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The legacy of institutions: civic capital and corrupt behavior

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Abstract
We conduct a hybrid experimental–observational study on college students to examine how institutional quality and social identity cues jointly shape behavior in a corruption experiment. A between-subject design varies the availability of information on participants' geographic origin and whether matches occur within or across macro-regions. In the absence of geographic information, individuals from areas with lower contemporary and historical civic capital are significantly more likely to engage in corruption, consistent with internalized norm differences. Once geographic origin is revealed, this effect disappears and behavior is driven by the salience of group boundaries. In particular, revealing regional identity increases corrupt behavior primarily in out-group matches, reflecting strategic adjustment to perceived coordination prospects. These results suggest that while institutional quality leaves a lasting imprint on prosocial norms, salient group cues can crowd out internal motivations and redirect behavior toward strategic responses to social boundaries, underscoring the role of institutional and informational environments—and the policy relevance of social identity salience—in shaping corruption-related behavior.

Keywords Corruption · Institutions · Social capital · Diversity

JEL Classification A14 · C91 · D73 · Z13

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1 Introduction

The set of shared values, social norms, and networks of trust and cooperation within a community that facilitate collective action and promote the functioning of institutions, commonly referred to as "civic capital," has been instrumental in explaining a variety of stylized facts.[1] Collectively, these norms contribute to the economic development and well-being of communities and countries. Conversely, negative social norms like corruption diminish reciprocal trust in individuals and institutions, leading to an increase in issues such as free riding, dishonesty (Faravelli et al., 2015), tax evasion (Andriani et al., 2021; Lefebvre et al., 2015; Zhang et al., 2016), and poor cooperation (Bigoni et al., 2019, 2016). This raises the question: why are some communities more prone to corruption than others? Are there mechanisms that facilitate corruption among socially connected communities (Attanasi et al., 2016)? The process by which communities develop, transmit, and adhere to social norms across generations remains an open question.[2]

Adherence to social norms can be driven both by inner motivations– internalized beliefs in the value of civic behavior–and by external motivations shaped by expectations about others' adherence to these norms. Individuals may act in line with civic norms not solely out of personal conviction but also out of a desire to align with community expectations, creating "multiple equilibria" (Bénabou & Tirole, 2006). In groups where corruption is prevalent, individuals might adopt corrupt behaviors not because they endorse them, but because they expect others to do the same.[3]. Conversely, in communities where civic norms are strong, individuals may be more likely to act ethically, not only due to intrinsic motivation but also because of reinforcing social expectations. Our study aims to explore this dual influence–where inner attitudes intersect with external influences driven by social expectations–offering insights into how corruption might be mitigated through policy approaches targeting both personal and communal norms.

To explore this duality, we examine the persistence of differing attitudes toward corruption within the same country and seek to uncover why these local differences emerge. Additionally, we examine whether being informed about others' geographic origin can influence these attitudes. This approach is motivated by two main starting hypotheses: (i) individuals hold an inner attitude toward corruption (i.e., their "type"), shaped by historical local institutions that have instilled community-specific norms; and (ii) although these norms provide a baseline, individuals adapt their behavior in response to the perceived norms of those they interact with, particularly

[1] These include economic growth (Guiso et al., 2016; Knack & Keefer, 1997; Tabellini, 2008; Zak & Knack, 2001), indicators of good governance (Nannicini et al., 2013; Putnam, 1993), financial development (Guiso et al., 2004; Lins et al., 2017), crime (Bernasco et al., 2017; Buonanno et al., 2019; Buonanno & Vanin, 2017; Glaeser et al., 1996), and corruption (Barr & Serra, 2010; Fisman & Miguel, 2007; Gächter & Schulz, 2016; Meier et al., 2016).

[2] See Cavalli-Sforza and Feldman (1981) for a classic reference on formal models of cultural transmission.

[3] Extensive literature, both observational and experimental, has shown how the prevalence of rule violations in a society can negatively influence individuals' intrinsic honesty (e.g., Shalvi, 2016, Gulino and Masera, 2023, Hakimov and Kajackaite, 2024)

when encountering others from different regions (i.e., individuals who may have a different "type").

We use these hypotheses to develop empirical predictions that we test in a controlled laboratory experiment, and then combine experimental data with proxies of civic capital observed in Italian municipalities. Our experimental design is a modified version of the corruption game developed in Barr and Serra (2010), which uses an abstract framework to simulate a scenario where a citizen can offer a bribe to a public official. If the public official accepts, both the citizen and the official benefit at the expense of society. Observing a higher propensity to offer or accept bribes among participants from areas with lower civic capital would support our first hypothesis. To test our second hypothesis, we introduced a noisy signal about the geographic origin of participants' matched counterparts while varying the matching based on regional origin. This informational treatment allows us to assess whether individuals' behavior changes upon learning about their counterpart's region of origin. By combining these two conditions, we implemented a 2×2 between-subject experimental design.

To build a sufficiently heterogeneous sample of participants, we recruited college students at the University of Bologna (Italy). Participants came from 195 different Italian municipalities, roughly equally distributed between Northern and Southern Italy. We purposely chose this methodological approach for three reasons. First, we focused on a specific sample of participants who are fairly homogeneous in terms of ethnicity, religion, language, but who have been exposed to different social norms during their high-school years.[4] Second, by focusing on students enrolled in the same university, we tried to minimize empirical issues which may arise had we compared students from different universities across the country, since their enrollment decision may be motivated by other unobserved factors (e.g. parents' education, economic status, etc.). Third, focusing on a pool of students enrolled in the same university, we can test whether participants coming from municipalities with different levels of civic capital behave in line with their past experience and modify their behavior when they are informed about the origin of the other participants.

We examined the relationship between participants' behavior in the corruption game and both contemporary and historical proxies of civic capital. Social norms that influence corrupt behavior can stem from both the "formal" rule of law (e.g., crime rates) and the "informal" rule of law (e.g., contributions to public goods). To capture these dimensions, following Putnam (1993) and Guiso et al. (2008), we use various measures of prosocial and antisocial behavior, including organ donation rates, solid waste recycling, tax compliance, nonprofit and volunteer associations, car theft rates, and educational attainment. To address potential self-selection and unobserved factors influencing corruption attitudes, we complement these measures with historical proxies of civic capital.

We establish several results. First, we identify a significant negative association between the contemporary level of civic capital in participants' municipalities of origin and their propensity to engage in corrupt behavior across all experimental conditions, supporting our main research hypothesis. Second, we find a significant negative association between historical proxies of institutional quality and observed

[4] A similar approach is followed by Falk and Zehnder (2013) and Bigoni et al. (2022).

corrupt behavior, suggesting a potential causal link between past social interactions and participants' internalized social norms that persists over time. This relationship is significantly negative in municipalities with higher social openness, as measured by surname diversity—a proxy for a community's openness to other communities. This suggests that policies promoting migration and social diversity may actually enhance prosocial behavior and, in turn, civic capital. Finally, we observe that participants matched with counterparts from different geographic areas are more likely to engage in corrupt behavior. Anticipating that individuals from different regions may adhere to different social norms, participants strategically adjust their bribe offers and acceptance thresholds to increase the likelihood of reaching an agreement. Taken together, the findings highlight the critical role of civic capital in shaping ethical behavior and suggest that fostering social diversity and strengthening local institutions can be effective strategies to curb corruption.

The remainder of the paper is organized as follows. Section 2 relates our paper to the relevant literature on civic capital and corruption. In Sect. 3 we describe the experimental design and establish the empirical predictions. Section 4 describes the pool of participants and the proxies of civic capital we use in our analysis. In Sect. 5 we present the findings of our experimental conditions, and provide a rationale for how our measures of civic capital predict the agents' observed behavior. Section 6 concludes.

2 Contribution to the literature

Our paper relates to several distinct, yet related, strands of the literature on the effect of institutions and cultural norms on behavior. While many authors adopt a traditional approach focusing either on cross-country or within-country observations (for a recent survey, see Alesina and Giuliano, 2015), we join a growing body of the literature by adopting a hybrid experimental-observational methodology in an attempt to study individual behavior in a controlled setting while extending the external validity of our findings (c.f., Falk and Zehnder, 2013, Meier et al., 2016, Nese et al., 2018, Dai et al., 2018, Bigoni et al., 2022, Gneezy et al., 2019). In common with these studies, in the attempt to minimize possible confounding factors, we focused on a single location. The recent study from Andreoni et al. (2020) shows, by means of a model with dynamic interactions and tipping thresholds, how the change in social norms can have dramatic consequences in terms of welfare, especially when these norms are detrimental. Our paper, instead, focuses on the static interaction between the social norms internalized by the participants and highlights the change in behavior triggered by the information received during the experiment.

Other authors have also documented a relationship between corruption behavior observed in the lab or in the field, and measures of corruption observed in the home countries of participants (e.g. Fisman and Miguel, 2007, Cameron et al., 2009, Alatas et al., 2009, Barr and Serra, 2010, Armantier and Boly, 2013, Leibbrandt et al., 2013, Gneezy et al., 2016, Zhang et al., 2016). In line with Barr and Serra (2010), we also find that participants from municipalities with low civic capital are more inclined to

engage in bribery but, unlike them and more in line with Fisman and Miguel (2007), we find that this effect does not fade out with education.[5]

Finally, our paper is related to a recent area of research interested in the behavioral foundations of observed differences in the levels of civic capital between the North and the South of Italy (Attanasi et al., 2020; Bigoni et al., 2019, 2016; Zhang, 2018). In line with our findings, these studies conclude that a significant difference between participants belonging to different regions exists, but that such differences are explained by differences in belief rather than intrinsic preferences. Our findings, instead, show that cross-municipality variation, rather than the North-South divide, may explain the observed differences in behavior.

Our study also contributes to the literature that investigates the role of social norms and culture in shaping corrupt behavior in experimental settings (Abbink & Hennig-Schmidt, 2006; Alekseev et al., 2017; Banerjee et al., 2023; Banuri & Eckel, 2012). As Abbink et al. (2018) note, existing studies typically explore cultural variation by conducting bribery games across different countries or with participants from diverse national backgrounds, while holding institutional parameters constant. In contrast, our approach focuses on local cultural heterogeneity within a single country, leveraging variation in participants' geographic origin while maintaining a shared national identity and institutional setting.

3 The experiment

3.1 Experimental design

3.1.1 Basics

Our experiment is designed to test whether individuals engage in corruption and whether they react to the information about the geographic origin of other participants.[6] The design builds on Barr and Serra (2010)'s bribery game. In their own words, this setting "*simulates a petty corruption exchange in which a private citizen must decide whether and how much to offer to a public servant as a bribe in exchange for a corrupt service, such as a speedier admission to hospital, a reduction in taxes, or the cancellation of a fine.*" If a bribe is accepted by the public official, the briber and the bribee benefit at the expenses of the other members of society who collectively incur a cost.

The game is played by n individuals, indexed by $i \in \{1, ..., n\}$, who are evenly and randomly divided into three categories: bribers or "private citizens", bribees or "public officials", and "other members of the society." In addition to the original

[5] The cultural explanation of corruption is also consistent with Gneezy et al. (2019), who reports that self-interest is the major driver of corruption whilst the presence of moral costs and reciprocation mildly mitigate the phenomenon.

[6] We acknowledge that this experiment was not pre-registered, and we thank one of the referees to pointing this out. At the time of design, October 2018, pre-registration was a relatively new concept in experimental economics (Nosek et al., 2018), and had just begun to spark a debate that has only recently led to its adoption as a standard in the field.

model, we let Nature randomly assign to each individual, playing as either public official or private citizen, a type $\theta_i \in \Theta$ with uniform probability, where Θ is the finite set of possible types. Each type, which is each agent's private information, corresponds to the individual attitude towards corruption.

3.1.2 Actions and payoffs

Each "private citizen" and "public official" receive an endowment $E > 0$. Upon receiving the endowment, each "private citizen" can offer a bribe $b \geq 0$ to the paired "public official" who, without knowing the actual offer, decides whether or not to accept the bribe via strategy-method elicitation.[7] The "other members of the society" are passive players: each of them has *e*, where $0 < e < E$, and they incur a cost $\varepsilon > 0$ for every accepted bribe. Their final payoff is equal to $e - \widetilde{n}\varepsilon$, with $\widetilde{n} \in \left\{1, ..., \frac{n}{3}\right\}$ being the number of accepted bribes.[8] If a "private citizen" offers a bribe and the paired "public official" accepts it, the "private citizen" receives $E + \pi - b$, while the "public official" receives $E + b - \gamma$, with $\gamma < E + b$ being the cost of supplying the corrupt service. If no bribe is offered, both the "private citizen" and the "public official" keep their endowment *E*.

3.2 Predictions

3.2.1 Equilibrium

Let us first assume that each individual *i* has the same type $\theta_i = \theta$, implying that all individuals have the same attitude towards corruption. In this case, the type has no effect on the game, which has a unique (subgame perfect) equilibrium where each "public official" accepts any bribe $b \geq \gamma$ and each "private citizen", anticipating this, offers $b = \gamma + \eta$, with $\eta > 0$. Therefore, all bribes are accepted and each "other member of the society" gets $e - \frac{n}{3}\varepsilon$.

3.2.2 Corruption types

Suppose now each individual *i* has its own type θ_i, which reflects an individual attitude toward corruption. For simplicity, we assume there are only two types: a Corrupt type θ_C, who always accept or sends a bribe $b \geq \gamma$; and a Non-Corrupt type θ_{NC}, who never sends or accepts a bribe, regardless of *b*. These types reflect the civic capital of the municipality where the individual grew up, encompassing the institutions, cultural norms, and social practices that have influenced their preferences and behaviors over time.

[7] That is, for every possible offer, a "public official" chooses whether to accept the offer or not.

[8] In the experimental design, we set *e* in such a way $e - \frac{n\varepsilon}{3} > 0$, implying that even if all "public officials" accepted the bribe proposed by the paired "private citizen", each "member of the society" would still earn a strictly positive payoff. In this sense, corruption is neutral in terms of aggregate welfare, as it only shifts π from the "members of the society"'s payoff to the briber-bribee's payoffs.

However, we assume individuals' behavior is not solely driven by their intrinsic type but also by their expectations about their counterpart's type. For example, a typically honest individual might offer a bribe if they believe the public official is corrupt and would expect one, especially when the potential payoff is high. Conversely, a corrupt type might withhold a bribe if they believe the official is highly unlikely to accept it. This interplay between inherent preferences and beliefs about others introduces another strategic layer to decision-making.

In equilibrium, it is straightforward to show that:

- An offer $b < \gamma$ will always be rejected by both types;
- A private citizen of type θ_C offers $b \geq \gamma$ only when they believe the public official is of type θ_C.

This heterogeneity becomes particularly relevant when participants are informed about their counterpart's region of origin (i.e., a signal about a participant's type). For instance, if an individual holds the belief that individuals from a specific region are more corrupt than others, they may be more inclined to offer a bribe, anticipating a higher likelihood of acceptance. Conversely, when matched with someone from a different region (an out-group member), participants may perceive a lower chance of reaching an agreement and strategically increase their bribe offer or lower their acceptance threshold to secure agreement. However, since regional origin is only an imperfect signal of an individual's true type–corrupt individuals may come from any region–any change in corrupt behavior following the disclosure of geographic origin should be attributed to the influence of beliefs rather than actual differences in behavior. Accordingly, we predict a higher likelihood of corrupt behavior in out-group matches due to strategic adjustments driven by these perceptions.

3.2.3 Empirical predictions

Based on these considerations, we propose the following empirical predictions:

- *Empirical Prediction 1*: Participants from low-civic-capital municipalities are more likely to engage in corrupt behavior than those from high-civic-capital areas.
- *Empirical Prediction 2*: Revealing a counterpart's geographic origin influences participants' behavior by making social group boundaries salient, thereby shaping strategic expectations in in-group and out-group interactions.
- *Empirical Prediction 3*: Participants in out-group matches will exhibit higher corrupt behavior due to perceived lower chances of agreement, prompting higher bribe offers or lower acceptance thresholds.

In the next subsection, we outline the mechanism underlying our empirical predictions.

3.3 Mechanism

3.3.1 Intrinsic preferences and civic capital

The first mechanism focuses on how an individual's type (θ_i) reflects the level of civic capital in their home municipality. Civic capital represents the historical and institutional factors that shape individuals' preferences for ethical versus corrupt behavior. Participants from regions with lower civic capital may have internalized norms that make them more likely to engage in corruption. This aligns with existing literature showing that individuals' behavior is influenced by the quality of governance and social norms they experience during formative years (e.g., Putnam, 1993, Shalvi, 2016).

If civic capital has a long-lasting impact on individuals, we expect participants from municipalities with lower civic capital to exhibit greater tendencies toward corrupt behavior in the experiment. This serves as the foundation for our first empirical prediction.

3.3.2 In-group salience

The second mechanism concerns how participants adjust their behavior once information about their counterpart's geographic origin becomes salient. In the absence of such information, individuals can only rely on their own internalized norms and moral dispositions, which we proxy through civic capital. Consistent with this interpretation, we find that higher civic capital is associated with a lower propensity to engage in corrupt behavior when no external social cues are available.

When information about geographic origin is disclosed, however, participants are exposed to a salient group cue that may shape their expectations about the counterpart's behavior. Importantly, this does not require assuming any specific content of beliefs about regions; rather, the mere activation of group boundaries can alter strategic considerations. Participants may adjust their actions based on how they believe others will behave, independently of their own civic disposition–for instance, by modifying bribe offers or acceptance thresholds in anticipation of a lower or higher likelihood of agreement.[9]

These beliefs become particularly relevant in the context of in-group and out-group dynamics. In an in-group match–when both participants come from the same region–individuals may exhibit greater trust and cooperation due to perceived similarity, consistent with in-group bias. Conversely, in an out-group match, participants may anticipate a lower probability of reaching an agreement and respond by increasing their bribe offers or reducing their acceptance thresholds to improve the likelihood of cooperation. This strategic adjustment in

[9] This interpretation concerns strategic expectations about others' behavior rather than intrinsic moral traits. When we refer to a potentially higher or lower "reservation price," we describe how participants may perceive their counterpart's strategy, not an assumption that individuals would accept corrupt transfers at some sufficiently high level.

response to perceived group membership directly underpins our second and third empirical predictions.[10]

3.4 Treatments

Building on the empirical predictions, we designed our experiment as follows. To preserve participants' anonymity, we created four "types" corresponding to various Italian macro-regions. Each participant is assigned to a macro-region according to her municipality of residence, which was requested at the recruitment stage. Using the definitions of the Italian National Statistical Institute (ISTAT), we identified four macro-regions: North-West, North-East, Center, and South (see Fig. 1).

In the experiment, we varied two key factors: (i) the availability of information about other participants' geographic origin, and (ii) the type of matching between "private citizen" and "public official." A matching was classified as *in-group* if both individuals came from the same macro-region, and out-group if they came from different macro-regions. Finally, we connected the corrupt behavior observed in the laboratory with proxies of civic capital.

Combining these conditions we obtain a 2×2 between-subject experimental design, consisting of the following treatments:

- Treatment 1 (T1): No information, in-group matching;
- Treatment 2 (T2): No information, out-group matching;
- Treatment 3 (T3): Information, in-group matching;
- Treatment 4 (T4): Information, out-group matching.

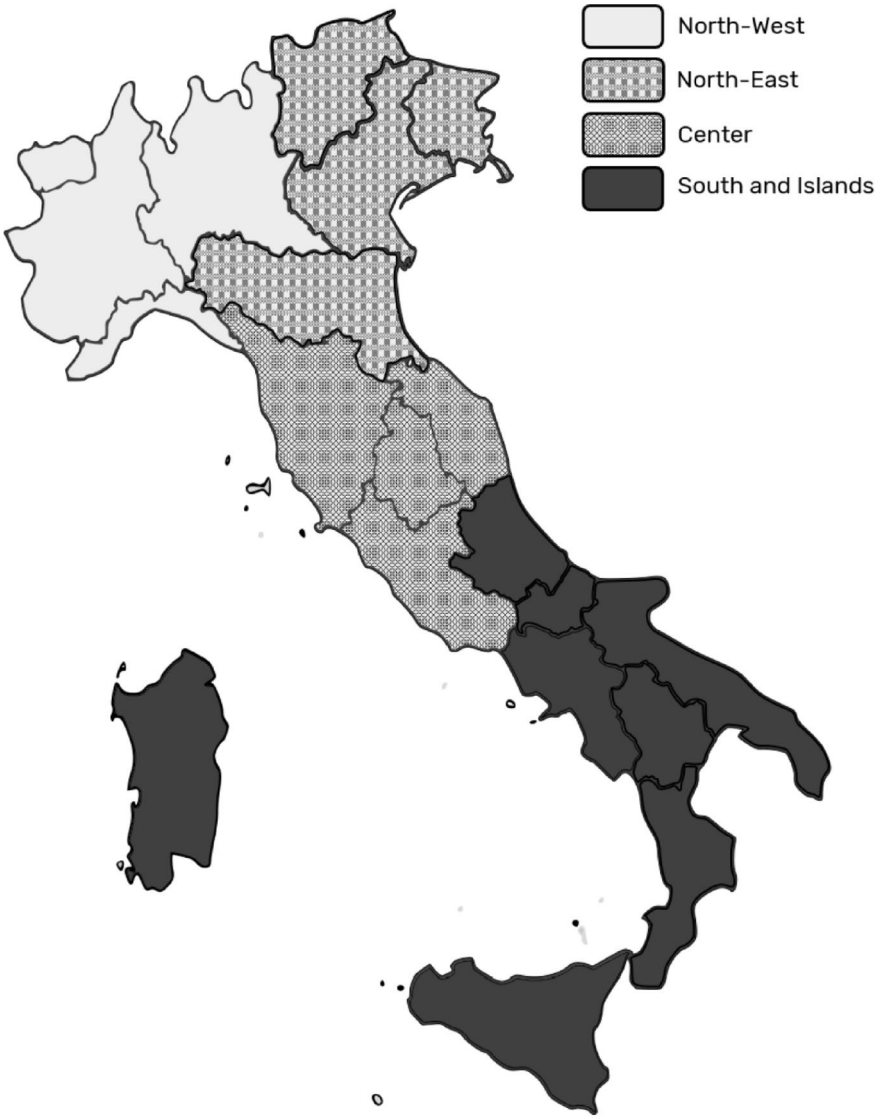
3.5 Implementation

3.5.1 Basics

The game was played using an experimental currency unit (ECU) which converted to Euro at a rate of 1 ECU = € 0.5. We set the endowment parameters to $E = 25$ ECU, $e = 20$ ECU (both including a show-up fee of 10 ECU), the "public official" cost $\gamma = 4$ ECU, and the "members of the society" per-accepted-bribe cost $\varepsilon = 1$ ECU, and the payoff $\pi = \frac{n}{3}$ ECU.[11] In every session, participants received a printed copy of two tables indicating, for each player category, all pos-

[10] Our experimental design simplifies real-world corruption dynamics by focusing on controlled interactions between participants. This abstraction, while common in experimental economics, allows us to isolate key mechanisms, such as the influence of civic capital and beliefs, while minimizing confounding factors. However, we acknowledge that the controlled nature of the experiment cannot capture all contextual nuances of corruption in real-world settings.

[11] These experimental parameters ensure that, even when all "public officials" accepted the bribe proposed by a "private citizen" in a session, the payoff of each "member of the society" would be strictly higher than the show-up fee (i.e. 11 ECU).



Notes: This figure shows the Italian macro-regions as defined by the Italian National Statistical Institute.

Fig. 1 Italian macro-regions

sible combinations of strategies leading to the final payoffs.[12] We conducted 11 experimental sessions: 10 sessions with 18 active participants (i.e. "private citizens" and "public officials") and nine passive participants (i.e. "other members of the society"), and one session with 16 active participants and eight passive participants, resulting in a total of 196 active participants and 98 passive participants.[13] Therefore, each group of players was composed of nine participants in 10 sessions, and eight participants in one session.

Each session consisted of three phases. In the first phase, participants were required to complete a pre-experiment questionnaire on basic demographic characteristics. We use the self-reported information to verify that a participant's stated region of origin matches the information obtained during the recruitment stage. Although it is not possible to rule out that asking participants about their region of origin may hint to the purpose of the experiment and thus generate demand effects, we believe this question was sufficiently "hidden" among other demographic questions that could also have been used as treatment conditions (e.g., gender, age, employment status).[14]

In the second phase, participants played the (one-shot) corruption game. Roles and "citizens-officials" pairs were randomly and anonymously assigned. In all sessions we used an abstract framing where "private citizens", "public officials", and "other members of the society" were labeled as players of category A, B, and C, respectively.[15] Each A-player was required to make an offer ranging from 0 to 13 ECUs to the assigned B-player, who was then asked to choose, for each possible offer, whether to accept it or not.

The game employs a neutral framing to ensure participants focus on the strategic interaction rather than moral or ethical judgments tied to explicit terminology like "bribery" or "corruption." The instructions clearly explain that any gain achieved comes at the expense of a third party who cannot influence the outcome, which conveys the essence of the game without biasing participants' behavior. This approach aligns with established practices in the experimental literature to elicit natural responses (e.g., Abbink and Hennig-Schmidt, 2006). Although the abstract framing might mitigate the effects of the experimental conditions, we prefer to adopt a conservative approach to avoid confounding effects due to framing.[16] In additional experimental sessions, we also employ a non-neutral framing to test the role of a framed experimental design. We discuss this in 5.5.

The experimental software was based on z-Tree (Fischbacher, 2007). An experimenter read the instructions aloud and answered participants' questions

[12] The payoff tables, as well as the pre- and post-experiment questionnaires are available in the Appendix in Section 1.2

[13] In the unique session with fewer participants, we set the public official cost $\gamma = 5$ ECU. This slight change in the parameters does not alter the choice set of the "private citizens" and, at the same time, keeps corruption welfare-neutral. Our qualitative results are robust to the exclusion of the session with fewer participants from our sample.

[14] A similar procedure has been used in other studies aimed at measuring the effects of out-group discrimination (e.g., Bigoni et al., 2022).

[15] No explicit reference to terms such as "bribe" or "corruption" was made.

[16] See Barr and Serra (2009) and Alekseev et al. (2017) for an investigation of framing in corruption games.

privately before starting the actual experiment. Once the game was completed, while the payoffs were being computed, participants were asked to answer a post game questionnaire about themselves and their perception of corruption in their region of origin.[17]

3.5.2 Information condition

To minimize the risk of creating experimenter demand effects, we used the following procedure. To provide participants with information about their counterpart's region of origin, we presented Table 1 at the pre-decision phase. This table displayed all the categories corresponding to the individual information elicited during the pre-game questionnaire, with all entries muted except, in treatments T3 and T4, the one referring to the region of origin. This approach was designed to persuade participants that this information could potentially be randomly disclosed in other experimental sessions, thereby leading them to believe that the experiment was not specifically intended to study beliefs related to participants' regions of origin.[18] When participants were not informed about the region of origin of their paired counterpart (i.e. treatments T1 and T2), the information corresponding to every row of Table 1 was displayed as "N/A".

4 Data

4.1 Experimental data

We ran the experiment in April 2019 at the Bologna Laboratory for Experiments in Social Science (BLESS) of the University of Bologna. We recruited participants from a pool of undergraduate and graduate students (60%) from the faculties of Economics (1%), Law and Political-Science (19%), Engineering, Physics or Math (20%), and Arts and Literature (60%) using ORSEE (Greiner, 2015). To

Table 1 Information about a paired participant

Paired participant's info	
Nickname	Participant A1
Gender	N/A
Age	N/A
Region of origin	North-West
Area of study	N/A
Status	Student

This table shows the information available to a participant when the counterpart region of origin was North-West. Each participant was presented with a different version of this table, where the order of each entry was randomly shuffled by the computer

[17] The average participant gained € 12, including the show-up fee. Sessions lasted approximately 60 minutes.

[18] Each participant saw a different version of this table where the order of each row was randomly shuffled.

select a sample of participants with sufficient geographic variation, we recruited participants according to the municipality where they were born.[19] The final sample consisted of 294 participants, of which 22 from North West (7.48%), 87 from North East (37.07%), 40 from Center (13.61%), and 145 from Southern Italy (49.32%). Participants came from 149 different Italian municipalities.[20] This information was later confirmed in the pre-experiment questionnaire, which also requested other socio-demographic data.[21]

In June 2021, we ran eight additional sessions where the experiment was presented with a non-neutral frame, i.e. with explicit reference to corruption, bribes, citizen, officials, and members of the society. Participants were recruited from the same subjects' pool at the BLESS laboratory. The set of 2021's participants consists additional 144 individuals, of which 18 from North West (12.50%), 46 from North East (31.94%), 20 from Center (13.89%), and 60 from Southern Italy (41.67%). Combining the first and the set of participants' municipalities of origin, our dataset covers 195 Italian municipalities, as per Fig. 2.

4.2 Civic capital and institutional quality

To provide empirical support for our research hypotheses, we relied on observational data capturing both contemporary and historical proxies of civic capital. This approach serves two purposes. First, direct data on corrupt behavior are inherently difficult to observe due to its illicit and concealed nature. Second, while corruption explicitly violates the formal rule of law, there are also social norms within certain groups that may implicitly encourage or tolerate corrupt behavior. Therefore, our analysis incorporates predictors of both formal rule-of-law violations and informal social norms that may undermine institutional quality and foster behaviors conducive to corruption.

4.2.1 Contemporary data

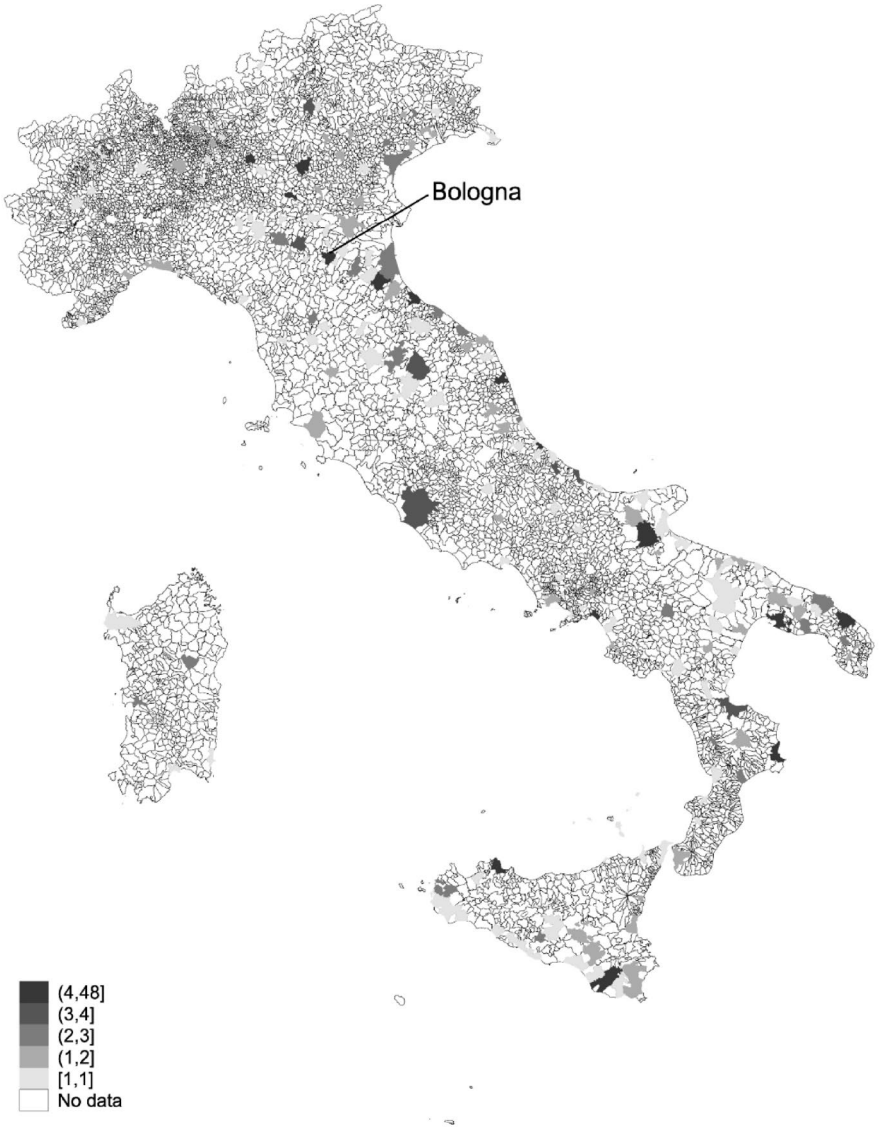
Following the vast literature on civic capital and prosocial (and antisocial) behavior in Italy (Buonanno et al., 2009; Guiso et al., 2008; Putnam, 1993) and in order to account for this multidimensionality, we considered seven measures of contemporary civic capital: the presence of an organ donation association, the share of solid waste recycling, a proxy for tax compliance, the share of nonprofit associations, the rate of volunteer associations, the car theft rate and the share of graduates in the population.

Our unit of observation is the municipality (*comune*). Data on municipalities for Italy are available from different sources. The variable *Organ donation* measures

[19] The information about participants' birth place is collected by the BLESS laboratory recruitment system at the time of registration through participants' fiscal ID.

[20] We aimed for a balanced sample from northern and southern Italian regions, though there may be an over-representation from the eastern side, likely due to Bologna's proximity and fewer major universities in the east. While not fully representative of Italy, our sample allows us to examine how civic capital from one's home municipality affects attitudes toward corruption and how these may shift upon relocation.

[21] We asked participants in which municipality they attended most of their high school years. About 94% of participants in our sample did not migrate to a different macro-region to attend high school.



Notes: This figure shows the geographic distribution of the 195 participants' municipalities in our sample.

Fig. 2 Municipalities of participants

whether a municipality hosts an organ donation association (AIDO).[22]. The share of solid waste recycling *Recycling* measures the 2014-2017 average share of recy-

[22] As discussed in Guiso et al. (2016) AIDO measure is more reliable and less subject to errors compared to blood donation since there is only one organ donation association in Italy, Associazione Italiana Donatori Organi(AIDO).

cling over the total amount of urban waste produced and is taken from the Italian National Statistical Institute.[23] Data for the tax compliance rate were obtained from Italy's national public broadcasting company (RAI - Radiotelevisione Italiana) and are available for the period 2004–2010. Our variable of interest (*Tax Compliance*) is defined as a municipality's share of households paying the annual Television Licence fee which we used as a proxy of the individuals' contribution to a non-local public good.[24] Similarly, *Volunteering* and *Nonprofit* measure the propensity of individuals to volunteer, and the presence of recreational, cultural, artistic, sport, environmental and any kind of non-profit association in a municipality per 100,000 inhabitants, respectively. Both datasets were obtained from the 9th Italian Census released by ISTAT in November 2011.[25] Moreover, we considered the average car theft rate (per 1,000 cars in the municipality) as a proxy for crime rate over the period 2004-2010.[26] Data for each municipality were obtained by the statistics department of the Italian police.

4.3 Historical data

Since the current level of civic capital may be correlated with unobserved factors that also influence corrupt attitudes, we incorporated historical proxies of civic capital to address potential endogeneity concerns. Specifically, we used a measure of social openness (*Social Openness*) based on municipality surname entropy, which captures a community's openness to external influences and is positively associated with civic capital.[27] Surnames, typically passed down patrilineally, diversify when new families migrate into a community and establish new households. Higher surname diversity reflects greater social openness and interaction with outsiders, fostering inclusivity, cooperation, and trust–key components of civic capital. In contrast, *Social Closure* measures the concentration of the most common surname within a municipality, with higher values indicating more insular and homogeneous communities. Specifically, *Social Closure* is defined as the share of the most frequent surname in the municipality.[28] Both surname-based indicators are sourced from Buonanno and Vanin (2017) and cover nearly all Italian households in 1993.

Additionally, we used a proxy for pre-industrial political instability (*Political Instability*) from Buonanno et al. (2019), which measures the number of times a municipality changed rulers between 1000 and 1800 AD. This indicator reflects the historical persistence of weak institutions and fragmented governance, which can

[23] http://amisuradicomune.istat.it/aMisuraDiComune/

[24] While the television licence fee was mandatory for all households owning a telecommunication device (e.g. radio or television), its payment was voluntary and the enforcement rather weak. The compliance rate, therefore, proxies the households willingness to contribute to a public good (c.f. Buonanno and Vanin (2017)). Since January 2016, however, the fee has been directly levied by the electric energy providers.

[25] Data are publicly available at https://www.istat.it/it/archivio/77877.

[26] Data on cars registered in each municipality are available on the ISTAT website http://asc.istat.it/asc_BL/

[27] For a detailed description of the entropy index, see Buonanno and Vanin (2017).

[28] The correlation between *Social Closure* and *Social Openness* is approximately -0.7, indicating that *Social Closure* captures social homogeneity, while *Social Openness* reflects social diversity.

have lasting effects on civic norms and trust in authority. Data for this measure were collected and elaborated from the Centennia Historical Atlas of Europe (Reed, 2016).

Figures A.1 and A.2 in the Appendix show that the macro-regions exhibit substantial heterogeneity in both contemporary and historical civic capital proxies.[29]

Table 2 presents the summary statistics for the variables used in the analysis, providing a comprehensive overview of participants' characteristics, civic capital proxies, and geographic features of their municipalities of origin.

Table 3 shows the cross correlation between the participants' perceived corruption elicited during the post-experiment questionnaire and municipality-level measures of civic capital. Each variable in columns (1)–(7) of Table 3 measures individuals' perception of corruption. Specifically, we asked participants to rate from 1 (very little) to 4 (very much) whether corruption in the municipality where they grew up is a major problem for each of the following categories: (1) politics; (2) business environment; (3) culture and values of society; (4) personal life. We also asked them to rate from 1 (very uncommon) to 4 (very common) whether in the municipality where they

[29] A one-way analysis of variance confirms that the observed negative difference in mean values between southern Italian participants and those from other macro-regions is consistently statistically significant.

Table 2 Summary statistics

	(1)	(2)	(3)	(4)	(5)
	Mean	SD	Min	Max	N
Panel A: participants' characteristics					
Father degree	1.956	0.731	1	4	294
Mother degree	1.986	0.734	1	4	294
Female	0.571	0.496	0	1	294
Economics	0.007	0.082	0	1	294
STEM	0.201	0.401	0	1	294
Poli-Sci	0.190	0.393	0	1	294
Other Field	0.602	0.490	0	1	294
South	0.415	0.494	0	1	294
Graduate	0.724	0.448	0	1	294
Panel B: Contemporary civic capital					
Nonprofit	0.086	0.143	0.001	1.013	294
Tax compliance	0.689	0.091	0.289	0.870	294
Organ donation	0.680	0.467	0	1	294
Graduates rate	0.138	0.047	0.046	0.229	294
Recycling	50.40	21.46	1.550	88.83	294
Volunteering	0.864	0.444	0.038	2.838	294
Cars theft rate	0.005	0.005	0	0.0262	294
Panel C: Historical civic capital					
Social openness	7.629	1.043	5.075	10.19	294
Social closure	0.961	0.671	0.198	4.471	294
Political instability	15.410	4.283	4	38	294
Panel D: Geographic characteristics					
Coast	0.418	0.494	0	1	294
Sh. Mountains	13.73	31.04	0	100	294
Difference in elevation	465.4	435.7	5	2,223	294
Ruggedness	100.6	105.6	1.627	573.7	294

Summary statistics table. Panel A reports statistics about the participants' individual self-reported characteristics. Panel B and Panel C refer to contemporary and historical proxies of civic capital, respectively. Panel D reports summary statistics of the geographic characteristics of the municipalities in our sample

Table 3 Cross-correlation between perceived corruption and civic capital

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	Politics	Business	Local culture	Personal life	Health	Job market	Police	Car thefts rate	Organ donation	Graduates share	Nonprofit	Recycling	Tax compliance	Volunteering	Social openness	Social Closure	Political instability
Politics	1																
Business	0.700**	1															
Local culture	0.495**	0.497**	1														
Personal life	0.352**	0.333**	0.409**	1													
Health	0.284**	0.341**	0.172**	0.164**	1												
Job market	0.262**	0.325**	0.161**	0.178**	0.397**	1											
Police	0.315**	0.356**	0.259**	0.209**	0.461**	0.414**	1										
Car thefts rate	0.259**	0.178**	0.153**	0.0784	0.133*	0.102	0.119*	1									
Organ donation	−0.112	0.00336	−0.0913	−0.0361	−0.114	−0.0804	−0.114	0.233**	1								
Graduates share	−0.143*	−0.0999	−0.0723	−0.00517	−0.0991	−0.187**	−0.179**	0.274**	0.466**	1							
Nonprofit	0.00497	−0.0129	0.0222	0.0574	−0.0725	−0.0836	−0.0295	0.398**	0.344**	0.544**	1						
Recycling	−0.378**	−0.304**	−0.166**	−0.0875	−0.205**	−0.156**	−0.140*	−0.285**	0.121*	0.157**	−0.106	1					
Tax compliance	−0.308**	−0.265**	−0.194**	−0.176**	−0.170**	−0.125*	−0.110	−0.314**	0.0459	0.0253	−0.140*	0.457**	1				
Volunteering	−0.351**	−0.236**	−0.194**	−0.0562	−0.285**	−0.289**	−0.202**	−0.219**	0.287**	0.551**	0.177**	0.450**	0.275**	1			
Social openness	−0.126*	−0.0376	−0.0264	0.00766	−0.136*	−0.151**	−0.110	0.376**	0.577**	0.739**	0.705**	0.0398	−0.0952	0.460**	1		
Social closure	0.125*	0.0131	−0.0328	−0.0104	0.103	0.0685	0.120*	−0.216**	−0.418**	−0.485**	−0.390**	0.00406	0.169**	−0.330**	−0.721**	1	
Political instability	0.112	0.0147	0.0735	0.0490	0.0394	−0.0497	−0.00906	0.238**	−0.0744	−0.0497	0.112	−0.0989	−0.142*	−0.190**	−0.00778	0.0759	1

This table reports the cross correlation between the self reported measures of perceived corruption (columns (1)–(7)) and the observed contemporary (columns (8)–(14)) and historical (columns (15)–(17)) measures of civic capital. ** and * refer to 1% and 5% statistical significance, respectively

grew up it is common to contact a friend or a relative to get a favor (5) when dealing with the public health service; (6) when looking for a job; (7) when dealing with the police force. Most correlations between perceived corruption and the municipality-level proxies of civic capital were negative and significant at 1% with the exception of the number of non-profit associations. Table 3 provides preliminary evidence that participant's perception of corruption is negatively correlated with observable measures of civic capital, suggesting that a link between the quality of institutions and participants' experience exists. To assess whether this experience affects participants' decision to engage in corruption, we analyzed their behavior while interacting in the corruption game.

5 Results

We begin our analysis by examining participants' decisions to engage in corruption. First, we investigate whether the decision to engage in corruption observed in the laboratory can be explained by measures of civic capital in the participants' municipality of origin, despite the relocation to another city may dilute the strength of these norms. Second, we study the effect of the experimental conditions on the probability of offering and accepting a bribe.[30]

5.1 The legacy of institutions

To test our first empirical hypothesis we investigate the relationship between participants' attitudes towards bribery and the level of civic capital observed in their municipality of origin. Of the 98 participants selected to play as "citizens", 77 (78.57%) offered at least the equilibrium bribe (i.e. at least 4 ECU's). All participants selected as "officials" chose to accept at least one potential offer and 36 accepted at least the equilibrium offer. We therefore constructed a measure of attitude to corruption (*Bribery*) as a dummy equal to one when a "citizen" (resp. an "official") offers (resp. accepts) at least the equilibrium bribe, and to zero otherwise.[31]

5.2 Contemporary variables

Table 4 reports, for each panel, the estimated marginal effect of stand-alone probit regressions of a contemporary measure of civic capital on participants' probability of engaging in corruption (*Bribery*) across all experimental conditions and participants' role. Standard errors were clustered within sessions. Individual control vari-

[30] Our results, derived from probit models, remain robust when using linear probability models or alternative dependent variables, such as the private citizen's offer and the public official's minimum acceptance threshold. Results are also consistent with the inclusion of individual-level controls. Full specifications are reported in 1.3.

[31] Our results are qualitatively comparable when we use alternative measures of corruption, such a dummy that "tags" participants offering (resp. accepting) bribes higher (resp. lower) than the median bribe, or a continuous variable equal to the actual offer (resp. the sum of all offers) made by a "citizen" (resp. accepted by an "official").

Table 4 Civic capital and probability to engage in corruption. Stand-alone effects

	(1)	(2)	(3)
Car thefts	−7.772	−3.720	−1.973
	(0.197)	(0.620)	(0.800)
Graduates share	−1.552	−1.866	−1.706
	(0.057)	(0.009)	(0.014)
Non-profit organizations	−0.497	−0.416	−0.394
	(0.073)	(0.125)	(0.127)
Organ donation	−0.228	−0.212	−0.206
	(0.001)	(0.007)	(0.007)
Share of recycling	−0.001	−0.001	−0.001
	(0.400)	(0.434)	(0.478)
Tax compliance	0.0317	0.0192	0.120
	(0.905)	(0.936)	(0.673)
Volunteering	−0.131	−0.178	−0.186
	(0.168)	(0.029)	(0.061)
Observations	196	194	194
Individual controls	×	✓	✓
Geographic controls	×	×	✓

This table reports, for each column, the estimated marginal effects of a stand-alone probit regression of a contemporary measure of social capital on the participants probability to engage in corruption, with p-values reported in parentheses. In all models the dependent variable is *Bribery*. Standard errors have been clustered within session. Individual control variables include: (i) gender; (ii) parents' education; (iii) being graduate; (iv) field of study; (v) self-declared membership to any charity. Geographic controls include: (a) the share of mountainous territory; (b) the difference in elevation with respect to the sea level; (c) average soil ruggedness; (d) whether a municipality is on the coast

ables include: (i) gender; (ii) parents' education; (iii) being graduate; and (iv) field of study. Geographic controls include: (i) the share of mountainous territory; (ii) the difference in elevation with respect to the sea level; (iii) average soil ruggedness; (iv) whether a municipality is on the coast.

Focusing on the most demanding model (i.e. column (3)), while the sign of the estimated coefficients is in the expected direction for all variables, we report a strongly significant negative correlation with the share of graduates in the population (*Graduates share*) and with the presence of an organ donation association (*Organ donation*), and a mildly negative effect of volunteer participation (*Volunteering*). These proxies of civic capital capture the broader socialization environment in participants' home municipalities, even though the specific behaviors they measure may not persist after relocation. This highlights the importance of education and institutional quality in shaping long-term cultural attitudes.

5.3 Historical variables

Contemporary proxies of civic capital may be correlated with unobservable factors, such as social norms and cultural traits, that also influence behavior observed in the lab, implying that the associations observed in Table 4 do not establish a causal link

between individual corruption and civic capital. To mitigate this concern, we examined historical variables as predictors of civic capital. These measures reflect deeply rooted institutional and cultural factors, providing stronger evidence that participants' intrinsic attitudes toward corruption are shaped by their home municipality's historical context, even if they later relocate.

Table 5 reports the estimated marginal effect, and the corresponding p-value, of stand-alone probit regressions of a historical measure of civic capital on the participants probability of engaging in corruption (*Bribery*). Standard errors have been clustered within each session. We observe a strong statistically significant effect of all proxies of civic capital. *Social openness* causes a reduction of between 8% and 9%, while *Social closure* increases corruption by about 11%-14%. We also report a significant effect of *Political instability*, resulting however in a smaller increase in corruption (between 1% and 2%).

These findings suggest that individuals from more culturally diverse communities, characterized by higher social openness, are more likely to internalize inclusive social norms that discourage corrupt behavior. Exposure to diverse social environments may foster trust, tolerance, and cooperation beyond immediate social circles, reducing reliance on insular networks where corruption might thrive. Moreover, the results indicate that historical proxies of local institutional quality have a lasting impact on individual behavior. This suggests that relocating to a different society does not necessarily result in the immediate adoption of new social norms, thereby confirming our first empirical prediction.

Empirical Result 1: *The quality of local institutions has a long-lasting effect on the probability of engaging in corruption.*

Table 5 Predicting the probability to engage in corruption with historical proxies of civic capital. Stand-alone effects

	(1)	(2)	(3)
Social openness	−0.0841	−0.0908	−0.0902
	(0.012)	(0.004)	(0.007)
Social closure	0.117	0.146	0.141
	(0.005)	(0.000)	(0.000)
Political instability	0.0131	0.0194	0.0269
	(0.109)	(0.050)	(0.001)
Observations	196	194	194
Individual controls	×	✓	✓
Geographic controls	×	×	✓

This table reports, for each column, the estimated marginal effect of a stand-alone probit regression of a historical measure of social capital on the participants probability to engage in corruption, with p-values reported in parentheses. In all models the dependent variable is *Bribery*. Standard errors have been clustered within session. Individual control variables include: (i) gender; (ii) parents' education; (iii) being graduate; (iv) field of study; (v) self-declared membership to any charity. Geographic controls include: (a) the share of mountainous territory; (b) the difference in elevation with respect to the sea level; (c) average soil ruggedness; (d) whether a municipality is on the coast

Table 6 Probit marginal treatment effects on the probability of engaging in corruption

Panel A: Citizens	(1)	(2)	(3)	(4)	(5)
Info	0.013		0.022	0.028	0.055
	(0.804)		(0.693)	(0.474)	(0.396)
In-group		0.049	0.053	0.046	0.084
		(0.368)	(0.360)	(0.289)	(0.276)
Info × In-group					−0.077
					(0.517)
Observations	98	98	98	94	94
Controls	No	No	No	Yes	Yes
Panel B: Officials	(1)	(2)	(3)	(4)	(5)
Info	0.229		0.228	0.224	0.337
	(0.013)		(0.022)	(0.005)	(0.002)
In-group		−0.051	−0.006	−0.031	0.178
		(0.710)	(0.968)	(0.809)	(0.114)
Info×*In-group*					−0.277
					(0.036)
Observations	98	98	98	97	97
Controls	No	No	No	Yes	Yes

This table reports probit marginal effects of the experimental treatments on measures of corruption. Standard errors clustered at the session level; p-values in parentheses. The dependent variable equals 1 if a "Citizen" offers at least the equilibrium amount (Panel A) or if an "Official" accepts such an offer (Panel B). *Info* equals 1 if participants were informed of their counterpart's geographic origin; *In-group* equals 1 if both participants are from the same macro-region. *Civic Capital* equals 1 if a participant's civic capital falls in the top tertile of the distribution. Control variables include: gender, mother's, father's, and participant's education levels, field of study, and region of origin

5.4 Beliefs and strategic corruption

In this section, we investigate the effect of the experimental conditions on the probability to engage in corruption, as outlined in Empirical Predictions 2 and 3.

Table 6 reports the estimated marginal effects of a probit model, and the corresponding p-values, of the experimental treatments on different measures of corruption. In Panel A the dependent variable is a dummy variable taking value one if an individual playing as a "citizen" makes at least the equilibrium offer. The estimates in Panel B refer to the participants playing as "officials" and the dependent variable is a dummy equal to one when participants accepted at least the equilibrium offer, and zero otherwise. All standard errors were clustered within sessions to account for possible participant dependence.

The key finding is that Officials respond significantly to the information treatment, particularly when interacting with out-group members. Column (1) shows that being informed about the counterpart's geographic origin (*Info*) increases the probability that Officials accept a bribe. This effect remains strong and statistically significant across all specifications, even when controlling for demographic characteristics (columns 4–5). By contrast, Citizens' behavior is unaffected by the information treatment across all models.

These role-specific effects align with the asymmetry embedded in our experimental design. Citizens must initiate the corrupt exchange and bear the risk of punishment

if their offer is too low. Officials, by contrast, act as gatekeepers – they can accept or reject offers without facing direct consequences. The data suggest that Officials are more willing to relax moral constraints when interacting with socially distant counterparts – possibly because reduced social proximity weakens internalized norms or accountability – or simply because they anticipate lower chances of agreement with out-group participants and strategically adjust their acceptance threshold to maximize the likelihood of a successful exchange. Conversely, Officials appear to self-censor in in-group contexts, perhaps out of reputational concerns or internalized moral norms.[32]

In Table 7, we explore whether these effects are moderated by individual civic capital. In this table, we use as a proxy of *Civic Capital* an indicator obtained as the first principal component of the covariance matrix of the variables *Tax Compliance*, *Share of recycling*, and *Organ donation* (as defined in Section 4). Civic Capital has generally a negative effect on the probability of acting corrupt, both for Citizens and Officials. However, we find that Officials with high civic capital become even more sensitive to group identity cues: the positive effect of *Info* is strongest among high civic capital participants, and the interaction term is statistically significant and large. This suggests that civic capital does not mechanically reduce corrupt behavior; instead, it may reinforce context-specific moral reasoning – encouraging rule-abiding behavior in some situations and enabling strategic norm relaxation in others. Among Citizens, we find limited and inconsistent moderation effects.

Taken together, these findings suggest that social identity salience, especially when combined with power asymmetries, plays a central role in shaping corrupt behavior. Officials exploit their strategic position more readily when the counterpart is socially distant, while Citizens show no corresponding shift.

Empirical Result 2: *Revealing a counterpart's geographic origin influences participants' behavior through either beliefs activation or group-boundary salience, with stronger effects observed among participants in positions of power and in out-group interactions.*

Empirical Result 3: *Participants exhibit out-group bias, with higher corruption observed in out-group interactions.*

These findings may initially seem at odds with our historical evidence showing that greater social openness and cultural diversity are associated with lower corruption levels. However, this apparent contradiction can be explained by the differing time horizons and incentives at play in the two contexts.

In the experimental setting, participants engage in one-shot interactions where the primary goal is to maximize immediate payoffs. When matched with out-group members–who are perceived as having different social norms–participants may strategically increase their bribe offers or lower their acceptance thresholds to secure an agreement. This behavior reflects short-term, payoff-driven decision-making rather than deeply ingrained social norms.

Conversely, the historical measures of social openness capture the long-term effects of sustained exposure to cultural diversity on the formation of civic norms.

[32] This aligns with Festinger and Hutte (1954), which suggests that group dynamics can suppress behavior perceived as undesirable within the group.

Table 7 Treatment effects and civic capital

Panel A: Citizens	(1)	(2)	(3)	(4)
High Civic Capital	−0.099	−0.080	−0.074	−0.346
	(0.310)	(0.380)	(0.410)	(0.001)
In-group			0.037	−0.180
			(0.430)	(0.075)
Info			0.013	−0.080
			(0.728)	(0.402)
Info×*High Civic Capital*				0.167
				(0.109)
In-group×*High Civic Capital*				0.248
				(0.000)
Info×*In-group*				0.077
				(0.500)
Info×*In-group*×*High Civic Capital*				n.a.
				n.a.
Observations	98	94	94	90
Controls	No	Yes	Yes	Yes
Panel B: Officials	(1)	(2)	(3)	(4)
High Civic Capital	−0.098	−0.053	−0.075	−0.422
	(0.406)	(0.681)	(0.562)	(0.000)
In-group		−0.028	0.204	
			(0.841)	(0.151)
Info			0.231	0.258
			(0.004)	(0.018)
Info×*High Civic Capital*				0.548
				(0.000)
In-group×*High Civic Capital*				0.040
				(0.852)
Info×*In-group*				−0.296
				(0.024)
Info×*In-group*×*High Civic Capital*				−0.027
				(0.852)
Observations	98	97	97	97
Controls	No	Yes	Yes	Yes

This table reports probit marginal effects of the experimental treatments and their interactions with civic capital on corruption-related behavior. Standard errors clustered at the session level; p-values in parentheses. The dependent variable equals 1 if a "Citizen" offers at least the equilibrium amount (Panel A) or if an "Official" accepts such an offer (Panel B). *High Civic Capital* equals 1 if a participant's civic capital falls in the top tertile of the distribution; *Info* equals 1 if participants were informed of their counterpart's geographic origin; *In-group* equals 1 if both participants are from the same macro-region. Control variables include: gender, mother's, father's, and participant's education levels, field of study, and region of origin

Over time, diverse communities are more likely to develop inclusive social norms that promote cooperation and discourage corruption. This gradual internalization of prosocial values reduces the reliance on insular networks where corrupt practices might otherwise thrive.

Therefore, while the experimental results reveal strategic behavior driven by immediate incentives in cross-group interactions, the historical evidence underscores how sustained cultural diversity fosters prosocial norms and civic capital in the long run. Recognizing this distinction suggests that policies promoting social integration and diversity can strengthen civic norms over time, even if short-term interactions may not immediately reflect these effects.

5.5 The role of framing

Our experiment's instructions adopt a deliberately neutral tone, avoiding loaded terms like "bribe" or overt references to law-breaking, in order to measure intrinsic corruption propensities as cleanly as possible. This framing choice is informed by the experimental corruption literature, which shows that context and wording can shape behavior.[33] However, explicitly labeling a "bribe" can sometimes reduce corrupt behavior by activating anti-corruption norms and moral restraint, though the effect may reverse in environments where corruption is socially tolerated. By using a consistent, context-light frame across treatments, we aimed to avoid artificially priming participants toward or against corruption.[34]

To see whether framing would affect our results, we report the results of additional experimental sessions in which we explicitly referred to corruption, bribes, citizens, officials, and members of society. This was done to highlight the distinction between our primary approach–designed to elicit participants' intrinsic attitudes toward corrupt behavior–and the influence of framing in morally charged experimental games (see e.g., Barr and Serra, 2009, Alekseev et al., 2017, Abbink and Hennig-Schmidt, 2006).

Tables A.8 replicates Table 6 but refers to sessions with non-neutral framing. The results differ markedly: the information condition significantly reduces "citizens" bribe offers but does not affect "officials" acceptance decisions. Overall, the information condition lowers participants' propensity to engage in corruption, though this effect is only marginally significant when participants are paired with individuals from different macro-regions. These findings remain robust when control variables are included (see Table A.9).

Explicitly framing the experiment around corruption and participants' geographic origin introduces notable challenges. First, this framing may prompt participants to act in ways influenced by social desirability bias rather than reflecting their intrinsic attitudes. When participants are directly informed that corrupt behavior has moral

[33] For instance, Abbink and Hennig-Schmidt (2006) found no difference between abstract and loaded frames in a bribery game, suggesting that a neutral design can already capture the essence of corrupt interaction.

[34] See also Abbink et al. (2018) and Banerjee et al. (2023) for a recent discussion on experimental studies on corruption.

implications, they may avoid corruption not due to intrinsic preferences but to align with social norms (e.g., Barr and Serra, 2009, Alekseev et al., 2017).

Second, framing may trigger emotional responses, such as ego-defensive behavior, especially when corruption is explicitly linked to participants' regional identity. Participants might reduce corrupt behavior to avoid reinforcing negative beliefs about their region. This response introduces noise that can obscure the intrinsic behavioral mechanisms the experiment seeks to measure.

While identifying which of these effects dominates requires further research and alternative experimental designs, Tables A.10 and A.11 provide preliminary evidence supporting the second interpretation (i.e., framing induces ego-defensive behavior). Specifically, these tables replicate Tables 4 and 5 but correspond to sessions with non-neutral framing. In these framed sessions, the previously significant associations between civic capital proxies and corrupt behavior largely disappear, with some coefficients even reversing sign. This shift suggests that explicit framing diverts participants' focus from intrinsic preferences and institutional influences, instead eliciting emotional responses beyond the scope of our research.

We acknowledge that any framing choice in experimental designs involves trade-offs. In line with the broader literature on corruption experiments, our decision to adopt a neutral framing was deliberate: it aimed to minimize moral signaling and social desirability bias, thereby helping to isolate participants' intrinsic propensity to engage in corrupt behavior. While this choice enhances the internal validity of our findings, it may come at the cost of generalizability. Participants from diverse cultural backgrounds may still interpret experimental tasks differently. To mitigate this, we implemented a standardized and comprehensive instructional period to ensure that all participants clearly understood the rules and mechanics of the game. Taken together, these design choices allow us to interpret the results as indicative of underlying behavioral mechanisms, while cautioning against direct extrapolation to broader populations or real-world settings.

6 Discussion and concluding remarks

We conducted an empirical analysis of individuals' propensity to engage in corruption using a hybrid methodology. In a laboratory experiment, we observed that participants from low-civic capital municipalities were more likely to engage in corrupt behavior. Additionally, when informed about their counterparts' geographic origin, participants were more likely to strategically adjust their bribe offers and acceptance thresholds–resulting in greater engagement in corruption–even when this behavior harmed the broader society. Since the outcome variable was observed in a controlled laboratory environment, reverse causality is unlikely to explain these results. While omitted variables cannot be entirely ruled out, the inclusion of geographic controls and robust model specifications suggests they are not a significant concern.

These findings contribute to the broader literature on civic capital as a determinant of cultural norms, supporting the view that social openness and diversity favor cooperation with strangers, and complementing the traditional perspective that civic capital thrives in homogeneous populations (Banfield, 1967; Buonanno & Vanin, 2017;

Tabellini, 2008). In closed communities, stronger social sanctions foster within-community cooperation, but individuals may still engage in corruption, harming those outside their community (i.e., "the rest of society"). This observed heterogeneity in attitudes toward corruption likely reflects rational responses to deeply ingrained cultural norms. Future research could explore public policies that promote diversity and social openness to encourage cooperative-enhancing norms.

A potential limitation of our study is the reliance on university students as the participant pool. While this sample is not representative of the general population, it aligns with standard practices in experimental economics.[35] In our study, the use of university students offers two key advantages. First, it allows for a controlled investigation of how civic capital and beliefs interact to shape behavior, free from many confounding factors present in more heterogeneous samples. Second, the relative homogeneity of the sample in terms of education and age ensures that differences in observed behavior are more likely to stem from cultural and institutional influences rather than demographic variability. Nevertheless, we acknowledge that the findings should be interpreted as indicative of underlying mechanisms rather than generalizations to the broader population, and should be extended cautiously.

Public policies that promote social interaction across groups and reduce the salience of rigid social boundaries may influence corruption-relevant behavior by shaping strategic expectations and coordination, with potential implications for the long-run formation of civic capital.

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Declarations

Conflicts of Interest The authors declare no conflict of interest regarding the publication of this paper.

[35] University students are often selected due to their accessibility and their ability to engage with complex experimental tasks under controlled conditions. Falk and Heckman (2009) emphasize that experiments with students provide valuable insights into fundamental mechanisms, even if external validity is constrained.

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