Pay-to-Play: Political Contributions and Long-term Distortions in Public Procurement*

Saad Gulzar,† Juan Felipe Ladino,‡ Juan Felipe Riaño§

Abstract: Why do so few firms and individuals engage in political contributions despite mounting evidence of their political and economic returns? This paper addresses this generalized version of Tullock's puzzle by examining (i) how campaign donations translate into persistent advantages in public procurement, (ii) why current policies fail to prevent such advantages, and (iii) why, despite these long-term returns, relatively few individuals and firms donate to political campaigns. Using data linking the universe of political contributions to every contract-level procurement record in Colombia from 2011 to 2025, we document that (1) donor are more likely than non-donors to win public procurement contracts, and the contracts they receive are often more discretionary and of higher value; (2) donors continue receiving contracts even *after* losing political connections in later election cycles, suggesting donations provide prolonged access not explained by immediate reciprocation; and (3) donor-secured contracts frequently exceed budgetary limits and tend to benefit riskier firms and inexperienced individuals. To assess whether policy can mitigate these dynamics, we conduct a randomized controlled trial (RCT) with investigative journalists, NGOs, and Colombia's Inspector General Office to study how newly elected mayors respond to deterrence messages warning of scrutiny over contracts awarded to donors. We find that deterrence is more effective when messages include actionable information and explicitly identify donor firms and individuals. To understand why donations remain limited, we combine the intervention with administrative data and estimate a dynamic discrete choice model of selection into donations and public procurement. Our analysis shows that, despite the significant returns, one potential explanation to the puzzle is the presence of high entry costs and operational frictions deterring competition and widespread contributions.

Keywords: Public Procurement Allocation, Campaign Contributions, Donor Selection.

JEL codes: D72, H57, P00

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†Department of Politics and SPIA, Princeton University. Email: gulzar@princeton.edu

‡Department of Economics, Stockholm University. Email: juan.felipe.ladino@su.se

§Department of Economics, Georgetown University. Email: juan.felipe.riano@georgetown.edu

1 Introduction

Money plays a central role in politics, acting as a driver of democratic competition but also as a potential source of political and economic distortions. A growing body of research demonstrates that lobbying and campaign contributions shape electoral outcomes and public policy.[1] Yet, less is known about (i) how campaign contributions distort the allocation of public resources through selection, and how persistent the effects might be, and (ii) which interventions in contexts of weak state capacity can curb its influence. This is particularly important in public procurement, a sector that accounts for 25% of government expenditures globally (World Bank, 2020; OECD, 2019).

This paper addresses such gaps in the literature by examining whether political campaign donations are used for preferential treatment in public procurement, and how selection and persistence factor into this process.[2] It also explores how an increased threat of oversight can improve resource allocation. We employ a comprehensive empirical approach that integrates a reduced-form analysis, a nationwide randomized controlled trial, and a structural model. Leveraging a novel dataset linking firm- and individual-level donation records to the universe of over six million public contracts across three mayoral election cycles in Colombia, this framework allows us to isolate the causal effect of donations on procurement outcomes while also accounting for self-selection into political donations and public procurement participation.

Our empirical approach allow us to revisit two persistent puzzles in the money-in-politics literature. First, hidden entry costs and procurement frictions may explain why, despite the high perceived return on investment from donations, not all individuals and firms choose to contribute to political campaigns. Second, variations in fringe benefits and operating costs among donors reveal the presence of what we term a *"pay-to-play"* mechanism, wherein contributions are made to sustain privileged access to the public procurement system even long after losing political connections.

Our approach also helps us to tackle a policy question in the literature on political accountability. In particular, in a context where traditional oversight instruments like audits can be costly to implement and do not necessarily result in improved government efficiency (Cuneo, Leder-Luis and Vannutelli, 2023), it is less clear how politicians can react to threats from government authorities. Our empirical approach allows us to explore how an increased and credible threat of oversight improves politicians' behavior by reducing potential distortions induced by political campaign donations.

[1] See Bombardini and Trebbi (2020) and Ansolabehere, De Figueiredo and Snyder Jr (2003), for reviews.

[2] The effect of political donations on allocation efficiency is ambiguous. Donations may enable favoritism, benefiting politically connected firms while reducing competition. Conversely, they may signal firm quality or alignment, improving contractor selection and project execution. Distinguishing these channels is essential to understanding their impact on resource allocation and overall welfare.

To motivate our analysis, we begin by documenting key patterns in the relationship between political donations and public procurement in Colombia. First, we show that donors differ from non-donors: they exhibit weaker financial indicators, stronger bureaucratic connections, and less labor market experience. Second, we find that donations are closely linked to a higher likelihood of entry to the public procurement system, suggesting that the decision to donate and the decision to enter the public procurement carry strategic incentives. Third, we find that contracts awarded to donors exhibit stronger bunching around a threshold for discretionary (rather than open) tender contracts.

Given these results, we next present evidence from two sets of analyses that hold fixed one margin of selection at a time: a difference in differences analysis that holds the decision to enter the public procurement system fixed and examines whether the decision to donate carries rewards; and an analysis of an RCT that holds fixed the decision to donate and studies how increased oversight can reduce preferential treatment of donors.

We proceed by using our unique dataset to expand on reduced-form findings from previous work on the effects of political campaign contribution in public procurement.[3] First, we employ a stacked difference-in-differences design, comparing the evolution of outcomes for donors and non-donors before and after the 2015 and 2019 mayoral elections. Importantly, we hold constant selection into the public procurement system by expanding the control group to include the universe of individuals within municipalities not receiving a contract, allowing for a comparison with the universe of potential contractors.

We show that donors to political campaigns are likely to receive more public contracts, and of greater total value, than non-donors. We provide evidence that such preferential treatment results in efficiency cost, as contracts awarded to donors eventually show more overruns, and are disproportionately awarded through discretionary political channels. Lastly, we extend these results by documenting a new pattern of procurement allocation. We find that donors tend to continue receiving public contracts even after *losing* their direct political connections, indicating that their donations grant them extended access beyond immediate reciprocation, a *pay-to-play* mechanism. Our results combined with the motivating facts suggest that political donations provide an important pathway for long-term access to public contracting, even for those who may not be the most qualified contractors *ex-ante* nor the most efficient *ex-post*.

Building on these findings, we evaluate how different forms of enhanced information and oversight can explain the patterns documented. To achieve this, we carry out a nationwide randomized

[3] See, for instance, Ansolabehere, De Figueiredo and Snyder Jr (2003); Ovtchinnikov and Pantaleoni (2012); IDEA (2014); Powell and Grimmer (2016); Kalla and Broockman (2016); Titl and Geys (2019); Kim, Stuckatz and Wolters (2020); Bombardini and Trebbi (2020); Ruiz (2021); Gulzar, Rueda and Ruiz (2022); Teso (2023).

controlled trial in collaboration with anti-corruption NGOs, investigative journalists, and Colombia's Office of the Inspector General. The intervention informs newly elected mayors about the legal risks associated with awarding contracts to their donors, and highlights that different oversight agents may follow the procurement histories of their donors. The experimental design enables an uncoupling of three likely mechanisms for why political donations enable preferential access to public procurement: mayors may not be *informed*; there could be inadequate *enforcement* of the legal infrastructure; and mayors may not possess credible signals of *deniability* with donors. By analyzing within-donor and non-donor variation over time we are now also able hold constant selection into donation.

We find that the intervention reduced preferential treatment of donors depending on the identity of the oversight agent and the information provided. Specifically, the intervention is most powerful when mayors are informed that the government oversight agency, the Inspector General's office, will follow their donors procurement allocation *and* a list of donors is attached. Importantly, we observe these effects sustaining up to nine months post treatment, the last period of our detection. The results highlight that deterrence messages work when the threat of punishment is credible and actionable, as treatments involving journalists or only NGO oversight authority without a donor list did not produce similar effects. This suggests that the enforcement channel may be particularly important in breaking the links between money and public procurement.

Since each analyses presented thus far focus on one margin of selection at a time, we propose a dynamic discrete choice model that integrates donation and entry to the procurement system decisions. The structural model leverages government demand shifters from the RCT and our administrative data to disentangle the extent to which *pay-to-play* dynamics are driven by market forces. The model allows us to estimate the entry costs to the public procurement system and the sunk costs of donating that rationalize the patterns in our data and the reduced form results. Ultimately, the model intends to (i) explain the economic determinants of the *pay-to-play* mechanism, (ii) clarify why, despite substantial returns from donating, not all firms and individuals engage in this practice, and (iii) evaluate counterfactual policies aimed at reducing the influence of political donations on public procurement outcomes in Colombia.

This paper contributes to multiple strands of the political economy literature. Our first contribution is to the growing research on the role of money in politics that shows how politicians reward their donors through public contracts, employing predominantly regression discontinuity methods (Boas, Hidalgo and Richardson, 2014; Titl and Geys, 2019; Ruiz, 2021). Complementing this work, our difference-in-differences analysis allows us to focus on the decision to donate or not and the consequences this carries for kickbacks, thereby investigating the *extensive* and *intensive* margin

effects of political donations on public procurement.

The analysis also deepens connections with the discretion in public procurement literature (Palguta and Pertold, 2017; Coviello, Guglielmo and Spagnolo, 2018; Szucs, 2023), revealing that donors disproportionately benefit from *discretionary* contracts, facilitating the extraction of private rents (Gulzar, Rueda and Ruiz, 2022). Our key contribution to this strand of the literature is to investigate and present evidence for an under-examined "*pay-to-play*" mechanism that postulates that an important reason to donate is to get ongoing access to the public procurement system regardless of electoral outcomes of the supported candidates.

Second, our paper contributes to the literature on accountability and monitoring of public institutions and politicians (Duggan and Martinelli, 2017; Acharya, Lipnowski and Ramos, 2024; Moore, Pande and Schaner, 2025). Studies like Olken (2007); Ferraz and Finan (2008); Avis, Ferraz and Finan (2018) have shown the effect of increasing auditing risk in deterring politicians illegal behavior. We extend this literature by implementing an RCT that prevent corruption via breaking the influence of political donations, which can be a source of illegal behaviors. The intervention allows us to test how the identity of the oversight principal and the nature of the disclosed information affect compliance, and how these factors influence accountability and efficient allocation of funds. To the best of our knowledge, we are the first to conduct a study incorporating these elements, providing new insights into the role of oversight mechanisms in shaping the allocation of public resources.

Finally, our paper contributes to the literature on the distortions and misallocation of public resources stemming from political connections (Auriol, Straub and Flochel, 2016; Mironov and Zhuravskaya, 2016; Huneeus and Kim, 2018; Schoenherr, 2019; Baltrunaite et al., 2021; Weaver, 2021; Brugués, Brugués and Giambra, 2024). We develop and estimate a structural model that rationalizes our reduced-form results. The model enables us to investigate the economic determinants behind firms' decisions to make political contributions and participate in the public procurement system. Our framework provides a tractable, estimable, and exportable approach to analyzing political donations in local elections and competition within discretionary public procurement systems. The model also allows us to evaluate counterfactual policies aimed at curbing the influence of political donations, offering valuable insights into future public policy reforms.

The paper proceeds as follows: Section 2 describes the mayoral elections in Colombia and details on public procurement procedures. Section 3 describes the available data used in this paper. Section 4 documents the motivating data patterns. Section 5 reports presents the analysis for the returns to donate to a political campaign. Section 6 presents the the randomized controlled trial to decrease kickbacks in public procurement, and Section 7 presents the structural model and the details for its

estimation. Finally, Section 9 provides a preliminary discussion and conclusion.

2 Institutional Background

Electoral organization and political financing Elections in Colombia are coordinated by the National Electoral Commission, an independent agency that defines campaign financing rules, electoral timelines, and oversight of parties and candidates during political campaigns. Local elections take place every four years in nearly 1,120 municipalities simultaneously. Mayors are elected based on plurality rule and can not be reelected, but can contest for other positions or run for mayor again after one cycle of elections. Runner-up candidates obtain a position in the municipal council and can contest for mayor in the next electoral cycle. Political campaigns for upcoming elections run from June to October in the last year of the current mayoral's incumbency period. Voting occurs in October. November and December are transition months, and the winning candidate assumes office in January of the following year.

The National Electoral Commission allows candidates to use and receive resources for political campaign activities between June and October of the election year. Spending per candidate is subject to a cap based on the municipal population. Hence, candidates in larger municipalities have a higher spending limit, but within a municipality all are subject to the same threshold. Candidates can finance their campaigns through bank loans, close relatives resources, and private donations. In practice, 90% of financing comes from close relatives' and private contributions (MOE, 2019).

Private contributions are subject to a limit of 10% of the total allowed spending per candidate.[4] Such limits are imposed to curb the influence of money in politics (IDEA, 2014; Gulzar, Rueda and Ruiz, 2022; Avis et al., 2022) and to prevent private interests from influencing policy. Contributions can not be anonymous, and must be reported to the National Electoral Commission. Ultimately, candidates' financing must be revised and signed by an accountant and approved by the party. Failing to comply with the regulations can carry legal punishments for the party, candidates, and the donors, including destitution from office, banning the party and its members, fines, and jail-time.

Municipal government financing and public procurement Mayors are the highest municipal authority and are tasked with executing the budget to provide and maintain public goods and services. Municipalities obtain their funds via national transfers and locally collected taxes and fines. National transfers are formula-determined and must be used in activities related to the provision of

[4]There is no limit on family resources as long as they do not exceed the overall spending limit. Candidates can also obtain public financing from the government in the form of money refund if the candidate has more than 4% of votes.

services such as education or health. A share of national transfers can be used for any purpose at the discretion of the mayor's office. Municipal resources raised via taxes and fines can be used at the full discretion of the municipal government (Carreri and Martinez, 2022).

Municipal spending is primarily carried out through public procurement, which accounted for 13.3% of the national GDP in 2022, representing nearly a third of government spending. This illustrates its importance in economic activity and the allocation of public resources (OECD, 2020). The National Agency for Public Procurement is the primary office responsible for issuing public procurement regulations. The agency provides support to local governments in their procurement procedures. However, procurement is decentralized, and municipalities are autonomous in determining what goods and services to procure (conditional on the financing: national transfers or local taxes).

Procurement is divided into categories differing in the extent to which a competitive procedure is used to select a contractor. Appendix A.1 describes each category in detail. Large contracts must follow a public tender, in which various firms or individuals present proposals, and the best one is chosen. For smaller contracts, a "minimum value" procedure can be used. Such contracts can be assigned whenever the value is below a threshold and requires only one proposal so that competition can be avoided in exchange for a faster assignment. Finally, there are fully discretionary contracts–direct procurement–, which are mainly used to provide personnel for public offices. Mayors enjoy significant discretion in the assignment of small-value and bureaucratic tasks contracts.[5]

Political campaign donors and participation in public procurement While, it is not illegal for political campaign donors to receive contracts through public procurement, it is not infrequent that the media reports their involvement in corruption cases. Figure A1 in the Appendix shows examples of national-level media covering corruption scandals involving candidates and their donors, which are often related to illegal donations or public procurement. The main types of corrupt activities for which elected politicians (and their donors) are investigated relate to the use of public procurement, including providing kickbacks in exchange for donations, approving contract cost overruns, and avoiding the use of competitive procedures to favor specific individuals or firms (MOE, 2018).

For instance, one regulation for donors states that they are not permitted to participate in public procurement procedures issued by the municipality when the overall donated value exceeds 2% of the maximum allowed budget by the candidate. The ban includes close relatives when the donors are individuals, as well as board members, partners, and legal representatives when the donors are firms. Yet, it is common for elected officials to assign contracts to donors who exceeded the

[5]We use these two categories, namely 'minimum value' and 'direct' contracts, in our analysis of mayoral discretionary contract allocation below.

donation threshold (MOE, 2018; Transparency International Colombia, 2024).

A more general path through which donors would not be allowed to participate in public procurement is whenever the source of the donation is illegal. For instance, it is illegal to donate (and for parties to receive such donations) if the individual or firm is involved in a disciplinary investigation or if sanctions have been imposed due to involvement in corruption. Yet, there are cases in which candidates receive donations from individuals or firms that have been investigated or prosecuted due to corruption (Transparency International Colombia, 2019). Additionally, individuals are not allowed to donate to a political campaign if more than 50% of their income is raised through public contracts, as it would be considered using public resources to benefit a political campaign. As before, cases in which municipal contractors support political campaigns are common.[6]

Oversight agents The behavior of agents interacting in public procurement transactions is officially overseen by the Inspector General of Colombia Office, which is the national government agency responsible for monitoring misbehavior of public servants, including elected officials, public workers, and contractors. The agency can intervene and investigate whenever there is a risk of misuse of public resources and initiate prosecution processes if required. Thus, this office is responsible for ensuring procurement management by municipal governments is efficient and legal.

Nevertheless, the Inspector General's Office cannot oversee the full scope of local procurement. According to MOE (2018), mayoral offices do not use donation reports to validate if an agent participating in public procurement has been a donor. The NGO recommends an increased audit effort by the Inspectors General's Office to ensure that donors are not receiving public contracts illegally. Besides, the NGO recommends improved training for agency workers in the use of the donations and procurement information system to identify illegal contracts, suggesting that current investigative procedures are weak in utilizing available data on campaign finance.

Civil society organizations can also oversee procurement procedures to exert social control. In particular, national-level media outlets regularly cover corruption cases, which induce pressure on respective authorities to revise and punish officials as required (see Figure A1 for examples). Coverage by these organizations' additionally provides independent identification of potentially corrupt practices in procurement procedures. Such scandals usually appear around elections, when mayors are receiving donations, or after elections, when donors are awarded public contracts.

[6]A highlighted case from the mayoral elections in 2023 consists of a mayoral candidate in Medellin, the second largest municipality in Colombia, who received close to 50% of its donations from public contractors.

3 Data

Donations to political campaigns We gathered data from the web application "Cuentas Claras" developed by the Colombian counterpart of the NGO Transparency International.[7] The tool is used by the National Electoral Commission to improve accountability of campaign financing, and since 2013 candidates are required to upload their reports in it, even if they have received no donations. We collected data for three mayoral elections held in October 2015, 2019, and 2023. The reports include the names and national IDs of donors (firms and individuals), the candidates who received the donations, and the value of the donations.

The majority of candidates comply with the reporting. According to the National Electoral Commission, 92% of the mayoral candidates report in "Cuentas Claras." Nevertheless, in tandem to official declarations, there are reports that money is also transferred under the table. Such issues have been highlighted recently for national-level elections, where elected candidates have been investigated for omitting donations and exceeding the donations and campaign spending thresholds.[8] [9]

Table 1 presents summary statistics for the population of donors. Panel A includes all donors. On average, each donor contributes to only one candidate and does so in only one election. Only 1.1% of donors contributed in all three electoral rounds in our data. The average value of the donation is close to 8 million COP (about $2,000 USD),[10] approximately eight times the minimum legal monthly wage in the country. Nevertheless, the values are heterogeneous, with a standard deviation of 16.4 million COP, and a maximum of 500 million COP. Panel B reports on the donors that have ever received a public contract. Only 16% of donors have received a contract. On average, they receive four contracts after the elections, half of which are in the same municipality as the donation, and most of these contracts are located in the same region as the municipality.

Public procurement We collect procurement data from the "Electronic System for Public Procurement" – SECOP (from its acronym in Spanish) – managed by the National Agency for Public Procurement. SECOP was established in September 2011 to collect all information about public contracts in the country, including information on the value, duration, contractor name and national ID, contract description, and other characteristics of the contract.

[7] See https://www.cnecuentasclaras.gov.co/, https://transparenciacolombia.org.co/

[8] The national media reported that the winning candidate to the 2024 presidential elections omitted donations coming from contractors and business owners.

[9] In our analysis below where we study the effect of donating versus not, such undeclared transfers would be classified as non-donations. As a result, the existence of non-reported donors would go against observing a benefit of donating. At worst, any effects we identify can be considered a lower bounds on the impacts of donating.

[10] Using the average exchange rate in 2024, approximately 4 thousand COP per dollar.

Table 1: Summary statistics of donors

	Mean (1)	Max (2)	Sd (3)	Obs (4)
Panel A: All donors				
Supported candidates (#)	1.008	4	0.103	21,065
Donated in three elections (%)	0.011	1	0.104	21,065
Had contract before (%)	0.169	1	0.375	21,065
Had contract after (%)	0.162	1	0.369	21,065
Donated value (million COP)	7.994	500	16.401	21,065
Panel B: Donors with contracts after elections				
Contracts after elections (#)	4.641	208	8.346	3,421
Contracts supported muni (%)	0.490	1	0.491	3,421
Contracts supported region (%)	0.880	1	0.321	3,421
Donated value (million COP)	6.321	253	11.594	3,421

Notes: This table shows the summary statistics for the sample of donors who donated in each election (2015, 2019, 2023). Each observation is a donor. Panel A shows summary statistics for all donors. Panel B includes only donors who had contracts in the legislative period.

The national ID identifies the same person or firm across any national data. Thus, we use it to connect public contracts with information about donations to political campaigns following Ruiz (2021); Gulzar, Rueda and Ruiz (2022); Gulzar, Purroy and Ruiz (2022). As both persons and firms have unique national IDs, we can separately identify contracts awarded directly to each. Furthermore, in the case of contracts assigned to firms, our data allows us to identify the ID of the individuals managing the firm enabling us to also link individual donors with contractor firms. Figure A2 illustrates how the matching between donors and contractors was performed.

Between 2012 and 2024, almost 7 million contracts were issued by local governments. Panel A in Table 2 reports statistics for all public procurement contracts in our data. The average value of a contract is 21 million COP, which is approximately 20 times the minimum monthly wage in Colombia. The median is 8.4 million COP, suggesting fewer high-value contracts exist. Such heterogeneity is not found in the duration, which has an average of 4 months, and a median of 3 months, so differences in the contract value do not seem to completely explain contract duration. Contracts are also frequently renegotiated: 10% of all contracts report having an overrun beyond the initially agreed costs. 76% of contracts were awarded to individuals.

Panel B reports the descriptive statistics for contracts awarded to non-donors, and Panel C reports on contracts awarded to donors. Donors report a higher average contract value compared to non-donors. The median contract value is also higher for donors, with a similar standard deviation, suggesting an overall distribution towards higher valued contracts with same heterogeneity.

Figure 1 describes other relevant features of the public procurement system in Colombia. Panel (a)

Table 2: Summary statistics of public contracts

	Mean (1)	Median (2)	Sd (3)	Max (4)	Obs (5)
Panel A: All contracts					
Contract value (million COP)	21.212	8.462	61	1,010	6,829,966
Contract overruns (%)	0.098	0.000	0	1	6,829,966
Duration (months)	3.994	3.000	4	205	6,829,966
Panel B: No donors					
Contract value (million COP)	21.107	8.456	61	1,010	6,730,909
Contract overruns (%)	0.099	0.000	0	1	6,730,909
Duration (months)	4.003	3.000	4	205	6,730,909
Panel C: Donors					
Contract value (million COP)	28.321	8.920	79	1,009	99,057
Contract overruns (%)	0.057	0.000	0	1	99,057
Duration (months)	3.372	2.000	5	180	99,057

Notes: This table shows the summary statistics for the public contracts signed between Jan/2012-December/2024 separating between All contracts (Panel A), contracts to non-donors (Panel B) and contracts awarded to ever donors (Panel C). Each observation is a contract.

show the distribution of contracts by type of contractor and procurement. Only 25% of the contracts are assigned to firms, and the majority are allocated through direct procurement. Minimum value and public tender procedures correspond to almost 20% of contracts, but among these, minimum value correspond to 35% of the competitive procedures. The figure highlights that public procurement relies heavily on discretionary contract allocation.

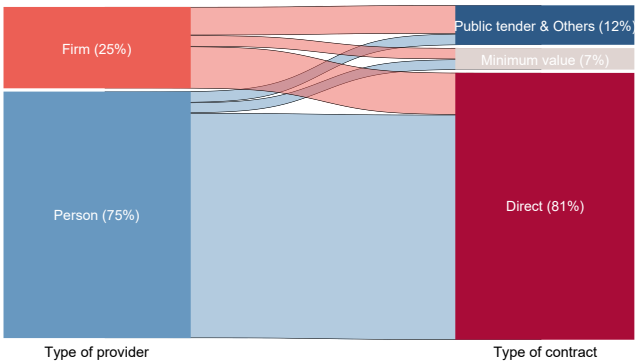
Panel (b) describes the average monthly distribution of contract assignments. The majority are issued in January and February. The timeline coincides with municipal budgets being allocated by year, so most contracts end in December and new contracts can be signed starting the year. A second peak appears in June, which is consistent with the average contract duration being four months, indicating that new contracts need to be issued. Despite these peaks, a significant share of contracts continue to be issued throughout the year.

Panel dataset of donors and contractors The high frequency of public procurement data allows us to measure outcomes for various time aggregations. We aggregate our data at the individual-by-half-year level for the analysis in Section 5 where we analyze impacts across two election cycles (eight years), and at the individual-by-month level for Section 6 where we analyze the results of an RCT over a year.

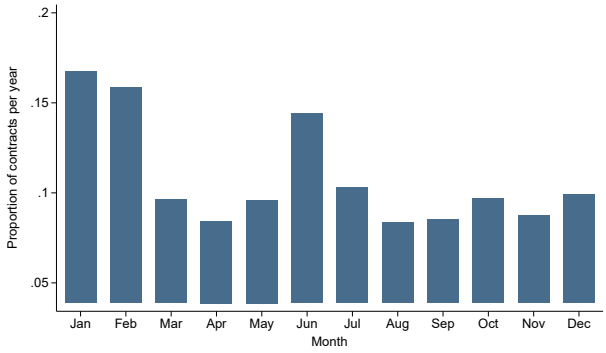
In each scenario, we create a balanced panel such that outcomes for individuals not receiving a

Figure 1: Procurement system features

(a) Distribution of contractors and types of contract



(b) Distribution of contract assignment date



Note: This figure describes two features of the procurement system in Colombia. Panel (a) plots the distribution of contracts assigned by type of contractor (individual or firm) and type of procurement (direct, minimum value, public tenders and others). Panel (b) report the time distribution of the contracts assigned by month of signature.

contract in a particular period are coded as zero. The very few donors that overlap across multiple mayoral races are assigned to the first mayoral campaign they donated to. Figure A3 in the appendix describes the population. From our data, we identify 1,555,990 individuals (and firms) as contractors and 12,000 as donors. 4,490 are donors and contractors, representing less than 1% of the contractors and 37% of the donors. Overall, the data contain 1,563,500 unique individuals.

These data allow us to identify from the donors' side those ever and never receiving a contract. However, from the non-donors side, however, only contractors are observed. When estimating the effect of donating we also need the non-donors who do not receive a contract, as in their absence we would be comparing successful and non-successful donors against only successful non-donors, thus mechanically underestimating the effect of donations.

To overcome this issue, we use information from the 2018 National Census to simulate the population of non-donor non-contractors as follows. First, we count the number of households in each municipality and assume that each has at least one individual eligible for donating and receiving a public contract. We considers such assumption plausible as all national citizens above the legal age are allowed to donate if they have no disciplinary sanctions, and can participate in procurement if they also fulfill the requirements of the contract they apply to. Second, we subtract the number of registered contractors and donors from the number of households that we calculate in the first step. We thus identify 12,671,500 individuals as the set that did not donate and did not receive a contract. We include the simulated population in our dataset, resulting in a balanced panel of nearly 14 million individuals. We present robustness of our results to alternative samples and assumptions

on the simulated population.

4 Patterns in Selection into Donation and Public Procurement

Estimating the impact of political donations on public procurement posits a key empirical challenge: firms and individuals who select into donating are unlikely to be randomly drawn from the pool of potential contractors. Understating the selection patterns is important as they shed light on pre-existing differences in the characteristics between donors and non-donors, but also shed light on the strategic incentives of the participants of the public procurement system. We begin the empirical analysis by documenting key patterns in the data that illustrate how selection into donating and procurement participation relates to the allocation of public contracts.

Selection into donation We explore the characteristics of individuals and firms who self-select into donating. We gather firm characteristics from ORBIS (van Dijk, 2024), which contains financial information for private companies worldwide, and recover individual characteristics using administrative data built by Riaño (2021) on the career paths of public officials in Colombia. Using the national ID, we match 18.5% of the firms and 34% of the individuals in our dataset (contractors and donors).[11] We aggregate the matched units at the individual $\times$ election level, so for each unit we keep the information on characteristics for the period before the electoral cycle.

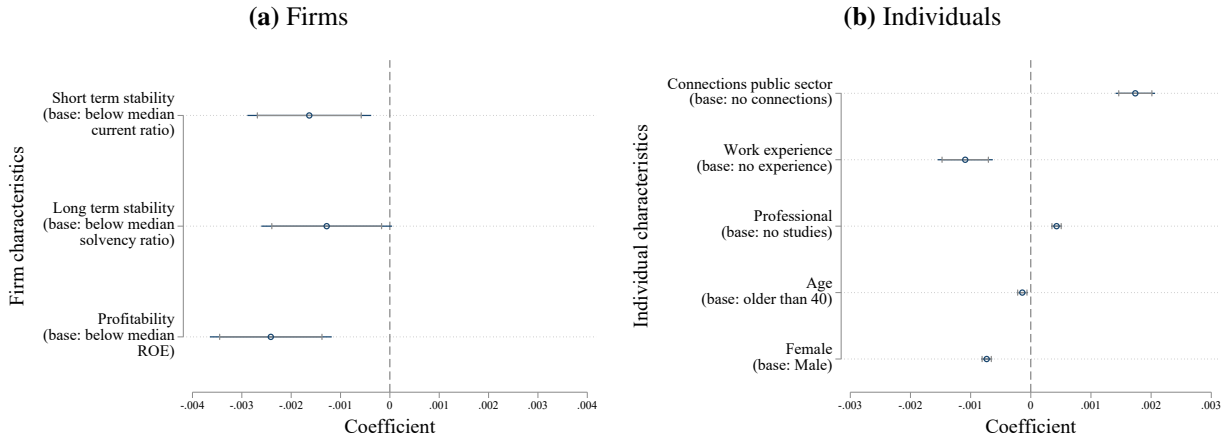
We estimate a equation of the form $D_{i,s} = \delta_s + \mathbf{X}_{i,s} + \varepsilon_{i,s}$, where $D_{i,s}$ is equal to one if the contractor i is a donor for election s, and zero otherwise. $\mathbf{X}_{i,s}$ is a vector of pre-election characteristics, such that the coefficients show how each covariate predicts the donation status. γ_s are fixed effects that ensure comparisons are within electoral races. Standard errors are clustered at the individual level.

Panel (a) in Figure 2 reports the results for firms. We use financial performance measures as predictors, all defined as dummies equal to one if the firm is above the median, and zero otherwise. The donation status is predicted by firms having lower performance: i) a lower current ratio reflects less capacity, ii) a lower solvency ratio indicates less stability, and iii) a lower return on equity suggests less capacity to generate new investments. Panel (b) reports for individuals. Donors are more likely to have a family member in the public sector, suggesting higher probability of nepotism, and are less likely to have had any work experience despite being more likely to have at least

[11] We do not recover all firms as some firms in our data are relatively small, so are not observed in ORBIS. Similarly, Riaño (2021) dataset covers all the public servants between 2011 and 2017, so it does not include our full timeline, and public servants CVs only consider contractors performing administrative tasks within a public office. The main results in the next sections also hold for the sample used for the analyses in this section.

an undergraduate degree. Overall, the results suggest that selection into donation is predicted by financially weaker firms and connected individuals with little work experience.

Figure 2: Predictors of Selection into Donation

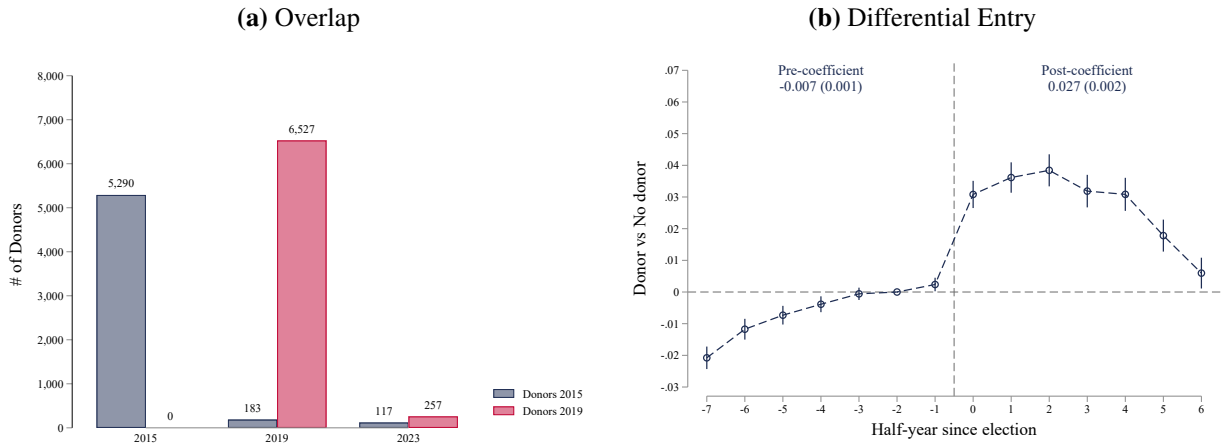


Note: The figure reports the point estimate and the 95% confidence interval from a linear probability model using as outcome whether the individual/firm donated or not, as explanatory variables the characteristics displayed in the figure and election-specific fixed effects. The data for the estimation consist on matched individuals and firms, as well as not matched units, which correspond to never-contractors and never-donors. Panel (a) report the results for firm characteristics. All explanatory variables are defined as dummies for whether a firm was above the median of the distribution of each variable. Panel (b) report the results for individuals. Connected family equals one if the contractor have ever had a connection with a family member in the public sector. Education levels defined relative to *No formal studies*. Experience is defined as zero if *No experience*. Female equals one if the individual reported its gender as female. Age is categorized relative to being older than 40 years. Standard errors are clustered at the contractor level.

Strategic timing of donation and entry A relevant feature of our context is that individuals and firms donate to campaigns only in one electoral race. Figure 3a shows the overlap between donors across the electoral cycles in our data. Less than 4% of donors in the 2015 (blue) and 2019 (red) mayoral elections donated again in the following electoral period. We explore if the timing of donation correlates with entry to the procurement system by comparing the entry rates at the half-year level between donors and non-donors. If donation is a strategic decision to get preferential treatment, then donors should report larger entry rates after the election in which they donated.

Figure 3b shows the event study coefficients comparing donors and non-donors before and after the elections following the empirical strategy described in Section 5. The outcome equals one after the first entry of the individual into the procurement system. The coefficients at the top of the figure report the pre and post-average coefficients. The pattern suggests that donors increase their entry rate the closer to the elections. However, there is a jump in the entry probability immediately after the election relative to non-donors. The increasing pattern remains until the third half-year after the election when the difference in entry rates between donors and non-donors starts decreasing.

Figure 3: Strategic Timing of Donation and Entry



Note: Panel (a) reports the number of donors for the 2015 and 2019 electoral cycles, separating between those that initially donated in the 2015 elections (blue) or 2019 elections (red). Panel (b) reports the point estimate and the 95% confidence intervals from estimating an event study version of equation 1 for the overall population of potential contractors. It also reports the pooled coefficients for the periods before and after. Standard errors clustered at the individual level. The outcome equals one for the periods where the individual obtained the first public contract and remains constant after.

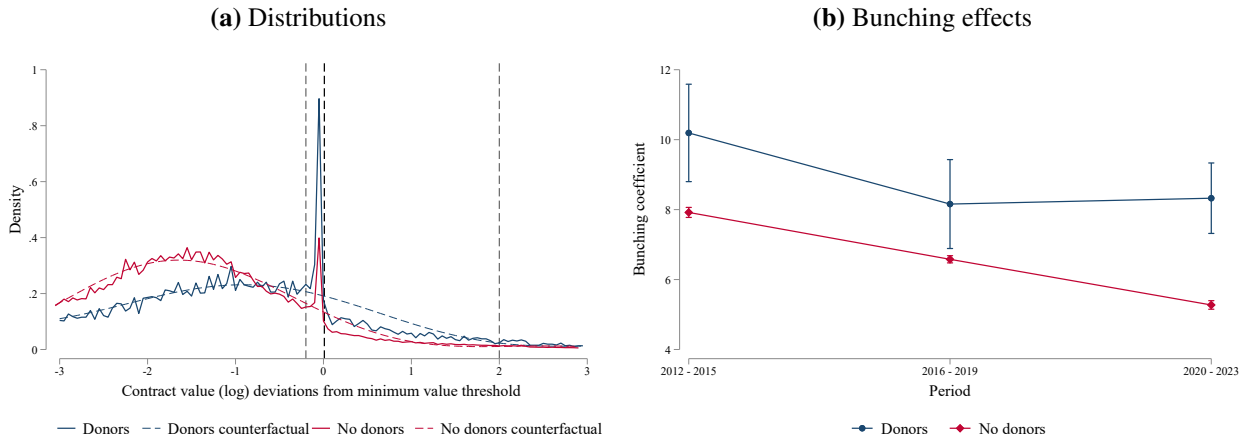
Strategic behavior for decreasing competition Except for direct procurement –bureaucratic contracts–, all procedures require some level of competition. The *Minimum value* is the one requiring less competition, so it might be prone to more discretion: contracts are published only for a day and can be awarded with only one bid. The decision rule for using the minimum value consists of a value threshold, around which the nature of contracts should be similar, but mayors have incentives to use the more discretionary procedure only if the contracted value is below it.

Using our contract level, we explore the extent to which the relationship between mayors and donors reflects strategic behavior by analyzing bunching of values below thresholds (Coviello, Guglielmo and Spagnolo, 2018; Szucs, 2023), suggesting mayors might be manipulating contract values to facilitate assignments to their preferred contractors. Panel (a) of Figure 4 shows the distribution of contracts relative to deviations from the (log) threshold, for donors (blue) and non-donors (red). The black dashed vertical line indicates the threshold. We observe large bunching just below the threshold and a larger bunching for donors than that of non-donors.

We formally estimate the bunching size for each population following Kleven and Waseem (2013); Kleven (2016). We estimate a counterfactual distribution by fitting a polynomial to the observed distribution, excluding the data around the threshold using the equation $D_j = \sum_l^p \beta_j \cdot (z_j)^i + \sum_{j=-z}^{z+} \gamma_j \cdot \mathbb{1}[z_j = l] + \varepsilon_j$. D_j is the number of contracts in the bin j, z_j is the deviations from the threshold in bin j, $z-$ and $z+$ consist of the excluded range, and p is the order of the polynomial. The excess

bunching is obtained by comparing the counterfactual and observed distributions in the excluded range. The gray vertical lines in Panel (a) indicate the excluded range.[12] Panel (b) shows the estimates for donors and non-donors for contracts assigned in different mayoral periods, confirming the patterns of panel (a): the degree of bunching for donors is higher than for non-donors.

Figure 4: Bunching around Discretionary Contract Thresholds



Note: Panel (a) reports the distribution of (log) deviations from the minimum value threshold, excluding contract assigned via direct procurement, in bins of size 0.05 log deviations. The blue (red) line plots the observed distribution for donors (non-donors). Dashed lines plot the predicted distribution without the data within the excluded range. The gray lines at both sides of the threshold indicates the minimum and maximum value of the excluded range. Panel (b) shows the estimate for the bunching mass around the excluded range following Kleven and Waseem (2013), for donors and non-donors in each mayoral period.

5 Political Donations and Public Contract Allocation

In this section, we assess the impact of donating to a political campaign on public procurement outcomes. We estimate the returns from donating, the mechanisms by which donors obtain returns from their support, and the efficiency consequences in terms of distortions in the contract allocation.

5.1 Empirical strategy

To identify the returns of donating to a political campaign, we rely on a difference-in-differences strategy that accounts for time-invariant differences between donors and non-donors under parallel trends –in the absence of elections, outcomes for donors and non-donors would have followed similar trajectories–, and no-anticipation –elections do not alter expected contract allocations

[12]The excluded range on both sides of the threshold is asymmetric, as it comes from a notch that changes the level of the distribution around the threshold (Kleven, 2016).

beforehand–. As described in section 3, we aggregate our data at the individual-by-half-year level between 2012 and 2023.

We estimate a *stacked difference-in-differences* (Cengiz et al., 2019; Baker, Larcker and Wang, 2022; Dube et al., 2023)[13]. We consider each electoral period as an event and create event-specific datasets centered around the election hal-year using never-donors as control units. The resulting dataset stacks each event-specific dataset, so an effect can be recovered conditional on indexing individual and time-fixed effects with indicators for each event-dataset. Thus, our setting compares individuals that donate to a political campaign to those that do not, before and after each election. Figure A4 illustrates the stacking procedure. The following equation describes the empirical strategy:

$$P_{i,t,s} = \gamma_{i,s} + \lambda_{t,m,s} + \beta \cdot (Donor_{i,s} \times Post_{t,s}) + \mathbf{X}_{i,s,t} + \varepsilon_{i,t,s} \tag{1}$$

Subscripts i, t, and s are for individual, half-year and election-event dataset. $Donor_{i,s}$ equals one if the individual donated to a political campaign in election s. $Post_{t,s}$ equals one after the election s. β captures the causal effect of donating. $\gamma_{i,s}$ is for individual $\times$ election-dataset s fixed effects to capture time-invariant characteristics of individuals. $\lambda_{t,m,s}$ is for time $\times$ municipality of individual $\times$ election-dataset fixed effects to control by municipal time trends, as procurement behavior might have differential trends by region. $\varepsilon_{i,t,s}$ is the error term clustered at the individual level.

The outcome $P_{i,t,s}$ include the probability of getting a contract (extensive margin) and the total value (intensive margin). All outcomes are coded as zero for not-recipients in a half-year. We log-transform continuous outcomes as the benefits of donating can arise from higher contract values or larger relative value increase. For instance, a mayor might find it easier to double the value of a contract when the original value is small. We follow Chen and Roth (2022) to account for the intensive and extensive margin effects for zero-valued outcomes. We normalize relative to the minimum non-zero value to decrease the sensibility to measurement units and then log-transform the normalized variable. We define $-x = -1$ for values equal to 0, so a change from not receiving to receiving account for $100x$ log points ($\approx$ percent change) in the intensive margin.

$\mathbf{X}_{i,s,t}$ is a vector that includes the number of half-years since the individual/firm has entered the public procurement system and the cohort of entry to the public sector (equal to 0 if entering after elections). These variables allow us to hold fixed selection into the procurement system. They are measured before the election, as they are potential outcomes of donating. The vector also include an indicator for firms and individuals to absorb differential trends across the types of units in the data.

[13]We thank Gulzar, Purroy and Ruiz (2022) for work on an early version of some analysis in this section.

Finally, we drop the half-years when the elections occur (2015-2 and 2019-2) as starting in July of the election year, a procurement ban decreases the amount of contracts awarded. The ban remains in effect until October once the elections have occurred. Besides, during November and December of the election year, donors can receive contracts for which we can not disentangle whether they were given directly by the current mayor or indirectly by the incoming mayor.

5.2 Returns of donating to a political campaign

Table 3 reports the average effect (β) from estimating equation 1. In the extensive margin, we find that the probability of receiving a contract after the elections is 2.8 percentage points higher for donors relative to non-donors. In the unconditional intensive margin, we find that donors receive contracts with 17% greater value relative to non-donors after the elections. The coefficients support the hypothesis that donors receive significant returns from their contributions. The results are robust to changing the assumption on the non-donor population. Table A1 in the appendix show that the coefficients remain similar and significant if we drop from the non-donors those that would not have been able to donate due to lack of financial capacity.

Table 3: Effect of donating to a political campaign

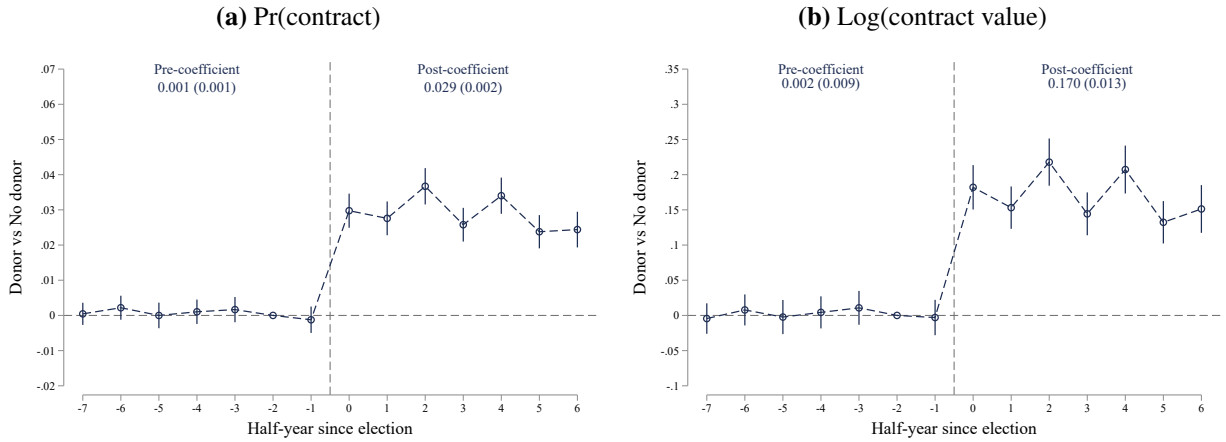
Dep. Variable	Pr(contract)	Log(contract value)
	(1)	(2)
Donor×Post	0.028***	0.17***
	(0.0015)	(0.0097)
Number of observations	398,412,056	398,412,056
Number of donors	12,574	12,574
Number of non-donors	14,222,715	14,222,715
Non-donor Mean Dep. Var. before (unlogged)	0.008	0.001
Individual × Election FE	Yes	Yes
Time × Municipality × Election FE	Yes	Yes
Controls × Time dummies	Yes	Yes

Notes: The unit of observation is at the individual-half-year level. *Donor* equals one for individuals/firms donating to a political campaign. *Post* equals 1 for periods after the elections. Contract value is log-transformed. The intensive margin is defined following Chen and Roth (2022) and set to $-x = -1$ for non-recipients. The mean of the contract value is measured for non-donors in the pre-period in million COP. Pr(contract) equals one if individual reported at least one contract per period. Controls include the cohort of entry (coded as 0 if no entry yet by the time of donation), periods of experience before the election, and type of contractor (individual or firm). Standard errors clustered at the individual level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 5 present the results from an event-study approach. At the top of each figure, we report the pooled coefficients for the pre and post periods. Panel (a) shows the results on the probability of receiving a contract. Panel (b) reports on the log-transformed contract value. Both cases show non-significant pre-coefficients (individually and pooled), providing support for the parallel trends

and no-anticipation assumptions. The figures show an immediate jump after the election, suggesting the returns from donating manifest within the first six months of the mayoral term.[14]

Figure 5: Effect of donating to a political campaign



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study version of equation 1 for the overall population. It also reports the pooled coefficients for the periods before and after. Standard errors clustered at the individual level. The contract value is log-transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients. Pr(contract) equals one if the contractor reports having at least one contract per period.

5.3 Pay-to-play and long-term access to the procurement system

Does access to the public sector continue after the connection with the politician is lost? Mayors cannot be reelected, so persistent returns after the mayoral period has ended might signal that, beyond a quid pro quo between donors and politicians, donations can act as investments that enable access to the procurement system. We label this mechanism "pay-to-play". We test for pay-to-play by estimating effects separately for the 2015 and 2019 elections, extending both event panels to all post-periods.[15] For 2015 donors, we can explore the longer-term consequences of donating. For 2019 donors, we can explore if there are differences in the returns across mayoral races.

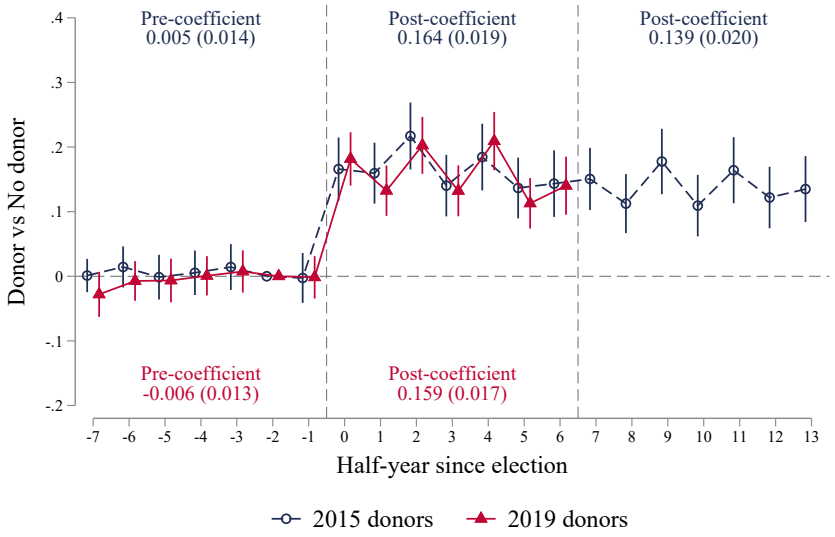
Figure 6 reports the results. Blue coefficients are for 2015 donors, and red for 2019 donors. The figure shows that 2015 donors perceive returns beyond the mayoral election after the donation. The coefficient for the first mayoral period shows an increase of 16.4% in the contract value relative to non-donors. The returns decrease to 13.9% in the second mayoral period. The results suggest

[14]These results are robust to variations of the intensive margin value in the log-transformation (Figure A5), and to not controlling for cohort of entry fixed effects that account for differential selection into procurement system (Figure A6).

[15]By separating the estimation by event-panel, we drop the indicators for each event-panel from equation 1. Because we do not have staggered timing, we estimate the effects through two-way fixed effects.

donors stay connected with the public sector once introduced to it and do not require continued connection with the mayor to whom they donate. The loss of political connection might explain the slight decrease in the returns, so the quid-pro-quo mechanism is still active. The coefficient for the 2019 donors shows an increase of similar magnitude to that of 2015 donors after the first election.

Figure 6: Pay-to-play: extended effect of donating to a political campaign - log(contract value)



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study based on equation 1 independently for each election sub-panel, and extending for each the respective post periods. Blue coefficients are for the 2015 elections. The red coefficients are for the 2019 elections. It also reports the pooled pre and post coefficients. Standard errors clustered at the individual level. The contract value is log transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients.

Political turnover Pay-to-play can also be explained by party turnover. Titl and Geys (2019) show that donors of winning parties receive higher-valued public contracts. One interpretation is that donors who obtained a contract by supporting a political party might be punished if the party leaves office. We explore these dynamics by estimating the extended effect of donating in the 2015 elections, separating between municipalities that change / not change the party in power in the 2019 elections. We proxy party turnover with ideology turnover using data on political parties characterization from Cabra-Ruiz et al. (2023). Figure A8 shows that the dynamics between these two samples are similar, suggesting that even if the party that the donors initially supported leaves office, the returns of the donation are long-lasting.

Degree of access to political power Ex-ante, it is expected that the returns would be larger when donating to the candidate with the highest access to public resources. Previous work typically examines this by studying the difference between contracts received by donors to winners vs

donors to runner-ups (Boas, Hidalgo and Richardson, 2014; Gulzar, Rueda and Ruiz, 2022; Ruiz, 2021). Our data allow us to separate the treatment effects by the electoral position of the person to whom money was donated. Figure A7 presents these results by decomposing the treatment group between donors to the winner, the runner-up, and the remaining candidates, comparing against the non-donating group. The figure shows that winning donors receive public contracts at a higher rate in the short and long term. The effect is smaller for donors of non-winning candidates.

5.4 Efficiency consequences of political donation

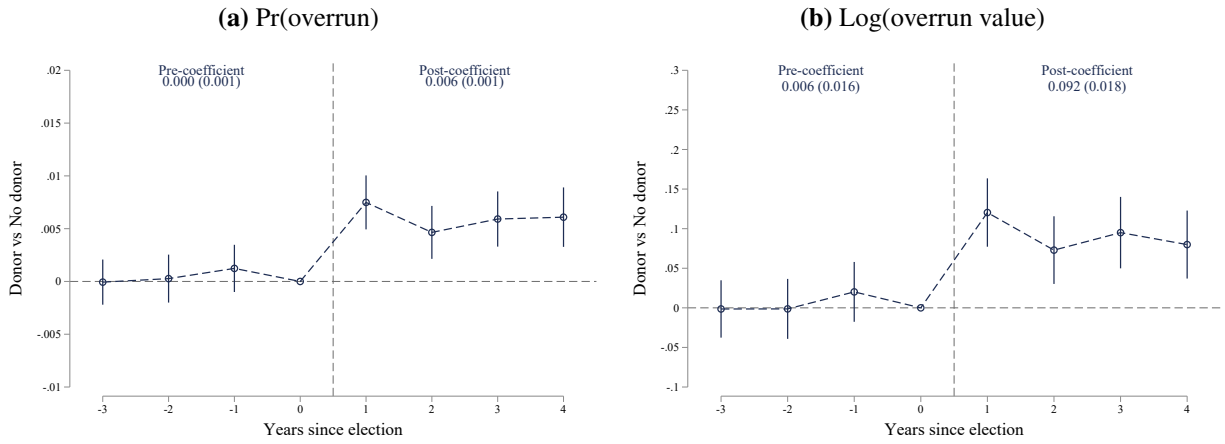
Donors reporting less efficient contract execution would suggest that the returns from donating lead to potential misallocation of public resources (Mironov and Zhuravskaya, 2016; Schoenherr, 2019; Baranek and Titl, 2020; Ruiz, 2021). This is even more likely considering the results from section 4 which showed that contractors selecting into donation are worse than non-donors, and are more likely to avoid competitive procedures. We define two proxies of inefficient behavior following Gulzar, Rueda and Ruiz (2022) –the probability and value of overruns. Considering an overrun is an infrequent event (10%, see Table 2), we aggregate our data at the individual-year level.

Figure 7 report the results from estimating an event study based on equation 1. The results are positive and significant for the years after the election. Panel (a) shows that donors have a 1 percentage point higher probability of reporting an overrun. Panel (b) shows that donors report close to 10% higher overrun value than non-donors. The results suggest that donors increase their returns from donating by extending their contracts. Figure 8 explores the pay-to-play effects. Donors of the 2015 elections perceive similar overruns across mayoral periods, suggesting that effects are not driven by the political connection but by the donors being connected to the procurement system. Donors of the 2019 elections report similar increase in overruns as 2015 donors.

Our efficiency variables approximate inadequate behavior, but do not fully capture it. Well-planned contracts might still have overruns from factors external to the contractor, and some contract extensions are allowed if the public agency wants the contractor to keep executing specific tasks. Yet, differences in overruns are significant and major in magnitude. Thus, interpreting the contracts assigned to donors as inefficient also captures the ability of donors to keep extracting benefits.

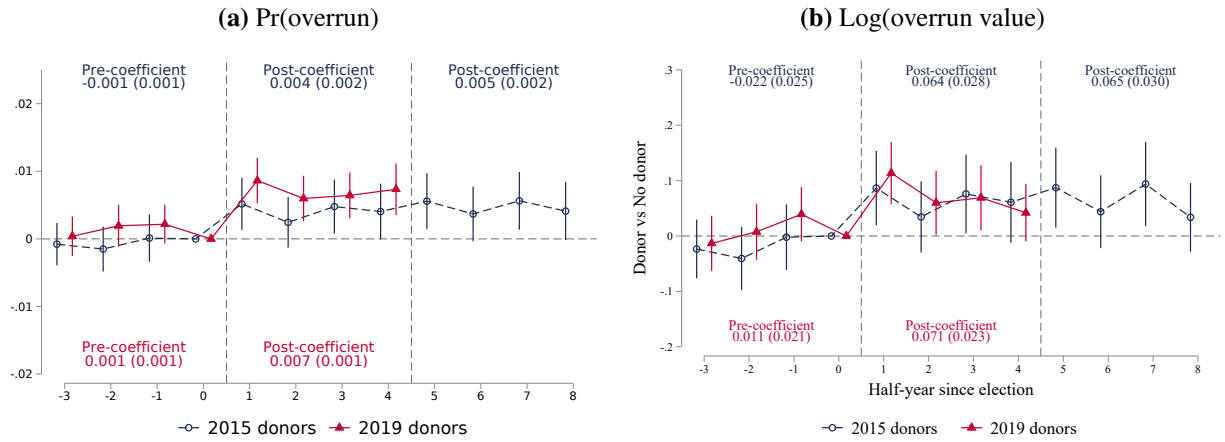
To further test the ability of donors to capture rents, we separate the contracts between discretionary and non-discretionary, as higher discretion can lead to misallocation (Baltrunaite et al., 2021; Bosio et al., 2022; Ruiz, 2021; Gulzar, Rueda and Ruiz, 2022). We define discretionary as bureaucratic contracts, called 'direct procurement,' for which the mayor has full discretion to choose a contractor. We also include 'minimum value procurement,' which refers to contracts where multiple bids are

Figure 7: Effect of donating to a political campaign - efficiency of contracts



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study version of equation 1 for the overall population. Standard errors clustered at the individual level. The contract value of the overrun is log transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients. Pr(overrun) equals 1 if the contractor had at least one contract with an overrun per period.

Figure 8: Effect of donating to a political campaign - Pay-to-play in efficiency of contracts



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study based on equation 1 independently for each election sub-panel, and extending for each the respective post periods. Blue coefficients are for the 2015 elections. The red coefficients are for the 2019 elections. It also reports the pooled pre and post coefficients. Standard errors clustered at the individual level. The contract value is log transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients. Pr(overrun) equals 1 if the contractor had at least one contract with an overrun per period.

not needed. Figure A9 in the appendix shows that the returns for donors come from discretionary contracts, consistent with the opacity to which they can be assigned. We interpret the returns from donation leading to an inefficient use of public resources, as donors can capture more rents.

6 Curbing the Influence of Political Donations

In this section, we implement a randomized controlled trial to curb the influence of money in politics. The design and main outcomes were pre-registered in the AEA RCT Registry.[16] We hypothesize that there are at least three reasons for the preferential treatment given to donors. First, mayors might have insufficient 'information' on the legal boundaries of favoring donors with contracts. Previous work shows that information provision can improve government work (Hjort et al., 2021; Saavedra, 2024) and reveal politicians' responses to information (Haaland, Roth and Wohlfart, 2023). A second reason could be that oversight agents do not present a 'credible threat'. This would be consistent with oversight bodies, like the Inspector General, having limited capacity to follow local public procurement (MOE, 2018). Third, mayors might not be able to 'deny' a contract because they do not have a plausible method of showing that there is a risk of punishment.

To test our hypothesis, we partnered with an international NGO – Open Contracting Partnership (OCP) – a local Anti-Corruption NGO – Instituto Anticorrupcion (IA) –, and the Office of the Inspector General to send letters to recently elected mayors highlighting regulations about rewarding political campaign donors via public procurement, and informing them about increased oversight of the public contracts associated with their donors. The letters also use public available data on public procurement and political campaign donations to highlight increased capacity of oversight.[17]

6.1 Experimental design

The unit of randomization is the municipality. We focus on those where at least one candidate reported receiving a campaign donation in the 2023 mayoral campaign. Figure 9 shows the intervention and includes in parentheses the number of mayors (municipalities) included in each treatment arm. Mayors in the treatment – **Letter** – receive a letter signed by OCP and IA with information on current regulations about campaign finance. Those receiving a letter are divided into treatment arms that vary in whether the letter also informs mayors about increased oversight.

The treatment arm **Letter + No CC** only include information about the regulatory framework on public procurement and political campaign donors. Thus, it tests whether improved 'information' affects mayors' procurement decisions. The **Investigative Journalist** and **Inspector General** treatment arms test for the effect of increased oversight by adding to the letter a header with the name of the oversight agent and a mention that they will be following the procurement outcomes

[16] AEA RCT Registry number AEARCTR-0013709.

[17] See Appendix B.1 for a description of each partner organization.

of the donors in the municipality. We expect mayors to have incentives to reduce donor contract assignments when highlighting an actor that can punish misbehavior. Investigative Journalists can punish by exposing corruption in the media, while the Inspector General's office has power to investigate and prosecute mayors (and donors) if engaged in illegal procurement.

To get at the 'credibility' and 'deniability' mechanisms, we further divide the above treatment arms into subgroups that vary in the detail in which the identity of donors is disclosed in the letter. Mayors in the **No donor list** only receive the letter. Mayors in the **Full donor list** additionally receive an attachment with the list of donors to any candidate in the municipality in the last mayoral election, as well as information on donors procurement history. The letter includes a mention of the attachment. This arm enhances the credibility of the letter by demonstrating the existence of specific and actionable information linking donors with contractors in the municipality.

Mayors in the **Partial donor list** receive a list of donors in which a donor is randomly omitted for each candidate rank (winner, runner-up, and others). This produces random variation in which donors are 'detected' by the letter and which are not, providing mayors an opportunity to continue providing contracts to the ones who are not on the list, while enabling 'deniability' with the rest.

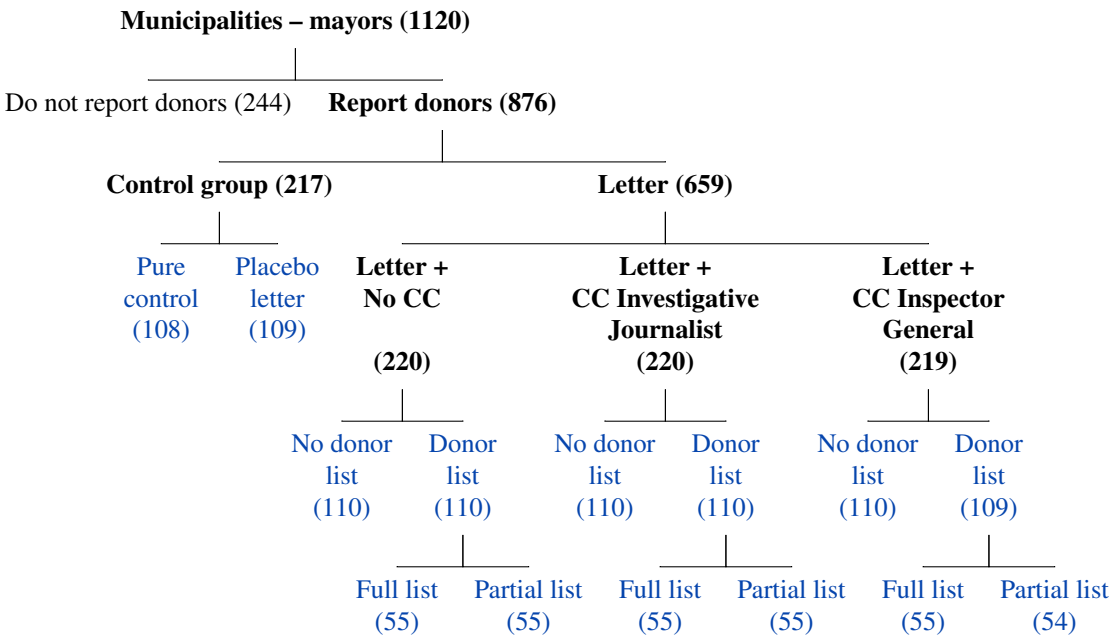
The control municipalities consist of two groups. Mayors in the **Pure Control** do not receive any letter. Mayors in the **Placebo** receive a letter only describing the NGOs we partner with to test if mayors react to *any* communication they might perceive as relevant. Table B4 in the appendix show the Placebo letter had no effects. Thus, we combine the placebo and pure control groups into a single control group for subsequent analyses.

Implementation details Figure 10 describes the timeline. Mayoral elections for the period 2024-2027 were held in October of 2023. Elected candidates assumed office in January 2024. Our analysis spans the first year of the mayoral period. E-mail letters were sent five months after mayors assumed office, and physical letters were sent three months after the e-mail as a remainder.[18] We tracked interactions with the e-mail and found that 100% of the letters were received and opened. 80% of the physical letters arrived at their municipality within the first week, and 95% after three weeks. Any communication received by a public office should be re-directed to the individual to whom it is addressed, so we can be confident that the letters reached the mayor's mailbox.

Figure B1 shows the letter variation across treatment arms. All letters mention the intention of the

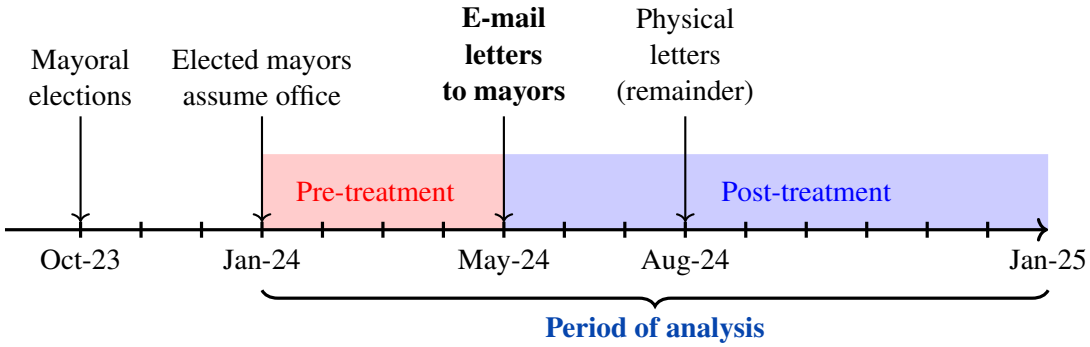
[18]The information used for mayoral e-mails and physical addresses is public available. It was compiled from the *National Information System of Public Employment*. In cases where the e-mail or physical address was incorrect, we obtained the information from the institutional web pages of the municipalities.

Figure 9: Experimental Design - Treatment Arms



Note: The figure illustrates the treatment arms structure of the experimental design. The number of municipalities (i.e., mayors) included in each treatment arm is reported in parentheses.

Figure 10: Experimental Design - implementation timeline



NGOs to remind mayors about the legal framework on public procurement and political campaign donors, followed by a short description of such legal framework. For municipalities randomized into **Investigative Journalist** or **Inspector General** treatments, the header of the letter mentions the oversight agent, and concludes mentioning that donors public contracts information will be shared with them. For municipalities randomized into the **Donor list**, the letter includes a paragraph describing the attachment. Figure B2 shows an example of the donor list attached to the letter.

Randomization The design in Figure 9 consists of 876 municipalities (elected mayors) randomized across 11 treatment arms. Municipalities are placed in 57 blocks based on the number of unique contractors, the total contracted value, and the share of value assigned to donors, all measured in the previous mayoral period (2020-2023). We build equally sized blocks –randomization strata– by sorting the three variables. All treatments are randomized at the municipal level within each block.[19] For the municipalities receiving a partial list of donors, we randomly select the donors who will be excluded. We build blocks based on the rank of candidate that the donor supported –winner, runner-up, or any other–. A donor is randomly excluded for each rank within the municipality.[20] Appendix B.3 show we have balance in municipal and donor level covariates.

6.2 Estimating equation

If informing mayors that their procurement decisions are being monitored decreases the returns of political donations, we expect a decrease in donors procurement outcomes in municipalities where the mayors received a letter. Lower returns of donating can also be reflected in the distribution of contracts towards other non-donors, suggesting a system-level effect where the resources are allocated to other participants. Alternatively, mayors can make system-level decisions to award fewer contracts to decrease the probability of being caught in any misuse of resources.

We follow the public procurement outcomes for donors and non-donors, before and after the letters have been sent. We aggregate our panel data at the individual-by-*month* level as described in section 3 for the first year of the mayoral period. We estimate equations of the form:

$$P_{i,t} = \gamma_i + \lambda_{m(i)\times donor\times t} + \sum_{j}^{J} \beta^{j}_{donor} \left(\mathbb{1}[\text{Letter}_{m(i),donor} = j] \times \text{Post}_t \right) + \sum_{j}^{J} \beta^{j}_{nondonor} \left(\mathbb{1}[\text{Letter}_{m(i),nondonor} = j] \times \text{Post}_t \right) + \varepsilon_{i,t}, \quad (2)$$

$P_{i,t}$ is the procurement result for individual i (donor or non-donor) in month t, defined as in Section 5. Post_t equals one for the periods after the letters were sent and zero before. $\mathbb{1}[\text{Letter}_{m(i),donor} = j]$ equals one for donors in municipality m where the mayor received the letter of treatment j, and zero otherwise. In our preferred specifications $Letter_{m(i),donor}$ consist of six independent dummies, for mayors receiving the letter with and without list, for each oversight agent. β^{j}_{donor} capture the effect of the letter. If it is negative, we conclude that treatment j decrease the influence of political

[19] The size of each block is 16 municipalities (except for one block, which is of size 28).

[20] We obtained 1,189 blocks of at least two donors, one of which is randomly excluded from the attachment sent to mayors. On some occasions blocks were formed with observations across municipalities because of data sparsity.

donations compared to the control group.

For non-donors, the term $\mathbb{1}[\text{Letter}_{m(i),nondonor} = j]$ consider the aggregate effects from the oversight agents as the only relevant treatment for them is whether the mayor received a letter. We include γ_i as an individuals i fixed effect, and $\lambda_{m(i)\times donor\times t}$ as a municipal randomization block $\times$ $\mathbb{1}[Donor]$ $\times$ time fixed effects. Because the randomization and donation status are constant for individuals, they are absorbed by the individual fixed effects. By including $\lambda_{m(i)\times donor\times t}$, we are able to account for specific differential time trends across randomization structures and by donation status. $\varepsilon_{i,t}$ is for the standard errors clustered at the municipal level.

6.3 Impact of increased risk of oversight on procurement outcomes

Table 4 presents the results. Columns 1-2 report on the probability of receiving a contract. Columns 3-4 report on the total contract value. The first column for each outcome (1 and 3) reports the effect of the aggregate treatment. The second column for each outcome (2 and 4) report the coefficients when separating the treatment between no list and list recipients. We find significant effects when the letter treatment mentions the Inspector General's office *and* includes an attachment with the list of donors. The coefficients show a 0.8 percentage point lower probability of a donor receiving a contract (about three times the mean of the dependent variable), and a decrease in contract value of 4.8% relative to donors in control municipalities.

The bottom of the table presents the p-values from linear combinations comparing the *Inspector General + list* treatment with the other treatment arms. The difference is significant against *Inspector General + no list*, suggesting that making oversight 'credible' with the donor list matters for a change in procurement outcomes. The difference is also significant against the investigative journalist treatment suggesting that the effect is sizable. We cannot reject significant difference against the *No CC + list* treatment arm, though the difference is in the correct direction. Overall, we can conclude that credible information mentioning the government as an oversight agent, attaching the list of donors as a way to signal specific oversight capacity, was effective in decreasing the short-term returns from political donations. We do not observe any movement on non-donors.

Table B5 in the Appendix shows that when separating the effects by partial list (*omitted donor*) and full list (*included donor*), both coefficients are negative for the *Inspector General + list*. The effect is only significant for the *included donor*, though difference with the *omitted donor* is not statistically significant, suggesting that we do not have evidence for the 'deniability' mechanism.

We also estimate the coefficients for each post-period to explore the how the effects evolve over

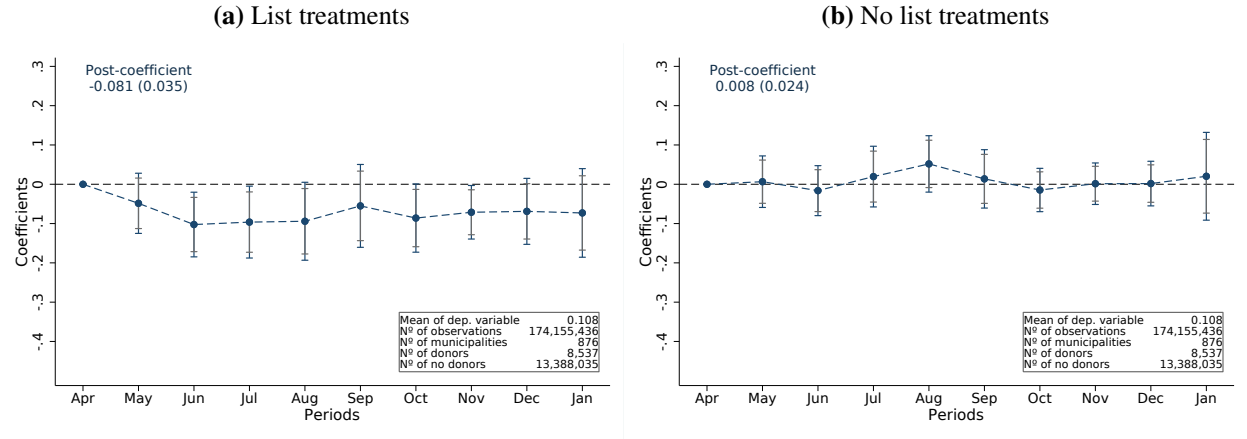
Table 4: Effect of RCT letter on procurement outcomes

Dep. Variable	Pr(contract)		Log(contract value)	
	(1)	(2)	(3)	(4)
Donor				
A. Inspector General×Post	-0.003		-0.020	
	(0.002)		(0.014)	
Inspector General + no list×Post		0.001		0.005
		(0.002)		(0.015)
Inspector General + list×Post		-0.008**		-0.048**
		(0.003)		(0.019)
B. Investigative Journalist×Post	-0.002		-0.013	
	(0.002)		(0.014)	
Investigative Journalist + no list×Post		-0.001		-0.012
		(0.003)		(0.018)
Investigative Journalist + list×Post		-0.002		-0.014
		(0.003)		(0.016)
C. No CC×Post	-0.002		-0.019	
	(0.002)		(0.015)	
No CC + no list×Post		-0.001		-0.015
		(0.003)		(0.019)
No CC + list×Post		-0.003		-0.022
		(0.003)		(0.018)
Non-donors				
A. Inspector General + NO donor×Post	-0.000	-0.000	-0.001	-0.001
	(0.000)	(0.000)	(0.001)	(0.001)
B. Investigative Journalist + NO donor×Post	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)
C. No CC + NO donor×Post	0.000	0.000	0.002	0.002
	(0.000)	(0.000)	(0.003)	(0.003)
Linear combinations P-values				
Inspector General + list - Inspector General + no list		.012		.007
Inspector General + list - Investigative Journalist + list		.1		.09
Inspector General + list - No CC + list		.289		.24
Inspector General + list - Inspector General + NO donor		.023		.014
Mean of dependent variable	.003	.003	.111	.111
N. of obs.	174,155,436	174,155,436	174,155,436	174,155,436
Number of municipalities	876	876	876	876
Number of donors	8,537	8,537	8,537	8,537
Number of non donors	13,388,035	13,388,035	13,388,035	13,388,035
Individual FE	Yes	Yes	Yes	Yes
Block × $\mathbb{1}[Donor]$ × Time FE	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the individual-month, estimating equation 2 on procurement outcomes. *Inspector General* is for the treatment letter carbon copying the relevant public office that oversight public procurement. *Investigative Journalist* is for the treatment letter carbon copying investigative journalist. *No CC* is for municipalities receiving the treatment letter without carbon copy additional organizations. *No list* is for treatment letters not including the donor list as attachment. *List* group the treatment letter including the full and partial list of donors as attachment. *Pr(contract)* equals 1 if the donor received a contract in t, 0 otherwise. *log(contract value)* is the value of contracts. The log transformation follows Chen and Roth (2022) and define the intensive margin as $x = -1$ for non recipients. *Post* equal 1 for periods after the letter were sent to mayors. The mean of the outcomes is measured in the pre-period and is reported in million COP for the contract value. *Individual FE* is for individual fixed effects. *Block* × $\mathbb{1}[Donor]$ × *Time FE* is for randomization block by donation status by month fixed effects. Standard errors clustered at the municipal level are in parentheses. $^{*}p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

time. Figure 11 shows the results for the Inspector General treatment, using as the base period the month just before the letters were sent. Panel (a) shows the result for the list treatment and Panel (b) report for the no list treatment. The coefficients after the intervention are significant only for the treatment letter with the list of donors, and are sustained throughout the year, suggesting that up to nine months later, mayors continue avoiding assignment of contracts to donors under increased and credible oversight. Figures B3 in the appendix show the results for the other oversight agents.

Figure 11: Effect of Inspector General Letter letter on donors procurement - log(contract value) post-treatment coefficients



Note: The unit of analysis is the individual-month. The figure shows point estimates and the 90% and 95% confidence intervals from estimating equation 2 on procurement outcomes. Coefficients only reported for donors. Fixed effects for randomization block $\times$ $\mathbb{1}[Donor]$ $\times$ month are included. Standard errors clustered at the municipality level. The point estimates represent the effect of the treatments relative to the *Control* groups post-intervention. The outcome is the *Log(contract value)*. The log transformation for the value follows Chen and Roth (2022), defining the intensive margin as $x = -1$ for non-recipients.

Impact by rank of supported candidate Mayors can have an stronger response for their own donors procurement outcomes if they anticipate that their direct link is most likely to be scrutinized. We estimate a variant of equation 2 where we separate each treatment arm for donors into a treatment arm by supported candidate (winner / non-winners). We include donor randomization block fixed effects instead of individual fixed effects as the donors blocks were built by municipality and candidate rank, ensuring the comparison donors supporting the same rank across municipalities.

Panel A of Figure B4 in the appendix shows that shows the effect is negative and significant for the donors of the winner regardless of the oversight agent mentioned in the letter. When separating by *list* or *no list* all coefficients remain negative and the coefficient for the *Inspector General* + *list* treatment remains significant. The p-values at the bottom of the table do not show significant differences between the *list* treatments for the winning candidate. The effects are consistent with donors having a direct relationship with individuals in public positions, so that increased oversight

by any agent or by disclosing donors identity constitutes a credible threat. In the case of donors to non-winner candidates, the coefficients are smaller in magnitude and significance.

Impact on pay-to-play donors The results in section 5 show evidence consistent with donors "paying" to get access to the procurement system so they can receive contracts even when their connection leaves office. We explore the extent to which increased oversight changes the incentives of mayors to assign contracts to previous election donors. We estimate equation 2 separating the pay-to-play donors (donors of the previous mayoral election) from the non-donors. Because there is no overlap across mayoral races, the attachment with the list of donors never includes a donor from the previous electoral cycle. Also, because there is no reelection in consecutive mayoral races, the newly elected candidate does not have a direct connection with previous donors.

Panel B of Figure B4 in the appendix shows that the treatments do not impact pay-to-play donors' procurement outcomes. As such, despite the results suggesting that communications coming from the government including a specific list for oversight can break the influence of money in politics for new donors, it does not appear to be the case that it affects contracts to previous election donors.

Impact on procurement efficiency The results in section 5 show that donors report more inefficient procurement. We estimate the effects of the RCT on our efficiency proxies. Figure B5 show the post-coefficients on overruns, with the caveat that these manifest completely a few months after a contract is issued, so our current data does not fully capture them. The coefficient for the *Inspector General + list* is negative and significant, suggesting it reduced inefficient procurement. Panel C of Figure B4 reports the results for discretionary and non-discretionary contracts and shows that the effects are driven by decreased discretionary procurement for donors in the *Inspector General + list*. Panel D of Figure B4 shows the results for contracts assigned just below the threshold for minimum value contracts, for which we observed in section 4 that donors reported higher bunching. The results show that donors in the *Inspector General + list* report a lower assignment of contracts close to the threshold. Overall, the results point towards the intervention being effective in improving the efficient allocation of public resources.

Municipal procurement behavior A unintended consequence of the letter might be that mayors reduce the overall amount of resources assigned to public procurement to avoid any type of complaint related to the use of public resources. Such reaction can affect municipal performance despite decreasing the influence of money in politics. We aggregate our individual-by-month data at the municipality-by-month level to analyze the aggregate behavior of public procurement. We estimate

a reduced version of equation 2 with a single β^j for each treatment arm at the municipality level. We use municipality fixed effects and block $\times$ month fixed effects. Table B6 in the appendix shows for the (log) total amount of resources –the value of contracts– that there are no significant differences across the coefficients of the treatments for the resources assigned to non-donors, suggesting that mayors did not react by decreasing the overall amount of resources in the municipality.

7 A Model of Political Donations and Public Procurement

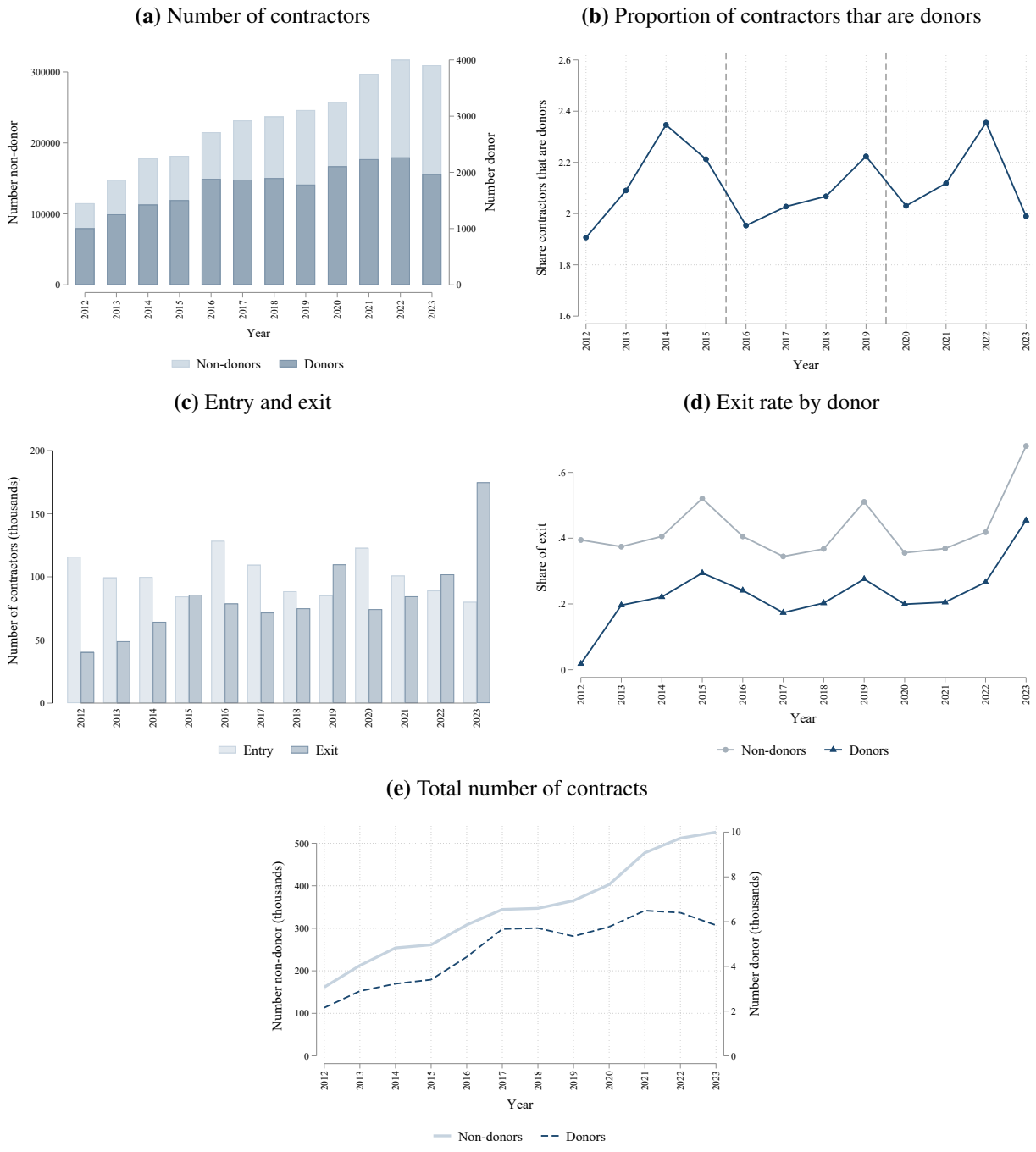
In this section, we introduce a model to interpret our reduced-form findings presented earlier. Our model addresses two key questions: What economic factors determine firms' and individuals' political contributions and their decisions to participate in public procurement, and how do these factors explain our empirical observations?

Although our reduced-form analysis identifies the existence of a "*pay-to-play*" distortion, it cannot uncover the underlying economic mechanisms that generate this distortion or jointly explain how decisions regarding donations and procurement participation interact. Notably, our data indicate that only a small fraction of contractors contribute politically, despite the apparent high returns from donations in public procurement. To understand this puzzle, we move beyond average treatment effects and explicitly model entry and exit decisions, as well as cost differences between donating and non-donating entities.

7.1 Preliminaries

Evolution of the market structure To ensure our structural model captures the full set of empirical regularities beyond the reduced-form findings, we seek to match additional data patterns that describe the long-run evolution of public procurement markets. We focus on three additional patterns that are essential for refining the model's representation of entry, persistence, and competition in public contracting. First, Panel (a) in Figure 12 illustrates the steady expansion of the contractor pool over time, yet it also underscores that donors consistently represent a small fraction of all contractors. This observation highlights the existence of substantial barriers to entry into procurement markets, especially for firms that seek privileged access through political contributions. Panel (b) further refines this insight by showing that the proportion of contractors who are donors fluctuates cyclically, peaking in election years. This pattern suggests that donation behavior is inherently dynamic, with firms strategically adjusting their status based on political cycles. To match these patterns, our model must incorporate the costs and benefits of entry, account for firms' endogenous decisions to donate, and capture the role of sunk costs in sustaining persistent donor

Figure 12: Evolution of public procurement market structure by donor and non-donors



Note: The panels in the figure describe the market structure of public procurement contracts. Panel (a) describes the total number of contracts by year and donor / non-donor. Left axis correspond to non-donors, right axis to donors. Panel (b) shows the proportion of contractors that are donors for each year. Panel (c) describes the number of contractors entering and exiting the procurement system –in terms of receiving or not a contract– by year. Panel (d) describes the average share of exit rate of donors and non-donors. Panel (e) show the time trends of the total number of contracts assigned to donors and non-donors by year. Left axis correspond to non-donors, right axis to donors.

advantages.

Second, the dynamics of contractor participation are captured in Panels (c) and (d), which depict entry, exit, and persistence in the procurement market. Panel (c) shows that contractor entry and exit are highly volatile, with turnover increasing significantly in the years following elections. This suggests that the decision to participate in public procurement is not purely static but is driven by shifting political and institutional conditions. Panel (d) further differentiates the exit patterns of donors versus non-donors, revealing that donors exhibit systematically lower exit rates. This persistence is a hallmark of the pay-to-play mechanism we document—donors, once embedded in the system, appear to retain access even beyond the direct tenure of the politicians they originally supported. Our structural model must account for these dynamics by allowing for long-term persistence effects among donors, capturing the differential exit risks between donors and non-donors, and incorporating dynamic firm decisions regarding continued participation in public procurement.

Lastly, Panel (e) tracks the total number of contracts assigned to donors and non-donors over time, revealing a key allocative rigidity: while the volume of contracts awarded to non-donors steadily increases, donor firms maintain a disproportionately high share of contracts relative to their representation in the contractor pool. Despite fluctuations in the overall number of donors, the flow of contracts to donor firms remains relatively stable, suggesting that procurement markets exhibit structural persistence—once firms gain privileged access via political contributions, their contract volume remains insulated from competitive pressures. To match this pattern, our model must allow for donor firms to have preferential access to discretionary contracts, face lower uncertainty in bidding, or maintain a cost advantage that allows them to persist over multiple election cycles. By ensuring that our structural model incorporate all these features and replicates these additional empirical moments, we aim to provide a comprehensive representation of the long-term distortions in public procurement markets driven by political contributions.

7.2 Model Structure

Timing Time is discrete with a finite horizon $t = 0, 1, 2, \ldots, T$. There are a finite number of incumbent firms within the public procurement system, indexed by i.[21] At any period t, each incumbent firm is in one of four states, $s_{it} \in \{\text{OO, OD, DO, DD}\}$. The state of the public procurement system at time t is represented by the aggregation, $s_t \equiv \{s_{it}\}_i = (N_t^{OO}, N_t^{OD}, N_t^{DO}, N_t^{DD})$, where N_t^{OO} denotes the number of firms that did not donate in the previous election and are not donating in the

[21] We take individual contractors as sole proprietorship firms, as is usually assumed in the public procurement system.

upcoming campaign, N_t^{OD} represents the number of firms that did not donate in the previous election but are donating in the upcoming campaign, N_t^{DO} represents the number of firms that donated in the previous election but are not donating in the upcoming campaign, and N_t^{DD} represents the number of firms that donated in both the previous and upcoming elections.

The model begins in period 0 with $N_0^{OO} \geq 0$ and $N_0^{DO} \geq 0$ incumbents who are non-donors in this electoral cycle, and zero firms donating for the upcoming election ($N_0^{OD} = 0, N_0^{DD} = 0$). At the start of each period, a potentially infinite number of entrants consider entering and competing in the public procurement system. They enter sequentially until the expected value of entry falls below the entry cost κ^{ent}. We assume entry firms are not yet donors for the current election cycle, but they could have been donors in the past. In each period, incumbents may exit permanently, continue operating without donating to the upcoming election, or operate and donate to the upcoming election by paying a sunk cost κ to procure goods and services at a different (most likely lower)[22] production cost in the next electoral cycle. A post-donation incumbent decides whether to exit or remain in the public procurement system. The following features of the game are common knowledge to all firms:[23]

- Each period t starts with free sequential and costly entry, followed by a competitive period where each firm earns period profit $\pi_t(s_{it}, s_{-it})$ based on public sector demand and cost conditions.

- After the competition period, N_t^{OO} and N_t^{DO} incumbent firms draw i.i.d *private cost shocks* $\varepsilon_{it}^{OO} = (\varepsilon_{it}^{1,OO}, \varepsilon_{it}^{2,OO}, \varepsilon_{it}^{3,OO})$, $\varepsilon_{it}^{DO} = (\varepsilon_{it}^{1,DO}, \varepsilon_{it}^{2,DO}, \varepsilon_{it}^{3,DO})$ and simultaneously choose actions a_{it}^{OO}, a_{it}^{DO} both in the choice set {exit, stay, stay & donate}.

- Once these actions are observed, N_t^{OD}, N_t^{DD} donating firms, (excluding those non-donor firms which just decided to donate) draw i.i.d *private cost shocks* $\varepsilon_{it}^{OD} = (\varepsilon_{it}^{1,OD}, \varepsilon_{it}^{2,OD})$, $\varepsilon_{it}^{DD} = (\varepsilon_{it}^{1,DD}, \varepsilon_{it}^{2,DD})$, respectively; and simultaneously choose actions a_{it}^{OD}, a_{it}^{DD} in the choice set {exit, stay}

[22] The marginal cost difference reflects the direct benefit of donating. We will use this for identification: The greater the market share of donor firms relative to non-donor firms, the lower the implied marginal cost for donors compared to non-donors. This cost advantage might stem from reduced market competition uncertainty or decreased operational risk due to the insurance given by the government.

[23] Our model and solution concept builds and expand upon Igami (2018), which examines the industry dynamics of offshoring in the hard disk drive industry. Similar to offshoring decisions, political donations entail significant sunk costs aimed at securing a competitive advantage in public procurement contracts. Firms in the hard disk drive industry, as studied by Igami (2018), incurred substantial relocation costs to reduce production expenses and sustain market viability. Likewise, political donations can be seen as a strategic investment, positioning firms favorably in the procurement process–much as offshoring serves as a cost-reducing investment essential for competitiveness in a global oligopoly.

– Market structure transits from s_t to s_{t+1} based on the actions of the firms

Private cost shocks arise from each firm's idiosyncratic but transient conditions. We focus on anonymous, type-symmetric pure strategies that convert these cost fluctuations into discrete choices, similar to a static entry game with private information. For simplicity and for estimation purposes, we assume all ε_{it} shocks are i.i.d type-1 extreme value with scale parameter ρ.

On top of variable profits $\pi_t(s_{it}, s_{-it})$, active firms might additionally incur either fixed costs or fringe benefits of operation denoted by ϕ, which are state specific.

Per-period profit Each period the public sector demand D_t, production-cost conditions C_t, the firm's own state s_{it}, and the other firms' status s_{-it} completely determine the form's period profit: $\pi_{it} = \pi(s_{it}, s_{-it}, D_t, C_t)$. The demand D_t establishes the link between the aggregate value and quantity of contracts, while the cost function represents the relationship between each firm's output and production costs, taking into account its donor status. As we explain below, D_t and C_t will be recovered from the data.

We also assume Cournot competition among firms in each period and analyze an anonymous, type-symmetric Nash equilibrium. As a result, the market structure, represented by the industry state s_t, which includes s_{it}, along with D_t and C_t, fully determines each firm's equilibrium profit during the competition period. This method allows us to succinctly address the dynamic game of donation and entry/exit decisions within a compact state space, despite the large number of firms observed in the data.

Active firms' problem Firms make dynamic discrete choices regarding entry, exit, and donations to maximize their expected values. They discount their future profit streams by a factor $\beta \in (0,1)$, maintaining rational expectations about both the endogenous evolution of market structure and the exogenous evolution of demand and production costs. The dynamic programming problems of

active firms at different states are

$$
\begin{aligned}
V_t^{OO}(s_t,\varepsilon_{it}^{OO}) &= \pi_t^{OO}(s_t,\cdot)+\max_{a_{i,t}\in\mathscr{A}}\left\{\begin{array}{ll}\varepsilon_{it}^{1,OO} & \text{if } a_{i,t}=\text{exit},\\ \phi^{OO}+\beta\mathbb{E}\left[V_{t+1}^{OO}(s_{t+1},\varepsilon_{it+1}^{OO})|s_t,\varepsilon_{it}^{OO}\right]+\varepsilon_{it}^{2,OO} & \text{if } a_{i,t}=\text{stay},\\ \phi^{OD}+\beta\mathbb{E}\left[V_{t+1}^{OD}(s_{t+1},\varepsilon_{it+1}^{OD})|s_t,\varepsilon_{it}^{OO}\right]-\kappa+\varepsilon_{it}^{3,OO} & \text{if } a_{i,t}=\text{stay, donate}\end{array}\right\}\\
V_t^{DO}(s_t,\varepsilon_{it}^{DO}) &= \pi_t^{DO}(s_t,\cdot)+\max_{a_{i,t}\in\mathscr{A}}\left\{\begin{array}{ll}\varepsilon_{it}^{1,DO}, & \text{if } a_{i,t}=\text{exit}\\ \phi^{DO}+\beta\mathbb{E}\left[V_{t+1}^{DO}(s_{t+1},\varepsilon_{it+1}^{DO})|s_t,\varepsilon_{it}^{DO}\right]+\varepsilon_{it}^{2,DO}, & \text{if } a_{i,t}=\text{stay}\\ \phi^{DD}+\beta\mathbb{E}\left[V_{t+1}^{DD}(s_{t+1},\varepsilon_{it+1}^{DD})|s_t,\varepsilon_{it}^{DO}\right]-\kappa+\varepsilon_{it}^{3,DO} & \text{if } a_{i,t}=\text{stay, donate}\end{array}\right\}\\
V_t^{OD}(s_t,\varepsilon_{it}^{OD}) &= \pi_t^{OD}(s_t,\cdot)+\max_{a_{i,t}\in\mathscr{A}}\left\{\begin{array}{ll}\varepsilon_{it}^{1,OD}, & \text{if } a_{i,t}=\text{exit}\\ \phi^{OD}+\beta\mathbb{E}\left[V_{t+1}^{OD}(s_{t+1},\varepsilon_{it+1}^{OD})|s_t,\varepsilon_{it}^{OD}\right]+\varepsilon_{it}^{2,OD} & \text{if } a_{i,t}=\text{stay}\end{array}\right\}\\
V_t^{DD}(s_t,\varepsilon_{it}^{DD}) &= \pi_t^{DD}(s_t,\cdot)+\max_{a_{i,t}\in\mathscr{A}}\left\{\begin{array}{ll}\varepsilon_{it}^{1,DD}, & \text{if } a_{i,t}=\text{exit}\\ \phi^{DD}+\beta\mathbb{E}\left[V_{t+1}^{DD}(s_{t+1},\varepsilon_{it+1}^{DD})|s_t,\varepsilon_{it}^{DD}\right]+\varepsilon_{it}^{2,DD} & \text{if } a_{i,t}=\text{stay}\end{array}\right\}
\end{aligned}
\tag{3}
$$

All subject to the perceived law of motion governing s_t. The expectations are over the other firms' choices, and hence over the realizations of their private cost shocks.

New entrants Normalizing the outside option for all entrants to 0, the problem of each one of them becomes: $\max\{0, V_t^{\cdot}(s_t)-\kappa^{ent}\}$, which by free entry condition implies that $V_t^{\cdot}(s_t)\leq\kappa^{ent}$.

Equilibrium We analyze the finite-horizon, sequential-move dynamic discrete-choice game with private information by characterizing its Perfect Bayesian Equilibrium (PBE) in type-symmetric pure strategies. Three modeling assumptions ensure computational tractability and equilibrium uniqueness. First, private information consists solely of independent and identically distributed cost shocks associated with firms' discrete choices, rather than persistent, firm-specific heterogeneity. As a result, beliefs regarding off-path realizations of rivals' shocks do not influence a firm's payoffs. Instead, a firm's payoff depends on rivals' cost shocks exclusively through their observed choices, providing complete information on the payoff-relevant portion of past histories.[24] Second, different firm types move sequentially, fully informed about the entry, exit, or innovation decisions of earlier movers. Thus, at each decision point, a firm confronts what effectively becomes a single-

[24]While we formally characterize equilibrium using the Perfect Bayesian Equilibrium (PBE) concept, the results are equally valid under Sequential Equilibrium (SE). The distinction between PBE and SE lies in the treatment of off-path beliefs: SE imposes additional consistency requirements relative to PBE. However, in our setting, private information enters only through i.i.d. cost shocks that affect payoffs solely via firms' observed actions. As a result, off-path beliefs about these shocks do not influence equilibrium behavior or payoffs. This implies that our equilibrium satisfies the stronger belief consistency conditions required by SE, and thus the two solution concepts coincide in this context.

agent decision problem conditioned on anticipated market dynamics. Finally, these assumptions, combined with the finite-horizon structure, enable equilibrium computation via backward induction.

We start the backward induction by assuming that the terminal values associated with firm states, $s_{it} \in \{OO, OD, DO, DD\}$ in T, are given by:

$$(V_T^{OO}, V_T^{OD}, V_T^{DO}, V_T^{DD}) = \left(\sum_{t=T}^{\infty} \beta^t \pi_T^{OO}(s_T), \sum_{t=T}^{\infty} \beta^t \pi_T^{OD}(s_T), \sum_{t=T}^{\infty} \beta^t \pi_T^{DO}(s_T), \sum_{t=T}^{\infty} \beta^t \pi_T^{DD}(s_T) \right)$$

In $T-1$, the non-yet-donor firms of the second electoral cycle $(N_{T-1}^{OO}, N_{T-1}^{DO})$, aside from maximizing their per-period profit, need to choose the action that maximizes their continuation value in the last period. Therefore they solve, receptively:

$$\max \left\{ \varepsilon_{i,T-1}^{1,OO},\ \phi^{OO} + \beta \mathbb{E}\left[V_T^{OO}(s_T) \mid s_{T-1} \right] + \varepsilon_{i,T-1}^{2,OO},\ \phi^{OD} + \beta \mathbb{E}\left[V_T^{OD}(s_T) \mid s_{T-1} \right] - \kappa + \varepsilon_{i,T-1}^{3,OO} \right\},$$

$$\max \left\{ \varepsilon_{i,T-1}^{1,DO},\ \phi^{DO} + \beta \mathbb{E}\left[V_T^{DO}(s_T) \mid s_{T-1} \right] + \varepsilon_{i,T-1}^{2,DO},\ \phi^{DD} + \beta \mathbb{E}\left[V_T^{DD}(s_T) \mid s_{T-1} \right] - \kappa + \varepsilon_{i,T-1}^{3,DO} \right\}.$$

Similarly, the donor firms of the second electoral cycle $(N_{T-1}^{OD}, N_{T-1}^{DD})$ choose the action that solves:

$$\max \left\{ \varepsilon_{i,T-1}^{1,OD},\ \phi^{OD} + \beta \mathbb{E}\left[V_T^{OD}(s_T) \mid s_{T-1} \right] + \varepsilon_{i,T-1}^{2,OD} \right\},$$

$$\max \left\{ \varepsilon_{i,T-1}^{1,DD},\ \phi^{DD} + \beta \mathbb{E}\left[V_T^{DD}(s_T) \mid s_{T-1} \right] + \varepsilon_{i,T-1}^{2,DD} \right\}.$$

To compute the value functions $V_{T-2}^{\cdot\cdot}$ in $T-2$, we need to derive an expression for the conditional expected value before observing the idiosyncratic shocks $\varepsilon_{i,t}$, in $T-1$, we follow Rust (1987) and Igami (2018) and exploit the properties of the i.i.d. logit errors, to obtain closed-form expressions for such expected values as follows:

$$\mathbb{E}_{\varepsilon_{i,T-1}}\left[V_{T-1}^{OO}(s_{T-1},\varepsilon_{i,T-1}) \mid s_{T-1}\right] = \pi_{T-1}^{OO}(s_{T-1}) + \rho\left\{\gamma + \ln\left[\exp(0) + \exp\left(\frac{\phi^{OO} + \beta\mathbb{E}[V_T^{OO}(s_T) \mid s_{T-1}]}{\rho}\right) + \exp\left(\frac{\phi^{OD} + \beta\mathbb{E}[V_T^{OD}(s_T) \mid s_{T-1}] - \kappa}{\rho}\right)\right]\right\}$$

$$\mathbb{E}_{\varepsilon_{i,T-1}}\left[V_{T-1}^{DO}(s_{T-1},\varepsilon_{i,T-1}) \mid s_{T-1}\right] = \pi_{T-1}^{DO}(s_{T-1}) + \rho\left\{\gamma + \ln\left[\exp(0) + \exp\left(\frac{\phi^{DO} + \beta\mathbb{E}[V_T^{DO}(s_T) \mid s_{T-1}]}{\rho}\right) + \exp\left(\frac{\phi^{DD} + \beta\mathbb{E}[V_T^{DD}(s_T) \mid s_{T-1}] - \kappa}{\rho}\right)\right]\right\}$$

$$\mathbb{E}_{\varepsilon_{i,T-1}}\left[V_{T-1}^{OD}(s_{T-1},\varepsilon_{i,T-1}) \mid s_{T-1}\right] = \pi_{T-1}^{OD}(s_{T-1}) + \rho\left\{\gamma + \ln\left[\exp(0) + \exp\left(\frac{\phi^{OD} + \beta\mathbb{E}[V_T^{OD}(s_T) \mid s_{T-1}]}{\rho}\right)\right]\right\}$$

$$\mathbb{E}_{\varepsilon_{i,T-1}}\left[V_{T-1}^{DD}(s_{T-1},\varepsilon_{i,T-1}) \mid s_{T-1}\right] = \pi_{T-1}^{DD}(s_{T-1}) + \rho\left\{\gamma + \ln\left[\exp(0) + \exp\left(\frac{\phi^{DD} + \beta\mathbb{E}[V_T^{DD}(s_T) \mid s_{T-1}]}{\rho}\right)\right]\right\}$$

Where γ is the Euler constant and ρ is our scale parameter. Following the same logic, we can recursively construct the sequence of expected value functions from period T all the way back to the initial period, 0. The policy functions implied by this process, in turn, characterize the choice probabilities that underpin the maximum likelihood estimation detailed below.

7.3 Estimation

To estimate the empirical model, we follow four steps. First, we focus on individual municipalities and limit our analysis to the periods surrounding the last two electoral cycles. We solve the model by treating each municipality as an independent market, since public contracting decisions are decentralized at this level and depend on the mayors of each municipality.

Second, we estimate public sector demand for contracts within each municipality using public procurement data—specifically, the number and value of awarded contracts. Using these estimates, and exploiting the randomized controlled trial (RCT) intervention as an exogenous demand shifter, we recover marginal costs of production based on the first-order conditions implied by firms' period profit maximization.

Third, using the estimated demand and cost parameters, we compute per-period profits for each type of firm in each year, conditional on any given market structure s_t.

Finally, we embed these per-period profits into the dynamic discrete game of political donation and market entry/exit. Solving this game allows us to estimate the sunk cost of donating (κ), the entry cost (κ^{ent}), and the fixed costs or fringe benefits associated with different firm and donation statuses

$(\phi^{OO}, \phi^{DO}, \phi^{OD}, \phi^{DD})$.

Demand We treat a mayor's decision to award a contract in period t as a discrete-choice problem. For every contract type j (defined by the municipality–procedure pair) with value p_{jt}, a mayor in municipality m derives total utility

$$U_{mjt} = u^1_{jt} + \alpha\, p_{jt} + u^2_{mjt},$$

where u^1_{jt} is the contract's average appeal, $\alpha\, p_{jt}$ captures the marginal "cost" of allocating a more expensive contract, and u^2_{mjt} gathers idiosyncratic considerations relevant only to that mayor. The base component is decomposed as

$$u^1_{jt} = \gamma_j + \eta_t + \xi_{jt},$$

with γ_j absorbing time-invariant rules or procedures tied to the contract type, η_t reflecting economy-wide or electoral-cycle shocks common to all types, and ξ_{jt} representing time-varying attributes unobserved to the econometrician. Individual-specific utility is written

$$u^2_{mjt} = \beta' x_{jt} + \varepsilon_{mjt},$$

where x_{jt} is the vector of observed contract features, β measures their importance, and ε_{mjt} is an i.i.d. extreme-value taste shock that creates the familiar logit choice probabilities. Competitive open-tender contracts serve as the outside option with normalized utility $U_{m0t} = 0$.

Letting $\bar{U}_{jt} \equiv \gamma_j + \eta_t + \beta' x_{jt} + \alpha p_{jt} + \xi_{jt}$, the implied logit market share of contract type j in period t is $ms_{jt} = \frac{\exp(\bar{U}_{jt})}{\sum_l \exp(\bar{U}_{lt})}$. Following Berry (1994)'s inverstion we formalize the demand model as

$$\ln\left(\frac{ms_{jt}}{ms_{0t}}\right) = \gamma_j + \eta_t + \beta' x_{jt} + \alpha p_{jt} + \xi_{jt}, \tag{4}$$

where ms_{0t} denotes the share of open tenders. We estimate the structural parameters α and β, which capture how mayors trade off contract value against other features and respond to observable contract characteristics, respectively. The unobserved term ξ_{jt} reflects latent factors, such as project complexity or quality, that also influence the contract price p_{jt}. Since ξ_{jt} correlates with p_{jt}, price is endogenous, making ordinary least squares (OLS) estimates of α and β inconsistent. To address this, we instrument p_{jt} with randomized controlled-trial (RCT) treatment assignments, which are exogenous to ξ_{jt}. OLS provides descriptive benchmarks, while the instrumental-variables (IV) approach, combined with fixed effects, delivers consistent causal estimates of α and β. These estimates reveal how contract price shapes mayoral choices and uncover the preferences driving

contract allocation decisions.

Market Competition and Marginal Costs We model the public procurement market as a Cournot competition with heterogeneous marginal costs based on firms' donation status. This framework captures the strategic allocation of contracts and is motivated by three key market features. First, public procurement contracts typically involve standardized goods or services with minimal differentiation, leading firms to compete primarily on quantities and contract terms, resembling a commoditized market. Second, firms' capacities to fulfill contracts are constrained by fixed resources and sunk investments, which are slow to adjust, resulting in competition driven by available capacities. Third, despite intense competition, evidence indicates that firms—particularly those with donor status—maintain thin but positive profit margins, suggesting a strategic advantage linked to their donation status. These characteristics justify the use of a Cournot model to represent strategic interactions and market dynamics in public procurement.

Firms are categorized by donation status: never donors (OO), one-time donors (OD or DO, depending on the period), and consistent donors (DD). Their respective marginal costs of production, denoted $mc_t^{\text{OO}}, mc_t^{\text{OD}}, mc_t^{\text{DO}}, mc_t^{\text{DD}}$, are assumed constant with respect to quantity and uniform across firms of the same donation status within a period t. Each firm i maximizes its profit, defined as

$$\pi_{it} = (P_t - mc_{it})q_{it}, \tag{5}$$

where q_{it} is the firm's offered quantity, P_t is the average contract price in a municipality (representing a composite good across contract types), and mc_{it} is the firm's marginal cost, determined by its donation status. The first-order condition for profit maximization is

$$P_t + \frac{\partial P_t}{\partial Q_t} q_{it} = mc_{it}, \tag{6}$$

where $Q_t = \sum_i q_{it}$ is the total market quantity. Using equation 6, we infer the marginal costs $mc_t^{\text{OO}}, mc_t^{\text{OD}}, mc_t^{\text{DO}}, mc_t^{\text{DD}}$ for each donation status in each period. Since the data are observed at the municipality-contract type level, rather than the firm or contract level, we impose symmetry across firms of the same donation status, up to private cost shocks, as an identifying assumption. The dataset provides each firm's total number of contracts per municipality, the average contract price P_t, and we recover the IV estimates of the demand slope $\partial P_t / \partial Q_t$ from the estimation of equation 4.

Sunk cost of donation, fixed costs, and fringe benefits Using the demand parameters and marginal costs from prior steps, we compute per-period profits for each firm type (OO, OD, DO,

DD) in period t, conditional on market structure s_t. These allow us to estimate the marginal costs for each donation status. These profits form the foundation for the value and policy functions, which govern firms' entry, exit, and donation decisions. In this final estimation step, we integrate these profits into the dynamic discrete-choice game and solve for the Perfect Bayesian Equilibrium (PBE) via backward induction, as outlined before.

We estimate the dynamic parameters, i.e., the fixed costs or fringe benefits $(\phi^{OO}, \phi^{DO}, \phi^{OD}, \phi^{DD})$, sunk cost of donating κ, and scale parameter of idiosyncratic cost shocks ρ using maximum likelihood estimation (MLE). The discount factor β is not estimated due to the now very well documented identification challenges (Rust, 1987). Similarly, while a parameter for the rate of change in sunk costs, δ, could enhance the model's fit to donation timing, its estimation is computationally intensive. We fix δ at a constant and conduct sensitivity analyses to evaluate robustness and fit.

Likelihood To estimate the dynamic parameters of the model, we construct the likelihood of observing firms' actions (exit, stay, or stay and donate) given their states and the market structure. The parameters to be estimated are the fixed costs or fringe benefits $(\phi^{OO}, \phi^{OD}, \phi^{DO}, \phi^{DD})$, the sunk cost of donating (κ), and the scale parameter of idiosyncratic cost shocks (ρ). The discount factor β is calibrated due to known identification challenges (Rust, 1987). Additionally, we fix a parameter $\delta \in (0,1]$, which scales the sunk cost of donating over time $(\delta^t \kappa)$, to capture potential variation in donation costs across periods; sensitivity analyses assess robustness to this choice. The likelihood contribution of firm i in period t, given its state $s_{it} \in \{\text{OO, OD, DO, DD}\}$ and action a_{it}, is derived from the choice probabilities implied by the type-symmetric Perfect Bayesian Equilibrium (PBE). These probabilities reflect firms' dynamic decisions over entry, exit, and donations, conditional on the market structure s_t and idiosyncratic cost shocks ε_{it}, which are i.i.d. type-1 extreme value with scale parameter ρ. The contribution of an incumbent firm i in year t to the likelihood when such a firm is at state $s_{i,t} = OO$ is:

$$\begin{aligned} f^{OO}(a_{i,t}|s_t;\phi^{OO},\phi^{OD},\kappa,\rho) = &\Pr(a_{i,t}=\text{exit})^{\mathbb{1}(a_{i,t}=\text{exit})} \times \Pr(a_{i,t}=\text{stay})^{\mathbb{1}(a_{i,t}=\text{stay})} \\ &\times \Pr(a_{i,t}=\text{stay, donate})^{\mathbb{1}(a_{i,t}=\text{stay, donate})} \end{aligned}$$

where probabilities of each action are given by

$$\Pr\big(a_{it}=\text{exit}\big)=\frac{1}{1\;+\;\exp\Big(\dfrac{\phi^{OO}+\beta E_{\varepsilon}V_{t+1}^{OO}(s_{t+1})}{\rho}\Big)\;+\;\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})-\delta^{t}\kappa}{\rho}\Big)},$$

$$\Pr\big(a_{it}=\text{stay}\big)=\frac{\exp\Big(\dfrac{\phi^{OO}+\beta E_{\varepsilon}V_{t+1}^{OO}(s_{t+1})}{\rho}\Big)}{1\;+\;\exp\Big(\dfrac{\phi^{OO}+\beta E_{\varepsilon}V_{t+1}^{OO}(s_{t+1})}{\rho}\Big)\;+\;\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})-\delta^{t}\kappa}{\rho}\Big)},$$

$$\Pr\big(a_{it}=\text{stay, donate}\big)=\frac{\exp\Big(\dfrac{\phi+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})-\delta^{t}\kappa}{\rho}\Big)}{1\;+\;\exp\Big(\dfrac{\phi^{OO}+\beta E_{\varepsilon}V_{t+1}^{OO}(s_{t+1})}{\rho}\Big)\;+\;\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})-\delta^{t}\kappa}{\rho}\Big)}$$

while the contributions for firms at states $s_{i,t}=OD$, $f^{OD}(a_{i,t}|s_t;\phi^{OD},\phi^{DD},\kappa,\rho)$, take similar form.

Likewise, the contribution of an incumbent firm i in year t to the likelihood when such a firm is at state $s_{i,t}=OD$ is

$$g^{OD}(a_{i,t}|s_t;\phi^{OD},\rho)=\Pr(a_{i,t}=\text{exit})^{\mathbb{1}(a_{i,t}=\text{exit})}\times\Pr(a_{i,t}=\text{stay})^{\mathbb{1}(a_{i,t}=\text{stay})}$$

where like before probabilities of each action are given by

$$\Pr\big(a_{it}=\text{exit}\big)=\frac{1}{1\;+\;\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})}{\rho}\Big)}$$

$$\Pr\big(a_{it}=\text{stay}\big)=\frac{\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})}{\rho}\Big)}{1\;+\;\exp\Big(\dfrac{\phi^{OD}+\beta E_{\varepsilon}V_{t+1}^{OD}(s_{t+1})}{\rho}\Big)}$$

while the contributions for firms at state $s_{i,t}=DD$, $g^{DD}(a_{i,t}|s_t;\phi^{DD},\kappa,\rho)$, take similar form.

To compute the choice probabilities, we solve the dynamic game via backward induction for each candidate parameter vector θ, using per-period profits $(\pi_t^{\text{OO}},\pi_t^{\text{OD}},\pi_t^{\text{DO}},\pi_t^{\text{DD}})$ derived from the demand and cost estimates. Entry costs κ_t^{ent} are calibrated to match the observed number of entrants and post-entry market structure s_t, using the free-entry condition $\kappa_t^{\text{ent}}=V_t^{\cdot}(s_t)$, where $V_t^{\cdot}(s_t)$ is the expected value of entry. This calibration ensures consistency with empirical entry patterns, allowing the likelihood to focus on incumbent firms' decisions.

With these contributions at hand, the overall likelihood for the observed sequence of firm actions

across all periods is given by:

$$L(\theta) = \prod_{t=0}^{T-1} \left[\prod_{s \in \{\text{OO,DO}\}} \prod_{i \in I_t^s} f^s(a_{i,t} \mid s_t; \theta) \times \prod_{s \in \{\text{OD,DD}\}} \prod_{i \in I_t^s} g^s(a_{i,t} \mid s_t; \theta) \right] \tag{7}$$

where $\theta = (\phi^{\text{OO}}, \phi^{\text{OD}}, \phi^{\text{DO}}, \phi^{\text{DD}}, \kappa, \rho)$ represents the vector of dynamic parameters to be estimated, and I_t^s denotes the set of incumbent firms in state s in period t. The function $f^s(a_{i,t} \mid s_t; \theta)$ is the probability that a firm in state s chooses action $a_{i,t}$, given the market structure s_t and parameters θ, as defined by the choice probabilities earlier.

The maximum likelihood estimators for the dynamic parameters are obtained by maximizing the log-likelihood:

$$\hat{\theta} = \arg\max_{\theta} \ln L(\theta) \tag{8}$$

To compute the choice probabilities $f^s(a \mid s_t; \theta), g^s(a \mid s_t; \theta)$, we solve the dynamic game via backward induction for each candidate parameter vector θ, using the per-period profits $(\pi_t^{\text{OO}}, \pi_t^{\text{OD}}, \pi_t^{\text{DO}}, \pi_t^{\text{DD}})$ derived from the demand and cost estimates in the previous steps. This solution accounts for firms' expectations over future market structures and the evolution of states based on their actions. In this game, the sequence of entry costs $\{\kappa_t^{\text{ent}}\}_t$ is not directly estimated within the likelihood function but is instead indirectly inferred using the *free-entry condition*. This condition posits that, in equilibrium, firms enter the market until the expected value of entry equals the cost for the marginal entrant. Specifically, for each period t, the entry cost κ_t^{ent} is calibrated to match the observed number of entrants and the resulting post-entry market structure s_t. This is achieved by setting $\kappa_t^{\text{ent}} = V_t^{\cdot}(s_t)$, where $V_t^{\cdot}(s_t)$ denotes the expected present value of future profits for an entrant given s_t. During estimation, for each candidate parameter vector θ, the model solves for κ_t^{ent} to ensure the predicted entry behavior aligns with the data, allowing the likelihood to focus on other parameters, such as those governing incumbents' decisions. This approach ensures consistency between the model's equilibrium and the empirical entry patterns observed in public procurement markets.

7.4 Structural model results

Demand estimation and marginal cost We estimate the demand parameter by regressing the log-transformed relative market share of contracts on the average contract value, as specified in Equation 4. To obtain a causal estimate of contract demand, we leverage the randomized controlled trial (RCT) treatment assignment outlined in Section 6 as a demand shifter, inducing exogenous variation in prices (i.e., contract values). Specifically, we interact the treatment assignments at the municipality level for the *list* and *no-list* conditions with a dummy variable equal to one for the year

2024 (when the treatment shock occurred) and zero for prior years. The instrumental variable (IV) estimation is conducted using two-stage generalized method of moments (GMM). Table 5 presents both ordinary least squares (OLS) and IV demand estimates. Although both estimates are negative and statistically significant, we adopt the IV estimates for our baseline inverse-demand elasticity calculations due to their causal interpretation.

Table 5: Demand for public contracts estimates

Dep. Variable	Log(share of contracts)	
	OLS	IV
	(1)	(2)
Contract price (million COP)	-0.015***	-0.072***
	(0.002)	(0.028)
Number of observations	81,315	81,315
Municipality FE	Yes	Yes
Year FE	Yes	Yes

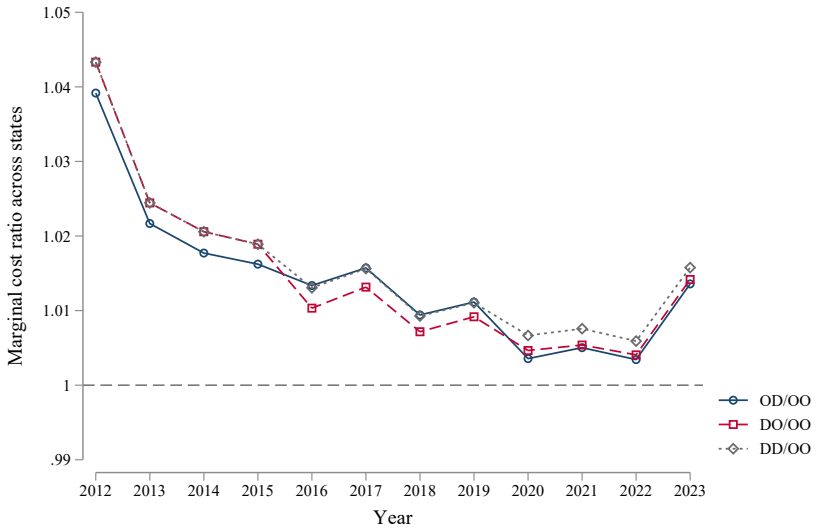
Notes: The unit of analysis is the municipality-representative agent-year, estimating a linear regression using as outcome the log share of market shares and as explanatory variable the price –average contract value– by municipality-representative agent-year. We include municipality and year fixed effects. For the column (2) use as instrument the treatment assignment from the RCT described in section 6, interacted with a dummy for the year 2024, which is the period when the RCT was implemented, generating an exogenous shock to procurement markets. The IV estimate is obtained through two-step GMM. Standard errors clustered at the municipality-type of contract level in parentheses. $^{*}p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We compute marginal costs for representative agents across possible states by solving the firms' first-order conditions under per-period Cournot competition (Equation 6). Figure 13 illustrates the average ratio of marginal costs across these transition states. It shows that agents transitioning into donation states consistently face higher marginal costs than those who never donate, though this cost premium has gradually declined over time.

The figure reveals that the marginal cost ratio for first-time donors (OD/OO) and repeat donors (DD/OO) initially exceeded 1.04 in 2012, indicating that donating firms bore approximately 4% higher marginal costs compared to non-donors. This differential steadily decreased over the subsequent decade, stabilizing just above parity by 2021–2022. This trend suggests a convergence in the cost structures of donors and non-donors, possibly reflecting learning effects, economies of scale in donation practices, or broader institutional normalization of donation behaviors.

Although the percentage differences appear modest and qualitative evidence from administrative reports suggests that even marginal cost gaps of this size materially influence firms' participation decisions. This is particularly relevant in the context of public procurement, where competitive margins are often narrow and firms weigh reputational costs and benefits carefully.

Figure 13: Marginal cost ratio relative to never donate – OD/OO, DO/OO and DD/OO



Note: The figure reports the ratio between the implied marginal cost of adopters relative to the implied marginal cost of never adopters. Blue line reports the marginal cost ratio between agents donating for the first time *OD* and those never donating *OO*. Red line reports the marginal cost ratio between agents donating before *DO* and *OO*. Gray line reports the marginal cost ratio between agents donating again *DD* and *OO*. The marginal cost is calculated using data on prices, quantity shares and the estimated demand parameter, based on data aggregated at the municipality-by-representative agent-by-year.

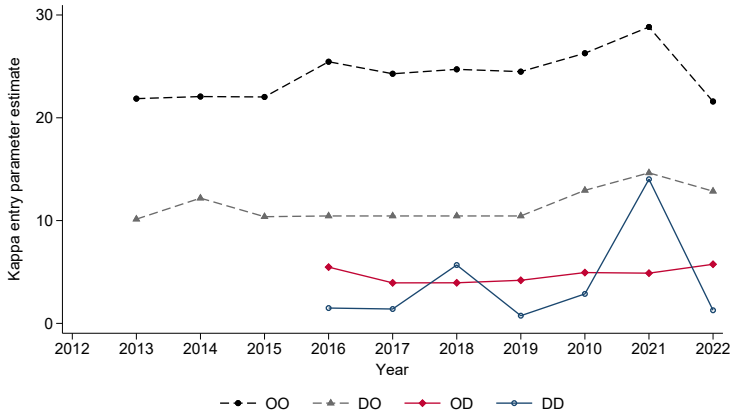
Several structural mechanisms help rationalize these patterns. First, the initial cost premium likely reflected the fixed costs of establishing donation channels, including administrative coordination, compliance, and strategic signaling. Second, over time, as municipalities institutionalized donation mechanisms and more firms became donors, marginal costs likely fell due to standardization and peer learning. Third, as the donor pool expanded, the marginal reputational return to donating may have diminished, prompting some firms to reoptimize their strategies, further eroding the average cost gap.

Taken together, the range of estimated marginal cost ratios—generally within 1 to 1.04, appears consistent with a world in which small but persistent cost differences significantly affect firms' entry and donation behavior. The gradual convergence in costs supports the view that donations evolved from being a selective strategic investment to a more routine component of engagement for many firms.

Entry Costs Figure 14 presents the posterior mean of the state-specific entry-cost parameter κ_s^{ent} (in million COP) that satisfies the free-entry condition in the dynamic discrete-choice game. The state $s \in \{\text{OO}, \text{OD}, \text{DO}, \text{DD}\}$ reflects a firm's donation history. Two key patterns emerge,

aligning with the "pay-to-play" framework outlined earlier. *First*, from 2012 to 2022, the estimates consistently follow the ranking $\kappa^{\text{ent}}_{\text{OO}} > \kappa^{\text{ent}}_{\text{DO}} > \kappa^{\text{ent}}_{\text{OD}} \approx \kappa^{\text{ent}}_{\text{DD}}$, with an average gap of approximately 18 million COP between OO and DD. This suggests that political donations seem to reduce significantly high barriers to entry (e.g., informational and bureaucratic regulation). *Second*, the persistently low values of $\kappa^{\text{ent}}_{\text{OD}}$ and $\kappa^{\text{ent}}_{\text{DD}}$ support the model's learning-by-doing mechanism: after a firm donates, the expected net surplus from re-entry nearly offsets the sunk cost, and over time, the sunk cost of donations appears to decline. Together, these findings help us give a rational to our reduced-form estimates, demonstrating that cost heterogeneity across type of firms over time can explain the endogenous sorting, which in turn explains and amplifies the pay-to-play mechanism.

Figure 14: Entry cost κ^{ent} by state



Note: The figure plots the average across municipalities and time of the estimated cost of entry κ^{ent}

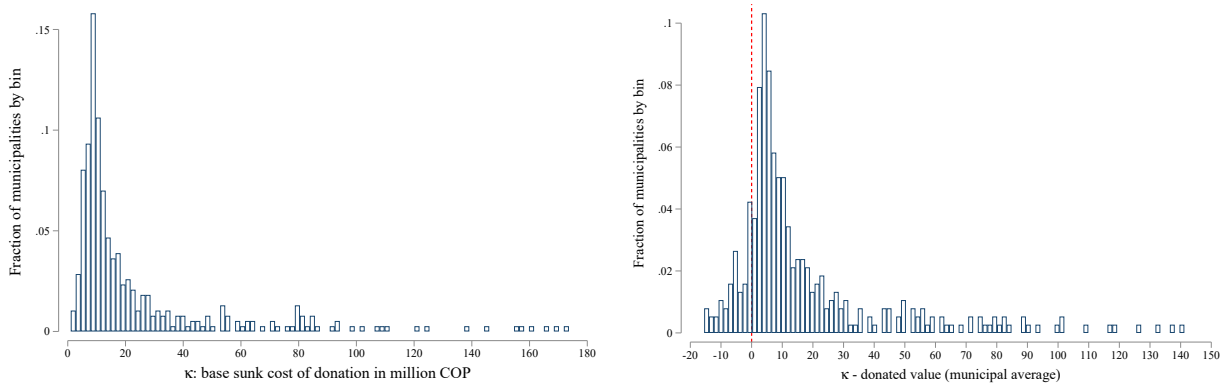
Cost of donation and fringe benefits of operation The structural estimation of the sunk cost of donation (κ) reveals a non-monotonic relationship with observed donation levels.[25] The parameter κ captures the total fixed cost incurred when a municipality transitions into a donor status (e.g., from *OO* to *OD* or *DO* to *DD*), encompassing both monetary expenditures and non-monetary burdens such as bureaucratic hurdles or strategic signaling considerations.

Panel (a) of Figure 15 presents the distribution of maximum likelihood estimates of κ across municipalities. The mass of estimates lies between 4 and 20 million COP, with a long right tail extending up to nearly 180 million COP. The average estimated κ is 25 million COP, while the median is 11 million COP. Panel (b) illustrates the distribution of deviations of κ from the average observed donations per municipality. This distribution is centered around zero but is notably right-

[25] Given that we aggregate our data by municipality $\times$ representative agent $\times$ year, the parameters are estimated in a smaller sample of municipalities for which we have variation in entry, exit, and donation decisions for each of the state over time. The structural parameters are reported in in million COP and calibrated using $\beta = 0.8$ and $\delta = 0.95$.

Figure 15: Distribution of sunk cost of donation - κ

(a) κ distribution **(b)** Deviations from donated values



Note: The figure plots the municipal distribution of the structural parameter κ for the sunk cost of donation, obtained via MLE. Panel (a) report the distribution of the parameter. Panel (b) report the deviations of the parameter relative to the observed average donation by municipal.

skewed, indicating that in many cases, the estimated sunk cost exceeds actual reported donation levels. This discrepancy likely reflects unobserved indirect or non-monetary costs not captured in the political contribution figures.

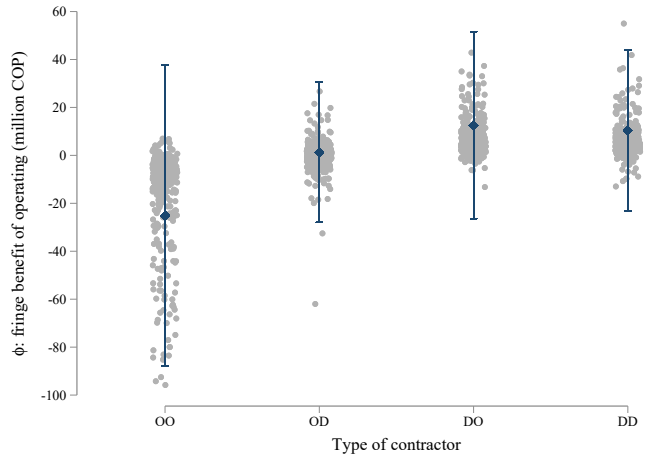
Figure 16 complements this analysis by showing estimates of the state-dependent fringe cost ϕ. These values are generally negative for non-donor states (OO, DO) and slightly positive for donor states (OD, DD), suggesting that fringe benefits often help offset fixed costs, particularly when municipalities are not donating. This implies increasing net benefits from donation participation.

Importantly, κ remains a fixed parameter scaled by the discount factor δ^t, and is not designed to track donation magnitude directly. Instead, the model's discrete-choice structure and free-entry condition ($\kappa^{ent} = V_t^{\cdot}(s_t)$) ensure that κ is estimated to rationalize observed transitions into donation states, rather than to replicate observed donation levels or costs.

Overall, the model parameters underscore the role of substantial costs in shaping firms' incentives to donate and enter public procurement. In particular, while donating result in large benefits, these can only be perceived after donating, which make firms incur in a cost that in most cases would be prohibitively large. Even more, the large fringe cost perceived by non-donors still represent a relevant barrier for any other firm in deciding to entry the procurement system.

Policy counterfactuals [Preliminary and Incomplete, comments welcome] We propose the following policies aimed at mitigating distortions in public procurement resulting from the influence

Figure 16: Distribution of fringe cost ϕ by state



Note: The figure report the distribution of the structural parameter ϕ for each possible state. Gray points for each state correspond to the estimated parameter in a municipality-state. The blue dot plots the average across municipalities and the 95% confidence interval based on the municipal distribution. The mean and confidence interval are calculated using all the estimates, but the plot is truncated between 60 and -100 million COP for visualization.

of money in politics. First, we evaluate a ban on contracts for the current electoral cycle on donors in previous electoral cycles, directly targeting the pay-to-play mechanism. Reducing the capacity of firms that have donated in past to participate again can reduce the long-term insider advantage and encourage greater contractor turnover. Second, we introduce a fixed-period ban for donors to receive public contracts, delaying any returns and discouraging firms from using contributions as a short-term investment. Third, we scale up the Inspector General letter + donor list disclosure RCT arm, so it increases the perceived threat of detection and sanction for mayors who allocate contracts to donors, shifting the relative value of donor versus non-donor status in equilibrium. Fourth, we evaluate a centralized reform in which high-value or discretionary contracts are allocated through randomized selection, reducing local discretion, weakening the payoff from cultivating political ties, and potentially improving efficiency.

8 Synthesis and discussion

Our findings reveal that campaign contributions in Colombian municipal procurement operate like an enduring market-access fee rather than as isolated quid-pro-quo exchanges. Donor firms bear a hefty up-front burden: the average sunk cost of joining the donor pool hovers around 25 million COP, their implied marginal costs begin roughly four percent higher than those of non-donors, and they face administrative and reputational hurdles. Yet despite these marginal cost disadvantages, donation unlocks a privileged lane. Donor firms encounter sharply lower entry barriers, secure

a disproportionate share of discretion-based contracts, bunch their awards just below thresholds that would trigger open tenders, and keep winning long after their favored politicians exit office. Our dynamic model based on forward looking firms can rationalize such patterns. Once a firm donates for the first time, the marginal-cost disadvantage is eroded, so eventually donors operate at cost parity with non-donors while still pocketing political rents. Meanwhile, non-donors confront persistently high entry costs and even negative fringe benefits, which explains why many capable contractors stay out despite eye-catching returns.

The results from our nationwide randomized experiment confirms that this pay-to-play equilibrium hinges on selective enforcement rather than economic fundamentals alone. When newly elected mayors are told that the Inspector General will track their donors and receive an attached donor list, favoritism toward contributors drops and stays low up to nine months later (the period of our observation). Treatment arms that relied solely on journalistic exposure or generic NGO warnings produce no comparable change, highlighting that actionable information must be paired with credible sanctions. Integrating these experimental insights with our structural estimates shows how modest frictions at the donation and entry margins, combined with weak oversight, can skew an entire procurement market toward connected insiders. Effective reform therefore requires lowering informational and bureaucratic hurdles for non-donors while raising the probability and bite of punishment for favoritism. Doing so is essential for restoring competition, efficiency, and accountability in settings where state capacity is limited.

9 Conclusion

We study whether political campaign donations operate as a form of pay-to-play in public procurement, generating long-term distortions in the allocation of public contracts. Our results are drawn from a comprehensive dataset linking donations to mayoral campaigns with the universe of public procurement contracts in Colombia. We find that donors more and higher-valued contracts immediately after an election, and continue to secure public contracts in subsequent administrations, after the political connection is lost. The persistent effect suggests that donations effectively confer long-term "insider" status rather than short-term reciprocity from the winning politician.

The reduced-form evidence also indicates that donors frequently exhibit weaker ex-ante performance, are more likely to manipulate procurement processes, and incurring in higher contract overruns relative to non-donors. Together, these behaviors underscore efficiency and resource-allocation costs associated with pay-to-play dynamics, as donors can extract rents through additional discretion.

We implemented a large-scale nationwide randomized controlled trial to decrease the distortion produced by political campaign donors. In partnership with the Office of the Inspector General, investigative journalists, and anti-corruption NGOs, we sent letters to newly sworn mayors informing them about the legal risks of awarding contracts to donors. The intervention varies the identity of the oversight authority mentioned and the degree of the donor information disclosed. The findings indicate that monitoring can curb donors preferential treatment only when there is a credible threat of punishment and actionable information on the identity of donors. Specifically, informing mayors that the Inspector General's office is copied on the communication, along with a detailed list of donors, significantly reduces the probability and value of donor contracts. In contrast, treatments that lack a credible enforcer or explicit donor details do not yield reductions in contract favoritism.

Moreover, donors who contributed in past electoral cycles—and acquired "insider" status—continue to capture substantial public contracts. Thus, while the deterrence messages effectively affects *new* donors, it do not impact entrenched contractors with prior donation histories. This pattern is consistent with a pay-to-play mechanism in which the largest benefit from donating is the long-run entry into and persistence in government contracting, rather than a one-shot quid pro quo.

Motivated by our findings, we develop a structural model incorporating contracting frictions, sunk donation costs, and donor versus non-donor cost differentials. By leveraging exogenous demand shifts induced by the RCT, we recover key parameters about the cost of donating and participating in public procurement. The model highlights how high returns to donation can coexist with relatively few donors: the up-front costs —-monetary and hidden-— to donate are prohibitively large despite the permanent benefits perceived by a firm once it becomes a donor.

Two sets of policy lessons emerge. First, oversight approaches are most effective when the monitoring agent has the authority to impose sanctions *and* has actionable information about donor identities, highlighting the role of targeted transparency in constraining corruption in procurement. Second, pay-to-play might be rooted in persistent distortions linked to donors' cost of entry into the public procurement system. Policies aimed at diminish immediate quid pro quo will have limited effectiveness unless they also disrupt the long-run persistence.

Overall, our paper highlights that favoritism in procurement through campaign contributions is both substantial and persistent, with robust evidence of allocative inefficiencies. Nonetheless, relatively low-cost innovations in oversight—particularly from a legally empowered agency with direct information on donor identities—can curb pay-to-play for new donors. Future work could explore whether more sweeping reforms—such as corporate donation bans, stricter campaign finance limits, or the introduction of comprehensive digital auditing—could eliminate these distortions for good.

References

Acharya, Avidit, Elliot Lipnowski, and João Ramos. 2024. "Political accountability under moral hazard." *American Journal of Political Science*.

Ansolabehere, Stephen, John M De Figueiredo, and James M Snyder Jr. 2003. "Why is there so little money in US politics?" *Journal of Economic perspectives*, 17(1): 105–130.

Auriol, Emmanuelle, Stéphane Straub, and Thomas Flochel. 2016. "Public procurement and rent-seeking: the case of Paraguay." *World Development*, 77: 395–407.

Avis, Eric, Claudio Ferraz, and Frederico Finan. 2018. "Do government audits reduce corruption? Estimating the impacts of exposing corrupt politicians." *Journal of Political Economy*, 126(5): 1912–1964.

Avis, Eric, Claudio Ferraz, Frederico Finan, and Carlos Varjão. 2022. "Money and politics: The effects of campaign spending limits on political entry and competition." *American Economic Journal: Applied Economics*, 14(4): 167–199.

Baker, Andrew C, David F Larcker, and Charles CY Wang. 2022. "How much should we trust staggered difference-in-differences estimates?" *Journal of Financial Economics*, 144(2): 370–395.

Baltrunaite, Audinga, Cristina Giorgiantonio, Sauro Mocetti, and Tommaso Orlando. 2021. "Discretion and supplier selection in public procurement." *The Journal of Law, Economics, and Organization*, 37(1): 134–166.

Baranek, Bruno, and Vitezslav Titl. 2020. *The cost of favoritism in public procurement.* KU Leuven, Department of Economics.

Berry, Steven T. 1994. "Estimating Discrete-Choice Models of Product Differentiation." *The RAND Journal of Economics*, 25(2): 242–262.

Boas, Taylor C, F Daniel Hidalgo, and Neal P Richardson. 2014. "The spoils of victory: campaign donations and government contracts in Brazil." *The Journal of Politics*, 76(2): 415–429.

Bombardini, Matilde, and Francesco Trebbi. 2020. "Empirical models of lobbying." *Annual Review of Economics*, 12: 391–413.

Bosio, Erica, Simeon Djankov, Edward Glaeser, and Andrei Shleifer. 2022. "Public procurement in law and practice." *American Economic Review*, 112(4): 1091–1117.

Brugués, Felipe, Javier Brugués, and Samuele Giambra. 2024. "Political connections and misallocation of procurement contracts: Evidence from Ecuador." *Journal of Development Economics*, 170: 103296.

Cabra-Ruiz, Nicolás, Santiago Torres, Laura Wills-Otero, and Valentina Castilla-Gutiérrez. 2023. "Una caracterización histórica de los partidos políticos de Colombia: 1958-2022 (A historical characterization of Colombian political parties: 1958-2022)." *Documento CEDE*, , (36).

Carreri, Maria, and Luis Martinez. 2022. "Fiscal rules, austerity in public administration, and political accountability: Evidence from a natural experiment in Colombia." *Chicago: Becker Friedman Institute for Research in Economics*.

Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer. 2019. "The effect of minimum wages on low-wage jobs." *The Quarterly Journal of Economics*, 134(3): 1405–1454.

Chen, Jiafeng, and Jonathan Roth. 2022. "Log-like? ATEs defined with zero outcomes are (arbitrarily) scale-dependent." *arXiv preprint arXiv:2212.06080*.

Coviello, Decio, Andrea Guglielmo, and Giancarlo Spagnolo. 2018. "The effect of discretion on procurement performance." *Management Science*, 64(2): 715–738.

Cuneo, Martina, Jetson Leder-Luis, and Silvia Vannutelli. 2023. "Government audits." National Bureau of Economic Research.

Dube, Arindrajit, Daniele Girardi, Oscar Jorda, and Alan M Taylor. 2023. "A local projections approach to difference-in-differences event studies." National Bureau of Economic Research.

Duggan, John, and César Martinelli. 2017. "The Political Economy of Dynamic Elections: Accountability, Commitment, and Responsiveness." *Journal of Economic Literature*, 55(3): 916–84.

Ferraz, Claudio, and Frederico Finan. 2008. "Exposing corrupt politicians: the effects of Brazil's publicly released audits on electoral outcomes." *The Quarterly journal of economics*, 123(2): 703–745.

Gulzar, Saad, Miguel Purroy, and Nelson A Ruiz. 2022. "Money in Politics and Kickbacks: Evidence from Colombia." *APSA Proposal*.

Gulzar, Saad, Miguel R Rueda, and Nelson A Ruiz. 2022. "Do campaign contribution limits curb the influence of money in politics?" *American Journal of Political Science*, 66(4): 932–946.

Haaland, Ingar, Christopher Roth, and Johannes Wohlfart. 2023. "Designing information provision experiments." *Journal of economic literature*, 61(1): 3–40.

Hjort, Jonas, Diana Moreira, Gautam Rao, and Juan Francisco Santini. 2021. "How research affects policy: Experimental evidence from 2,150 brazilian municipalities." *American Economic Review*, 111(5): 1442–1480.

Huneeus, Federico, and In Song Kim. 2018. "The effects of firms' lobbying on resource misallocation."

IDEA. 2014. *Funding of Political Parties and Election Campaigns: A Handbook on Political Finance.* International Institute for Democracy and Electoral Assistance.

Igami, Mitsuru. 2018. "Industry Dynamics of Offshoring: The Case of Hard Disk Drives." *American Economic Journal: Microeconomics*, 10(1): 67–101.

Kalla, Joshua L, and David E Broockman. 2016. "Campaign contributions facilitate access to congressional officials: A randomized field experiment." *American Journal of Political Science*, 60(3): 545–558.

Kim, In Song, Jan Stuckatz, and Lukas Wolters. 2020. "Strategic and Sequential Links between Campaign: Donations and Lobbying."

Kleven, Henrik Jacobsen. 2016. "Bunching." *Annual Review of Economics*, 8(1): 435–464.

Kleven, Henrik J, and Mazhar Waseem. 2013. "Using notches to uncover optimization frictions and structural elasticities: Theory and evidence from Pakistan." *The quarterly journal of economics*, 128(2): 669–723.

Mironov, Maxim, and Ekaterina Zhuravskaya. 2016. "Corruption in procurement and the political cycle in tunneling: Evidence from financial transactions data." *American Economic Journal: Economic Policy*, 8(2): 287–321.

MOE. 2018. *From private funders to public contractors (Spanish).*

MOE. 2019. *Maps and electoral risk factors: elections of local authorities in Colombia 2019 (Spanish).*

Moore, Charity Troyer, Rohini Pande, and Simone Schaner. 2025. "Scaling Accountability: Experimental Evidence on Impacts of Citizen-Led Audits on Social Protection Delivery and Election Outcomes."

OECD. 2019. *Public Procurement in Germany.*

OECD. 2020. *Government at a Glance: Latin America and the Caribbean 2020.*

Olken, Benjamin A. 2007. "Monitoring corruption: evidence from a field experiment in Indonesia." *Journal of political Economy*, 115(2): 200–249.

Ovtchinnikov, Alexei V, and Eva Pantaleoni. 2012. "Individual political contributions and firm performance." *Journal of Financial Economics*, 105(2): 367–392.

Palguta, Ján, and Filip Pertold. 2017. "Manipulation of procurement contracts: Evidence from the introduction of discretionary thresholds." *American Economic Journal: Economic Policy*, 9(2): 293–315.

Powell, Eleanor Neff, and Justin Grimmer. 2016. "Money in exile: Campaign contributions and committee access." *The Journal of Politics*, 78(4): 974–988.

Riaño, Juan Felipe. 2021. "Bureaucratic nepotism." *Available at SSRN 3995589*.

Ruiz, Nelson A. 2021. "The power of money. the consequences of electing a donor funded politician." *SSRN*.

Rust, John. 1987. "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher." *Econometrica*, 55(5): 999–1033.

Saavedra, Santiago. 2024. "Technology and State Capacity: Experimental Evidence from Illegal Mining in Colombia." *Available at SSRN 3933128*.

Schoenherr, David. 2019. "Political connections and allocative distortions." *The Journal of Finance*, 74(2): 543–586.

Szucs, Ferenc. 2023. "Discretion and favoritism in public procurement." *Journal of the European Economic Association*.

Teso, Edoardo. 2023. "Influence-Seeking in U.S. Corporate Elites' Campaign Contribution Behavior." *The Review of Economics and Statistics*, 1–34.

Titl, Vitezslav, and Benny Geys. 2019. "Political donations and the allocation of public procurement contracts." *European Economic Review*, 111: 443–458.

Transparency International Colombia, TIC. 2019. *Elections and public contracts in Colombia: 2018-2019.*

Transparency International Colombia, TIC. 2024. *Second report on elections and public contracts in Colombia.*

van Dijk, Bureau. 2024. "ORBIS."

Weaver, Jeffrey. 2021. "Jobs for Sale: Corruption and Misallocation in Hiring." *American Economic Review*, 111(10): 3093–3122.

World Bank. 2020. "Enhancing Government Effectiveness and Transparency: The Fight Against Corruption."

Online Appendix

A Political Donations and Public Contract Allocation

A.1 Public procurement categories

Public procurement in Colombia is governed by Law 80 of 1993, establishing the General Contracting Statute of the Public Administration. The law defines the public procurement categories and the requisites for public agencies to use each type of procedure. Law 1150 of 2007 further introduced efficiency and transparency measures to Law 80 of 1993, most of which consisted of stronger requisites for participating in competitive procedures. Below we describe each procurement.

Direct (discretionary): contracts with a maximum of one year to support bureaucratic/administrative tasks. The public agency can define the technical requirements and assign the contractor with complete discretion as long as the selected contractor meets the requirements defined for the contract execution. The contractor finishing a contract can receive another through direct procurement immediately after, and there are no value limits.

Minimum value and short selection (discretionary): open bid contracts whose value is lower than 10% of the yearly budget of the public agency and are assigned in less than a day to the offer with the minimum value. Public offices issuing minimum value contracts do not require the establishment of a necessary level of experience or technical skills.

Merits contest: assigned based on open-bid competition. A technical proposal is evaluated, and the best-suited for the specific requirement is chosen. Contest assigned contracts are usually used for consultancy or technical assistance in public program execution.

Open tender: open-bid competition for contracts with large values and long-term execution. Usually used for infrastructure projects. Proposals are scored based on different technical aspects, with price being the main factor defining the assignment.

Special procurement regime: some public agencies are not subject to the regulations established by Law 80 of 1993, so they do not need to follow the categories described above but instead have their own procedures, adjusted as required depending on their needs. Public universities and hospitals are part of the special procurement regime.

A.2 Additional details

Figure A1: Journalist covering corruption cases involving political campaign donors

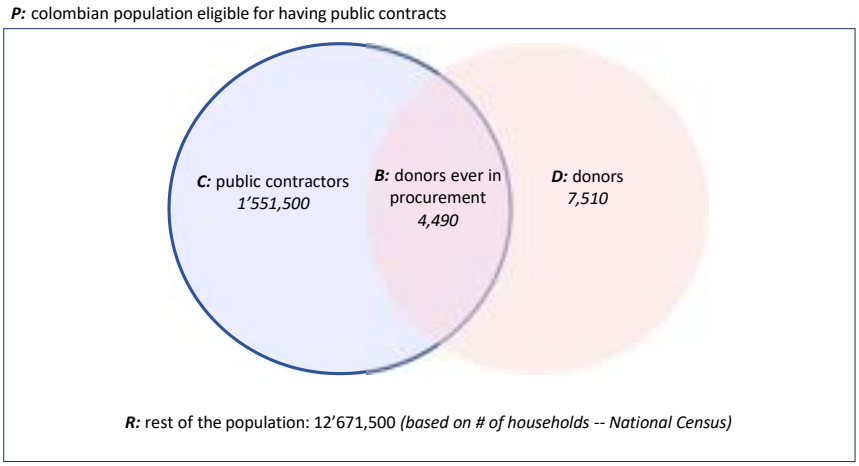
Contractors data

typeprovideriid	providername	nationalID
cedula de ciudadania	leonardo urie…	177477
nit	jorge humbert…	178880
nit	jorge humbert…	178880
nit	corporacion r…	218591
cedula de ciudadania	elias alberto…	281020

Donors data

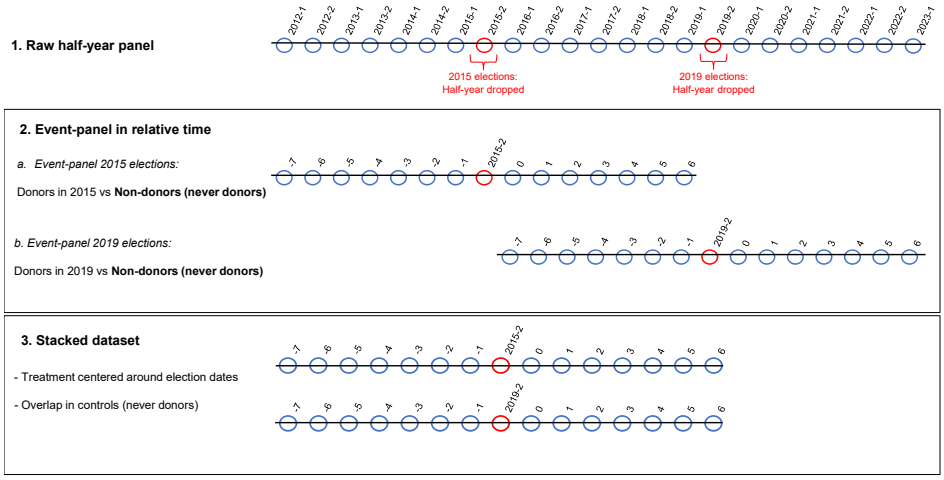
nationalID	donor_name	legal_person
177477	leonardo alayon	Person
178880	antonio lopez	Person
188241	lito cauca	Firms
188241	lito cauca	Firms
196940	felipe benavide…	Person

Note: The figure exemplifies how the data is merged between donors and contractors dataset. Note that the national ID coincides for the same individuals in both datasets. In the contractors dataset, the column *typeprovideriid* takes the value of "cedula de ciudadania" and "nit", which are the names of the ID for individuals and firms respectively. Thus we are able to identify if the contract was awarded to a firm or an individual. In the donors data, the column *legal_person* identifies whether the donor was a person or a firm. The first match between the two datasets correspond to a Person-person match, so the same individual donating is receiving the contract. The second match in the donors sample is merged with two observations. The ID in the donors data is identified as person, while the column *typeprovideriid* in the contractors identifies the two observations as firms. The merged firms in this case are identified as donors a long as the national ID coincide with a person donating, which usually corresponds to the CEO or manager. In cases where the national ID in the donors is identified as firm in both datasets, firms are also defined as donors.



Note: The figure illustrates the sample that is being used for the estimations. Our data consist of the population of contractors (blue circle) and population of donors (red circle), both of which are a subset of the Colombian population. From the red circle, we only observe outcomes for those that have ever being in the procurement system (intersection between blue and red). Thus, outcomes for donors not receiving contracts are coded as zero. We simulate the population of non-donors never registered in the procurement system (rest of the population) based on the number of households reported by the 2018 National Census. We assume that each household represents at least one individual who would be eligible for donating and obtaining a public contract.

Figure A4: Stacking procedure description



Note: The figure describes the stacking procedure. The first panel illustrates the structure of the raw data. Blue half-years will be included in the stacking. Red half-years include the month of elections (October) and are dropped from the sample as: i) there is a ban in procurement between July and October, which might affect the contract distribution, and ii) during November and December of the election year, just before the winning candidate take position into office, it is not possible to disentangle whether contracts awarded come directly from the outgoing mayor or indirectly through the incoming mayor. The second panel describes for each event (election) the normalized periods before and after the electoral half-year. Note that post-periods for the 2015 elections dataset overlap with the pre-periods of the 2019 elections dataset. For each event, donors are compared with never donors. The third panel show how both event-datasets are stacked one on top of the other. As shown in the second panel, the stacking imply that there is overlap in the control units. Equation 1 include fixed effects interacted with indicators for each event-dataset to account for overlap.

A.3 Additional results

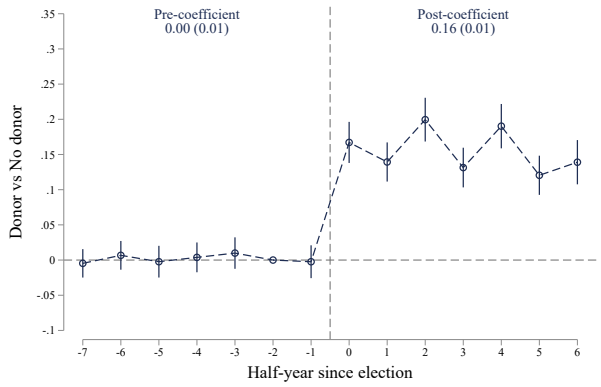
Table A1: Effect of donating to a political campaign - non-donors population robustness

Dep. Variable	Pr(contract)	Log(contract value)
	(1)	(2)
Donor×Post	0.025***	0.15***
	(0.0015)	(0.0097)
Number of observations	308,907,172	308,907,172
Number of donors	12,574	12,574
Number of non-donors	11,026,112	11,026,112
Non-donor Mean Dep. Var. before (unlogged)	0.010	0.001
Individual × Election FE	Yes	Yes
Time × Municipality × Election FE	Yes	Yes
Controls × Time dummies	Yes	Yes

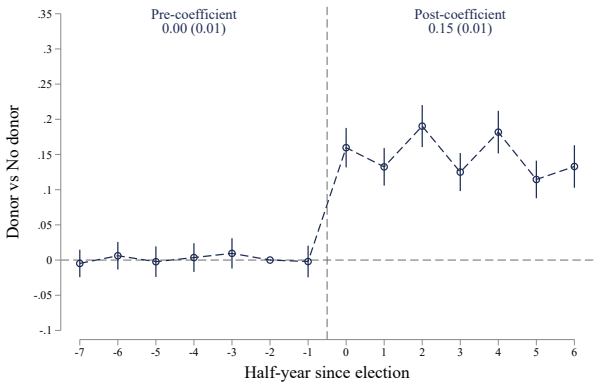
Notes: The unit of observation is at the individual-half-year level. The non-donors group exclude the number of individuals (households) per municipality defined as poor based on the Multidimensional Poverty Index from the 2018 National Census. *Donor* equals one for individuals/firms donating to a political campaign. *Post* equals 1 for periods after the elections. Contract value is log-transformed. The intensive margin is defined following Chen and Roth (2022) and set to $-x = -1$ for non-recipients. The mean of the contract value is measured for non-donors in the pre-period in million COP. Pr(contract) equals one if individual reported at least one contract per period. Controls include the cohort of entry (coded as 0 if no entry yet by the time of donation), periods of experience before the election, and type of contractor (individual or firm). Standard errors clustered at the individual level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure A5: Effect of donating to a political campaign - log transformation robustness

(a) Log(contract value) - x = 0.5

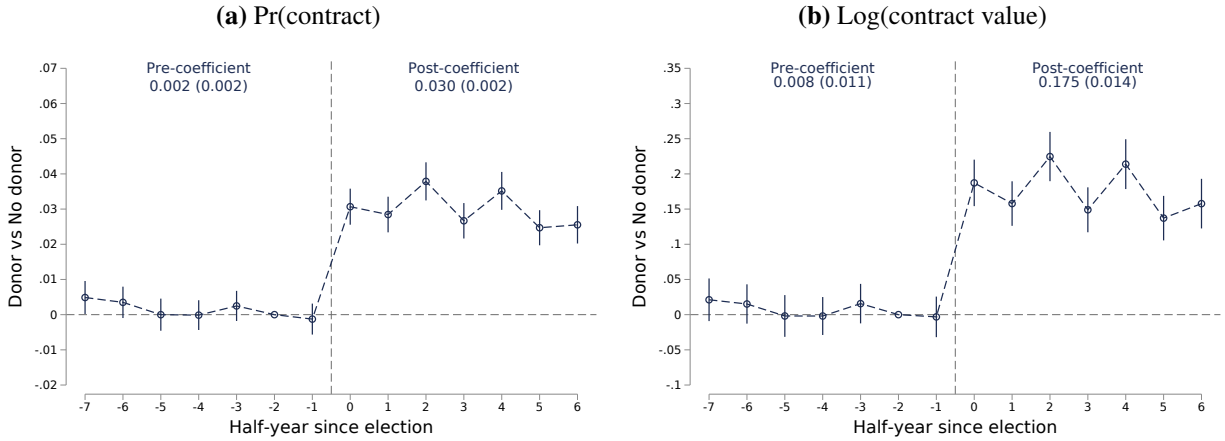


(b) Log(contract value) - x = 0.25



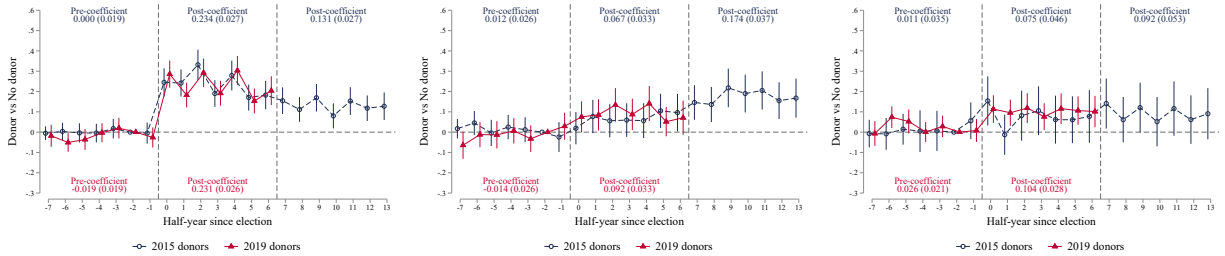
Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study version of equation 1 for the overall population. It also reports the pooled coefficients for the periods before and after. Standard errors clustered at the individual level. The contract value is log-transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -0.5$ and $x = -0.25$ for non-recipients. Pr(contract) equals one if the contractor reports having at least one contract per period.

Figure A6: Effect of donating to political campaign - no cohort fixed effects



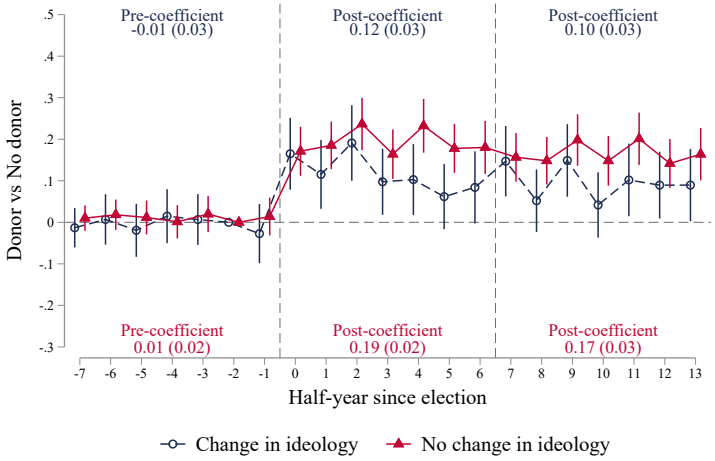
Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study version of equation 1 for the overall population. It also reports the pooled coefficients for the periods before and after. Standard errors clustered at the individual level. The contract value is log-transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients. Pr(contract) equals one if the contractor reports having at least one contract per period.

Figure A7: Effect of donating to a political campaign by supported candidate - log(contract value)



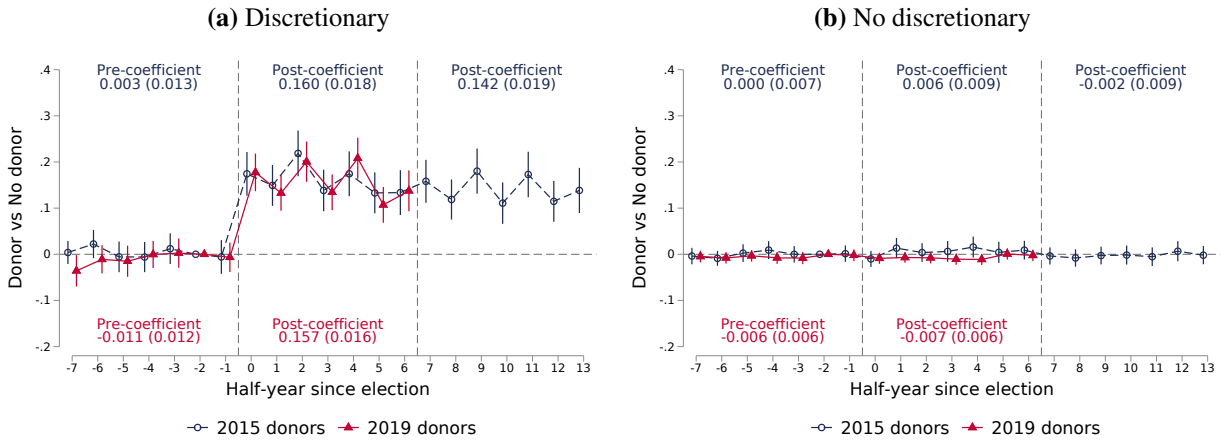
Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study based on equation 1 independently for each election sub-panel, and extending for each the respective post periods, and separating the donors' group by the position of the supported candidate in the elections, while leaving the non-donors group constant. It also reports the pooled pre and post coefficients. Standard errors clustered at the individual level. The contract value is log transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients.

Figure A8: Effect of donating to political campaign by change in ideology - log(contract value)



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study based on equation 1 comparing 2015 donors against non-donors, and separating between those receiving contracts in municipalities that in 2019 elections changed / not changed ideology of the political party in power. Blue coefficients are for the changing municipalities. The red coefficients are for not changing municipalities. It also reports the pooled pre and post coefficients. The contract value is log-transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$ for non-recipients.

Figure A9: Effect of donating to political campaign by procurement type - log(contract value)



Note: The figure reports the point estimate and the 95% confidence intervals from estimating an event study based on equation 1 separating by type of procurement. It also reports the pooled pre and post coefficients. Standard errors clustered at the individual level. The average contract value is log transformed. The intensive margin of the log transformation is defined following Chen and Roth (2022) and set to $x = -1$. *Discretionary:* include Direct and Minimum Value. *Non-discretionary:* include Contest, Tender and Selection.

B Curbing the Influence of Political Donations

B.1 Partner organizations

Open contracting partnership – NGO: It is an independent non-profit organization that supports government, businesses, and civil society to implement reforms and innovations aimed at better and more transparent public procurement. The organization works in over fifty countries, including Colombia. Open Contracting Partnership supports the project by allowing us to send communications (e-mail and physical) under their name.

Anti-corruption Institute (Instituto Anticorrupción) – NGO: it is a Colombian non-profit organization founded in 2018 with the intention of developing research and analysis on the causes and effects of corruption, as well as potential solutions to it. As partners, the Anti-corruption Institute supports the project by allowing us to send communications (e-mail and physical) under their name.

Inspector's General Office (Procuraduría General de la Nación) – Government agency: it is the national level government office overseeing public sector workers and presenting the required legal actions whenever a public servant is found in unlawful behavior. Part of the office's responsibility is to investigate inefficient procurement as long as the municipal mayor, contractor, and other relevant actors may be involved in corruption or other types of misbehavior. The Inspector General Office is related to the project only by being knowledgeable about the letters that will mention them as receptors of the data. We consider such coordination might increase the policy implications of the intervention, as it might increase the efficiency by which the office identifies probable unlawful behavior.

B.2 Letter draft

Figure B1 shows a draft of the letter received by mayors. Highlighted in yellow, there is a paragraph that mentions that attached to the letter, there is the list of donors of the latest mayoral campaigns in the municipality. For the treatment arms that do not receive an attachment with the letter, there paragraph is not included. Highlighted in red there are the parts of the letter that mention an specific authority to share the donors procurement data with. It can mention the Inspector General Office (government), or multiple investigative media outlets (journalist). In cases were no authority is mentioned, the letter does not include the red highlighted text. The rest of the text remains regardless of the treatment arm.

Figure B2 shows an example of the donor list received by mayors . The first and second column mention the national ID and name of the donor, respectively. The third column mentions the name of the candidate that was supported by the donor, while the fourth mention the total donated amount. The rest of the column report whether the donor has already received contracts with the new mayoral administration, and the value of such contracts if they have received. Similarly, it also reports if the donor received contracts under the previous mayor, and the total amount of the contracts received.

Figure B1: Draft letter for elected mayors

Bogotá, D.C., May 1st, 2024

Dear Doctor,

<<NAME>> <<LAST NAME>>
Mayor of the municipality of **<<MUNICIPALITY NAME>>**

Subject: Political donations and public procurement in your municipality
Copied to: ***<<Contact government organizations or other civil society organizations>>***

As part of an independent research study, **Open Contracting Partnership (OCP)** in partnership with the **Anti-Corruption Institute (IA)** wants to remind you of the existing and specific legal restrictions on the allocation of public contracts to political campaign donors in your municipality.

As you may be aware, Colombia has adopted strict measures to promote transparency in public procurement, particularly regarding political campaign donors.

- **The Law 1474 of 2011**, in its second article, establishes that natural or legal persons who have made contributions to the political campaign of the mayor-elect ***may not receive contracts*** when such donations exceed the limits established by this law. In addition, it extends this restriction to family members of natural persons and to the legal representatives, partners, and members of the board of directors of legal entities.
- **The Statutory Law 1475 of 2011,** in its twenty-seventh article, ***prohibits political donations*** from individuals whose main income in the previous year comes from contracts with the public sector.
- Likewise, **Law 80 of 1993,** in its eighth article, establishes a detailed list of ***inabilities and incompatibilities*** for contracting with the state.

Attached to this letter you will find the list of donors to the political campaigns in your municipality during the last elections of 2023, as well as the values donated by each of them. We have included information on public procurement and donation amounts based on information available on the *Clear Accounts in Elections* page and on the *Open Data portal* as **of April 30, 2024**.

We hope that this legal framework and detailed cross-checking of information will be valuable for you to manage the public resources of your municipality and, above all, useful for complying with all the restrictions provided for by law. We remind you that as part of our process of empowering local actors and with the aim of surveillance and monitoring the contracting process, all the information contained in this letter, as well as the attached documents and databases, are being shared with ***<<Contact government organizations or other civil society organizations>>***

If you have any doubts regarding this communication or its content, we invite you to consult the portal for resolved questions: https://www.open-contracting.org/studies/donnors_study

Kind regards

The Open Contracting Partnership Colombia Team
The Anti-Corruption Institute Team.

This communication is addressed solely and exclusively to the public office or person to whom reference is made. All the information mentioned and attached to this communication comes from official public sources of the Colombian Government. Open Contracting Partnership, OCP, is committed to the legal, lawful, confidential, and secure treatment of your data, so any additional information outside of what is available in the public domain will be treated in accordance with Colombian regulations on data management.

ID del donante (Cedula o NIT)	Nombre completo del donante	Dono al candidato...	Valor donado	Recibio contratos durante la actual administracion con corte al 30/04/2024	Valor total contratado durante la actual administracion con corte al 30/04/2024	Recibio contratos durante la administracion pasada	Valor total contratado durante la administracion pasada
30341103	Myriam Yolanda Rojas Mafla	Campo Elias Ramirez Padilla	$30.000.000	No	-	No	-
91179414	Robinson Rodriguez Sarmiento	William Mantilla Serrano	$51.000.000	No	-	Si	$120.205.904
1098610878	Yuly Andrea Mantilla Mantilla	William Mantilla Serrano	$37.000.000	No	-	Si	$125.232.376
9007546468	Partido Politico Centro Democratico	William Mantilla Serrano	$10.000.000	No	-	No	-
13512558	Sabal Mantilla Rivero	Dalida Prada Villamizar	$4.500.000	No	-	No	-
70119713	Mario De Jesus Osorio Zora	Blanca Azucena Rodriguez Romero	$5.813.745	No	-	No	-
1095806423	Laura Tatiana Florez Prada	Blanca Azucena Rodriguez Romero	$290.000	No	-	No	-
1095920214	Jose Luis Prada Rueda	Mauricio Gomez Nino	$40.000.000	No	-	No	-
13826970	Oscar Clavijo Camargo	Mauricio Gomez Nino	$7.500.000	No	-	No	-
37727297	Jackeline Gomez Carreno	Mauricio Gomez Nino	$6.000.000	No	-	Si	$96.072.696
1095920583	Cristian Mauricio Gomez Perez	Mauricio Gomez Nino	$6.000.000	No	-	No	-

B.3 Balance

We test for balance across randomized municipalities on (i) municipal level variables, including procurement history, electoral results, donors' behavior and municipal characteristics, and (ii) observable donor characteristics, including their total donated value, contracts awarded in the previous mayoral period, the existence of a registry in the procurement system, and the ranking of the donor relative to other donors of the same candidate based on the donated value. We also test for balance across omitted and included donors. While only 164 municipalities received a list of donors with an omitted individual, we randomized for all treatment arms to ensure global balance.

We test for balance in municipal characteristics across treatment arms in Table B1 by estimating a linear regression comparing municipal outcomes for each treatment arm against the constant. We include randomization block fixed effects and robust standard errors. The bottom of the table reports the p-value of a joint significance test for the null that all the differences across treatment arms are jointly equal to zero.

We test for balance in donor level variables across treatment arms in Table B2 by estimating a linear regression comparing outcomes for each treatment arm against the constant. We include randomization block fixed effects and standard errors clustered at the municipal level (randomization level). Finally, we test for balance between omitted and included donors in Table B3 by estimating a linear regression comparing outcomes for each treatment arm against the constant. We include donor randomization block fixed effects and standard errors clustered at the municipal level.

Table B1: Balance on municipal covariates

Panel A: municipal procurement covariates												
Dep. Variable	# contractors			# contracts			# discretionary			Contract value		
Electoral cycle	2012-2015	2016-2019	2020-2023	2012-2015	2016-2019	2020-2023	2012-2015	2016-2019	2020-2023	2012-2015	2016-2019	2020-2023
Control	2.126	3.432	3.510	0.758	1.754	1.631	0.379	0.541	0.754	34.371	69.746	99.349
	(1.830)	(3.120)	(2.894)	(0.613)	(1.566)	(1.368)	(0.270)	(0.471)	(0.667)	(65.331)	(99.983)	(93.836)
Placebo letter	7.282	8.342	6.123	1.605	1.897	1.602	1.004	0.970	0.973	65.687	127.594	173.566
	(6.514)	(7.588)	(5.621)	(1.420)	(1.727)	(1.617)	(0.866)	(0.928)	(1.061)	(86.189)	(138.959)	(172.924)
Letter + no CC + no list	-1.604	-2.114	-2.338	-0.386	-0.737	-0.984	-0.188	-0.280	-0.548	-19.913	84.367	-66.466
	(1.658)	(2.208)	(1.976)	(0.385)	(0.645)	(0.759)	(0.240)	(0.339)	(0.537)	(65.714)	(144.315)	(51.764)
Letter + no CC + full list	-1.940	-2.939	-3.837	-0.438	-0.635	-1.450	-0.328	-0.526	-1.216	-87.962	-96.199	-90.310
	(1.984)	(2.696)	(2.663)	(0.461)	(0.808)	(1.028)	(0.283)	(0.425)	(0.764)	(57.707)	(63.265)	(67.949)
Letter + no CC + partial list	1.111	3.682	5.303	0.245	1.213	3.173	0.204	1.068	2.904	235.007	56.835	114.378
	(2.378)	(5.084)	(5.723)	(0.566)	(1.667)	(3.259)	(0.355)	(1.114)	(2.818)	(267.630)	(82.520)	(120.273)
Letter + CC journalist + no list	-2.191	-3.239	-2.942	-0.519	-1.134	-1.136	-0.296	-0.496	-0.689	30.742	-84.647	-82.144
	(1.696)	(2.233)	(2.021)	(0.401)	(0.670)	(0.789)	(0.244)	(0.329)	(0.557)	(110.911)	(51.077)	(53.395)
Letter + CC journalist + full list	-2.352	-3.587	-4.044	-0.540	-1.171	-1.587	-0.306	-0.446	-0.955	-84.033	-94.288	-86.011
	(2.107)	(2.946)	(2.846)	(0.492)	(0.893)	(1.108)	(0.297)	(0.449)	(0.774)	(56.495)	(63.967)	(67.915)
Letter + CC journalist + partial list	-1.218	-2.486	-2.752	-0.263	-0.694	-1.026	-0.140	-0.311	-0.773	-59.323	-84.801	-76.443
	(2.017)	(2.808)	(2.585)	(0.453)	(0.763)	(0.953)	(0.288)	(0.415)	(0.701)	(56.343)	(59.689)	(62.038)
Letter + CC government + no list	-1.112	-1.245	-0.445	-0.287	-0.382	-0.207	-0.182	-0.224	-0.162	-46.844	-40.481	-19.466
	(1.594)	(2.096)	(1.986)	(0.370)	(0.619)	(0.745)	(0.226)	(0.305)	(0.548)	(44.997)	(50.574)	(52.745)
Letter + CC government + full list	-1.173	-0.989	-0.776	-0.270	-0.397	-0.168	-0.090	-0.080	-0.139	-72.418	-77.161	-46.766
	(1.868)	(2.449)	(2.281)	(0.439)	(0.704)	(0.900)	(0.291)	(0.393)	(0.658)	(53.032)	(58.117)	(57.800)
Letter + CC government + partial list	-0.968	-1.672	-1.161	-0.211	-0.544	-0.609	-0.108	-0.253	-0.360	-46.743	-3.743	-22.995
	(1.104)	(1.575)	(1.370)	(0.266)	(0.490)	(0.574)	(0.167)	(0.217)	(0.391)	(38.321)	(55.883)	(38.260)
Number of municipalities	876	876	876	876	876	876	876	876	876	876	876	876
Joint significance p-value	0.746	0.746	0.574	0.828	0.755	0.568	0.697	0.719	0.608	0.818	0.603	0.696

Panel B: municipal elections and donations covariates												
Dep. Variable	# votes		% votes		# candidates	# donors per candidate			# total donors	Donated value		
Candidate rank	winner	runner-up	winner	runner-up		winner	runner-up	other cand.		winner	runner-up	other cand.
Control	7.965	2.295	0.467	0.045	1.951	3.647	1.026	0.824	5.495	28.811	15.281	4.182
	(5.564)	(1.458)	(0.097)	(0.019)	(0.281)	(0.788)	(0.392)	(0.716)	(1.442)	(9.619)	(10.406)	(5.200)
Placebo letter	14.403	5.392	0.466	0.040	1.978	3.963	0.872	1.185	5.910	26.672	3.031	21.171
	(11.896)	(4.943)	(0.099)	(0.019)	(0.283)	(0.767)	(0.389)	(0.765)	(1.332)	(9.780)	(5.639)	(18.350)
Letter + no CC + no list	0.712	0.616	0.503	0.035	1.959	2.655	0.266	0.540	3.481	13.367	-5.532	-0.531
	(3.590)	(1.906)	(0.098)	(0.019)	(0.295)	(0.757)	(0.367)	(0.781)	(1.372)	(8.971)	(4.353)	(7.407)
Letter + no CC + full list	-0.867	-0.003	0.460	0.050	2.004	3.928	0.648	-0.060	4.517	20.734	0.150	-10.455
	(3.976)	(1.974)	(0.101)	(0.022)	(0.325)	(0.884)	(0.457)	(0.875)	(1.607)	(10.300)	(6.719)	(9.462)
Letter + no CC + partial list	4.806	3.980	0.450	0.058	1.877	3.219	0.703	0.376	4.263	41.081	-6.233	8.480
	(4.752)	(3.301)	(0.104)	(0.023)	(0.299)	(0.833)	(0.505)	(0.593)	(1.299)	(24.111)	(5.330)	(13.714)
Letter + CC journalist + no list	0.460	0.294	0.453	0.046	2.004	3.446	1.530	0.131	5.117	19.323	8.408	-4.018
	(3.363)	(1.685)	(0.098)	(0.019)	(0.296)	(0.799)	(0.509)	(0.559)	(1.244)	(8.927)	(6.600)	(6.626)
Letter + CC journalist + full list	0.567	0.771	0.424	0.053	2.022	4.165	1.084	-0.042	5.154	22.930	9.672	-1.414
	(4.170)	(2.064)	(0.100)	(0.023)	(0.313)	(1.023)	(0.535)	(0.679)	(1.510)	(10.613)	(7.683)	(6.982)
Letter + CC journalist + partial list	1.785	1.313	0.421	0.025	2.131	3.728	1.466	1.522	6.772	32.931	9.141	10.454
	(3.693)	(1.820)	(0.101)	(0.021)	(0.339)	(0.849)	(0.681)	(1.071)	(1.823)	(10.600)	(9.177)	(11.121)
Letter + CC government + no list	-0.051	0.809	0.461	0.048	1.813	3.501	0.630	0.349	4.563	21.683	-2.858	-2.360
	(3.418)	(1.755)	(0.098)	(0.019)	(0.280)	(0.820)	(0.355)	(0.671)	(1.314)	(9.678)	(4.518)	(7.187)
Letter + CC government + full list	0.947	1.874	0.543	0.064	1.531	3.274	0.721	-0.696	3.390	20.766	-1.266	-6.573
	(3.665)	(2.011)	(0.104)	(0.023)	(0.299)	(0.956)	(0.595)	(0.756)	(1.762)	(9.884)	(7.254)	(8.012)
Letter + CC government + partial list	1.071	0.578	0.470	0.040	2.025	3.259	0.730	0.842	4.773	17.852	-0.772	4.521
	(2.790)	(1.624)	(0.103)	(0.021)	(0.322)	(0.832)	(0.460)	(0.888)	(1.430)	(8.861)	(4.605)	(6.425)
Number of municipalities	876	876	876	876	876	876	876	876	876	876	876	876
Joint significance p-value	0.932	0.644	0.663	0.754	0.605	0.663	0.516	0.809	0.839	0.435	0.359	0.764

Panel C: general municipal characteristics and other variables												
Dep. Variable	Population	Area	Height	Dist. capital	Poverty	Andean	Caribbean	Pacific	Orinoquian	Amazonian	# teachers	# students
Control	30.112	1685.766	549.599	108.131	60.410	0.310	0.355	0.140	-0.023	0.218	2.504	6.158
	(18.408)	(761.879)	(206.726)	(20.096)	(5.300)	(0.128)	(0.132)	(0.091)	(0.019)	(0.103)	(1.367)	(3.196)
Placebo letter	68.859	1599.301	638.729	104.643	62.885	0.323	0.336	0.138	0.013	0.190	6.286	12.853
	(59.396)	(748.374)	(203.900)	(20.208)	(5.146)	(0.125)	(0.131)	(0.091)	(0.024)	(0.106)	(5.191)	(10.169)
Letter + no CC + no list	4.665	1391.553	652.448	105.225	62.625	0.300	0.398	0.173	-0.033	0.162	0.909	2.246
	(16.626)	(745.405)	(202.306)	(19.916)	(5.215)	(0.125)	(0.133)	(0.092)	(0.017)	(0.101)	(1.539)	(3.200)
Letter + no CC + full list	-9.087	1670.762	507.357	104.198	62.787	0.345	0.371	0.091	0.012	0.181	-0.549	-0.039
	(19.851)	(868.139)	(213.740)	(20.318)	(5.668)	(0.134)	(0.136)	(0.094)	(0.034)	(0.110)	(1.771)	(3.690)
Letter + no CC + partial list	33.672	2088.980	522.157	89.837	61.633	0.291	0.353	0.109	0.048	0.199	3.241	5.847
	(32.110)	(816.164)	(214.542)	(21.652)	(5.258)	(0.132)	(0.136)	(0.096)	(0.040)	(0.104)	(2.734)	(4.444)
Letter + CC journalist + no list	-2.709	1394.526	640.694	103.629	62.125	0.318	0.407	0.091	0.012	0.171	0.042	0.984
	(15.947)	(740.017)	(203.291)	(19.686)	(5.162)	(0.129)	(0.131)	(0.089)	(0.023)	(0.102)	(1.410)	(2.991)
Letter + CC journalist + full list	-5.234	1612.344	463.230	108.979	64.157	0.272	0.426	0.128	-0.006	0.181	-0.149	0.642
	(21.096)	(797.320)	(230.117)	(20.951)	(5.595)	(0.132)	(0.138)	(0.105)	(0.030)	(0.104)	(1.866)	(3.813)
Letter + CC journalist + partial list	6.392	1335.708	313.903	105.195	64.309	0.272	0.426	0.128	-0.006	0.181	0.814	2.568
	(18.293)	(740.067)	(213.718)	(20.154)	(5.503)	(0.136)	(0.138)	(0.105)	(0.031)	(0.104)	(1.690)	(3.443)
Letter + CC government + no list	8.767	2732.271	614.603	100.123	60.293	0.345	0.353	0.118	0.003	0.181	1.066	3.056
	(15.983)	(969.994)	(205.579)	(20.020)	(5.180)	(0.127)	(0.130)	(0.090)	(0.023)	(0.106)	(1.435)	(3.058)
Letter + CC government + full list	1.056	1318.762	685.194	106.918	59.934	0.309	0.371	0.091	0.012	0.217	0.600	2.021
	(17.926)	(740.963)	(219.354)	(21.256)	(5.491)	(0.135)	(0.139)	(0.093)	(0.034)	(0.106)	(1.581)	(3.302)
Letter + CC government + partial list	5.834	2095.609	387.015	107.028	64.599	0.319	0.355	0.131	-0.004	0.199	0.850	2.642
	(12.565)	(821.055)	(219.673)	(20.097)	(5.567)	(0.138)	(0.135)	(0.097)	(0.032)	(0.105)	(1.035)	(2.396)
Number of municipalities	876	876	876	876	876	876	876	876	876	876	876	876
Joint significance p-value	0.882	0.215	0.269	0.737	0.899	0.998	0.876	0.912	0.717	0.751	0.876	0.908

Notes: The unit of analysis is the municipality. The table shows the average municipal characteristics per treatment arms. All regressions include randomization block fixed effects and robust standard errors in parentheses. The bottom of the table reports the p-value of a joint significance test for the difference of each arm treated arm relative to the control group. Panel A show balance in municipal procurement outcomes by electoral cycle (2012-2015, 2016-2019, 2020-2023). *# contractors* measures the number of unique contractors in hundreds. *# contracts* and *# discretionary* measure the number of contracts and discretionary contracts, respectively, in thousands. *Contract value* report the total value in hundred million COP. Panel B report on electoral and donation covariates in the last electoral cycle (2020-2023). *# votes* per winner and runner-up in thousands. *% votes* per winner and runner-up candidate relative to overall votes in municipality. *# candidates* is for the number of participating candidates. *# donors per candidate* reported per winner, runner-up and other candidates. *# donors* is the sum of all reported donors in the municipality. *Donated value* per winner, runner-up and other candidates in million COP. Panel C report on general characteristics. *Population* in thousand inhabitants as reported by the 2005 national census. Municipal *Area* in squared kilometers (Km^2). *Height* reports the distance relative to the sea level. *Distance capital* in linear kilometers. *Poverty* is the share of households that reported unmet basic needs in 2012. *Andean*, *Caribbean*, *Pacific*, *Orinoquian* and *Amazonian* measure the share of municipalities in each regions. *# teachers* in hundreds and # students in thousands, for 2012.

Table B2: Balance on donor characteristics by municipal treatment arms

Dep. Variable	Donated val. last election (1)	# contracts 2020-2023 (2)	Contracted val. 2020-2023 (3)	Had contract before 2024 (4)	Had contract since 2024 (5)	Rank donor =1 if highest (6)	Donated above threshold (7)
Control	6.681	0.429	-74.448	0.163	0.041	3.094	0.535
	(1.927)	(0.157)	(92.977)	(0.062)	(0.024)	(0.598)	(0.103)
Placebo letter	7.839	0.429	632.409	0.140	0.039	2.462	0.515
	(2.957)	(0.194)	(533.182)	(0.060)	(0.024)	(0.539)	(0.102)
Letter + no CC + no list	5.003	0.409	-56.538	0.191	0.033	2.049	0.509
	(1.809)	(0.160)	(81.553)	(0.061)	(0.023)	(0.647)	(0.101)
Letter + no CC + full list	5.401	0.394	5.690	0.155	0.035	2.279	0.532
	(1.765)	(0.184)	(48.710)	(0.063)	(0.024)	(0.535)	(0.106)
Letter + no CC + partial list	8.336	0.558	-56.161	0.204	0.034	1.984	0.582
	(3.322)	(0.209)	(97.796)	(0.068)	(0.024)	(0.662)	(0.102)
Letter + CC journalist + no list	6.159	0.574	-18.145	0.188	0.049	3.160	0.486
	(1.732)	(0.176)	(54.410)	(0.061)	(0.024)	(0.643)	(0.101)
Letter + CC journalist + full list	6.624	0.216	25.839	0.186	0.042	3.270	0.571
	(1.891)	(0.167)	(73.390)	(0.061)	(0.024)	(0.649)	(0.107)
Letter + CC journalist + partial list	7.404	0.456	-20.625	0.149	0.029	2.645	0.508
	(1.765)	(0.168)	(69.464)	(0.060)	(0.023)	(0.740)	(0.102)
Letter + CC government + no list	5.350	0.426	-52.795	0.171	0.039	2.955	0.506
	(1.766)	(0.171)	(77.219)	(0.063)	(0.023)	(0.662)	(0.102)
Letter + CC government + full list	5.935	0.706	-70.872	0.185	0.061	3.337	0.496
	(1.795)	(0.245)	(115.682)	(0.066)	(0.026)	(0.987)	(0.103)
Letter + CC government + partial list	5.271	0.248	-42.474	0.137	0.044	2.106	0.570
	(1.801)	(0.162)	(81.997)	(0.061)	(0.024)	(0.568)	(0.107)
N. of donors	8,560	8,560	8,560	8,560	8,560	8,560	8,560
N. of municipalities	876	876	876	876	876	876	876
Joint significance p-value	0.719	0.284	0.995	0.408	0.534	0.574	0.304

Notes: The unit of analysis is the donor for the electoral period 2024-2027. The table shows the average donor characteristics across municipal treatment arms relative to the constant. All regressions include block-fixed effects and standard errors clustered at the municipal level. The bottom of the table reports the p-value of a joint significance test for the difference of each arm treated arm relative to the control group. *Donated value* in million COP is for the total amount donated by an individual donor to a single candidate. *# contracts* and *Contracted value* for 2020-2023 measures the procurement characteristics of donors in the mayoral period before the donation. *Contracted value* in million COP. *Had contracts before 2024* measures whether the donors were already registered contractors at the time of the mayoral period for which they donated started. *Had contracts since 2024* measures if the donor received a contract between January and May of 2024. *Rank donor* measures the ranking of the donor by candidate and municipality based on the amount donated. *Donated above threshold* measures if the total amount donated by an individual or firm is above the legal limit for being allowed to participate in public procurement procedures.

Table B3: Balance on donor characteristics by omitted and included donor

Dep. Variable	Donated val. last election (1)	# contracts 2020-2023 (2)	Contracted val. 2020-2023 (3)	Had contract before 2024 (4)	Had contract since 2024 (5)	Rank donor =1 if highest (6)	Donated above threshold (7)
Include donor	14.800	0.330	5.088	0.256	0.026	20.002	0.026
	(3.127)	(0.232)	(4.117)	(0.075)	(0.027)	(1.942)	(0.027)
Omitted donor	14.799	0.452	-6.620	0.272	0.029	19.923	0.021
	(3.144)	(0.256)	(22.588)	(0.077)	(0.028)	(1.942)	(0.029)
N. of donors	8,560	8,560	8,560	8,560	8,560	8,560	8,560
Joint significance p-value	1	.27	.61	.26	.61	.42	.68

Notes: The unit of analysis is the donor for the electoral period 2024-2027. The table shows the average donor characteristics across omitted or included donor treatment arms. All regressions include donor block-fixed effects and robust standard errors. The bottom of the table reports the p-value of a joint significance test for the difference of each arm treated arm relative to the control group. *Donated value* in million COP is for the total amount donated by an individual donor to a single candidate. *# contracts* and *Contracted value* for 2020-2023 measures the procurement characteristics of donors in the mayoral period before the donation. *Contracted value* in million COP. *Had contracts before 2024* measures whether the donors were already registered contractors at the time of the mayoral period for which they donated started. *Had contracts since 2024* measures if the donor received a contract between January and May of 2024. *Rank donor* measures the ranking of the donor by candidate and municipality based on the amount donated. *Donated above threshold* measures if the total amount donated by an individual or firm is above the legal limit for being allowed to participate in public procurement procedures.

B.4 Additional results

Table B4: Placebo letter effect on donors procurement outcomes

Dep. Variable	Pr(contract) (1)	Log(contract value) (2)
Donor		
Placebo×Post	0.005	0.036
	(0.003)	(0.022)
Mean of dependent variable	0.003	0.126
N. of obs.	71752694	71752694
Number of municipalities	217	217
Number of donors	2,218	2,218
Contractor FE	Yes	Yes
Block $\times$ $\mathbb{1}[Donor]$ $\times$ Time FE	Yes	Yes

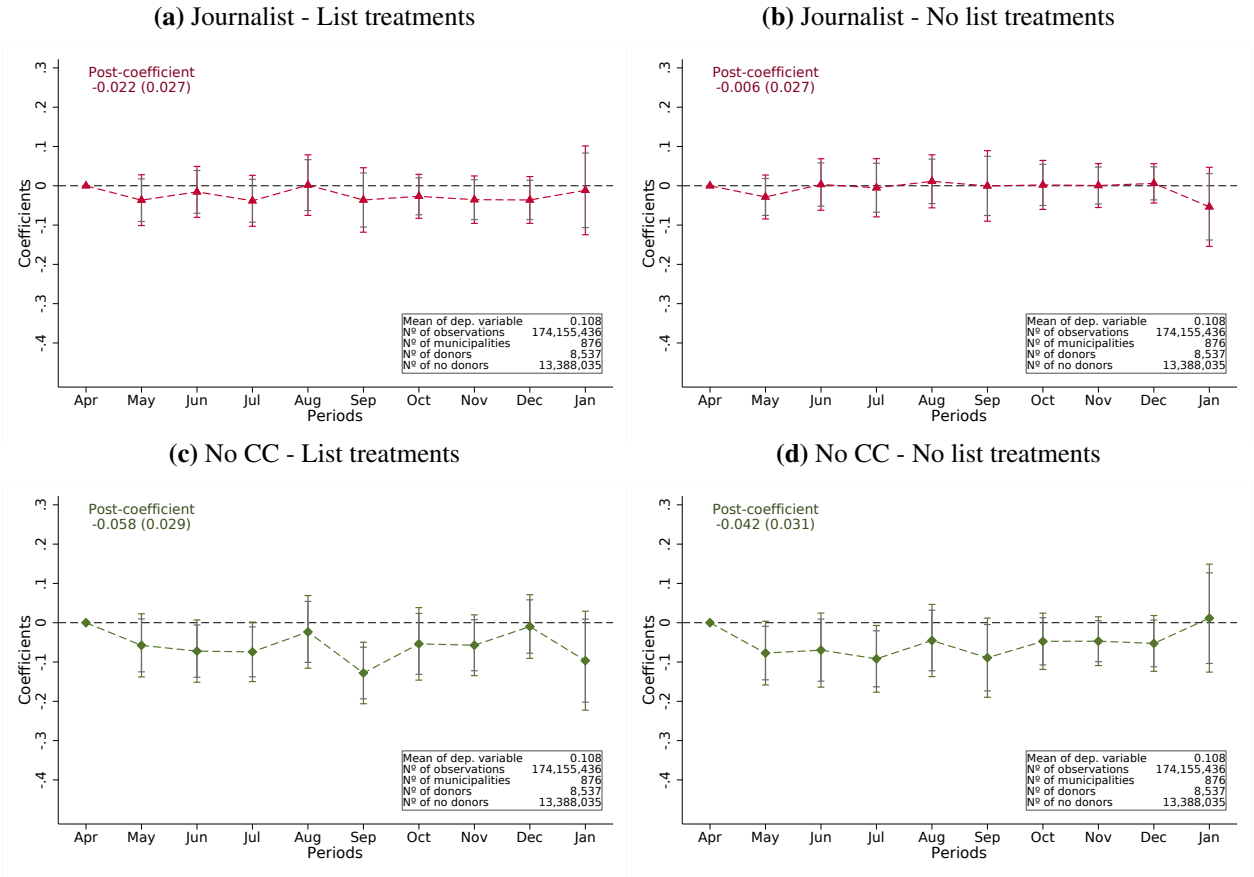
Notes: The unit of analysis is the individual-month, estimating equation 2 on procurement outcomes, comparing only the placebo arm with the pure control. Panel for non-donors estimated but not reported. See Table 4. *Placebo* is for the placebo letter being outside the control group. *Pr(contract)* equals 1 if the donor received a contract in t, 0 otherwise. *log(contract value)* is the value of contracts. The log transformation follows Chen and Roth (2022) and define the intensive margin as $x = -1$ for non-recipients. *Post* equal 1 for periods after the letter were sent to mayors. The mean of the outcomes is measured in the pre-period and is reported in million COP for the contract value. *Donor block FE* is for donor randomization block fixed effects. *Time FE* is month fixed effects. Standard errors clustered at the municipal level are in parentheses. $^{*}p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B5: Effect of RCT letter on donors procurement outcomes - omitted and included donors

Dep. Variable	Pr(contract) (1)	Log(contract value) (2)
Donor		
A. Inspector General×Post		
Inspector General + no list×Post	0.001	0.005
	(0.002)	(0.015)
Inspector General + list + Omitted donor×Post	-0.015	-0.083
	(0.009)	(0.051)
Inspector General + list + Included donor×Post	-0.007**	-0.045**
	(0.003)	(0.020)
B. Investigative Journalist×Post		
Investigative Journalist + no list×Post	-0.001	-0.012
	(0.003)	(0.018)
Investigative Journalist + list + Omitted donor×Post	0.006	0.038
	(0.006)	(0.033)
Investigative Journalist + list + Included donor×Post	-0.002	-0.018
	(0.003)	(0.016)
C. No CC×Post		
No CC + no list×Post	-0.001	-0.015
	(0.003)	(0.019)
No CC + list + Omitted donor×Post	0.003	0.020
	(0.010)	(0.057)
No CC + list + Included donor×Post	-0.004	-0.026
	(0.003)	(0.018)
Linear combinations P-values		
Inspector General + list: Omitted donor - Included donor	.389	.479
Mean of dependent variable	.003	.111
N. of obs.	174155436	174155436
Number of municipalities	876	876
Number of donors	8537	8537
Individual FE	Yes	Yes
Block × $\mathbb{1}[Donor]$ × Time FE	Yes	Yes

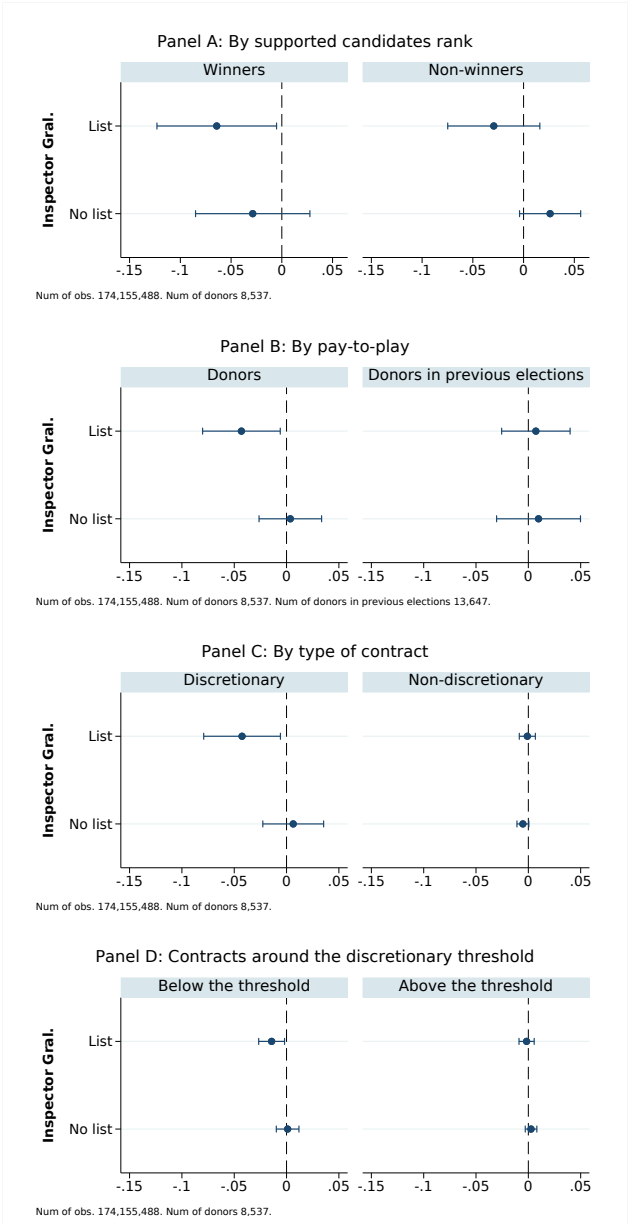
Notes: The unit of analysis is the individual-month, estimating equation 2 on procurement outcomes. Panel for non-donors estimated but not reported. See Table 4. *Inspector General* is for the treatment letter carbon copying the relevant public office that oversight public procurement. *Investigative Journalist* is for the treatment letter carbon copying investigative journalist. *No CC* is for municipalities receiving the treatment letter without carbon copy additional organizations. *No list* is for treatment letters not including the donor list as attachment. *List* group the treatment letter including the full and partial list of donors as attachment. *Pr(contract)* equals 1 if the donor received a contract in t, 0 otherwise. *log(contract value)* is the value of contracts. The log transformation follows Chen and Roth (2022) and define the intensive margin as $x = -1$ for non-recipients. *Post* equal 1 for periods after the letter were sent to mayors. The mean of the outcomes is measured in the pre-period and is reported in million COP for the contract value. *Individual FE* is for individual fixed effects. *Block* × $\mathbb{1}[Donor]$ × *Time FE* is for randomization block by donation status by month fixed effects. Standard errors clustered at the municipal level are in parentheses. $^{*}p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure B3: Effect of RCT letter on donors procurement - log(contract value) post-treatment coefficients



Note: The unit of analysis is the individual-month. The figure shows point estimates and 95% confidence intervals from estimating equation 2 on procurement outcomes. Fixed effects for randomization block $\times$ $\mathbb{1}[Donor]$ $\times$ month are included. Standard errors clustered at the municipality level. The point estimates represent the effect of the treatment post-intervention. Top panel report the coefficients in the municipalities were mayors received the list. Bottom panel show the results for municipalities that did not received the list. The bottom labels specify the *Letter* treatment *Investigative Journalist*, or *No CC*. The outcome is the *Log(contract value)*, with non-recipients assigned a value of 0. The log transformation for the value follows Chen and Roth (2022), defining the intensive margin as $x = -1$ for non-recipients.

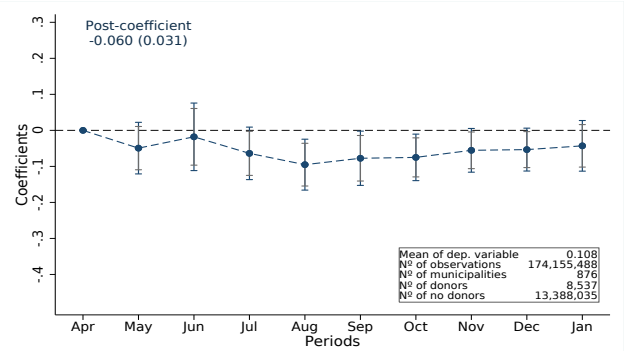
Figure B4: Effect of Inspector General Letter on donors procurement - other specifications on log(contract value)



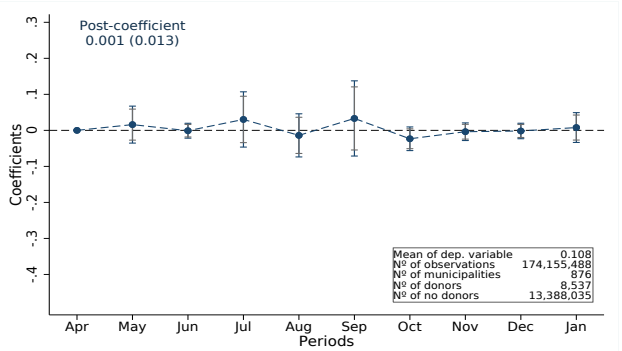
Note: The unit of analysis is the individual-month. Each panel in the figure shows point estimates and 95% confidence intervals from estimating equation 2 on procurement outcomes. Coefficients only reported for donors in the *Inspector General letter treatment arm*. Fixed effects for randomization block $\times$ $\mathbb{1}[Donor]$ $\times$ month are included. Standard errors clustered at the municipality level. The outcome is the *Log(contract value)*, with non-recipients assigned a value of 0. The log transformation for the value follows Chen and Roth (2022), defining the intensive margin as $x = -1$ for non-recipients. **Panel A** reports the effects by diving donors between those supporting the winner candidate and those supporting non-winner candidates, relative to their respective comparison in the control group. We include donor randomization block fixed effects instead of individual fixed effects for comparing donors supporting the same rank across municipalities. **Panel B** reports the effects for donors and for non-donors that were donors in previous electoral races. **Panel C** estimates the effects of donating on contract value separating the outcome by type of contract. **Panel D** estimates the effects of donating on contract value separating the outcome by value received just below the threshold of *Minimum value* contract, and just above it. Excluding the coefficients for donors in the treatment *Inspector General + list* and + *no list*, overall, the panels estimate a total of 40 coefficients of the effect of donating on log(contract value). From those, corresponding to the other treatment arms, only four are significant at least at the 10%.

Figure B5: Impact on donors procurement efficiency - monthly post-treatment coefficients on log(overrun value)

(a) Inspector General - List treatments



(b) Inspector General - No list treatments



Notes: The unit of analysis is the individual-month, estimating equation 2 on the overrun value. *Inspector General* is for the treatment letter carbon copying the relevant public office that oversight public procurement. *Investigative Journalist* is for the treatment letter carbon copying investigative journalist. *No CC* is for municipalities receiving the treatment letter without carbon copy additional organizations. *No list* is for treatment letters not including the donor list as attachment. *List* group the treatment letter including the full and partial list of donors as attachment. The outcome *log(overrun value)* is the value of overrun. The log transformation follows Chen and Roth (2022) and define the intensive margin as $x = -1$ for non-recipients.

Table B6: Impact on municipal procurement outcomes

Dep. Variable	Log(contract value)	
	(1)	(2)
A. Inspector General×Post	-0.032	
	(0.082)	
Inspector General + no list×Post		-0.062
		(0.093)
Inspector General + list×Post		-0.002
		(0.103)
B. Investigative Journalist×Post	-0.036	
	(0.087)	
Investigative Journalist + no list×Post		0.040
		(0.092)
Investigative Journalist + list×Post		-0.112
		(0.118)
C. No CC×Post	0.113	
	(0.085)	
No CC + no list×Post		0.100
		(0.111)
No CC + list×Post		0.125
		(0.092)
Linear comb. P-values		
A. Inspector General - B. Investigative Journalist	0.957	
A. Inspector General - C. No CC	0.060	
Inspector General + list - Inspector General + no list		0.570
Inspector General + list - Investigative Journalist + list		0.388
Inspector General + list - No CC + list		0.225
Mean of dependent variable	2424.079	2424.079
Number of obs.	11,388	11,388
Number of municipalities	876	876
Municipality FE	Yes	Yes
Block × Time FE	Yes	Yes

Notes: The unit of analysis is the municipality-month, estimating equation 2 on procurement outcomes. *Inspector General* is for the treatment letter carbon copying the relevant public office that oversight public procurement. *Investigative Journalist* is for the treatment letter carbon copying investigative journalist. *No CC* is for municipalities receiving the treatment letter without carbon copy additional organizations. *No list* is for treatment letters not including the donor list as attachment. *List* group the treatment letter including the full and partial list of donors as attachment. *Pr(contract)* equals 1 if the individual received a contract in t, 0 otherwise. *log(contract value)* is the value of contracts received. The log transformation follows Chen and Roth (2022) and define the intensive margin as $x = -1$ for non-recipients. *Post* equal 1 for periods after the letter were sent to mayors. The mean of the outcomes is measured in the pre-period and is reported in million COP for the contract value. *Municipality FE* is for municipal fixed effects. *Block × Time FE* is for randomization block by month fixed effects. Standard errors clustered at the municipal level are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.