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# Jurisdiction size and perceived corruption

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**Abstract**
This paper studies the relationship between the size of a jurisdiction and how corrupt its citizens perceive officials to be. The relationship may a priori be driven by four distinct mechanisms: (i) larger communities have more officials, thereby making it more likely at least one official is corrupt; (ii) larger communities have a larger budget, thereby offering more opportunity for corruption; (iii) monitoring officials is costlier in larger communities; and (iv) the public is less likely to have contact with officials in larger communities, which raises citizens' suspicion. First, using cross-country analysis, we establish that people perceive more corruption in countries with larger populations. We then test this stylized fact using French survey data on the perception of municipal government corruption. We again observe that the perception of corruption increases with population size. This result is robust to a series of checks and many confounding factors. Moreover, our results hold across two distinct periods and for another administrative unit, departments. Finally, we report suggestive evidence that the stylized fact is driven by mechanisms (i) and (ii), but not by (iii) and (iv).

**Keywords** Perceived corruption · Jurisdiction size

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## 1 Introduction

Every jurisdiction, be it a country, a district, or a municipality, has a designated population. Yet, population size varies widely across the same type of jurisdiction, from a few thousand for micro-states to a billion and a half in countries like India and China. Likewise, the populations of municipalities can vary widely even within the same country. For instance, whereas the population of New York exceeds eight million residents, Monowi, Nebraska, came to fame by reporting only one inhabitant in the 2010 US census. The diversity of jurisdiction sizes begs the question of efficiency, specifically whether larger jurisdictions are better administered or not. Classical writers held conflicting views: whereas Plato, Rousseau, and Montesquieu viewed a large population as a hindrance to good administration, Madison viewed it as a protection of weaker citizens against others (Gerring & Veenendaal, 2020).

Importantly, the size of a jurisdiction may affect the perceptions and attitudes of its citizens. Using a natural experiment in Denmark, Lassen and Serritzlew (2011) document that municipal mergers reduced citizens' beliefs in their own competence and ability to understand and take part in politics. In addition, feelings of political alienation or pessimism about the state of democracy have been found to correlate with higher perceived corruption (Melgar et al., 2010). Jurisdiction size might, therefore, affect the perception of corruption and ultimately lead to unpalatable consequences. For instance, Villoria et al. (2013) observe that the perception of corruption is correlated with lower levels of satisfaction with democracy and greater acceptance of rule-breaking behavior. Pellegata and Memoli (2016) report that the perception of corruption reduces confidence in the parliament and government.

In this paper, we establish a new stylized fact: the perceived corruption level of officials in charge of a jurisdiction increases with the size of that jurisdiction, as defined by its population size. We document it first at the cross-country level and then at the level of French municipalities. Surprisingly, the literature has paid little attention to the effect of jurisdiction size on perceived corruption. Current evidence is essentially a by-product of studies of other determinants of perceived corruption where constituency size is a control variable and not decisive of the sign of the relationship. Fisman and Gatti (2002b) observe that larger countries are perceived as less corrupt, while Xin and Rudel (2004) report the opposite, and Gerring and Veenendaal (2020) find that the association is statistically insignificant.[1] By using both cross-country and French data, we can show that the relationship between population size and perceived corruption is robust and applies to various levels of government.

Four mechanisms may a priori result in a positive correlation between the size of a jurisdiction and the perception of the corruption of its officials. The first is a scale effect. As there are more public officials in larger jurisdictions, the probability that at least one of them is corrupt is, all else equal, greater the larger the size of the jurisdiction. Accordingly, if residents infer the prevalence of corruption from the number of corrupt officials, they will believe it to be higher in a larger jurisdiction (Gerring & Veenendaal, 2020). Moreover, the severity of actual corruption, as measured by the outcomes of audits, has been found to increase with the size of the legislature in Brazilian municipalities (Britto & Fiorin, 2020).

[1] The origin of the differences between those results are difficult to pinpoint. They may be traced back to differences in samples and periods of study. Fisman and Gatti (2002b) consider various corruption indices for a cross-section of 55 countries averaged over the 1980–1995 period, whereas Xin and Rudel (2004) consider a larger cross-section of 95 countries separately in 1999 and 2001 and focus on Transparency International's Corruption Perception Index. Gerring and Veenendaal (2020) state that their own cross-national analysis led to a null result but do not share their sample and method.

The second mechanism is that the number of opportunities to be corrupt and the potential profitability of corruption are larger in large jurisdictions where budgets are larger. Larger countries typically have larger public budgets in absolute terms and as a share of GDP (Ram, 2009; Krieger & Meierrieks, 2020), although evidence that this always holds true is mixed (Alesina & Wacziarg, 1998). The size of perks is, therefore, greater in larger jurisdictions. At the local level, Jetter and Parmeter (2018) also report that people in urban areas believe that governments should take more responsibilities and are more supportive of redistribution, again leading to a larger public budget. The effect may be complemented by transfers from the central government, resulting in windfalls of public resources that have been found to favor corruption by Fisman and Gatti (2002a); Brollo et al. (2013). Finally, the size of the projects that the authorities can approve and oversee is larger, again resulting in the possibility of receiving larger bribes. If citizens realize that officials face such incentives, they will perceive them as more corrupt.

The third mechanism rests on information. Residents of larger jurisdictions should on average be less well informed about the deeds of their officials because they are geographically and socially more distant. By the same token, social control should be tighter in smaller communities, as observed by Funk (2010). Moreover, the opacity of the responsibility of corrupt practices also increases with the size of a jurisdiction because officials in larger jurisdictions perform more tasks (Tanzi, 1996). As a result, monitoring officials is more difficult in larger jurisdictions, as Aidt (2003) or Fan et al. (2009) point out. Officials are therefore less accountable in larger jurisdictions (Shrestha et al., 2023), and the incentive for them to be honest may accordingly be smaller. In addition, larger jurisdictions provide a larger market and make selling information more profitable for media or journalists, not to mention that covering larger jurisdictions might be more prestigious. The press and watchdog groups, therefore, have a stronger incentive to scrutinize the officials of larger jurisdictions (Prud'homme, 1995). Moreover, within a country, larger jurisdictions — for instance, larger municipalities — may draw the attention of the national press, while smaller ones may only be scrutinized by the local press, which is weaker than national media (Fan et al., 2009). Residents of larger jurisdictions are more likely to be informed of wrongdoings by their officials because the latter are more closely monitored. Those residents may then perceive their officials as more corrupt (Rizzica & Tonello, 2015).

The fourth mechanism is driven by the fact that the larger a jurisdiction, the lower the probability of contact with local officials, let alone personal contact, which Tanzi (1996) refers to as "contiguity". In small municipalities, officials and citizens may have lived their whole lives close to one another and may even be related. Contiguity brings personalism to residents' assessment of the corruption of officials. Research in sociology and leadership shows that distance to a leader affects how followers assess the leader; citizens are more likely to forgive or downplay a leader's misdeeds when they are closer (Bogardus, 1927; Antonakis & Atwater, 2017). The lower proximity between respondents and their officials in larger jurisdictions results in less frequent contact and, hence, less contiguity. Accordingly, residents of larger jurisdictions may be less lenient in the assessment of the corruption of officials who are more remote (Tanzi, 1996).

Those arguments can be countered. For instance, career concerns may mitigate the opportunities for corrupt deals in larger jurisdictions. Career opportunities in smaller jurisdictions, if any, are likely less attractive, ceteris paribus. Accordingly, officials in larger jurisdictions have a stronger incentive to avoid corruption to either keep their position or be pro-

moted to higher positions in the administrative or political structure (Myerson, 2006). One could, therefore, expect corruption to be less common in larger jurisdictions. The prestige of holding an office in a large jurisdiction could also serve as a deterrent (Seabright, 1996; Tabellini, 2000). In addition, smaller jurisdictions may face specific hurdles. For instance, because they can offer lower wages due to the size of their budget, they may find it harder to hire a manager to supervise day-to-day operations, which is correlated with lower corruption (Gerring & Veenendaal, 2020). Also, smaller entities are typically more open to trade, resulting in more exposure to international shocks, which raises the demand for compensation and results in a larger budget (Bharati et al., 2023) and more opportunities to be corrupt. The level of corruption citizens see will again depend on how they perceive those incentives. Finally, perceived corruption has been found to correlate positively with the heterogeneity of the population, both at the cross- and within-country level (Mauro, 1995; Olken, 2009). To the extent that heterogeneity may be related to population size, it could therefore also contribute to its relationship with perceived corruption. However, the relationship between heterogeneity and population size is mixed and depends on the characteristics taken into account (Wilson, 1986). As a result, the correlation between jurisdiction size and perceived corruption may go in either direction, and the question of which is mainly an empirical one.

To study the relationship between jurisdiction size and perceived corruption and investigate the mechanisms explaining that relationship, we rely on data on French municipalities. Using data from a single country reduces the unobserved heterogeneity that could confound the finding in an international comparison. Moreover, France offers an interesting case study. First, there is corruption without it being a fundamental political or economic problem — France is ranked 22nd in Transparency International's 2021 Corruption Perception Index (Transparency International, 2021) — and no event close to the time of the survey (end of July 2021) was likely to have affected the answers of respondents. Second, since France is a centralized country, all its municipalities are governed by the same regulations. Nonetheless, the number of those municipalities is particularly large at 35,000 at the time of the survey. Moreover, municipal size varies greatly, from a few dozen inhabitants in a small village to two million in the capital city of Paris. This allows us to leverage a large diversity within a stable and homogenous institutional context. Finally, we can assess corruption at the municipal level thanks to a large national survey ($N$>9,000) carried out online in July 2021 and based on a representative sample of the French population aged 18 and over registered on the electoral roll.

Both at the cross-country level and within France, we find that more corruption is perceived in more populous jurisdictions. The within-country findings are stable and stand up to many robustness checks. Thanks to a different survey, we are able to observe the same relationship both 15 years ago and across departments (a "department" is the French jurisdiction that is between the smaller municipality and the larger region in size). We also reach similar conclusions when using an instrumental variable approach where the jurisdiction's population is instrumented by its altitude. Further tests allow us to rule out that the correlation between perceived corruption and municipal size is driven by a general perception of corruption, an erosion of confidence in all representatives, or a general lack of trust. We also observe that actual corruption correlates positively with both perceived corruption and population size.

Afterward, we investigate the four mechanisms that may drive the relationship described above. We find no evidence that the observed relationship is driven by information or con-

tacts with public officials. By contrast, we report evidence that it is driven by the size of the municipal council, in line with the scale effect, and the size of the municipal public budget.

The rest of the paper is organized as follows. The next section investigates the correlation between size and perceived corruption using a cross-country comparison. Section 3 describes the French dataset that we use to establish the stylized fact within a given institutional context, and Sect. 4 reports baseline results and the results of various robustness checks. Section 5 rules out a series of confounding factors. In Sect. 6, we investigate the four potential mechanisms behind the relationship. Section 7 concludes.

## 2 A cross-country comparison

In this section, we investigate the relationship between the size of the population of a country and three corruption indices: Transparency International's Corruption Perception Index, the World Bank's Control of Corruption, and the International Country Risk Guide's corruption index. All indices have been rescaled to a scale that increases when a country is perceived as more corrupt.[2]

We regress the three corruption indices on population size, controlling for a series of standard variables that have been found to be correlated with corruption in the cross-country literature.[3] We estimate a series of pooled regressions with standard errors clustered at the level of individual countries.

Table 1 reports the outcome of those regressions. The logarithm of population size bears a positive coefficient that is statistically significant at the one-percent level in the three regressions, implying a positive association between population size and perceived corruption.[4] Accordingly, perceived corruption is larger in larger countries. A one-standard-deviation increase in a country's population (log-transformed) is associated with an increase in corruption indices of 0.25 or 0.19, depending on the corruption variable scrutinized.

While those results provide a first sense of the relationship between population size and perceived corruption, they must be considered with caution, as cross-country estimations may be affected by unobserved heterogeneity. Moreover, smaller countries may draw less attention from corruption experts and be missing from the sample (Knack & Azfar, 2003; Gerring and Veeendaal, 2020). Our main analysis therefore focuses on the relationship within a single country, which reduces unobserved heterogeneity and is not subject to a selection bias.

[2] The variables used in this section are described in Table A.1 of Appendix A1.

[3] Specifically, we control for GDP per capita, government expenditures as a percentage of GDP, fuel exports as a percentage of merchandise exports, the V-Dem polyarchy index, ethnic fractionalization, and the share of Protestants in the population. See Appendix A1 for details.

[4] We observe very similar results if we estimate the relationship using data on the last available year by country (see Table A.3 in the Appendix).

**Table 1** Indices of corruption and country population: international comparison

| | Dependent variable: Indices of corruption | | |
|---|---|---|---|
| | CPI [2012–2019] | WB [2010–2019] | ICRG [2010–2017] |
| | Coef. | Coef. | Coef. |
| | (se) | (se) | (se) |
| | Standardized | Standardized | Standardized |
| Population (log) | 3.86*** | 0.20*** | 0.18*** |
| | (1.089) | (0.054) | (0.066) |
| | *0.25* | *0.25* | *0.19* |
| Control variables | ✓ | ✓ | ✓ |
| Observations | 364 | 461 | 372 |
| Year | 8 | 10 | 8 |
| Country (max) | 48 | 49 | 48 |
| Adjusted $R^2$ | 0.86 | 0.86 | 0.83 |

Notes. CPI is Transparency International's Corruption Perception Index. CCE is the World Bank's Control of Corruption. ICRG is the International Country Risk Guide's corruption index. The CPI data cover 177 countries from 2012 to 2020. The CCE data cover 214 countries from 1996 to 2019. The ICRG data cover 140 countries from 1984 to 2017. All indices increase with corruption. The observations by country are stacked. The method of estimation is pooled OLS. Control variables are GDP per capita, government expenditure (% of GDP), fuel of exports (% of merchandise exports), electoral democracy index, ethnic fractionalization, proportion of protestants, regional fixed effects, and main cultural legacy dummies (British, French, German, Socialist, and Scandinavian). Constant included but not reported. For details, see Table A.2 in Appendix A1. Standard errors clustered at the country level are reported in parentheses. Beta-coefficients are in italics. ***Significant at 1% level; **significant at 5% level; *significant at 10% level

## 3 A within-country analysis of the French case: data and method

We now study the correlation between population size and the perceived corruption of municipal governments within France. This section describes the survey, the size of the municipalities in the sample, and our empirical strategy.

### 3.1 The survey

The survey was carried out online from July 7 to 11, 2021, as part of the Ipsos Access Online Panel. It consisted of a representative sample of the French population aged 18 and over registered in the electoral roll and was constructed using the quota sampling method applied to gender, age, profession of the interviewee, region, and urban area. The sample was 10,105 respondents.[5]

At the time of the survey, there were about 35,000 French municipalities. In our sample, respondents live in 5,004 of them. Those municipalities are located in each of the 14 metropolitan regions and in 94 out of the 94 metropolitan departments. Our sample excludes Corsica. On average, a municipality included in the survey features 2.02 respondents. The most represented municipality has 413 respondents, and the least represented only one.[6]

[5] See Appendix A2 for more details on the survey.

[6] Figure A.1 in Appendix A2 draws the distribution of the survey respondents according to the population of their municipality. We observe an apparently normal distribution without any statistical concerns.

Municipalities are the lowest and smallest administrative division in France.[7] Each is run by the municipal council (*conseil municipal*), which appoints the executive branch, the mayor (*maire*), and his deputies (*adjoints aux maire*). The municipal council is elected by registered voters of the municipality every 6 years and in a two-round list voting system that depends on the municipality's number of inhabitants. The winning list with the majority of votes — either in the first or second round — obtains the majority of seats in the municipal council.

Because the French political system is centralized, the municipal council oversees very local policies. Its powers are the same regardless of the size of the municipality. It mainly manages urban, land, and real estate policies and urban public transport.

In addition to the typical sociodemographic and political information, the survey specifically deals with corruption. In particular, respondents were asked to indicate the degree of corruption they perceive in their local government. They could reply on an 11-point scale, from "no corruption at all" (0) to "a lot of corruption" (10).

Figure 1 reports the distribution of the answers to the question on the corruption of municipal governments. The middle modality is unsurprisingly the mode of the distribution, being chosen by 22.6% of respondents. 41.1% of respondents picked a value below the middle, while 36.4% chose a value above it. Focusing on the extreme ends of the scale, 6.3% of respondents stated that there is no corruption at all and 5.3% that there is a lot of corruption.

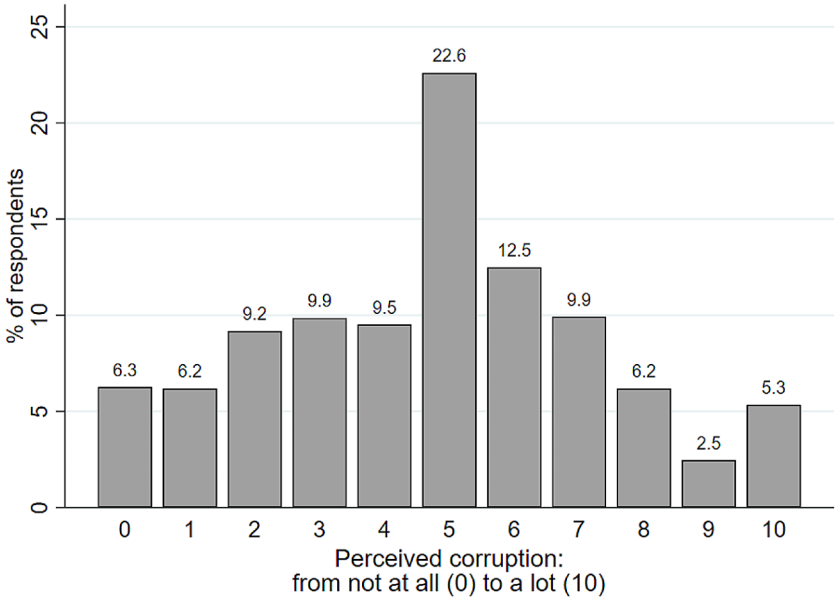


**Fig. 1** Perception of municipal government's corruption. Notes. Perceived corruption is measured using the question: "Do you think that the municipal institution is involved in corruption?" An 11-point scale is proposed from 0 "no corruption at all" to 10 "a lot of corruption". $N = 10{,}105$

[7] In addition to municipal governments, there are three other local governments: the inter-municipal governments, which are a grouping of municipalities; the *Conseil Généraux*, which manage public policy at the level of departments; and the *Conseil Régionaux*, which run regions.

Thanks to the code of the respondents' municipality of residence, we can match their answers with information about their municipality, including its population. Because we exclude Paris, Lyon, and Marseille from our main analyses, we end up with a sample of 9,536 respondents from 5,001 municipalities.[8] Table A.6 in the Appendix shows that the distribution of survey respondents according to the characteristics of their municipality is balanced and follows the distribution of the French population. The municipalities included in the sample are heterogeneous in terms of size, with a population ranging from 13 to nearly 500,000 inhabitants. The average municipality in the sample has a population of 35,500, and the standard deviation of population size is 1.9 times higher than the mean. Our empirical model leverages this large variability.

### 3.2 Empirical model

Our baseline specification aims to measure how respondents' perception of the level of corruption in their municipal government correlates to the size of their municipality. To measure this, our model has three levels: respondent, municipality, and region. The specification reads:

$$Corruption_{i,j,r} = a_0 + a_1 \log\left(Pop_j\right) + \mathbf{A}_R \mathbf{R}_i + \gamma_r + u_{i,j,r} \quad (1)$$

,where $Corruption_{i,j,r}$ is the level of corruption that respondent $i$ living in municipality $j$ and region $r$ perceives of her municipal government. It can take 11 values corresponding to the answers to the corruption question on a 0 ("no corruption at all") to 10 ("a lot of corruption") scale. $Pop_j$ is the population of municipality $j$ . $\mathbf{R}_i$ is a vector of respondent individual controls, and $\mathbf{A}_R$ is the vector of corresponding coefficients. Our specification includes several standard sociodemographic characteristics: gender, as women have been found to be less tolerant of corruption (Alexander et al., 2020); marital status; age; education level; income; and work status. We also introduce political characteristics such as the respondent's political position on the left-right axis and her interest in politics, as both have been found to affect the perception of corruption (Anduiza et al., 2013). Finally, the terms $\gamma_r$ and $u_{i,j,r}$ represent the fixed effects related to the respondent's region and the error term, respectively.[9] Model 1 is estimated using OLS and with standard errors clustered at the municipal level to allow for arbitrary dependence between respondents of the same municipality.

[8] Paris, Lyon, and Marseille are the most populous municipalities in France. However, because of institutional specificities, we exclude respondents living in those municipalities from our baseline estimations. The three municipalities are ruled — and their governments are elected —according to special rules. Specifically, they are divided in sub-municipal governments — "arrondissements" — with their own mayors, namely "maires d'arrondissement" in Paris and Lyon and "maires de secteur" in Marseille. As a result, we do not know whether respondents were thinking about the sub-mayor or the mayor when they evaluated municipal corruption. In Sect. 4.3, we show that including the three municipalities in the sample does not affect our results.

[9] We use the 21 French metropolitan regions that existed before the 2015 merger, except Corsica which is not present in the sample.

## 4 Municipal size and the perceived corruption of French municipal governments

Table 2 reports the baseline outcome of estimating Model 1.[10] The regression shows an unambiguous positive correlation between population size and perceived corruption. We observe this relationship in a bivariate estimation (Column 1 of Table 2), and it remains very stable even when introducing control variables capturing respondents' characteristics or regional fixed effects (Columns 2 and 3). Thereafter, we focus on the full specification, which is in line with Model 1.

The coefficient of the logarithm of population size is positive and significant at the one-percent level. Since the population size is log-transformed, the estimated coefficients are semi-elasticities: the coefficient of population, therefore, implies that a 1% increase in population size is associated with an increase of 0.18 points in perceived corruption. As perceived corruption is measured on a scale from 0 to 10, and the ratio of the standard deviation of population size to its mean is 5.29, the magnitude of the effect is substantial.

Figure 2 gives a more precise illustration of the impact of population size on the perceived corruption of municipal governments. The figure plots predicted perceived corruption against population size, from the minimum to the maximum of the studied sample. Over the range of the population in our sample, predicted perceived corruption climbs two degrees out of eleven. The correlation between municipal size and corruption is, therefore, quantitatively significant.

### 4.1 Robustness checks and extensions

To make sure that the baseline results are not driven by our assumption regarding the functional form of the relationship between size and perceived corruption, we estimate two alternative functional forms. We first use a linear and a quadratic specification (Table 3, Columns 1 and 2). All coefficients associated with the population variable are significantly different from 0 at the 1% threshold. To further test the possibility of a non-linear relationship, we split the sample of respondents into three terciles defined by municipal size and

**Table 2** Population size and perceived corruption in French municipalities

| | (1) | (2) | (3) |
|---|---|---|---|
| Population (log) | 0.22*** | 0.21*** | 0.18*** |
| | (0.016) | (0.016) | (0.015) |
| Respondent's characteristics | | ✓ | ✓ |
| Regional FE | | | ✓ |
| Observations | 9536 | 9536 | 9536 |
| Adjusted $R^2$ | 0.026 | 0.068 | 0.080 |

Notes. Perceived corruption is measured through the question: "Do you think that the municipal government is involved in corruption?" An 11-point scale is proposed from 0 "no corruption at all" to 10 "a lot of corruption". The detailed outcomes for the most complete specification (Column 3) are given in Table A.5. Constant included but not reported. The method of estimation is OLS. The included respondent's characteristic variables are detailed in Appendix A2. Regional fixed effects correspond to the 21 former French metropolitan regions. Standard errors clustered at the municipal level are reported in parentheses. ***Significant at 1% level; **significant at 5% level; * significant at 10% level

[10] For conciseness's sake, we report the coefficients of control variables only in Table A.5 of the Appendix.

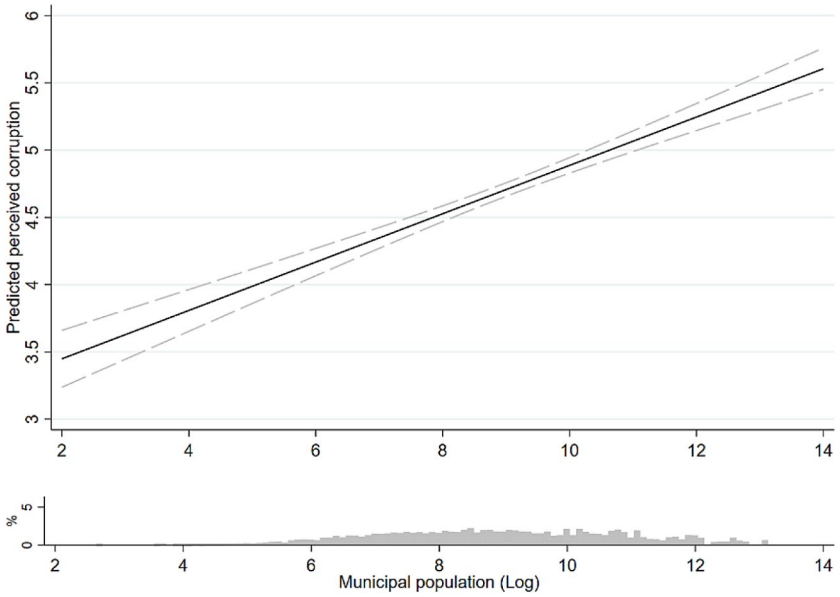


**Fig. 2** Predicted perceived corruption of municipal government according to respondent municipal size. Notes. Perceived corruption is measured through the question: "Do you think that the municipal institution is involved in corruption?" on an 11-point scale ranging from 0 "no corruption at all" to 10 "a lot of corruption". Predicted perceived corruption is computed using the estimation reported in Table 2, Column 3, with all other explanatory variables taking their average value. The histogram at the bottom draws the distribution of respondents according to the (log) population of their municipality

estimate the baseline model separately for each. The outcomes are displayed in Columns 3 to 5 of Table 3. In all cases, respondents perceive more corruption in larger municipalities. Moreover, in all regressions, the adjusted $R^2$ is smaller than in the baseline regression, suggesting that the baseline specification is the preferred model.

As the size of municipalities varies widely, one could be concerned that outliers or initially excluded observations drive the baseline results. We first addressed that concern by trimming the sample at the 5th and 95th percentiles of the size variables (Table 3, Column 6). Second, we winsorized the sample at the same percentiles (Table 3, Column 7). Third, baseline regressions exclude respondents living in Paris, Lyon, and Marseille because of institutional specificities. To make sure that their exclusion does not drive our results, we ran a regression on a sample including the respondents of these three municipalities (Table 3, Column 8). We conclude that regardless of the subsample, the log of population exhibits a significant, positive, and quantitatively similar coefficient.

To determine whether the relationship between municipal size and perceived corruption is stable over time, we use a 2006 survey described in Lascoumes (2010, 2011) and François and Méon (2021).[11] The wording of the question is the same as in the 2021 survey, but respondents could only answer on a four-point scale: no corruption, little corruption, some corruption, and a lot of corruption. Although the sample was smaller at 1,800 respondents, we apply a similar empirical model (for details, see Appendix 5). Column 9 reports the outcome of that estimation. It shows that population size is also strongly correlated with

[11] The "Probité" survey was carried out in 2006 (Lascoumes, 2010, 2011). For details, see Appendix A4.

**Table 3** Additional estimates

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Linear | Quadratic | 1st tercile | 2nd tercile | 3rd tercile | Trimming | Winsorizing | Including Paris, Lyon, and Marseilles | 2006 | Depart-mental gov | IV | De-part-ment FE |
| Population (log) | | | 0.16*** | 0.14* | 0.10* | 0.19*** | 0.19*** | 0.15*** | 0.080*** | 0.12** | 0.33*** | 0.17*** |
| | | | (0.059) | (0.086) | (0.055) | (0.017) | (0.015) | (0.023) | (0.011) | (0.055) | (0.046) | (0.016) |
| Population | 2.95e-06*** | 7.93e-06*** | | | | | | | | | | |
| | (5.88e-07) | (9.28e-07) | | | | | | | | | | |
| Population squared | | -1.5e-11*** | | | | | | | | | | |
| | | (2.8e-12) | | | | | | | | | | |
| Respondent's charact. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Region FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Department FE | | | | | | | | | | | | ✓ |
| Observations | 9536 | 9536 | 3176 | 3176 | 3178 | 8927 | 9536 | 10,105 | 1869 | 9536 | 9536 | 9536 |
| Adjusted $R^2$ | 0.067 | 0.070 | 0.052 | 0.053 | 0.054 | 0.076 | 0.076 | 0.079 | 0.075 | 0.047 | 0.22 | 0.076 |

Notes. Unless specified otherwise, perceived corruption is measured through the question: "Do you think that the municipal government is involved in corruption?" An 11-point scale is proposed from 0 "no corruption at all" to 10 "a lot of corruption". Except for Columns 1 and 2, the variable population is log transformed. In Column 1, the population variable is the raw measure, instead of the log transformation like in the baseline specification, and in Column 2, the quadratic relation is tested. Columns 3, 4, and 5 restrict the sample to the first, second, and third terciles of respondents, respectively, according to the population of their municipality. In Column 6, we exclude the observations for which the municipal size is under 5% and over 95% of the distribution from our sample. In Column 7, we cap the population at the [5%, 95%] bounds. The sample in Column 8 includes the respondents living in Paris, Lyon, or Marseille who are excluded in the baseline model. In Column 9, perceived corruption is measured in 2006 through the question: "In your opinion, there is 1) no corruption; 2) little corruption; 3) some corruption, or 4) a lot of corruption in the municipal government?" (Source: Survey "Probité", 2006). In Column 10, we apply our baseline model to the identical question about the respondents' departmental government, another local government in which the constituency is larger than municipal one. In Column 11, the method of estimation is 2SLS; the log of municipal population is instrumented by the average altitude of the municipality. In Column 12, we replace the regional fixed effects by department fixed effects. Method of estimation is OLS. Constant included but not reported. The included variables for respondent's characteristics are detailed in Appendix A2. Regional fixed effects correspond to the 21 former French metropolitan regions (excluding Corsica). Department fixed effects correspond to the 94 French metropolitan departments (excluding Corsica). Standard errors clustered at the municipal level are reported in parentheses. ***Significant at 1% level; **significant at 5% level; *significant at 10% level

perceived corruption in 2006, implying that the relationship between population size and perceived corruption is stable over time.

The relationship between population size and perceived corruption should hold at other levels of government. To test this, we look at the level of departments, or "*départements*", the main French administrative unit. Mainland France features 96 departments, each run by a departmental council ("*conseil départemental*"). We have data for all mainland departments except those of Corsica. We can, therefore, estimate Model 1 with the sample of 94 departments by replacing the municipal population with the department population. The outcome of that estimation is reported in Column 10 of Table 3. The coefficient of population size is significant at the five-percent level and positive. In other words, the relationship is not only observable at the level of countries and French municipalities but also at the level of French departments, even though there exists less disparity in terms of population across departments than across municipalities or countries.

The results reported so far are based on correlations and should be interpreted as such. A priori, reverse causality running from the corruption perceived by an individual respondent to the size of the municipality where she lives is unlikely. By the same token, it is unlikely that the same variable drives both the perception of corruption and the size of the constituency. It is, therefore, tempting to consider our estimates to be causal.

To lend more credence to the interpretation of the correlation between municipal size and perceived corruption as reflecting a causal relationship, we estimate an instrumental variable model where the population size of a municipality is instrumented by its average altitude. Altitude is a compelling instrument for several reasons. First, it is a good predictor of population, as population size tends to diminish with altitude (Cohen & Small, 1998). Second, the variance of the altitude of municipalities in France is large. Third, it is unlikely that perceived corruption correlates in a systematic way with altitude, especially since we include regional fixed effects to control for broad geographic and socio-demographic differences. In addition, the use of regional fixed effects allows us to restrict the analysis to variations within a region where the altitude of a municipality is more homogenous than in the whole sample. We control for the bulk of the indirect effect of altitude on corruption, which lends credence to the exclusion restriction. The outcome of the IV estimations is reported in Column 11 of Table 3. The coefficient of population size remains statistically significant at the one-percent level and even increases in magnitude.

Finally, in Column 12 of Table 3, we show that using department fixed effects instead of regional fixed effects leads to quantitatively and qualitatively very similar results.

## 5 Ruling out confounding factors

To interpret our results as implying a relationship between municipal size and perceived corruption, we need to rule out that we indirectly estimate another relationship because either the dependent variable or the variable of interest is a proxy for another variable. First, we establish that the relationship is not driven by a broader propensity of respondents to perceive corruption. Second, we show that our finding does not capture a correlation between municipal size and trust. Finally, we report evidence suggesting that the correlation is indeed a matter of perception as opposed to a direct reflection of actual corruption.

**Table 4** Size of the municipal council: RDD estimates

| | (1) | (2) |
|---|---|---|
| | Optimal bandwidth | Optimal bandwidth×2 |
| Discontinuity | 2.50*** | 1.02** |
| | (0.57) | (0.51) |
| Population | -0.04 | -0.01 |
| | (0.10) | (0.03) |
| Respondent's characteristics | ✓ | ✓ |
| Regional FE | ✓ | ✓ |
| Bandwidth | 13.97 | 27.95 |
| Observations | 165 | 314 |

Notes. Perceived corruption is measured through the question: "Do you think that the municipal government is involved in corruption?" An 11-point scale is proposed from 0 "no corruption at all" to 10 "a lot of corruption". Local polynomial regression discontinuity estimates with covariate adjustment are considered as in Calonico et al. (2019). The optimal bandwidth is computed following Imbens and Kalyanaraman (2012). The 17 cut-offs are pooled together by normalizing municipal size according to the distance of every municipality from the above or below each cut-off. The estimates are weighted by the number of councillors. Constant included but not reported. The included respondent's characteristic variables are detailed in Appendix A2. Regional fixed effects correspond to the 21 former French metropolitan regions. Standard errors clustered at the municipal level are reported in parentheses. ***Significant at 1% level; **significant at 5% level; * significant at 10% level

### 5.1 A general perception of corruption?

The correlation between municipal size and the perceived corruption of municipal governments may be driven by a general feeling of corruption at all levels of government. To address that concern, we scale down the baseline dependent variable by the assessment of corruption at other levels of government. If our model has captured a relationship between municipal size and a general perception of corruption that is not specific to municipal governments, then the correlation should vanish.

We leverage questions in the survey dealing with the perception of corruption at other levels of government, namely departmental and regional councils, deputies (members of the lower chamber of the Parliament), ministers and prime ministers (members of the national cabinet), and the president of the republic.

Using the answers to these questions, we first simply divide the perceived corruption of municipal governments by the average level of perceived corruption at other government levels. As an alternative, we subtract the average level of perceived corruption at other government levels from the level of corruption at the municipal level that respondents perceive. We use the two variables in succession instead of the baseline measure of perceived corruption. Those regressions are reported in Table A.7 in the Appendix. Regardless of how the perceived corruption of municipal governments is scaled down by the level of corruption at other government levels, the coefficient of population size exhibits a positive coefficient that is statistically significant at the one-percent level.

A second solution is to estimate the relationship between municipal size and respondents' perception of corruption at other levels of government. Specifically, we replace the dependent variable with answers to similarly framed questions that ask respondents to gauge the corruption of inter-municipal governments and departmental governments. We then apply our empirical model to these two different levels.

The outcome of those regressions is reported in Table A.8 of the Appendix. The striking finding of those regressions is that respondents living in larger municipalities do not perceive departmental governments to be less or more corrupt. The coefficient is statistically insignificant at standard levels. Those findings suggest that respondents differentiate between municipal governments and other levels of government when gauging the level of corruption, which lends credence to the interpretation of our baseline findings as indicating a relationship between the size of the population of a municipality and how its residents perceive their municipal government.

In line with our baseline results, we find that the coefficient of population size in the regression that uses the perceived corruption of inter-municipality governments as its dependent variable is positive and statistically significant at the 10-percent level. This is unsurprising as the members of inter-municipality governments are either (a) the members of municipal governments in municipalities smaller than 1000 inhabitants or (b) elected at the same time and on the same lists as members of the local government in municipalities larger than 1000 inhabitants. Respondents correctly perceive that the two groups of officials overlap.

Overall, the results obtained for other levels of government suggest that the effect of municipal size specifically relates to the perception by respondents of the corruption of their municipal government and not to a broader perception of corruption that spills over to other levels of government.

### 5.2 Trust in municipal government?

François and Méon (2021) report a negative correlation between trust and the perception of corruption in local governments. The measure of corruption that we use as dependent variable may therefore be a proxy for trust, and the baseline finding may capture a correlation between municipal size and trust.[12]

To rule that possibility out, we leverage a question from the survey gauging respondents' trust in mayors: "Could you tell me to what extent you trust the mayor of your municipality?" Respondents could reply by choosing one of the following four options: "not at all", "a little", "some", and "totally". While the trust question refers to the "mayor" instead of the "municipal government", mayors are the heads of municipal governments, making the semantic difference insubstantial. We include three dummy variables coding the answer to the trust question in our baseline model. If the relationship between municipal size and perceived corruption is driven by respondents' trust, it should vanish when the trust variable is controlled for.

The results reported in Table A.10 lead to two conclusions. The first is that trust in mayors unsurprisingly correlates with the perceived corruption of municipal governments. As the reference category corresponds to the maximum level of trust and the three dummies exhibit a negative sign significant at the one-percent level, higher trust in mayors correlates with lower perceived corruption.

The second and main finding is that, despite the first finding, the relationship between municipal size and perceived corruption is not altered by controlling for the trust variables. The coefficient of population size remains positive and significant at the one-percent level.

[12] Table A.9 shows that trust also correlates with city population size.

Moreover, the magnitude of the coefficient changes little compared to the baseline estimations reported in Table 2.

### 5.3 Perceived vs. actual corruption

We have so far focused on perceived corruption, which begs the question of the relationship between perceived and actual corruption and the extent to which actual corruption drives the baseline results.

To measure actual corruption, we leverage the dataset provided by the national French police on probity offenses recorded by the police between 2016 and 2021 at the departmental level. It includes the offenses of corruption, influence peddling, bribing, favouritism, and other crimes as defined by the French law. The dataset makes the distinction between offenses made by officials, by civil servants for the public administration, and by actors of the private sector. Unfortunately, we do not have data for each category, for every year, or at a finer level than department. Despite those limitations and the usual concern with police statistics, this is the best available proxy of local corruption.

We then control for the absolute number of cases and its logarithm, along with the number of cases per inhabitant and its logarithm, as explanatory variables of perceived corruption in the regression. Table A.11 reports the results of those estimations. First, we observe a statistically significant correlation between actual and perceived corruption, meaning that the perception of corruption is correlated with actual corruption in the respondents' environment. More to the point, the coefficient of population size always remains statistically significant at the one-percent level, with very little change to the value. Those results suggest that the relationship between population size and perceived corruption is not affected by the level of actual corruption, as we measure it.

## 6 Mechanisms exploration

Now that we have established a strong, robust, and stable relationship between perceived corruption and constituency size, we need to explore the four theoretical mechanisms that may explain this stylized fact.

### 6.1 A scale effect of municipal government

Large constituencies have larger governments, which increases the probability that at least one official is corrupt and might deteriorate the perception of corruption of all local officials (Gerring & Veenendaal, 2020; Britto & Fiorin, 2020).[13] In the case of French municipalities, the number of members of the municipal government in France is strictly determined by the official population at election time, ranging from 7 in municipalities with less than 100 inhabitants to 69 in municipalities with populations larger than 300,000 inhabitants,

[13] Krieger and Meierrieks (2011) contend that a similar mechanism may explain why larger countries are more likely to both produce terrorists and be the targets of terrorist attacks. The argument may not extend to the French case over the last decade because small rural municipalities hosted jihadist networks. For instance, the hamlet of Artigat hosted a jihadi community that trained Mohammed Merah, the perpetrator of mass shootings in the south of France in 2012.

as defined by 17 population thresholds reported in Table A.12 in the Appendix. Those 17 thresholds generate 17 discontinuities that can be leveraged to estimate the effect of the size of the council on perceived corruption. If the size of the municipal council has a causal effect on perceived corruption, then perceived corruption should be higher to the right (above the cut-off) than to the left (below the cut-off) of every threshold.

To test that possibility, we implement a regression discontinuity design where we use the municipal population as a running variable. As we have several cut-offs, we follow Brollo et al. (2013) and first normalize the running variable by assigning it to the nearest cut-off and subtracting the relevant cut-off from the running variable. We then pool all observations to perform a standard regression discontinuity design with the normalized running variable and a cut-off defined at zero.

The outcome of the RDD is reported in Table 4 above. The first column uses the optimal bandwidth computed following Imbens and Kalyanaraman (2012). It shows that crossing a threshold increases perceived corruption by nearly 2.5 points on the perceived corruption scale and that the effect is statistically significant at the one-percent level. When we double the size of the bandwidth, like in Column 2, the effect shrinks but remains positive and statistically significant at the five-percent level.

Therefore, increasing the size of the municipal council causally increases perceived corruption, in line with the scale effect discussed by Gerring and Veenendaal (2020). As the size of the council mechanically increases with population size, it accounts for part of the effect of population size on perceived corruption. To test whether it accounts for the entire effect, we estimate a slightly modified model where we introduce the number of municipal councillors plus an interaction term between this number and the log of the municipal population. If the number of members of the council was the only driver of the relationship, then the marginal effect of municipal size should be zero for municipalities with the same number of members of the government.

Figure 3 Reports the marginal effects of the municipality population conditioned on the number of municipal councillors and its 95% confidence intervals. The point estimate of the effect is positive and statistically significant regardless of the size of the local government, except for the smallest two, for which it is statistically insignificant. Moreover, although the marginal effect of population size increases with the size of the council, confidence intervals largely overlap, implying that marginal effects are statistically indistinguishable across municipal council sizes. Those findings show that the number of municipal councillors does not entirely drive the relationship between population size and perceived corruption, even though it is one mechanism behind the phenomenon.

### 6.2 The volume of municipal public spending

Larger municipalities have larger budgets. In our sample, the coefficient of correlation between the municipal population and the total spending of the municipal government reaches 0.99 (see Table A.14 in Appendix A6.2). Accordingly, local officials may have more opportunity to be corrupt or at least to be perceived as such, especially as about 30% of resources come from transfers from the central government that result in a political resource windfall (Fisman & Gatti, 2002a; Brollo et al., 2013). As a result, the size of the budget may

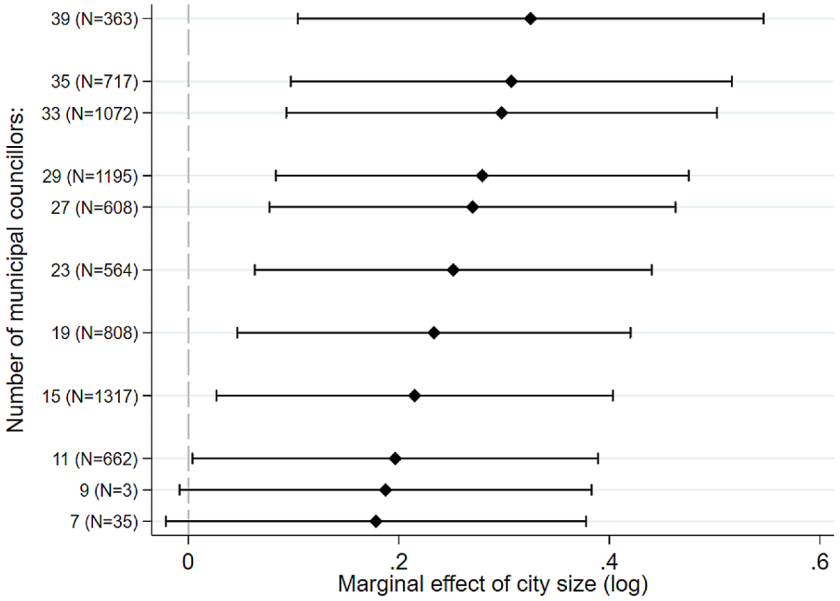


**Fig. 3** Coefficients of municipal population conditioned by the size of the municipal government (number of councillors). Notes. *N* indicates the number of respondents at each level of municipal council size. The dependent variable is the perceived corruption of municipal government. The model is a variant of Model 1 where we introduce an interactive term between the number of municipal councillors and the log transformation of the municipal population. The method of estimation is OLS. Regional fixed effects correspond to the 21 French metropolitan regions existing at the time of the survey. Respondents' characteristics are detailed in Appendix A2. Standard errors clustered at the departmental level. For the detailed estimation, see Table A.13 in the Appendix. 95% confidence interval

be a channel of transmission from population size to perceived corruption.[14] The relationship between the size of the budget and perceived corruption has been empirically established at both national (e.g., Buehn & Schneider, 2012; Dreher et al., 2007; Tanzi, 1998) and local levels (e.g., Goel & Nelson, 1998, Nikolova & Marinov, 2017), even though a few studies observe a relationship in the opposite direction or no relationship at all (e.g., Treisman, 2000). We test this possibility in Table 5.

The first column of Table 5 shows a positive and statistically significant correlation between public spending and perceived corruption. When we add population size as a regressor, its coefficient becomes statistically insignificant at accepted levels, but the size of public spending remains positive and statistically significant at the one-percent level, which suggests that the budget may channel the effect of population size (Column 2). In the third column of Table 5, we replace public spending and population size with the ratio of spending per inhabitant, which then exhibits a positive coefficient significant at the one-percent level. Given the strong correlation between a municipality's population and public

[14] The effect may be mitigated or compounded by the fact that larger budgets may draw more attention and more sophisticated compliance oversight and hence a higher probability of detection, resulting in either a stronger incentive to act honestly or a higher probability of detection and corruption scandal. Our data, however, does not allow for the disentangling of the two effects. We thank an anonymous referee for pointing out that possibility.

**Table 5** Perceived corruption of municipal government, municipal public spending, and municipal population

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Public Spending (log) | 0.16*** | 0.24*** | | |
| | (0.013) | (0.078) | | |
| Population (log) | | -0.100 | | |
| | | (0.091) | | |
| Spending per inhabitant (log) | | | 1.29*** | |
| | | | (0.14) | |
| Respondent's municipality situation toward national means: | | | | |
| Pop below & Spending below | | | | *ref* |
| Pop below & Spending above | | | | 0.65 |
| | | | | (0.57) |
| Pop above & Spending below | | | | 0.29*** |
| | | | | (0.11) |
| Pop above & Spending above | | | | 0.67*** |
| | | | | (0.065) |
| Respondent's characteristics | ✓ | ✓ | ✓ | ✓ |
| Regional FE | ✓ | ✓ | ✓ | ✓ |
| Observations | 9455 | 9455 | 9455 | 9455 |
| Adjusted $R^2$ | 0.076 | 0.076 | 0.069 | 0.071 |

Notes. The dependent variable is the perceived corruption of the municipal government. Pop below (above) means the respondent's municipality has a population under (over) the national mean, and Spending below (above) means the respondent's municipality has an overall level of municipal public spending under (over) the national mean. Respondents' characteristics are detailed in Appendix A2. The method of estimation is OLS. Constant included but not reported. Regional fixed effects correspond to the 21 French metropolitan regions existing at the time of the survey. Standard errors clustered at the municipal level. ***Significant at 1% level; **significant at 5% level; *significant at 10% level

municipal spending, we provide a last test where we distinguish the respondent's municipality according to two criteria: whether the municipal population is below or above the national average and whether municipal public spending is below or above the national average.[15] We take the case when the respondent lives in a municipality where both population and spending are below the national averages as the reference category, resulting in three dummy variables.

The results are reported in Column 4. First, municipalities with above-average public spending and below-average population are statistically indistinguishable from the reference category, as the coefficient of the dummy variable is not statistically significant. In other words, more spending in cities with lower populations does not correlate with higher perceived corruption. Second, an above-average population is associated with higher perceived corruption regardless of public spending as the coefficients of the two relevant dummies are significant. Accordingly, the relationship between perceived corruption and population is not totally explained by higher public spending. Third, the magnitudes of the two coefficients coding above-average population are different: it is larger for the coefficient coding

[15] It is important to note that we use the national means of the measures and not the sample means.

above-average public spending.[16] The effect of public spending partly drives the effect of population size on perceived corruption but does not entirely explain the relationship.

### 6.3 Information and municipal size

The size of a municipality affects the information that respondents leverage to form their opinion on the corruption of their local government. To test this possibility, we interact population size with respondents' education level. We interpret the variable as a measure of respondents' overall ability to collect and treat information about officials' corruption, and we expect that ability to moderate the relationship between size and perceived corruption if it is a mechanism of the relationship. The results are given in Table A.15 in the Appendix. In addition to the baseline small correlation between education and perceived corruption reported in Table A.5 in the Appendix, the new estimates show that respondents' education does not moderate the effect of population size, as no interaction term is statistically significant. The relationship between municipal size and perceived corruption is, therefore, unlikely to be driven by the ability of respondents to process information.

We also consider the production and diffusion of information by newspapers. Newspapers have a higher incentive to monitor larger municipalities, which may drive the effect of population size on perceived corruption (Prud'homme, 1995). Looking at France, Cagé (2020) observes that more competition among newspapers in a department deteriorates the quality of information in that department. To assess the role of the press in driving our main result, we control for media consumption.[17] The information is available at the department level, which aggregates several municipalities. We complement those results by also controlling for the level of competitiveness of the local press market, which is gauged by the Herfindahl-Hirschman index computed over the market share of local newspapers in each department. By integrating the variables on available media into the specification, we test the presence of the media mechanism and the extent to which it contributes to the baseline correlation.

The results are reported in Table A.17 in the Appendix. We distinguish the national and local press (see Appendix 6.3 for more details). The first observation is that newspaper diffusion (Columns 1 and 2) or concentration (Column 3) have no direct impact on perceived corruption. No variable on media availability exhibits a coefficient that is significant at usual levels. The second observation is that controlling for the media variables affects neither the significance nor the magnitude of the coefficients of population size. Accordingly, the correlation between municipal size and corruption is not driven by a difference in the diffusion of local or national press or a difference in competition among local newspapers.

### 6.4 Contacts with municipal government officials

The residents of larger cities are less likely to see and meet their mayors, which results in less frequent contact and may prompt residents to be more negative in the assessment of local officials (Tanzi, 1996). We test that possibility by controlling for the landmass of

[16] The two coefficients are statistically different according to the F-test, with $F(1, 4949) = 14.00$ and $p = 0.0002$.

[17] The data is described in Table A.16.

municipalities. The larger (spatially) a municipality, the less likely it would be for its inhabitants to see and meet their mayor. Table 6 controls for landmass.

In the first column of Table 6, landmass is introduced as a measure of size without population size. It bears a coefficient significant at the one-percent level, suggesting that part of the effect of size may be driven by landmass. In line with our contention, the coefficient is positive. However, when population size is controlled for in addition to landmass, the latter turns statistically insignificant while the population bears a positive and significant coefficient with a magnitude similar to the baseline. Accordingly, landmass likely is a proxy for population size but has no effect of its own.

In the last column of Table 6, we interact population size and landmass by defining four groups of municipalities as a function of their position above or below the mean of population size and landmass.[18] We use the group of municipalities with both population and landmass below the mean as the reference group and create dummies for the other three groups.

**Table 6** Perceived corruption of municipal government and municipal size: landmass and density

| | Landmass | Landmass and Population | Landmass × Population |
|---|---|---|---|
| Landmass (log) | 0.16*** | -0.032 | |
| | (0.034) | (0.037) | |
| Population (log) | | 0.19*** | |
| | | (0.017) | |
| Respondent's municipality situation with respect to national mean: | | | |
| Pop. below & Landmass below | | | Ref. |
| Pop. below & Landmass above | | | -0.11 |
| | | | (0.11) |
| Pop. above & Landmass below | | | 0.49*** |
| | | | (0.087) |
| Pop. above & Landmass above | | | 0.59*** |
| | | | (0.083) |
| Respondent's characteristics | ✓ | ✓ | ✓ |
| Regional FE | ✓ | ✓ | ✓ |
| Observations | 9536 | 9536 | 9536 |
| Adjusted $R^2$ | 0.063 | 0.076 | 0.070 |

Notes. The dependent variable is the perceived corruption of the municipal government. Pop below (above) means that the respondent municipality has a population under (over) the national mean. Landmass below (above) means that it has a landmass under (over) the national mean. The method of estimation is OLS. Constant included but not reported. The included respondent's characteristic variables are detailed in Appendix A2. Regional fixed effects correspond to the 21 former French metropolitan regions. Standard errors clustered at the municipal level in parentheses. ***Significant at 1% level; **significant at 5% level; *significant at 10% level

[18] Once again, we define the mean over the overall French municipality and not over our sample of municipality.

We find that the coefficients of the dummy variables coding a population size below the mean and a landmass above the mean are not significantly different from the coefficient of the dummy coding a population and landmass both below the mean. In small municipalities, a larger landmass is not associated with higher perceived corruption.

By contrast, the coefficients of the two dummy variables coding municipalities with above-mean populations are statistically significant, and a t-test rejects the hypothesis that the two coefficients are different.[19] Therefore, inhabitants of municipalities with larger populations perceive their local governments to be more corrupt regardless of municipal landmass. Moreover, landmass does not condition the effect of population size. Overall, the baseline finding is not driven by landmass but by population size.

In addition, we directly ask respondents if they have had contact with the municipal government. The precise wording of the question is "In your municipality, did you have the opportunity to contact municipal councillors, members of the municipal government, or the mayor?". Respondents could choose a reply ranging from *very often* to *never*. We pool the two first answers (*very often* and *often*) and the two others (*time to time* and *never*) to define a dummy variable that distinguishes respondents who have rare contact from those who have frequent contact with the municipal government. Controlling for that dummy and its interaction with population size allows us to condition the effect of population size on the frequency of contact with the municipal government. Figure 4 shows that the marginal effect of population size is positive and statistically significant for both categories. However, the two marginal effects are statistically indistinguishable from each other.

Another less direct way to proxy for the proximity of respondents with elected officials is to consider their characteristics. First, respondents may differ in their commitment to local benevolent activities. These kinds of activities are an opportunity to meet members of the municipal government. Second, local civil servants are more likely to have contact with their local officials and may also have a specific opinion of governments in general because the latter are their employers. We, therefore, distinguish local civil servants from other respondents.[20] We also introduce successively these three variables in our baseline specification and interact them with the municipality population (log-transformed).

Figure 4 reports the conditional marginal effect of population size specific to each category. The marginal effects of size are positive and statistically different from zero for all categories. However, we do not observe significant differences across the categories: the correlation between the municipal population and the perceived corruption is similar for respondents who have or do not have contact with the municipal government, who are engaged in local activities, or who work for local administrations.

The effect of municipal size does not seem to be conditional on contact with municipal government. This evidence is inconsistent with a mechanism where municipal size would capture the probability of directly interacting or being in contact with local officials.

[19] The F statistic is 1.89, and the p-value is 0.17.

[20] The local civil servant category gathers respondents who work for municipal, departmental, or regional government.

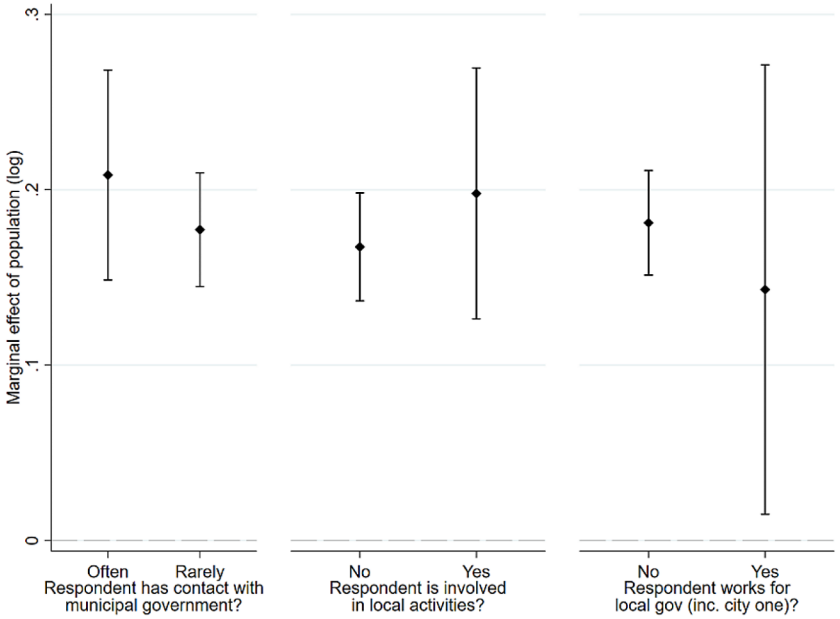


**Fig. 4** Estimated coefficients of municipal size according to respondent contact with municipal government. Notes. The figure displays the coefficient of population size (log) conditioned by the respondent's type of contact with the municipal government. We propose three measures of contact. The first is a self-evaluation of the contact frequency given by the respondent. The second is the respondent's involvement in local activities. The last one indicates if the respondent works for local government, including the municipal one. For the detailed estimation, see Table A.18 of the Appendix. The method of estimation is OLS. Regional fixed effects correspond to the 21 French metropolitan regions existing at the time of the survey. Respondents' characteristics are detailed in Appendix A2. Standard errors clustered at the municipal level

## 7 Conclusion

People perceive corruption as more severe in larger jurisdictions. We observe that stylized fact at the cross-country level and at the municipal and department level within a single country: France. We show that the level of perceived corruption is not driven by a general perception of corruption independent from the government level and that it does not capture the effect of general trust. We also report evidence that perceived corruption is positively correlated with actual corruption and that it is correlated with population size in the same way as perceived corruption.

By contrast, using a regression discontinuity design, we can show that this stylized fact is partly driven by the size of the municipal council. We also report suggestive evidence that the stylized fact is partly driven by the size of the municipal budget. By contrast, we find no evidence suggesting that information — including its consumption, treatment, and reporting by the local or national press — or contact with the local government are behind the effect.

Our results indicate a positive relationship between perceived corruption and the size of a jurisdiction, which is partly driven by the fact that larger jurisdictions are associated with more politicians and a larger budget. This finding, once confirmed by other studies in other

institutional contexts and countries, could be another argument in favor of decentralization and fiscal federalism if it is accompanied by a reduction in the size of jurisdictions.

**Supplementary Information** The online version contains supplementary material available at https://doi.org/10.1007/s11127-024-01188-8.

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