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gov.msc@lse.ac.uk

Ballot-Structure and Corruption:

A Natural Experiment from French Municipal Elections

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Economy

Abstract

Electoral reforms continue to be a highly debated topic in many democracies. However, although great progress has been made in recent years, our knowledge of the effects of var-

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1 Introduction

Corruption is not only a significant issue in the developing world. On the contrary, the cost of corruption in the EU, for instance, is estimated to lie between €179 and €990 billion annually (Hafner et al., 2016). Hence, learning more about the causes of corruption in these developed countries is potentially highly beneficial.

One of the factors that have been identified as an important determinant of corruption is political institutions. Yet, although empirical research abound, our understanding of which causal mechanisms play important roles remains poor. A recurring issue is the difficulty of isolating

2 Literature Review

How do political institutions affect corruption? While this question has been of academic investigation for a while, only more recently have the effects of electoral rules been explicitly linked with corruption, and many questions still remain unanswered. This section reviews a

tional and (with the exception of female participation) of limited policy interest as they identify variables largely out of societies' control.

As the incidence of corruption varies substantially among countries with similar socioeconomic characteristics, political institutions have naturally always occupied a central position in the corruption literature. For instance, Gerring and Thacker (2004) look at the effect of unitarism and parliamentarism on corruption and conclude that unitary parliamentary states have less corruption, and Fisman and Gatti (2002) find a negative association between fiscal decentralization and corruption. Treisman (2000) investigated the relationship between democracy and corruption. Yet, although the role of specific political accountability mechanisms have been extensively theoretically discussed in this context (e.g. Fackler & Lin, 1995; Linz & Stepan, 1996; Bailey & Valenzuela, 1997; Persson, Roland, & Tabellini, 1997; Rose-Ackerman, 1999; Besley, 2006), it has only received cursory empirical treatment. It is to these studies, bridging the literature on electoral rules and corruption, I now turn.

Persson, Tabellini, and Trebbi (2003) empirically test three arguments, developed by Myerson (1993); Persson, Roland, and Tabellini (2000); Persson and Tabellini (1998), respectively: (1) larger district magnitude and lower thresholds for representation generate more political competition and thus less corruption; (2) a larger fraction of representatives elected on an open- rather than closed-list ballot generates a stronger link of accountability and thus less corruption; and (3) relative to PR in large districts, plurality rule in small districts are associated with less corruption. They find that switching from a party list PR system to a system where all candidates are elected by plurality as individuals, reduce perceptions of corruption. Moreover, they argue that although electoral system has observable partial effects on corruption, the total effect of changing from one electoral system to ano(are)-aTteon43vonePerssrethreturceptioreten-

al. (2003) that closed-list ballot structure raises corruption, concerning district magnitude they argue that although entry-barriers are higher in small districts, political opponents' incentives to monitor each other are stronger. They find that countries with PR, federalism and presidentialism have higher corruption. This contradicts Persson et al. (2003) who report that electoral rules alone have no influence on corruption levels, and Persson and Tabellini (2003), who argue that presidentialist systems should be less corrupt.

Another major study finds that more years under democratic rule lowers corruption, and that transitioning from parliamentarism to presidentialism increases the probability of having high levels of corruption (Lederman, Loayza, & Soares, 2005). However, freedom of press, common law, and openness to trade are not statistically significant when institutional covariates are controlled for. The authors argue that political institutions themselves determine these factors so that these institutions have no independent effect. The study seemingly provides evidence that some correlations noticed in the early literature might be driven by underlying political institutions, which might play an even larger role than initially imagined.

Some key conclusions to draw from this literature are that, firstly, political institutions matter, and secondly, there is no consensus about the causal mechanisms accounting for the observed associations, nor about the overall effects of different electoral formulas and ballot structures.

Although providing important lessons, the literature reviewed above generally suffers from

experienced corruption. Worryingly, the subjective measure of corruption that is based on the perception of businessmen and citizens is the measure that actually corroborate the commonly held hypotheses; once objective measures are used, most of the associations disappear (Treisman, 2007). This is worrying since perceptions are inherently unreliable. No empirical evidence robustly links experts' opinions about corruption with experienced levels of corruption. Quite

a certain population threshold must use en open-list majoritarian system while those above must use a closed-list PR system. Comparing observations just below and above this arbitrary threshold, the present study aims to discern the causal effect of closed- versus open-list ballots on rent-seeking behaviour by elected politicians. In the next section, I present the theoretical framework that will be used to interpret the empirical findings.

3 Theoretical Framework

To inform the interpretation of the empirical findings, I utilize the simple career-concern model of Persson and Tabellini (2000), but modified slightly to fit the current single-district case. The model focuses on elections as a means for voters to select the most competent politicians, and correspondingly incumbency as a means for politicians to signal competence. The model is specified as follows.

There are two periods. Assume that taxes are fixed at $\bar{t}$ and that the government budget must be balanced in the two periods. Throughout this exposition, I assume that there are 3 incumbents, $J = \{1; 2; 3\}$. Moreover, suppose that J also corresponds to a given policy area and that there are J groups of voters (for simplicity, each group is equally large) that vote based on g_t^J. Persson and Tabellini (2000) imagines that there are J localities where voters in locality J care only about public goods local to J. However, in the local context, it is equally likely that there are different types of voters that vote on the basis of different things. Voters form preferences over candidates as follows:

$$w_t^J = \gamma(1 - \bar{t}) + \alpha g_t^J \tag{1}$$

where $\alpha > 1$ is an exogenous parameter, g_t denotes the public good provided by incumbent

The amount of public goods provided by politician J is given by

$$g_t^J = h^J(\bar{t}^J \quad r_t^J) \tag{2}$$

The parameter h^J denotes politician J's competence and r_t^J denotes rents extracted by politician J. For all politicians, h^J is randomly distributed over $[1 \quad 1=2x; 1 + 1=2x]$ (so that, $E[h^J] = 1$ and its density is x). Every politician has the same competence, h^J across periods. Rents must be non-negative and less than or equal to $\bar{r}$, which must be less than $\bar{t}y$ to ensure (as will become

r_1^J. In equilibrium, $\tilde{n}^J = h^J$, so plugging 2 into 4, we have

$$\frac{\bar{t}y \quad \tilde{r_1}^J}{\bar{t}y \quad r_1^J} = 1$$

which, since we have that the event $\tilde{n}^J$

infer that $\tilde{n}^J$ 1. If the incumbent's inferred competence is lower than 1, however, voters vote for the challenger. Thus, voters' optimal behaviour has not changed from the open-list scenario.

The incumbents' behaviour does change, however. In the closed-list scenario, re-election is not purely reliant on the incumbent's receiving the blessing of his supporters. The re-election chances of one incumbent are now also partially determined by the electoral support of his party colleagues. In equilibrium, each incumbent has a 50 percent chance of pleasing his voters, so that $p_J = 1/2$, where J denotes all other incumbents except for the one from whose perspective we take, J. Hence, we can write p_J as

$$p_1 = p_1[(1 - p_2)(1 - p_3)] + [p_2 p_3 + p_3(1 - p_2) + p_2(1 - p_3)] = p_1\frac{1}{4} + \frac{3}{4}$$
$$p_2 = p_2[p_1(1 - p_3) + p_3(1 - p_1)] + p_1 p_3 = p_2\frac{1}{2} + \frac{1}{4}$$
$$p_3 = p_1 p_2 p_3 = p_3\frac{1}{4}$$

In words, the first incumbent, since he ranks the highest on the list, needs only 1/3 of the voters to vote for his list and therefore only that at least one of his party colleagues is competent, to be re-elected. This means that, from his perspective, only in 1 election out of 4 is his own performance pivotal for his own re-election. The second ranking incumbent needs either that both of his colleagues are perceived as competent or that one of his colleagues are so perceived and that he himself is so perceived to win. Hence, sometimes his perceived competence does not matter because both his colleagues are perceived as competent, and sometimes his perceived competence does not matter because neither of his colleagues are perceived as competent. For incumbent number 3, re-election prospects are even bleaker. Only when both colleagues are perceived as competent and he himself is perceived as competent will he be re-elected. Thus, in 3 in 4 elections, he loses anyway so that his own efforts to seem competent are in vain.

In sum, the highest ranking incumbent free-rides on the effort of his colleagues and so has weak incentives to appear competent; the lowest ranking incumbent has a low probability of being re-elected anyway and so has weak incentives to appear competent; and the middle ranking incumbent has stronger incentives than his colleagues to appear competent, but they are

still weaker than under majoritarian election.

Repeating the analysis of optimal period 1 rents but with closed-list ballots, yields that total period 1 rents are given by

$$r_1 = 3\bar{t} \quad x\,b(R+\bar{r}) \tag{6}$$

Comparing 6 and 5 it is evident that, in equilibrium, total period 1 rents are higher under closed-list elections. In open-list elections, a candidate can guarantee his re-election by satisfying his voters. In closed-list elections, however, re-election is partially determined by party colleagues and so there are incentives to rely on good luck and extract higher rents.

In sum, because politicians depend less on appearing competent to be re-elected, the risk of corruption should be higher in closed-list than open-list elections. Thus, one can formulate a research hypothesis: Everything else equal, rent-seeking should be higher in municipalities holding closed-list elections than in municipalities holding open-list elections.

4 Municipal Elections and Political Corruption in France

French local governments have important responsibilities. Municipalities manage local development, build and maintain libraries, museums, and sports and tourist facilities; are in charge of pre-elementary and elementary schools, maintain roads and local public order through the police power of the mayor, and implements some social welfare functions (Loughlin, 2007; Arkwright et al., 2018). Municipalities are governed by the municipal council, which elects a mayor among its members. Normally, elections are held every sixth year. The four previous elections were held in 2014, 2008, 2001, and 1995.

Between 1982 and 2013, France's Code Électoralstipulated that municipalities with less than 3,500 inhabitants use a two-round block vote system with panachage. The threshold was changed to 1,000 in 2013. The system works as follows. If the municipality has n municipal council seats, voters can vote for up to n different candidates. In the first round, candidates are elected if they obtain an absolute majority and at least 25 percent of registered voters voted for them. In the second round, the n highest vote-getters receive seats. Voters can vote for any combination of candidates regardless of list. Thus, although candidates often run as groups, the

ballots represent candidate-level preferences.

Contrarily, municipalities with 3,500 inhabitants or more use a two-round, closed-list PR system with a 50 percent winner's bonus. Presented with lists, voters may vote for one only. If one list receives more than 50 percent of votes, that party receives half the seats and the remaining seats are allocated proportionally between the qualified lists — including the winning list. If no one party receives more than 50 percent of the votes, a second round ensues where the list with the most votes is awarded half of the seats while the remaining seats are distributed proportionally among all of the qualified lists — again, including the winning list. With regards to ballot structure, the important point is that voters are allowed to express list-level, but not candidate-level, preferences, and the Code stipulates that seats are allocated to candidates according to their ranking on their list ("Code Électoral - Article L264", 1983).

While praised for combining minority representation and effective government (e.g. by Alliès, 1995), the system has its critics. The electoral system and the practice of holding multiple offices (the system of cumul des mandats) have been blamed for enabling political corruption (Mény, 1992). Mény (1992) argues that, in local elections in municipalities with 3,500 inhabitants or more, due to weakly organized parties, parliamentarism is reversed so that the mayor co-opts the council rather than vice versa. This means that the mayor's party colleagues at the council are effectively discretionary selected lacqueys who will do the bidding of the mayor in return for favours and rewards. Making matters worse, the requirements of transparency towards the council on the part of the mayors executive team are arguably too lenient. For instance, the mayor may authorize the demolition of buildings or allocate building permits without the council knowing until the projects have commenced. Amplifying the discretionary powers of the executive, the largest party is often without real opposition. The 50 percent winner's bonus means that minority parties have very limited powers to meaningfully influence policy. In conclusion, it is a widespread opinion among observers of the French electoral system that the closed-lists PR system presents ample opportunities for abuse of power.

Given these observations and the fact that France has almost 1 elected local politician per

40 percent of all French corruption cases involve local politicians. While the cost of corruption is impossible to estimate precisely, some speculate that corruption costs the French €30 billion annually (Lenglet & Touly, 2013) — it is not unrealistic to suppose that a significant proportion of this cost is due to political corruption at local levels. Common types of corruption are favoritism, accepting bribes and embezzlement. Generally, the most recurring crimes committed are highly visible abuses of power such as awarding contracts or selling and regulating properties for personal gain or the enrichment of friends and family.

Nevertheless, the fight against corruption has not become a political priority, and, while

cycle) the most natural way to code the dependent variable is as a dummy variable that takes on the value of 1 if the municipality has experienced corruption during electoral cycle t, and 0 otherwise. Thus, I define the outcome of interest as the probability of visible corruption. While this data is far from as detailed as that of for instance Ferraz and Finan (2011) and so will no allow me to explore more deeply the character of corruption in France, it suffices for the purpose of testing my research hypothesis.

I divide the data into 3 periods: 1995-2001, 2002-2008, 2008-2013, corresponding to the municipal election cycles. If a municipality experienced corruption at any time during an electoral cycle, the variable corruption is coded 1 for that municipality in that electoral cycle. For each electoral cycle, I record the population at the year of the election at the end of the cycle. The reasoning behind this is that during that election cycle, politicians form expectations about how they will be held accountable at the next election and act accordingly. It is likely that lo-

model, figure 1 gives an overview of the data by displaying the binned data and including a global polynomial approximation. Encouragingly, the plot reveals a positive jump at the threshold. Three additional things can be noted. Firstly, there are a lot more observations in the control than treated group (100,621 versus 8,610). Secondly, the variance is larger in the treatment group. Lastly, the probability of corruption is quite linear with respect to population between 3,500 and approximately 7,000 inhabitants.

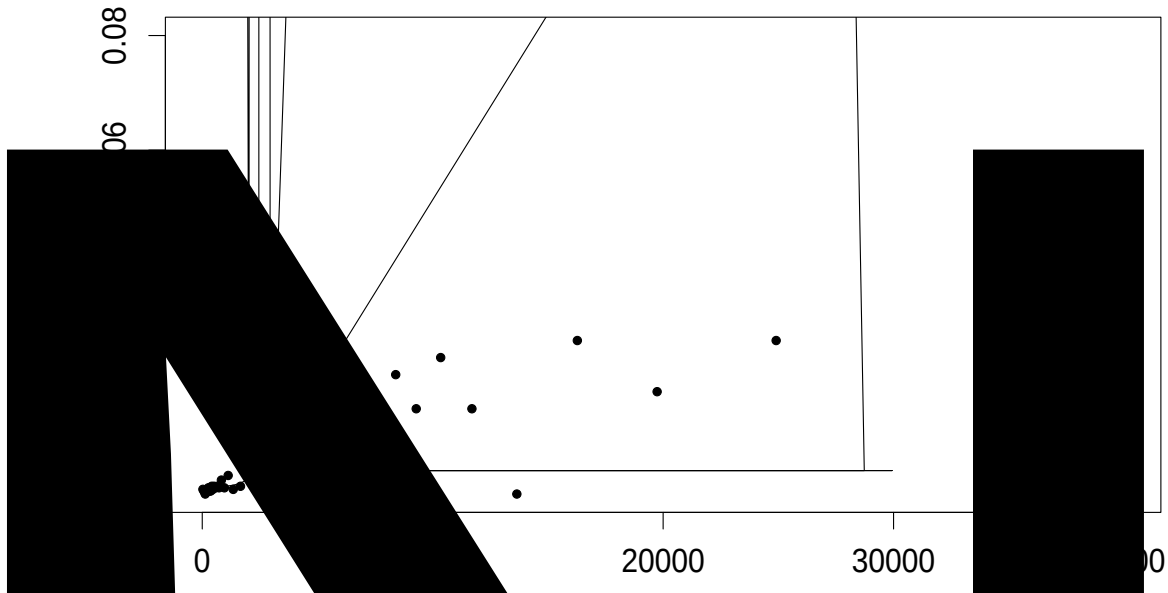


TABLE 1: BINOMIAL TESTS AT THE 3,500 INHABITANTS THRESHOLD

	Binomial tests		
h	N	N_+	p-value
1	1	1	1
10	21	26	0.56
50	113	119	0.74
100	252	236	0.50
150	374	359	0.58
200	519	479	0.22

Note: Binomial tests testing the probability of obtaining the populations around the threshold if population was randomly distributed with a binomial distribution with q = 0:5. h denotes the window within which the test is implemented.

TABLE 2: DENSITY TESTS AT THE 3,500 INHABITANTS THRESHOLD

	Density tests				
	h	h_+	N	N_+	p-value
Method					
Unrestricted, 2-h	125	125	301	298	0.31
Unrestricted, 1-h	125	125	301	293	0.31
Restricted	254	254	673	571	0.75

Note: The density tests implemented are unrestricted density estimation (i.e. estimation not assuming equal c.d.f.s nor equal higher-order derivatives) for both symmetrical and asymmetrical bandwidths, and restricted density estimation. (Cattaneo, Jansson, & Ma, 2017)

Changing the functional form, while the local regression seems to fit better, does not alter the substantive conclusion: the estimate is now $\hat{a}_{LATE} = 0{:}007$, and it is significant at the 5 percent level. In terms of sensitivity to bandwidth size, the pattern that emerges is very similar to when the local linear specification is used, and so is not reported. Thus, the finding is not sensitive to model specification.

Figure 4 shows how the estimate and standard errors change as bandwidths change when covariates are included. The same pattern emerges but with a more efficient estimator.

Lastly, figure 5 reveals that when the different bandwidths are used within the window where population is as-good-as random, the estimate is usually significant at the 10 percent level, but when the bandwidths dips below a bit less than 170, the estimates fall and are non-significant.

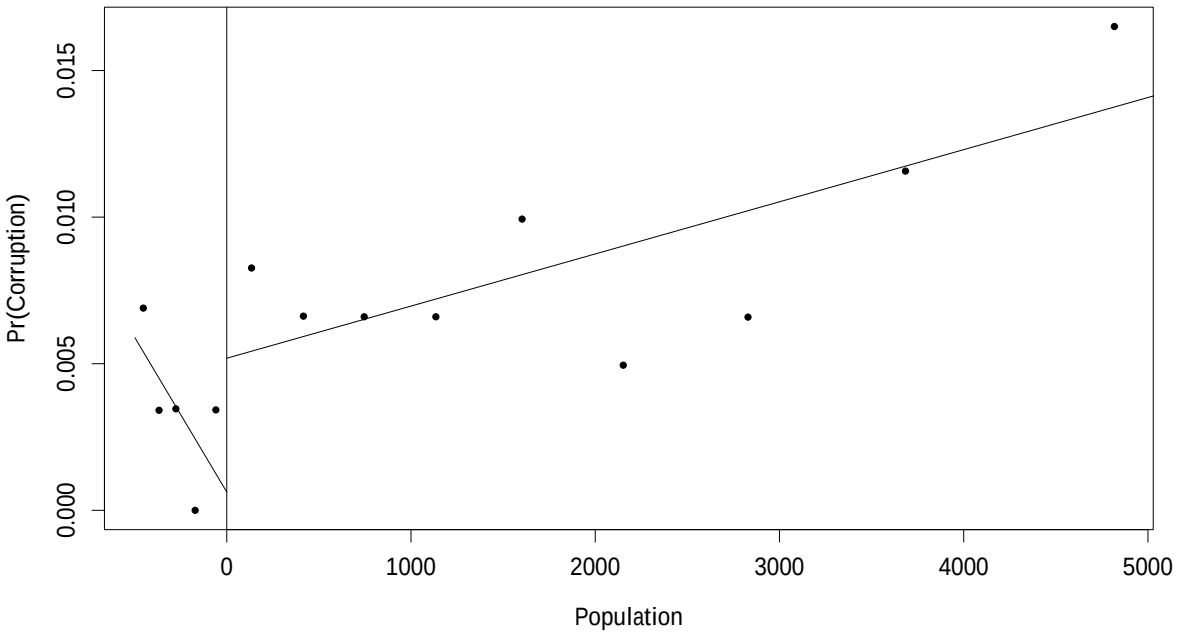
8 Discussion and Robustness Checks

Theory suggests that closed-list ballots weaken the incentives for incumbents to appear competent before the electorate and so produce an equilibrium outcome where rent-seeking (specifically here the probability of corruption) is higher relative to when incumbents' perceived competence directly influences re-election chances. Although not overwhelmingly robust, the finding from the sample of small French municipalities is broadly consistent with this theory: municipalities using closed-list ballots have a higher probability of at least one of its local politicians being convicted of corruption than the comparable control group of municipalities using open-list ballots. It seems that when local politicians can more easily get away with behaving counter to the interests of the voters, they actually do so.

This finding is also consistent with empirical findings discussed in section 2. For example, Persson et al. (2003) also find that ballot structure matters for perceived corruption, and Kunicová and Rose-Ackerman (2005) find that perceived corruption is higher in closed-list PR systems than in majoritarian systems. Hence my findings are in line with previous research.

However, the present study has an issue of compound treatment, and therefore the possibility

FIGURE 2: RESULTS FOR THE LOCAL LINEAR REGRESSION



(B) ESTIMATES AND CONFIDENCE INTERVALS FOR DIFFERENT CHOICES OF BANDWIDTHS

FIGURE 3: RESIDUAL PLOT FOR THE LOCAL CUBIC REGG57(6E)-62.003 (S)-60.999 (S)-62 (I)-62.003 (O)-6

deputy mayor salary; (5) majoritarian versus proportional representation; (6) gender parity; (7) outsourcing scrutiny; (8) council must debate budget prior to vote; (9) committees follow PR principle; and (10) amount of paid leave for council work (Eggers, Freier, Grembi, & Nannicini, 2018; Lepinard & Lieber, 2015).

Thus, for instance, some models predict that salary should decrease rent-seeking by leading to more competent politicians, or politicians with preferences more congruent to voters' preferences, to be elected (Besley, 2004; Mattozzi & Merlo, 2008). Persson et al. (2003) argue that higher wage is likely to suppress corruption since voters can exert more control by threatening to oust the politician from a more luxurious position. Lastly, higher wages might increase morale (Gagliarducci & Nannicini, 2013).

Some of these changes' effects may be indirectly tested since they also change on other population thresholds. In table 4, I list the different population thresholds and relevant policies that change on those thresholds. I run the same analysis on these thresholds that I did on the 3,500 threshold. Moreover, to verify that the relationship between population and corruption is not fundamentally discontinuous so that the jump at the threshold is contaminated by other factors (i.e. treatment effect is zero when it should be) I also test two placebo thresholds close to the 3,500 threshold.

As can be seen in table 4, at none of the thresholds is there an effect on corruption as large and as consistent as the effect of crossing the 3,500 threshold — most thresholds are neither. For instance, the estimate for mayor and deputy mayor salary is zero and non-significant at

TABLE 4: THE EFFECT ON CORRUPTION OF CROSSING OTHER POPULATION THRESHOLDS

		Model					
Population	Policy change(s)	(1)	(2)	(3)	(4)	(5)	(6)
100	CS; MDM	0 (0:001)	0 (0:001)	0 (0:001)	—	—	—
500	CS; SM; MDM	0 (0:001)	0:001 (0:001)	0:001 (0:001)	0:001 (0:001)	0 (0:001)	0:001 (0:001)
1;000	SM; PR	0 (0:001)	0:001 (0:001)	0 (0:001)	0:001 (0:001)	0 (0:001)	0:001 (0:001)
1;500	CS; MDM	0:001 (0:0013)	0:002 (0:002)	0:002 (0:001)	0:001 (0:001)	0:002 (0:001)	0 (0:001)
2;500	CS; MDM	0:006* (0:003)	0:004 (0:004)	0:006* (0:003)	0:005* (0:003)	0:005 (0:003)	0:006* (0:003)
3;000		0:002 (0:003)	0:001 (0:004)	0:003 (0:003)	0:001 (0:003)	0:001 (0:004)	0:002 (0:003)
4;000		0 (0:002)	0 (0:004)	0:001 (0:003)	0:001 (0:003)	0 (0:004)	0 (0:003)
5;000	CS; MDM	0 (0:004)	0 (0:005)	0 (0:004)	0:002 (0:004)	0:004 (0:004)	0:003 (0:004)
Covariates:		no	no	no	yes	yes	yes
Bandwidths:		MSE-optimal	50%	75%	MSE-optimal	50%	75%

Note: * p < 0:10; ** p < 0:05; *** p < 0:01. Clustered robust standard errors are reported in parentheses. “CS” indicates council size; “SM” indicates salary of mayor and deputy mayor(s); and “MDM” indicates maximum number of deputy mayors. Asymmetrical bandwidths were used wherever computationally possible, if not, symmetrical bandwidths were used if possible. Regressions where neither were possible have been marked with a dash.

ors changes from 7 to 8. Might it be that more potential reprobates with power means more corruption? Details of the data suggest that if this is the case, it should only have a minor effect. Although council sizes range from 7 to 69, almost 80 percent of corruption cases recorded are committed by mayors alone, suggesting the council size matters less. Interestingly, it might be noted that this fact too is consistent with the model of Persson and Tabellini (2000), in which the highest-ranking politician on the list has particularly strong incentives to misbehave.

Moreover, theoretical predictions with regards to district magnitude are ambiguous. For instance, on one hand, Persson and Tabellini (2003), Persson et al. (2003) argue that smaller districts (i.e., fewer elected politicians) increase entry barriers and therefore rent-seeking. On the other hand, Kunicová and Rose-Ackerman (2005) argue that although entry barriers are higher in small districts, incentives for political opponents to police each other are stronger.

In sum, while the data does not entirely rule out that council size contributes to the jump at the 3,500 threshold, there are strong reasons to doubt it plays a major part in explaining it.

With regards to the majoritarian versus PR change, it is commonly thought that more proportionality leads to more rent-seeking. More coalition executives means that it is more difficult for voters to assign praise or blame. It is unlikely, however, to be an important factor here. The

evidence that females are less likely to be corrupt, as discussed in section 2. Unfortunately, corruption data prior to year 2000 is poor and so there is no way of testing whether gender plays a major role for corruption levels in this context. However, as with wages, gender parity has been linked to lower rather than higher levels of corruption. Thus, if gender does play a role, it is likely to suppress rather than inflate the causal estimate.

The same is true of points 7. through 10. on the list. It is impossible to examine empirically whether they play a role in corruption levels. Yet, they are all factors that one would a priori think would mitigate the adverse effects of lower accountability, not amplify them.

As a final note, it is worth mentioning a subtly different causal story, which is less theoretically developed in this particular context, but might nevertheless be a competing explanation for the estimate. Rent-seeking among politicians can be generalized by applying the public good logic (Olson, 1965/2003; Persson et al., 2003). A brief exposition of the argument suffices for our purposes. In a system where politicians are held individually accountable, political office is a private good in the sense that the politicians' efforts to appeal to the electorate benefits her alone. In systems where politicians are to varying degreemplify areountableto with wiotr

Interesting directions for future research would be to find natural experiments of the career concern model at different levels of government and in countries with different political cultures. Another interesting avenue for future research might be to continue in the vain of Eggers (2015)

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