	No	Yes	No	Yes
Observations	1193	1193	1045	1045
Countries	155	155	145	145

Note: The method of estimation is least squares; t-values shown in parentheses are based on Huber-robust standard errors that are clustered at the country level. The dependent variable in columns (1) and (2) is the Kaufmann et al. (2008) corruption indicator; in columns (3) and (4) the dependent variable is the Transparency International corruption indicator. Both corruption indicators have been rescaled to have a [0, 6] range, with higher values indicating *less* corruption. * Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Estimation of a panel model that includes year fixed effects only (see columns (1) and (3) of Table 7) yields a significant negative coefficient on the Polity2 score and a significant positive coefficient on the interaction between the Polity2 score and ethnic fractionalization. This is the case for the Kaufmann et al. (2008) corruption variable (see column (1)) and the corruption variable from Transparency International (see column (3)). When also including in the model country fixed effects, the estimated coefficient on the Polity2 score is positive and the estimated coefficient on the interaction between Polity2 and ethnic fractionalization is negative. Each of these estimated coefficients is individually significantly different from zero at the 5% level when data on corruption are from Kaufmann et al. (2008) (see

column (2)). When data on corruption are from Transparency International, the estimated coefficients on the Polity2 score and on the interaction term are not significantly different from zero at the conventional levels (see column (4)).

The number of observations for the alternative datasets on corruption is less than half the number of observations that the PRS corruption data provides. It is hence understandable that, statistically, the results in Table 7 are somewhat weaker than the baseline estimates in Table 4.

7. Conclusions

Governments of western countries and international organizations have undertaken great efforts to promote democracy in the world.[7] One of the main arguments for promoting democracy in developing countries is that there is less corruption in democracy than autocracy. The empirical results in this paper showed that, indeed, there is less corruption in democracy than autocracy for the subset of countries with low or intermediate ethnic fractionalization. This subset of countries makes up about two-thirds of all countries in the world. For the remaining one-third of countries in the world where ethnic fractionalization is high, there is no significant corruption-reducing effect of democracy.

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Notes

1 For an in-depth discussion of corruption and democracy in India, see Sridharan (2014).

2 See also Persson et al. (1997) who show that separation of powers will lead to public officials increasing the amount of resources diverted from the economy due to the common pool problem if public officials have conflicting interests and policies are implemented unilaterally. Related, Besley and Coate (1998) show that representative democracy leads to inefficient public investment in a dynamic model where policy authority is delegated directly to citizens who are heterogeneous in productive abilities.

3 If corruption comes in the form of the politician directly stealing from the budget, then it is clear why excessive corruption reduces the possibility of future politicians implementing their preferred policy platform (the intertemporal budget constraint has to be satisfied). If on the other hand the politician simply abuses office by collecting bribes, then one would have to argue that the politician implements policies due to these bribes that obstruct future politicians' possibilities to implement their preferred policy when in power.

4 See also Alesina et al. (1999) who show that public good provision is significantly worsened by ethnic fractionalization. For an overview of the literature on ethnic fractionalization and economic policies and outcomes, see Alesina and La Ferrara (2005).

5 In using these concept variables I code all values corresponding to "system missing" (−66), "interregnum" (−77), and "transition" (−88) as missing, as it is unclear what score they should be assigned for the time-series analysis.

6 This variable has been used, for instance, in the democracy and growth literature by Barro (1999).

7 See, for example, Heymann (1996) who provides a discussion of democracy and corruption from the perspective of a law practitioner.

References

Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg. 2003. Fractionalization. *Journal of Economic Growth* 8: 155–94. [CrossRef]

Alesina, Alberto, and Eliana La Ferrara. 2005. Ethnic Diversity and Economic Performance. *Journal of Economic Literature* 43: 762–800. [CrossRef]

Alesina, Alberto, Reza Baqir, and William Easterly. 1999. Public Goods and Ethnic Divisions. *Quarterly Journal of Economics* 114: 1243–84. [CrossRef]

Barro, Robert J. 1999. Determinants of Democracy. *Journal of Political Economy* 107: 158–83. [CrossRef]

Besley, Timothy, and Stephen Coate. 1998. Sources of Inefficiency in a Representative Democracy: A Dynamic Analysis. *American Economic Review* 88: 139–56.

Blundell, Richard, and Stephen Bond. 1998. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics* 87: 115–43. [CrossRef]
Dincer, Oguzhan. 2019. Does Corruption Slow Down Innovation? Evidence from a cointegrated panel of U.S. states. *European Journal of Political Economy* 56: 1–10. [CrossRef]
Esteban, Joan-Maria, and Debraj Ray. 1994. On the Measurement of Polarization. *Econometrica* 62: 819–51. [CrossRef]
Fisman, Raymond, and Jakob Svensson. 2007. Are Corruption and Taxation Really Harmful to Growth. Firm Level Evidence. *Journal of Development Economics* 83: 63–75. [CrossRef]
Gruendler, Klaus, and Niklas Potrafke. 2019. Corruption and Economic Growth: New Empirical Evidence. *European Journal of Political Economy* 60: 101810. [CrossRef]
Heymann, Philip B. 1996. Democracy and corruption. *Fordham International Law Journal* 20: 323–46.
Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2008. *Governance Matters VII: Aggregate and Individual Governance Indicators, 1996–2007*. Washington, DC: World Bank, World Bank Policy Research Working Paper No. 4645.
Keita, Kouramoudou, and Hannu Laurila. 2021. Corruption and Tax Burden: What Is the Joint Effect on Total Factor Productivity? *Economies* 9: 26. [CrossRef]
Marshall, Monty G., Keith Jaggers, and Ted Robert Gurr. 2005. Polity IV Project: Dataset Users' Manual. Center for Global Policy, George Mason University. In *Polity IV Data Computer File, Version p4v2004*. College Park: Center for International Development and Conflict Management, University of Maryland, Available online: www.cidcm.umd.edu/polity (accessed on 15 May 2021).
Mauro, Paolo. 1995. Corruption and Growth. *Quarterly Journal of Economics* 110: 681–712. [CrossRef]
Montalvo, José G., and Marta Reynal-Querol. 2005. Ethnic Polarization, Potential Conflict and Civil War. *American Economic Review* 95: 796–816. [CrossRef]
Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1991. The Allocation of Talent: Implications for Growth. *Quarterly Journal of Economics* 106: 503–30. [CrossRef]
Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1993. Why is Rent-Seeking So Costly to Growth? *American Economic Review* 83: 409–14.
Olken, Benjamin A. 2006. Corruption and the Costs of Redistribution. *Journal of Public Economics* 90: 853–70. [CrossRef]
Padro i Miquel, Gerard. 2007. The Control of Politicians in Divided Societies: The Politics of Fear. *Review of Economic Studies* 74: 1259–74. [CrossRef]
Persson, Torsten, and Guido Tabellini. 2000. *Political Economics—Explaining Economic Policy*. Cambridge: MIT Press.
Persson, Torsten, and Guido Tabellini. 2003. *The Economic Effects of Constitutions*. Cambridge: MIT Press.
Persson, Torsten, and Guido Tabellini. 2006. Democracy and Development. The Devil in Detail. *American Economic Review* 96: 319–24. [CrossRef]
Persson, Torsten, and Guido Tabellini. 2008. The Growth Effect of Democracy: Is it Heterogenous and How Can it Be Estimated? In *Institutions and Economic Performance*. Edited by E. Helpman. Harvard: Harvard University Press.
Persson, Torsten, Gerard Roland, and Guido Tabellini. 1997. Separation of Powers and Political Accountability. *Quarterly Journal of Economics* 112: 1163–202. [CrossRef]
Przeworski, Adam, Susan Stokes, and Bernard Manin. 1999. *Democracy, Accountability, and Representation*. Cambridge: Cambridge University Press.
Reinikka, Ritva, and Jakob Svensson. 2004. Local Capture: Evidence from a Central Government Transfer Program in Uganda. *Quarterly Journal of Economics* 119: 679–705. [CrossRef]
Reinikka, Ritva, and Jakob Svensson. 2005. Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda. *Journal of the European Economic Association* 2–3: 259–67. [CrossRef]
Rose-Ackerman, S. 1999. *Corruption and Government: Causes, Consequences, and Strategies for Reform*. Cambridge: Cambridge University Press.
Shleifer, Andrei, and Robert W. Vishny. 1993. Corruption. *Quarterly Journal of Economics* 108: 599–617. [CrossRef]
Sridharan, Eswaran. 2014. India: Democracy and Corruption. Working Paper. Available online: https://casi.sas.upenn.edu/sites/default/files/upiasi/India%20-%20Democracy%20and%20Corruption.pdf (accessed on 15 May 2021).
Svensson, Jakob. 2005. Eight Questions about Corruption. *Journal of Economic Perspectives* 19: 19–42. [CrossRef]
Treisman, Daniel. 2007. What Have We Learned About the Causes of Corruption From 10 Years of Cross-National Research? *Annual Review of Political Science* 10: 211–44. [CrossRef]
Weingast, Barry R., Kenneth A. Shepsle, and Christopher Johnsen. 1981. The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics. *Journal of Political Economy* 89: 642–64. [CrossRef]
World Bank. 2009. World Development Indicators. Online Database. Available online: https://databank.worldbank.org/source/world-development-indicators (accessed on 15 May 2021).