# Corruption spreads: understanding interorganizational corruption contagion in municipal governments

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## Abstract

**Purpose** – Corruption is a major social problem, and scholars have devoted considerable attention to this phenomenon. However, less attention has been paid to how corruption spreads among organizations and what factors can make its spread more likely. This study aims to fill the gap by modelling corruption as an interorganizational contagion.

**Design/methodology/approach** – The authors used social contagion theory to model corruption as an interorganizational contagion, influenced by the susceptibility of organizations and the strength of contagion sources. The study analysed 736 medium and large Italian municipalities over a five-year period, with 3,146 observations (excluding missing data). The authors conducted a longitudinal analysis using panel logistic regression techniques and performed robustness and endogeneity checks through a dynamic panel data model.

**Findings** – The authors found that municipalities with a higher percentage of corrupt neighbouring municipalities were more likely to experience corruption. The probability of experiencing corruption was also significantly higher for municipalities with weaker organizational resistance to corruption contagion.

**Originality/value** – Previous studies have not clearly explained the organizational mechanisms behind the spread of corruption at the interorganizational level. The study suggests that corruption contagion at the municipal level occurs via reduced uncertainty in decision-makers and is influenced by the prevalence of corruption locally. The spread can be driven by conscious or unconscious mechanisms. This study challenges the idea that corruption contagion is immediate and inevitable. Organizational resistance to corruption can affect the risk of contagion, highlighting the importance of anti-corruption controls and ethical systems in preventing it.

**Keywords** Social contagion, Corruption, Panel analysis, Municipalities, Mafia infiltration

**Paper type** Research paper

## Introduction

In public management and administration, many aspects of corruption have been studied (Stapenhurst and Langseth, 1997; De Graaf, 2007; Palumbo and Manna, 2020; Gans-Morse *et al.*, 2022) at various levels (De Vries and Sobis, 2016; Nguyen *et al.*, 2017; Su and Ni, 2023). However, the ways in which corruption spreads between organizations are poorly understood. This gap leads to two questions: (1) Can corruption spread among public organizations through a social influence such as contagion? (2) If so, what factors render contagion more likely to spread? The idea that corruption can be a contagious phenomenon is not totally new, especially in spatial analysis research (Goel and Nelson, 2007; López-Valcárcel *et al.*, 2017). However, existing studies have not focused on interorganizational corruption contagion, and these two fundamental questions still remain unanswered in the field of public management and administration.

Social contagion theory provides a sound theoretical background on which to base our model of corruption contagion among public organizations. Our model describes contagion in this context as the ability of a corrupt public organization to transmit corruption to another public organization. The likelihood of contagion depends on the strength of the sources of contagion and organizational resistance to corruption.

There are various types of public organizations, but we have focused our analysis on municipalities for four reasons:

(1) They are highly relevant in the public sector, because they are numerous and also manage resources.

(2) They are the most basic units in the administrative hierarchy, and therefore neighbouring units can be easily identified (they are in the same administrative area at the next level of the hierarchy).

(3) They show a tension between administrative and political dimensions, which serves as a powerful source of potential individual and institutional corruption (Beeri and Navot, 2013).

(4) They tend to be relatively underrepresented in public corruption studies.

Our empirical analysis focused on the entire statistical population of medium and large Italian municipalities. This provided 736 units that we studied over five years, giving a total of 3,146 observations, less missing data. We conducted a longitudinal analysis using panel logistic regression techniques and performed robustness and endogeneity checks through a dynamic panel data model. Our empirical findings are consistent with our model, showing that the likelihood of contagion is positively related to the percentage of corrupt neighbouring municipalities and is higher when the ability of a municipality to resist corruption is weakened by mafia infiltration.

We believe that our contagion-based approach will be helpful in shedding light on how contagion occurs and the elements that may be effective in hindering the spread of corruption. Our research also offers new insights into ways of creating more effective corruption prevention policies and strategies.

## Theoretical background

*Social contagion theory*

Social contagion theory suggests that an actor's behaviour is influenced by the behaviour of neighbouring actors. The theory has its roots in crowd psychology studies (Mitchell, 2012), but has been developed by several disciplines, including sociology, management and organization science. The fundamental traits of this theory concern the subjects, the object

and the spreading mechanisms of contagion. As subjects, contagion involves two types of actors: those who infect (sources) and those who are infected (targets). Depending on the perspective, the actors have been defined as individuals, groups, or organizations. In this study, we were mainly interested in organizations as actors, where contagion takes the form of interorganizational influence (Williamson and Cable, 2003; Angst *et al.*, 2010).

With reference to the *object* (what is being spread), the literature has focused primarily on two elements: emotions and behaviours (Levy and Nail, 1993). Emotional contagion is a key variable affecting various aspects of organizational functioning (Vijayalakshmi and Bhattacharyya, 2012). However, this concept is of little use here, because corruption is a behaviour, or rather, a wide range of different behaviours (Johnston, 1996). Behaviours are observable activities in which an actor engages in relation to the reference environment. Behaviours can spread by contagion through and to individuals (Freedman *et al.*, 1980) or organizations (Galaskiewicz and Burt, 1991). The literature has shown that both positive and negative behaviours may spread by contagion.

With reference to the *mechanisms* underlying the contagion, the literature has provided three theoretical explanations for why and how contagion can develop and spread: (1) reduction of uncertainty, (2) social norms and (3) interorganizational learning. The *reduction of uncertainty* may happen when organizational decision makers face a high degree of uncertainty about a behaviour (Williamson and Cable, 2003). The behaviour will be less likely when the risks are perceived to be greater than or equal to the potential benefits. However, when the behaviour is practised by many other organizations without penalty, the risk–benefit perception in the target organization can be altered, which may reduce behavioural inhibition. *Social norms* are a second mechanism that may explain contagion. The neo-institutional theory suggests that when the environment creates symbolic uncertainty, organizations may model themselves on other organizations (DiMaggio and Powell, 1983). *Interorganizational learning* is also a potential contagion mechanism. Here, contagion is seen as the result of an interorganizational learning process that occurs because uncertainty pushes organizational decision makers to learn from the experience of other organizations (Greve, 2005).

## Theoretical model and hypotheses

We modelled corruption contagion as a function of: (1) the characteristics of the source of contagion and (2) the susceptibility of the target organizations. We also considered the proximity of the sources and targets, which is a condition in the transmission of contagion (Angst *et al.*, 2010). We considered "neighbouring organizations" to be municipalities in the same province because they are both geographically close and have significant institutional and administrative ties (Feiock *et al.*, 2009).

### The sources of contagion

Despite its diversity, the large body of research on social contagion has converged on an expectation that a larger number of prior adopters is associated with a greater likelihood of target actor(s) adopting the same (mal)practice (Freedman *et al.*, 1980; Galaskiewicz and Burt, 1991; Goel and Nelson, 2007; Angst *et al.*, 2010; Robert and Arnab, 2013).

The specific explanations underlying this expected positive relationship vary according to the three mechanisms of contagion, (1) uncertainty reduction in decision making, (2) social norms and (3) interorganizational learning. The decision to participate in a corrupt system is marked by a high level of uncertainty for decision makers. Rational choice theories of corruption suggest that corrupt behaviour is the result of a *rational calculation of the potential risks and benefits* of criminal conduct (Rose-Ackerman, 1978; Klitgaard, 1988). When expected

benefits outweigh perceived risks, it is more likely that susceptible decision makers will opt for corruption. Other organizations practising corruption in a given context can alter the risk–benefit assessment of decision-makers in non-corrupt organizations. Non-corrupt decision-makers may think, for example, that if corruption is widespread, the costs (e.g. moral and legal costs) must be relatively low or the benefits particularly high. Multiple sources of contagion may therefore alter the perceptions of the risks and benefits within the target organizations, favouring the spread of corrupt practices. For any given organization, this effect will be greater when there are more corrupt organizations around.

The *social norms approach* suggests that interorganizational influence can happen unconsciously through informal, unwritten rules that define appropriate actions in a context (Cialdini *et al.*, 1990). These rules become "social norms" when adopted by many actors in that context, leading to mimetic pressure on target organizations. When there are more corrupt organizations in the reference context, there is more mimetic pressure for target organizations to engage in corruption.

Social contagion literature also acknowledges *interorganizational learning* as a possible mechanism for choosing or rejecting the path to corruption. When the outcome of an action is uncertain, actors observe others and draw on their experience to decide how to act. As the practice increases in prevalence, so does the knowledge among potential adopters on how to implement the practice effectively. The practice therefore spreads more widely. As the number of corrupt organizations increases, more learning opportunities arise, leading to a spread of the malpractice. Although the different lines of social contagion research have proposed different mechanisms, they have generally agreed that a more common practice is more likely to be adopted by others.

Based on these arguments, we hypothesized that:

*H1.* The likelihood of a municipality being corrupt is positively related to the percentage of neighbouring municipalities that engage in corrupt behaviour.

*Susceptibility to contagion*
Corruption contagion is not equally likely for all actors in contact with corrupt neighbouring organizations. Actors have a different susceptibility to contagion, or extent to which they are affected by the influence of others. Susceptibility is the opposite of the ability to resist contagion, with higher susceptibility indicating lower organizational resistance.

There is no consensus in the corruption literature on the factors that shape organizational susceptibility to corruption. Existing studies (Pinto *et al.*, 2008) have highlighted characteristics at three levels: relating to individuals (e.g. ethical leadership and moral development), organizations (e.g. organization structure, corruption controls) and the context in which the organization operates (e.g. organizational culture and ethical climate). However, measuring susceptibility to corruption directly through these factors is difficult. Fortunately, there is an indirect way through which organizational susceptibility can be measured: the infiltration of organized crime into the organization.

Several authors (Rose-Ackerman and Palifka, 2018; Chiodelli, 2019) have documented the depressive effects of organized crime infiltration on organizational resistance to corruption. Studies have highlighted the tendency of mafia-type organizations to infiltrate government, diverting its political and administrative processes toward illegal purposes (Daniele and Geys, 2015; Ravenda *et al.*, 2020). Mafia infiltration has often been associated with corruption (Fazekas *et al.*, 2022). Mafia organizations use infiltration for purposes that go far beyond the influencing of a single decision through bribery. Instead, they tend to secure stable control over the infiltrated public organization. To do so, they destroy—whether intentionally or otherwise—aspects of organizational resistance such as ethical leadership (Downe *et al.*, 2016), corruption controls (Lange, 2008) and organizational culture (Campbell and Goritz, 2014).

Mafia infiltration therefore weakens all ethical and control standards, seriously compromising organizational resistance to corruption. All other factors being equal, we therefore expect that a municipality infiltrated by the mafia will have fewer organizational defences against corruption contagion than its non-infiltrated counterparts and, therefore, a higher susceptibility to corruption. We therefore formulated our second hypothesis as:

*H2.* The likelihood of a municipality being infected by corruption is higher if organizational resistance to corruption has been weakened by mafia infiltration.

## Research design
### Empirical sample
We tested our two hypotheses using data on every medium and large municipality in Italy. According to data provided by the Italian National Institute of Statistics in 2019, Italy contained 7,926 municipalities in 107 provinces. Overall, 736 of these were medium and large municipalities, with at least 15,000 inhabitants. These were considered particularly relevant, because approximately 60% of the Italian population is concentrated in these towns. The empirical analysis was conducted on the entire statistical population of Italian municipalities with 15,000 or more inhabitants over the years 2015–2019, building a panel dataset with N = 736 units and T = 5 years. There were some missing values at some time observations, and our unbalanced panel dataset therefore included 3,146 observations.

Italian municipalities provide an ideal context for exploring our corruption contagion hypotheses for at least four reasons:

(1) Italy has a high level of corruption, which is equal to or worse than much less-developed countries and much worse than most other developed countries;

(2) the centrality of municipalities in the administrative system;

(3) the high risk of corruption at the local level due to the relatively large number of municipalities and their relatively large discretionary power; and

(4) the large number of proximity relationships of municipal employees and elected officials with their counterparts in other municipalities, rendering them ideal units of analysis for testing hypotheses on the existence of contagion phenomena in the diffusion of corruption between public organizations.

We focused on medium and large municipalities for two reasons. First, they concentrate most of the human and financial resources. Second, this and other similarities allow for greater homogeneity in the units of analysis (for example, medium and large municipalities have the same electoral system, but the system is different for small municipalities).

### Data sources and collection methods
We collected data on corruption events by consulting all the official websites of Italian medium and large municipalities. Italian law (Law No. 190/2012) mandates that public entities report annually on every case of corruption that occurred that year. This information must be reported on a dedicated section of the municipality's website using a predetermined structure set by the Italian National Anti-Corruption Authority. This made it possible to use a uniform and objective approach to collecting corruption data.

Data on municipalities that were dissolved because of mafia infiltration were collected from the annual Ministry of the Interior reports on individual dissolution measures. The dissolution of municipal councils for mafia infiltration is an extraordinary administrative

measure regulated by the Italian law. It is implemented when there is a concrete clue that the activity of a municipality is driven by the interests of the mafia clans (Fazekas *et al.*, 2022).

Data on municipalities' resident populations were extracted from the website of the National Institute of Statistics. Data on local personal taxable income were acquired from the open data provided by the Department of Finance of the Ministry of Economy and Finance.

*Dependent variable*
Corruption is difficult to measure (Sampford *et al.*, 2016). Existing measurement approaches differ in terms of the unit of observation (perception, direct experience, or documented corruption cases) and the unit of analysis (countries, organizations, or individuals). The strengths and weaknesses of each approach are well documented (Donchev and Ujhelyi, 2014; Escresa and Picci, 2020).

We opted to measure the documented corruption cases. These cases are reported by each municipality through annual online publication of a report prepared in line with guidelines from the national anti-corruption authority. These guidelines clarify the definition of corruption that must be used as a reference in reporting. Corruption includes many crimes against public administration (embezzlement, bribery, extortion by a public officer, abuse of office, omission, unauthorised disclosure and use of information by a public officer). However, it is not limited to criminal behaviours and also includes other illegal but not criminal behaviours involving the abuse of public office for private gain (e.g. nepotism, repeated non-compliance with procedures, non-transparent hiring and accounting irregularities).

This measurement approach has the advantage of objectively measuring corruption, because it is based on judicial statistics or administrative sources. Its main limitation is that it is affected by the specific definition of corruption offenses in national legislation and the effectiveness of the judicial system. This was not considered an issue for our study because we made no regional or national comparisons, considering only municipalities within the same country, with substantial homogeneity in both the definition of corruption and the detection system (Escresa and Picci, 2020).

In line with other studies of corruption at the municipal level (Benito *et al.*, 2015; López-Valcárcel *et al.*, 2017), we measured corruption as a binary variable (*Mun-corrupt*) that took the value 1 if there was a case of corruption in municipality $i$ in each year in the period 2015–2019.

*Explanatory variables*
A core explanatory variable in this study was the occurrence of corruption in neighbouring municipalities (sources of contagion). Provinces were used to delineate the boundaries within which municipalities were considered "neighbours". Municipalities in the same province have consolidated economic and social relationships. They also often have administrative relationships, usually involving formal and informal inter-municipality networks such as collaborative agreements and contractual or institutional partnerships for the provision of local services. Municipalities often collaborate at the provincial level in public procurement, for example, which is a high-risk area for corruption. Within the same provincial territory, mayors, councillors, managers and administrative officials of the municipalities are closely connected and their interactions form a social network.

To calculate this variable, we borrowed a simple approach widely used in diffusion studies (Mooney, 2001; Valente, 2005; Pacheco, 2012; Bromley-Trujillo *et al.*, 2016). We measured the percentage of neighbouring units having a given characteristic believed to spread in space from one location to another in a delimited area. We adapted this idea to municipal corruption and calculated the proportion of neighbouring municipalities that reported at least one corruption case in the reference year.

The calculation method is expressed by equation (1):

$$\text{Neighbour} - \text{corrupt}_i = \frac{\sum_{\substack{i \neq j}}^{N-1} C_{j,t}}{N - 1} * 100 \tag{1}$$

where:

(1) $C_j$ is a binary variable with value 1 if the $j$-th municipality registered a case of corruption in year $t$ and 0 if no corruption was reported,

(2) $N-1$ is the number of municipalities with a population equal to or greater than 15,000 inhabitants in the same province as municipality $i$ (excluding municipality $i$ itself) and

(3) $t$ is the reference year.

Our second variable, mafia infiltration in municipalities, was designed to capture the heterogeneity in susceptibility to contagion. We measured mafia infiltration in municipalities as a binary variable (*Mafia-infil*) that took a value of 1 if the city council of municipality $i$ was dissolved for mafia infiltration in any year in the period 2015–2019 and 0 if not.

*Control variables*
Previous studies have shown a relationship between socioeconomic development and level of corruption (Treisman, 2007). Per capita personal taxable income has been used as a proxy of local socioeconomic development and a control for territorial differences in the country (Alesina and Paradisi, 2017). In line with previous researchers (Montinola and Jackman, 2002), we used the logarithm of per capita personal taxable income (*logYPC*). The literature also suggests that organizational size is often associated with corruption (Fisman and Gatti, 2002), so we controlled for the resident population of municipalities by using the logged value of the population (*logPOP*). Table 1 shows descriptive statistics.

*Model specification, robustness and endogeneity checks*
Our dependent variable (*Mun-corrupt*) was a dichotomous variable and our data were longitudinal, so we used a panel logistic regression approach. The model was:

$$P(y_{it} = 1) = \mu_0 + \mu_1 \text{Neighbour} - \text{corrupt}_{it} + \mu_2 \text{Mafia} - \text{infil}_{it} + \mu_3 \text{logYPC}_{it}$$
$$+ \mu_4 \text{logPOP}_{it} + \varepsilon_{it}, \tag{2}$$

|  | Observations | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *Dependent variable* | | | | | |
| Mun-corrupt | 3,199 | 0.087 | 0.283 | 0 | 1 |
| *Explanatory variables* | | | | | |
| Neighbour-corrupt | 3,615 | 7.402 | 11.278 | 0 | 100 |
| Mafia-infil | 3,680 | 0.013 | 0.113 | 0 | 1 |
| *Control variables* | | | | | |
| logYPC | 3,680 | 4.091 | 0.134 | 3.650 | 4.404 |
| logPOP | 3,680 | 4.500 | 0.301 | 4.166 | 6.458 |
| **Source(s):** Author's own creation | | | | | |

Table 1.
Descriptive statistics of variables

where $P$ is the probability that the response variable (*Mun-corrupt*) is equal to 1, $\mu_0$ is a constant term; $i$ denotes municipalities, $t$ is time, $\mu_t$ are the parameters to be estimated, and $\varepsilon$ is the error term.

We started by using a random-effects (RE) model. This requires more assumptions than the alternative fixed-effects (FE) models, but RE models provide more statistically efficient information both within and between units. This is valuable when predictor variables vary greatly across units but have little variation over time for each unit (Allison, 2009). Table 2 shows the results of panel logistic regression with random-effects estimation. We used the *xtlogit* command in STATA 17.0.

Random-effects models present an efficient solution, but assume that the unobserved variables are uncorrelated with all the observed variables. This was a strong assumption in our case. FE models offer an alternative solution because unobserved variables are allowed to have any possible associations with the observed variables (Allison, 2009; Wooldridge, 2010). By allowing for associations, FE models help to control for the effects of the unobserved variables (for example, geographical location in northern, central and southern Italy). We therefore checked the robustness of our findings by specifying a panel logistic regression with FE estimation. Table 3 shows the results.

The FE model helps to control time-invariant unmeasured confounding, but it cannot control for other significant biases, particularly endogeneity problems caused by reverse causality and unobserved heterogeneity. One central question to all panel data models is the influence of prior lags of the dependent variable on its later iterations. Econometric and statistical researchers have developed dynamic panel models to address this issue (Leszczensky and Wolbring, 2019). We used the cross-lagged panel model with fixed effects (Allison *et al.*, 2017). This method is a powerful tool, offering a set of techniques that can protect against both time-invariant unobserved heterogeneity and reverse causality and could also have some advantages in terms of bias, efficiency and performance over other alternative dynamic panel models. Table 4 shows the results of the cross-lagged panel model with fixed effects. We used the *xtdpdml* command in STATA 17.0.

## Findings

Table 2 shows the baseline random-effects logistic model and makes clear that there is a significant positive relationship between municipal corruption and the occurrence of

| Variables | Odds ratio | Std. Err. | *p*-value |
| --- | --- | --- | --- |
| Neighbour-corrupt | 1.027 | 0.006 | 0.000 |
| Mafia-infil | 4.116 | 2.093 | 0.005 |
| logYPC | 0.052 | 0.040 | 0.000 |
| logPOP | 27.703 | 8.909 | 0.000 |
| *Year* | | | |
| 2016 | 1.042 | 0.269 | 0.872 |
| 2017 | 0.981 | 0.255 | 0.943 |
| 2018 | 1.536 | 0.382 | 0.084 |
| 2019 | 1.873 | 0.458 | 0.010 |
| constant | 0.001 | 0.003 | 0.029 |

**Note(s):** The dependent variable is the binary variable *Mun-corrupt*, which takes the value 1 if there has been a case of corruption in the municipality in a given year. Model specification: Random effects logistic regression for panel data (years 2015–2019). Number of observations: 3,146
**Source(s):** Author's own creation

| Variables | Odds ratio | Std. Err. | $p$-value |
|---|---|---|---|
| Neighbour-corrupt | 1.027 | 0.007 | 0.000 |
| Mafia-infil | 5.265 | 3.764 | 0.020 |
| logYPC | 20.270 | 366.101 | 0.868 |
| logPOP | 0.000 | 0.001 | 0.682 |
| *Year* | | | |
| 2016 | 0.957 | 0.264 | 0.877 |
| 2017 | 0.920 | 0.269 | 0.779 |
| 2018 | 1.331 | 0.608 | 0.531 |
| 2019 | 1.468 | 0.805 | 0.483 |

**Table 3.**
Fixed-effects panel
logistic regression

**Note(s):** The dependent variable is the binary variable *Mun-corrupt*, which takes the value 1 if there has been a case of corruption in the municipality in a given year. Model specification: Conditional fixed-effects logistic regression for panel data (years 2015–2019). Number of observations: 766
**Source(s):** Author's own creation

| Variables | Coeff. | OIM Std. Err. | $p$-value |
|---|---|---|---|
| Mun-corrupt L1. | 0.231 | 0.036 | 0.000 |
| Neighbour-corrupt | 0.002 | 0.000 | 0.001 |
| Mafia-infil | 0.239 | 0.095 | 0.013 |
| logYPC | −2.165 | 2.037 | 0.288 |
| logPOP | −2.950 | 1.492 | 0.048 |
| Wald $\chi^2$ | 60.67 | | 0.000 |
| BIC | −18.541 | | |
| AIC | −19.457 | | |

**Table 4.**
Dynamic panel data
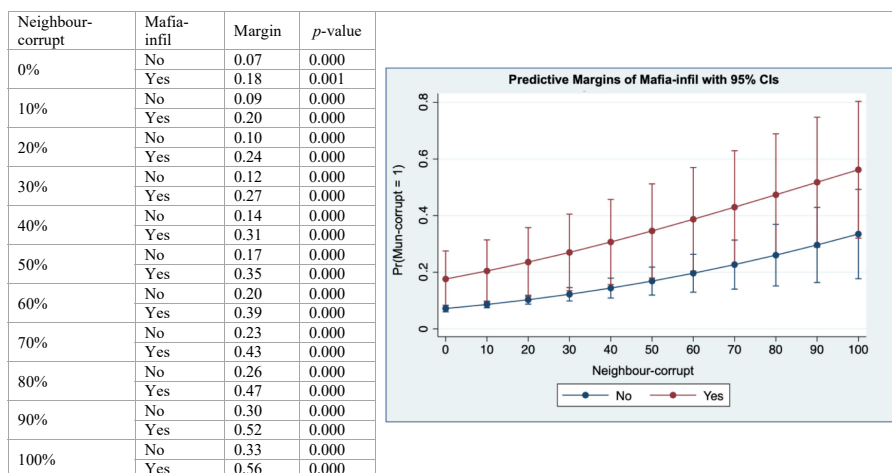model using ML for
outcome variable Mun-
corrupt

**Note(s):** The dependent variable is the binary variable *Mun-corrupt*, which takes the value 1 if there has been a case of corruption in the municipality in a given year. Model specification: Dynamic Panel Data Model using ML with robust errors and full information maximum likelihood (FIML) applied. Time dummies have not been included, given the difficulty in achieving convergence. Number of units = 736, Number of periods = 5. First dependent variable is from Period 2. Constants are free to vary across periods
**Source(s):** Author's own creation

corruption in neighbouring municipalities (odds ratio [OR] = 1.027; $p$ < 0.001). Our second explanatory variable, mafia infiltration, was also positively and significantly associated with municipal corruption (OR = 4.116; $p$ < 0.01). Our control variables were both statistically significant. In line with previous studies, per capita taxable income (a proxy of socioeconomic development) showed a negative association with corruption and population (a proxy of organizational size and complexity) was positively related to municipal corruption. Year-specific effects were not noteworthy.

Our results remained robust even when tested with the alternative panel model specification. The FE logistic regression substantially confirmed our findings for the two explanatory variables. The odds ratio and the significance level for the first explanatory variable were practically the same across the two models. The second explanatory variable (mafia infiltration) showed a slightly higher odds ratio in the FE model (OR = 5.26; $p$ < 0.05). Neither of the two control variables nor the year-specific effects were significant in this model. Our results remained confirmed even after the endogeneity check with our dynamic panel-data model (Table 4).

Based on the estimates from our RE logistic model (Table 2), we calculated the predictive margins in Figure 1, enabling us to calculate the average probability of occurrence of

| Neighbour-corrupt | Mafia-infil | Margin | p-value |
|---|---|---|---|
| 0% | No | 0.07 | 0.000 |
| | Yes | 0.18 | 0.001 |
| 10% | No | 0.09 | 0.000 |
| | Yes | 0.20 | 0.000 |
| 20% | No | 0.10 | 0.000 |
| | Yes | 0.24 | 0.000 |
| 30% | No | 0.12 | 0.000 |
| | Yes | 0.27 | 0.000 |
| 40% | No | 0.14 | 0.000 |
| | Yes | 0.31 | 0.000 |
| 50% | No | 0.17 | 0.000 |
| | Yes | 0.35 | 0.000 |
| 60% | No | 0.20 | 0.000 |
| | Yes | 0.39 | 0.000 |
| 70% | No | 0.23 | 0.000 |
| | Yes | 0.43 | 0.000 |
| 80% | No | 0.26 | 0.000 |
| | Yes | 0.47 | 0.000 |
| 90% | No | 0.30 | 0.000 |
| | Yes | 0.52 | 0.000 |
| 100% | No | 0.33 | 0.000 |
| | Yes | 0.56 | 0.000 |



Predictive Margins of Mafia-infil with 95% CIs

**Note(s):** Figure shows predictive margins at different covariate values and 95% confidence intervals derived from the random-effects logistic model (Table 2). The dependent variable is the binary variable Mun-corrupt, which takes the value 1 if there has been a case of corruption in the municipality in a given year. Number of observations: 3,146

**Source(s):** Author's own creation

corruption (*mun-corrupt* = 1) for different values of our covariates (*neighbour-corrupt* and *mafia-infil*).

## Discussion

*The strength of the sources of the contagion*

The first important result is that a municipality with a higher percentage of corrupt neighbouring municipalities had a greater likelihood of corruption. The average probability of an episode of corruption was 7% in a municipality with no corrupt neighbouring municipalities and 33% when all the neighbouring municipalities were corrupt (Figure 1).

Social contagion theory combined with the rational choice theory of corruption provide one theoretical explanation for our empirical evidence. The rational choice theory of corruption (Rose-Ackerman, 1978; Klitgaard, 1988) suggests that an actor's decision to engage in or abstain from corruption depends on factors such as: (1) the costs of finding a reliable partner in corruption, (2) the gains from corruption and (3) the probability of being caught and punished. All these factors add considerable uncertainty to the decision to participate in corruption, and this uncertainty acts as a "barrier" to corruption (Ryvkin and Serra, 2012). This is where the sources of contagion come into play. If corruption is practised by many neighbouring organizations, it will be easier to find reliable corruption partners. Decision-makers may also be led to believe that the benefits of corruption are great and that the chances of getting caught or severely punished are low (Andvig and Moene, 1990). When the sources of corruption contagion are stronger, there is less uncertainty about key factors affecting corruption decisions and weaker barriers to corruption. When the levee breaks, corruption contagion can easily spread.

The influence of sources of contagion on the target organizations does not necessarily occur in rational terms. Ashforth and Anand (2003) noted that when corrupt behaviour

spreads within a community, corruption behaviours become social norms and corruption practices become tacit understandings. The spread of corruption in neighbouring municipalities can generate an environment where it becomes a norm, influencing decision-makers in non-corrupt municipalities to adopt corrupt practices (DiMaggio and Powell, 1983).

Finally, the role of learning processes should not be overlooked. Our results could also be explained by a combination of social contagion theory and the theory of differential association. Differential association theory suggests that white-collar crimes such as corruption are socially learned through contacts with other actors (Sutherland, 1934). Here, actors are individuals, groups of people, organizations, or broader communities (Cressey, 1960). Learned behaviours include the techniques, motives, drivers, rationalizations, values and attitudes for committing corruption (Akers, 1998). Differential association theory suggests that individuals' involvement in corruption depends on their exposure to corrupt behaviour. When a municipality has more corrupt neighbours, it is more exposed to corruption at a greater intensity.

### The susceptibility of the recipient organization to contagion

A second key finding is the significant increase in likelihood of corruption occurring in a municipality if that municipality has a higher organizational susceptibility (weaker organizational resistance) to corruption contagion due to mafia infiltration. Figure 1 clearly shows that, whatever the percentage of corrupt neighbours, a mafia-infiltrated municipality always has a greater risk of corruption than one with no infiltration. Infiltrated municipalities have an 11-percentage point higher probability of corruption in the best-case scenario (no corrupt neighbouring municipalities), rising to 23% points in the worst-case scenario (all neighbouring municipalities are corrupt).

We believe this effect occurs because municipalities infiltrated by the mafia have higher susceptibility to corruption contagion, because of their weakened corruption controls. They therefore lack the essential means to limit risk of corruption (Anechiarico and Jacobs, 1994; Lange, 2008). These organizations have fewer organizational defences against unethical behaviour, meaning that corruption can arise more easily from within. There is also an effect of greater susceptibility when infiltrated municipalities are exposed to external sources of contagion, in this case, corrupt neighbouring municipalities.

### Conclusion

Despite the growing empirical evidence supporting the existence of corruption contagion mechanisms at the local level (López-Valcárcel *et al.*, 2017), few previous studies have proposed a clear explanation of the organizational mechanisms underlying the spread of interorganizational contagion (De Graaf, 2007). One theoretical contribution of this study is that corruption contagion at the municipal level occurs through the reduction of uncertainty among decision-makers involved in corruption dilemmas. The reduction of uncertainty is determined by the prevalence of corruption in the reference context (i.e. an increase in the sources of contagion) and can trigger conscious (perception of risks/benefits and learning) or unconscious (social norms) diffusion mechanisms.

Our study also overcomes a second limitation of the literature on corruption contagion: the idea that contagion is an inevitable and immediate result of exposure to a source of contagion (Goel and Nelson, 2007; López-Valcárcel *et al.*, 2017). We suggest instead that corruption contagion theories must be tempered by considering organizational susceptibility to corruption. Even when exposed to similar sources of corruptive contagion, municipalities have differing chances of becoming corrupt. The risk of contagion depends at least in part on the organizational resistance to corruption.

Our study has some important implications for policy makers and public managers. Over the last few decades, the debate on anti-corruption policies has been largely driven by international organizations such as the United Nations, the World Bank and the OECD. They have advised governments worldwide to put corruption at the centre of their political agendas. This pressure gave rise to strong anti-corruption regulation in many countries, usually with a macro-level focus (e.g. establishing national watchdog agencies). However, our results suggest that anti-corruption policies must pay more attention to the organizational level. They imply that anti-corruption systems should be effectively implemented *within* organizations, to reduce susceptibility to the contagion of corruption. Public managers should therefore be more alert to the risk of corruption contagion and the factors that can increase or reduce this risk. They could address the risk of contagion by designing and implementing ethical and anti-corruption management systems at the organizational level. Several actions may be undertaken at organizational level. Ethical leadership may encourage the diffusion of ethical behaviour within the organization. This is defined as leaders who show normatively appropriate conduct through personal actions and interpersonal relationships and promote this behaviour to their followers through two-way communication, reinforcement and decision-making (Brown *et al.*, 2005). This can therefore reduce the susceptibility to corruption contagion. Second, organizational resistance to corruption contagion may be strengthened by setting up comprehensive policies and procedures that outline expected ethical behaviour, anti-corruption measures and consequences for violations. Third, organizational susceptibility may be reduced by conducting regular risk assessments to identify vulnerabilities and potential areas where corruption could occur. These assessments can be used to adapt and enhance the organization's anti-corruption strategies. Finally, organizations should implement mechanisms to strengthen accountability (i.e. reward systems for ethical behaviour and consequences for ethical breaches) and promote transparency (e.g. by sharing information with stakeholders, including the public).

Our study had some limitations that may be addressed in future research. First, the lack of data meant that our sample did not include other organizations providing public services at the municipal level, such as municipally owned companies (MOCs). This is important because municipalities increasingly rely on MOCs to provide public services (Bergh *et al.*, 2022). MOCs are often jointly owned by several municipalities, usually neighbours and may therefore be a foundation for interorganizational relations at municipal level (Voorn *et al.*, 2020). Previous studies have found that local governments with more MOCs tend to be associated with more corruption (Bergh *et al.*, 2019). These findings could be interesting in the context of contagion research. Board members of MOCs are often also councillors in the municipalities or people with strong political connections to those councillors. It could therefore be argued that corruption might spread through municipal enterprises rather than directly from the municipalities themselves. The interorganizational relations developed within MOCs would take place in a "danger zone for corruption" (Bergh *et al.*, 2019), because of their reduced transparency and accountability.

Secondly, we have focused the study of corruption contagion in Italian municipalities, a context where corruption could be defined as "endemic". This is not an obstacle to studying corruption contagion, but it is important to consider that the spread of corruption could have different dynamics in endemic and epidemic contagion. In epidemic contagion, the spread is exponential and uncontrollable, but it is more predictable and localized in the case of endemic contagion. In both cases there is contagion, but with different characteristics and dynamics. It would therefore be interesting for future research to shed light on epidemic contagion of corruption.

Thirdly, we measured organizational resistance to corruption through mafia infiltration. This raises two problems. The first concerns the replicability of the study. The dissolution of municipal councils because of mafia infiltration is a specific measure regulated by Italian law. However, organized crime infiltration of public sector organizations is a major issue in other

countries, especially in North and South America, the Caribbean and Europe. It would therefore be interesting if further studies could test hypotheses using different measures of criminal infiltration. A second problem with mafia infiltration is that it is an "indirect" measure of the depressive effect on organizational resistance to corruption. Future studies could therefore use a differentiated replication approach (Lindsay and Ehrenberg, 1993) by using more direct measurements of organizational resistance to corruption (e.g. ethical leadership, internal controls, organizational culture).

Fourth, future studies could investigate how corruption spreads within diversified networks and use different research methods, such as social network analysis or case studies. Qualitative studies collecting and processing detailed information on corruption cases could shed light on how a different degree of complexity (unconnected behaviours vs behaviour chains, or single case vs multiple cases) may shape the spread of corruption. Finally, further studies could also consider other contextual variables that could affect the risk of corruption contagion, especially social capital, and verify whether alternative measures of perceived corruption provide converging results.

Despite these acknowledged limitations, we believe that our approach based on contagion has the potential to be a valuable research avenue for understanding the spread of corruption and identifying effective measures to prevent it. Our study provides novel insights for developing more effective policies and strategies to prevent corruption.

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