Where or Whom to Contract? An Empirical Study of Political Spillover Effects in Municipal Public Procurement

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Abstract

OECD and other international organizations have been very keen in recommending principles and institutional safeguards to curb corruption and to enhance transparency and integrity in public procurement. Despite the fact that Portugal is being considered a good example of e-procurement policies and practices among European countries, this is a very sensitive issue.

Based on the the literature that provides evidence of a politicized administration of public procurement contracts, but limited to a specific municipality, this paper extends the analysis of political effects to other municipalities. Specifically, it asks if there is a relation between the political parties in power in a given municipality and the frequency of contracts awarded to a given firm?

Our results show that for political reasons private firms are more likely to win a contract in a given municipality if they have already won contracts in other municipalities led by the same political party. We rely on a dataset ('base.gov') with information on all bids by private firms and all contracts awarded by the 308 Portuguese municipalities in the period between 2008 and 2017. This includes three electoral cycles and more than 250,000. The empirical results - the political proximity - is robust to a number controls, including geographic proximity. This result has political and public governance implications.

Keywords: Political parties, Public procurement, Favoured firms.

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1. Introduction

A close interaction between public officials and business firms is somewhat unavoidable in public procurement. In fact, some literature, mostly originated in management theory and prescriptive in nature, evens recommends several forms of supplier development in the form of mentoring. McKevitt and Davis (2014) report practices in which public buyers informally support suppliers, which they treat as a win-win relationship between organizations that take a strategic approach to suppliers and buyers who offer career and psycho-social support to suppliers.

However, considering the role and potential of public procurement in delivering desired policy outcomes in society (Grandia and Meehan, 2017), regulation usually imposes constraints upon how and when public buyers interact with suppliers (McKevitt and Davis, 2014). This is because public procurement is one of the government activities most vulnerable to corruption (OECD, 2016), frequently in the form of bribery to secure public contracts and illegal financing of political parties. For this reason, international organizations such as OECD are very active in recommending principles to curb corruption and to enhance transparency and integrity.

Public procurement is a policy tool that is indispensable to implement public policies in a wide range of fields and, therefore, has a role in delivering desired policy outcomes in society (Grandia and Meehan, 2017). It accounts, on average, for about 30% of general government expenditures of OECD countries. In Portugal, despite the severe decrease after the public finance crisis of 2011-14, the weight of this governmental activity is still about 20% of expenditures. In the case of local government, it accounted for over 11 704 million euros in the period 2008-2017.

Public procurement and contracting with external firms is a very sensitive area of government action given the complexity of the process, the close interaction between public officials and businesses, and the multitude of stakeholders (OECD, 2016). This closeness may take the prescriptive form of supplier development, as recommend by management theory in the form of mentoring. In the case of public procurement, regulation usually imposes constraints upon how and when public buyers interact with suppliers (McKevitt and Davis, 2014). However, the interaction may also be characterized by the collusion between government officials and a reduced number of local bidders (Coviello and Gagliarducci, 2017). This transforms the inherently administrative procedure into an intrinsically political relationship.

Coviello and Mariniello (2014) ask whether and how publicizing a public procurement auction causally affects entry and the costs of procurement. A regression discontinuity design analysis on a large database of Italian procurement auctions, provides evidence that an increased publicity

requirement induces more entry and higher winning rebates, which reduces the costs of procurement and rationalizes public spending. The evidence suggests that the number of bidders is the channel through which publicity affects rebates. Increased publicity also selects different winners: it increases the likelihood that the winner hails from outside the region of the public administration and that the winner is a large company. Publicity seems to have no adverse effect on the ex-post re-negotiations of the works, as measured by the percent of works delivered with delay or that are subcontracted.

In the same sense, Chvalkovská and Skuhrovec (2010) present data on how e-Government tools can contribute to greater openness and accountability of public institutions and to enhance the civic engagement in the control of governmental procurement activities.

Palguta and Pertold (2017) present a methodology for detecting manipulation of public procurement and evidence showing how policies that create discontinuous incentives to avoid transparent competition lead to manipulation and active waste by procurement officials. Our methodology exploits a natural experiment in which new discretionary thresholds in the anticipated value of procurement were established. Manipulations reveal through bunching of procurement below the new thresholds and affect 11% of relevant contracts. Manipulations lead to increases in the chance of allocating contracts to anonymously owned firms, often related to corrupt behavior, and preferential prices for anonymous contractors.

Baldi et al. (2016) improve our comprehension of the role played by project complexity and institutional quality as possible drivers of the choice between open auctions and negotiations in a sample of Italian municipalities. Controlling for project characteristics, for observed and unobserved heterogeneity at municipality level, the results suggest that projects that are more complex are more likely to be procured with negotiated procedures. On average, a rise in the project complexity index from the 25th to the 75th percentile of its distribution increases the probability of procuring the project with a negotiated procedure by about 6%-8%. However, our results also suggest that the impact of complexity might be more relevant in the case of projects procured by municipalities located in provinces characterized by low levels of corruption. Moreover, we also find that complex projects are associated to longer delays in their execution, larger rebates and to higher probabilities to be awarded to local firms.

Following the recent academic interest in the outcomes and quality of public procurement and its interplay with politics (Charron et al., 2017) (Broms et al., 2017), this paper takes this issue and asks whether there is a pattern between the political parties holding the executive power in a specific Portuguese municipality and the frequency of contracts awarded to some firms. In particular, it

investigates the existence of favoured supplier firms to political parties and whether this effect extends spatially to different municipalities administered by the same political party. While the political effects found in previous studies are limited to those found within the boundaries of one municipality, this paper extends the analysis of political effects produced by other municipalities. In sum, it investigates the existence of political party spillovers for privileged firms.

Main Research Questions: Is there a relation between the political parties in power in a given Portuguese municipality and the frequency of contracts awarded to a given firm? In particular, we ask i) whether the effect extends spatially to different municipalities **dominated** by the same political party?; and/or whether the effect extends spatially to different municipalities **irrespective** of the political parties?

Using a unique and complete database of public procurement and contracting by Portuguese municipalities and a specific research design that takes the firm bid in a procurement context as unit of analysis observed on a yearly basis (2008-2017), the evidence moderately corroborate the main hypothesis of a connection between political parties and their favoured supplier firms, meaning the politicization of a policy making that, on paper, was expert based. (Coviello and Gagliarducci, 2017). The next section reviews the relevant literature and section three briefly presents the institutional background of government and public procurement of Portuguese municipalities. Section 4 and 5 details the data used in the analysis and the specific research design adopted. Section 6 discusses the empirical results and it implications.

2. Related Literature: Departures from Competitive Public Contracting

Two main forces that lead public contracting decisions from the outcome of a competitive and efficient outcome. The first is geographical proximity of firms. The second is the political collusion/connectedness between political party officials and private firms. Accordingly two bodies of literature rose to address them.

2.1. Geographical Proximity and Networks in Public Procurement Decisions

This fact of companies that tend to win repeated auctions, thus gaining market share, was already investigated by Coviello and Mariniello (2014), which ask whether and how publicizing a public procurement auction causally affects entry and the costs of procurement. A regression discontinuity design analysis on a large database of Italian procurement auctions, provides evidence that an

increased publicity requirement induces more entry and higher winning rebates, which reduces the costs of procurement and rationalizes public spending. The evidence suggests that the number of bidders is the channel through which publicity affects rebates. Increased publicity also selects different winners: it increases the likelihood that the winner hails from outside the region of the public administration and that the winner is a large company. Publicity seems to have no adverse effect on the ex-post re-negotiations of the works, as measured by the percent of works delivered with delay or that are subcontracted.

The higher incidence of local and regional winners - spatial or geographical effects - is not a novelty in these two studies though. Mamavi et al. (2014) study the impact of spatial proximity on supplier selection, in the context of French legislation that explicitly forbids considering supplier location as decision criteria, and found public contractors may still rely on spatial proximity for complex transactions necessitating mutual adjustments with suppliers. The authors compiled 565,557 transactions completed on three public procurement markets between 6,182 contractors and 26,570 suppliers, over a period of six years (2006 and 2011). The authors conducted a two-level hierarchical linear auto-regression analysis and found a significant variation between the transactions on different markets: a negative effect of spatial proximity on the number of contract notices in the public market and a positive effect of spatial proximity on the number of notices in the services and supplies markets. The difference lies in the levels of mutual adjustment required to optimally manage the relationship between public contractor and supplier. **?** go a step further ask how networks influence the awarding of a contract, particularly strategic networks originating from cooperative relationships. The results highlight two important elements. First, the impact of the strength of weak and strong ties on contract awarding Second, the strength of weak ties is magnified by lead partners.

2.2. Political Proximity and Influences in Public Procurement Decisions

In the last couple of years, a separate avenue of research collected evidence that the outcomes and the quality of public procurement are politically influenced. Broms et al. (2017) use Swedish municipal data from 2009 to 2015 to provide evidence that when one party only dominates local politics, procurement quality decreases and corruption risks increase. Moreover, the risk for having only one bid on what is intended to be an open tender considerably increases with longstanding one-party-rule. They suggest that entrenched parties are able to exert favouristic control over public procurement due to less well-functioning internal and external control mechanisms.

Palguta (2018) examines the impact of increasing the number of parties in political representation organs on spending and selection of politically-connected suppliers in public procurement. By exploiting plausibly exogenous variation in the vote share of parties near the representation threshold in Czech municipal elections, I find that municipalities having more parties represented in their councils allocate fewer procurement to corporate donors of political parties, attract more suppliers into procurement competitions and reduce procurement prices. The impact of broader party representation is pronounced in politically competitive councils, but is not related to whether marginally represented parties are incumbent or not.

Coviello and Gagliarducci (2017) study the impact of politicians' tenure in office on the outcomes of public procurement. They match a data set on the politics of Italian municipal governments to a data set on the procurement auctions they administered and provide evidence that an increase in the mayor's tenure is associated with 'worse' outcomes: fewer bidders per auction, a higher cost of procurement, a higher probability that the winner is local and that the same firm is awarded repeated auctions. They interpret their results to support the possibility that time in office progressively leads to collusion between government officials and a few favored local bidders. Other interpretations receive less support in the data.

The favouristic control that benefits entrenched contractors is also investigated by Charron et al. (2017). Their explanation to this, as opposed to assigning public contracts more impartially, is that the corruption risks are minimized when the two groups involved in decision-making on public contracts - politicians and bureaucrats - have known different interests. This is institutionalized when politicians are accountable to the electorate, while bureaucrats are accountable to their peers, and not to politicians. They use a novel experience-based measure of career incentives in the public sector collected in a survey with over 85,000 individuals in 212 European regions and a new objective corruption risk measure including over 1.4 million procurement contracts, noting that both show a remarkable sub-national variation across Europe.

Another line of research looks at the political connectedness of private firms and how that influences public decisions (ex: driving investment) Fisman (2001) and the incentive for corporations to become politically connected Faccio (2006). With respect to public procurement, issues such as the role of i) party representation (more parties) Palguta and Pertold (2017); ii) party change Palansk (2013); governance (board of directors and ownership) Goldman et al. (2013) Palguta (2014); and design of auctions (thresholds and transparency) Palguta and Pertold (2017); Baldi et al. (2016).

Goldman et al. (2013) analyze whether political connections of the board of directors of publicly traded companies in the USA affect the allocation of government procurement contracts. It focuses

on the change in control of both House and Senate following the 1994 election and finds that companies with boards connected to the winning (losing) party experience a significant and large increase (decrease) in procurement contracts after the election. The results remain significant after controlling for industry classifications as well as for several other company characteristics. The findings highlight one of the main avenues through which corporate political connections add value to US companies.

Palansk (2013) analyzes whether political connections created by donations to political parties affect the allocation of public funds through procurement spending in the Czech Republic. Using a novel dataset on all corporate political contributions made between 2006 and 2013, it focuses on the extreme change in control of the regional councils following the 2008 elections. We start by observing the general patterns of behavior of regional governments as contracting authorities, which seem to support the potential of corruption. In the second part, we focus on the effects of donations to the two most powerful political parties in the regional councils during the examined period on regional public procurement outcomes. The results suggest that donating companies win public contracts of higher value compared to non-connected firms in times when their supported party is in power. Controlling for the size of the firms, the results remain significant and confirm the general notion that larger companies win contracts of higher value than smaller firms

Hessami (2014) examines the relation between political corruption and the composition of public spending. A rent-seeking model is used to describe political rent creation through the composition of public spending. Political corruption is indicated by empirical results for 29 OECD countries for the period 1996-2009: allocation of public spending to expenditure categories characterized by high-technology goods supplied by non-competitive industries varies positively with the Corruption Perceptions Index (CPI) provided by Transparency International. Previous literature on corruption in government has focused on low-income countries. The results of this study suggest that political corruption is also an issue in OECD countries.

Straub (2014) shows that firms connected with the first ring of power were punished and that there were efficiency gains, mostly in the form of institutions shifting to bigger and more competitive contracts, but that these gains were constrained by the scarcity of entrepreneurs able to step in to replace firms connected to the previous regime. This demonstrates that the potential economic benefits of democratization are hampered by the perverse rent-seeking entrepreneurial incentives created by a long-term single-party authoritarian regime. In 2008, an opposition coalition defeated the Paraguayan Colorado Party, which had been in power for 61 years, including 35 years of the longest dictatorship in South America. Using data of all the public procurement transactions from

2004 through 2011 and the political connections of the 700 largest public providers, this paper documents how the volume of contracts received by connected firms evolved after this landmark political change.

Palguta (2014) provides evidence of a strong link between two channels facilitating rent-extraction in public procurement: between concealing the ultimate ownership of contractors and manipulation of the anticipated value of tenders. Using data on more than 15 300 tenders awarded to joint-stock companies in the Czech Republic during 2005 - 2010, the study shows that tender value manipulation has been incentivized by the 2006 procurement reform, which established several discontinuities in the anticipated value of tenders. After the reform, manipulation increased much more for tenders awarded to contractors with anonymous owners as opposed to traceable owners. Contractors in manipulated tenders needed to underbid fewer firms in order to win procurement and their winning bids for comparable contracts were, on average, higher than before reform. The results imply disrupted optimality of contractor choice and reduced efficiency of procurement. The results are strongest for contracts on services and construction works, which traditionally conceal rent- extraction more easily.

3. Empirical Hypothesis: Political Proximity

Hypothesis 1: Spatial spillover: The number of contracts awarded to a firm is a function of the number of contracts awarded in neighbouring municipalities

Our conjecture is that benefit of politically connected firms extends spatially to municipalities controlled by the same political party.

Hypothesis 2: Political party spillovers The number of contracts awarded to a firm is a function of the number of contracts awarded in other municipalities dominated by the same political party

4. Institutional Background and Data

4.1. Portuguese Municipal Government

While Portuguese local governments comprises parishes, municipalities, and other forms of local organizations that may be created by law, such as metropolitan areas and municipal associations, the 308 municipalities are the most important both from an administrative and a financial point of

view. Municipalities aim to satisfy the interests of a certain geographic territory and they represent approximately 12% of the total public expenditure and about 46% of public investment. They have competencies on a very broad set of governmental domains: environment; culture; leisure; sports; economic development; civil protection; urban transports; territorial arrangement; social housing and support; and heritage preservation. Their revenues come essentially come from Central Government Grants (earmarked and non-earmarked transfers) and local raised municipal taxes (property and income). They are financially autonomous, meaning that they manage their own budget, finances, property, loans, and treasury. In practical terms, Central Government intervention is a legal control of the budgetary execution.

The municipal system of government is based on two elected political bodies - an executive council (5 to 11 members, except for the two largest cities) and a deliberative council. The members of both councils are elected through a proportional representation system based on party or independent closed lists and d'Hondt method. The mayor (President of the Municipality) is the first name of the winning list, a list that may or not have a majority of votes which guarantees a complete approval of Mayor's proposals.

With regard to public contracts, municipalities are also mostly autonomous and its notable that they are responsible for about 27,5% of public procurement. Public Contracts Law (PCL), in place since 2008, is the major legislative piece in this matter and regulates two major areas: the formation and the performance of public contracts. The formation part establishes how public contracts can be awarded, by laying down the rules for the procedures that give rise to a public contract. This phase runs from the moment the procurement decision is made to the moment the contract is awarded and signed. This phase is traditionally referred to in Portugal as public procurement. The performance part regulates - either mandatory or additionally - the important aspects of contract performance, such as the obligations and rights of the parties, non-compliance, contract amendments, etc. The contract performance phase begins with the contract conclusion or awarding.

The PCL transposes European Parliament and of the Council, of 31 March 2004 legislation (Directives 2004/17/EC and 2004/18/EC) into national law. Depending on the value and matter of the contract, several types of procedures can be used in formation phase, although direct award and open tendering are by far the most frequently used (see appendix for a complete explanation of these procedures):

- Direct award pre-contractual procedure - the contracting entity directly invites freely one or more entities to submit a bid;

- Open tendering procedure;
- Other
  - Urgent open tender procedure;
  - Restricted tender procedure;
  - Negotiation;
  - Competitive dialogue.

The PCL is said to follow a modern procurement model in the contractual relationships between private entities and the State, aiming to achieve a set of goals that are essential for a rational management of public expenditure: efficiency, transparency, simplification, innovation and monitoring. With this respect, among other measures, it worth noting the mandatory adoption of public procurement electronic platforms by contracting entities in support all the procedures in the formation phase.

4.2. Data

The paper uses data of Portuguese municipalities data to accomplish the analysis about the existence of political party spillovers for favoured supplier firms. It matches two main sources. The information on public contracts comes from the Portuguese website that collects them: BASE - public procurement portal (http://www.base.gov.pt/Base/en/Homepage). After completing the formation phase of the contracts, all public institutions, either central, regional or local, are required to published them in this website. The information includes the type of acquired good or service, price, data and duration of the contract, public institution (buyer) and identification of supplier firm, as well as the identification of the firm bidders.

All the information of each municipal contract registered in the site was individually extracted. Because the complete database could not be downloaded at once, a computer routine had to be created to implement the individual extraction procedure. In the end, a total of 230 531 contracts covering all the 308 municipalities in the period between the fourth quarter of 2008 and 2017 was included. Figure 1 provides some aggregate information of municipal public procurement in the period. First, while the number of contracts per year shows a stable pattern, the evolution of the number of bidders is more clearly increasing. This suggests increasingly more open and competitive procedures. Second, the increase in the amounts contracted was interrupted during the period of the fiscal bailout by FMI/EU/ECB from 2011 to 2015.

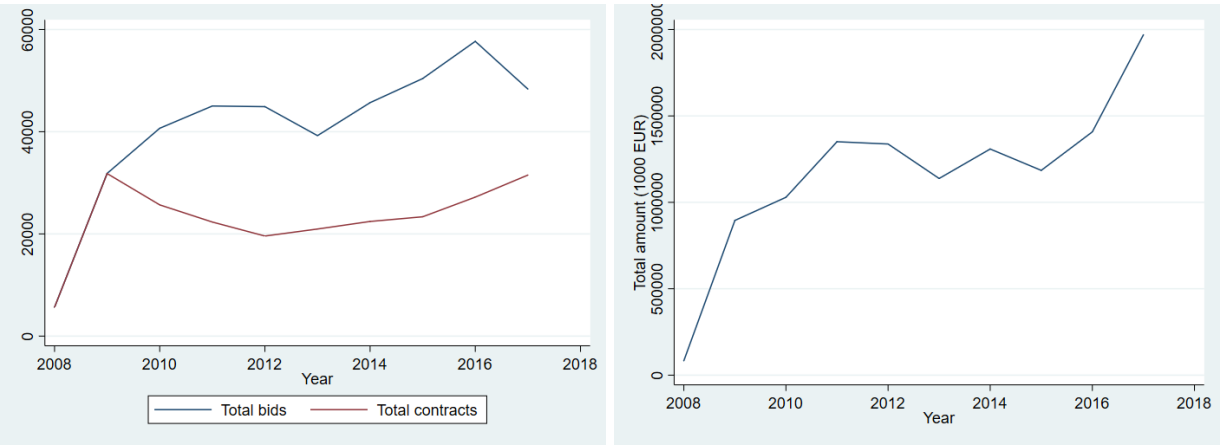

Figure 1: Municipal Procurement: Contracts, bids and amounts

The electoral results of municipalities for the political parties component of the data was collected directly from the Portuguese Electoral Commission which is in charge with conducting, validating, and publishing the electoral results. The variable of interest is the party of the mayor, which leads the executive body and in fact rules the choices over public contracts. Figure 2 depicts the three four-year electoral cycles of municipal politics that cover the period under analysis (2005-2009; 2009-2013; 2013-2017). Despite some structural stability, there are important changes over 11-year period, which permits to improve the analysis for the effect of changing the political party holding power.

Municipal politics is mostly dominated by the two largest parties that typically divide about 80% of the mayors in power: PS (grey); PSD (orange). Two other national parties divide the remaining offices: PCP (red); CDS (blue). Although local or regional parties are not allowed, the Portuguese Constitution permits that independent lists of citizens run for office, but in the period under analysis they corresponded to only about 3% of the mayors. Figure 3 shows number of contracts awarded by each of the existing municipal parties. Again, it is the clear the dominance of the two largest parties. It worth noting that the line for PSD (red) severely underestimates its true local influence, since frequently the party presents joint lists with CDS (yelow).

5. Model Specification - Identification Strategy

This paper seeks to investigate, first, whether there is a connection, and therefore a pattern, between the political party of the mayor in power and the frequency of contracts awarded to some firms and, second, whether this effect extends spatially to different municipalities led by the same

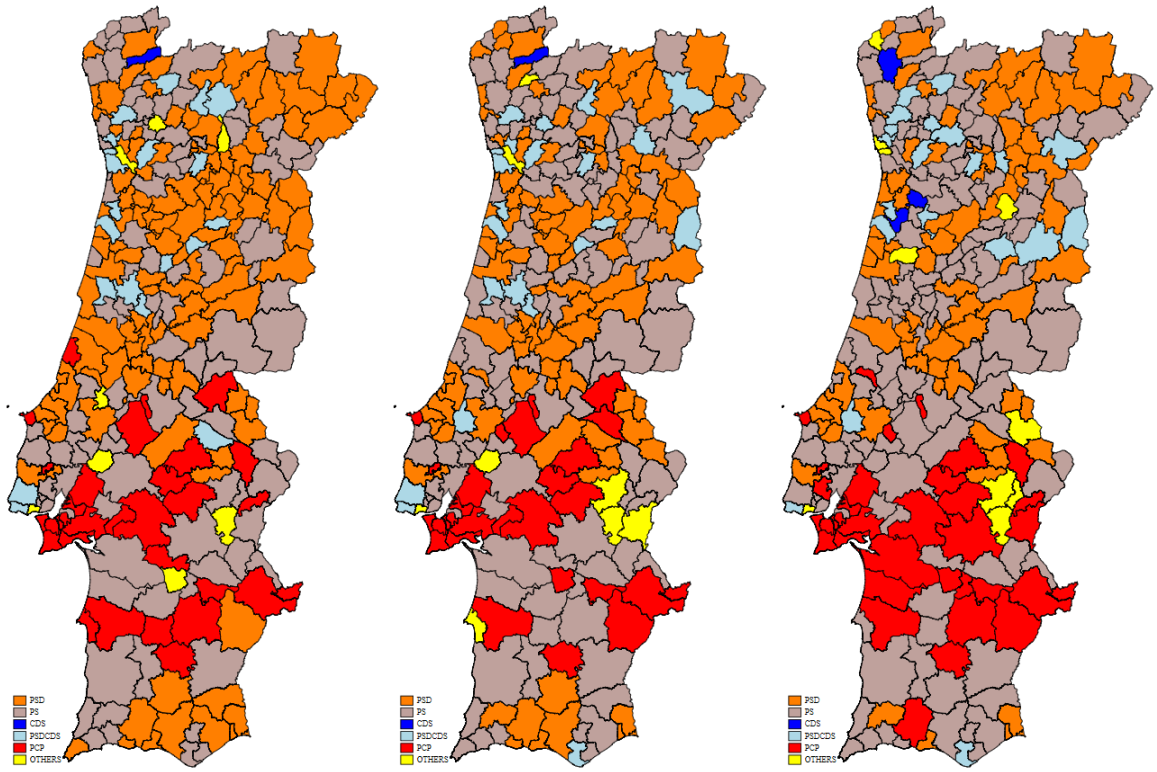

Figure 2: Party in charge: a) 2005-2009; b) 2009-2013; c) 2013-2017

political party. The data uses information about contracts, the municipalities that have the power to award them, the firms that bid for winning, and the firms that win the tender and are awarded with the contract. The data has a panel structure, so we use a model with fixed effects, that is, indicator variables for each of the municipalities and for each year. In this setting, the distinctive characteristics of each municipality are held constant, and the macroeconomic shocks that affect all the municipalities to the same extent are also controlled for.

Figure 4 shows the somewhat complex structure of the data, with almost no one-by-one relationship between these elements. This means that the design cannot be based on a trivial unit of analysis such as municipalities, firms or even contracts. The unit of analysis is ...

Spatial econometrics design

- Winning political parties spatially clustered
- Spatial spillovers may be correlated with political party spillovers
- Need to explicitly account for spatial correlation using spatial econometrics methods

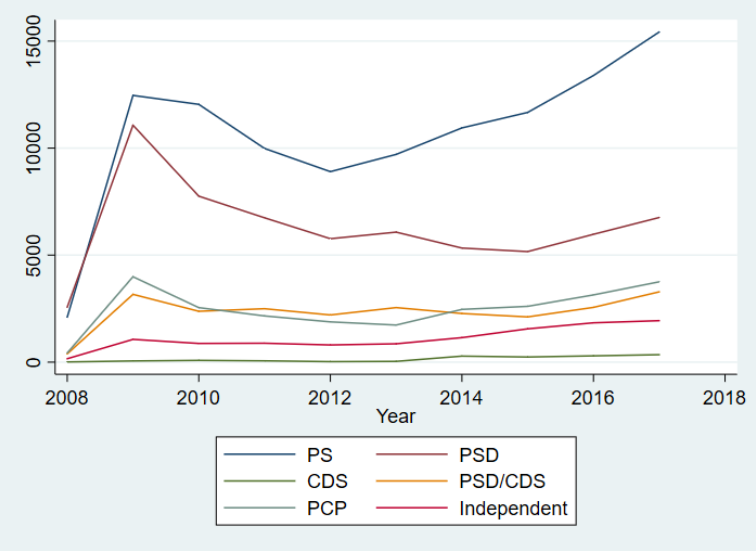

Figure 3: Number of contracts by party

The relevant concept of interest for the analysis is the probability of a given firm win a contract in a given municipality. In order to measure the number of times that a firm wins and to correlate it with the party in power in a municipality, the appropriate unit of analysis is the bid and the dependent variable is the total number of contracts awarded to a firm in a municipality m in year t. The dependent variable is the total number of contracts awarded by firm j in municipality m, governed by party p in year t.

The main conjecture of the paper is that the benefit of favoured firms extends spatially to different municipalities administered by the same political party. The empirical expectation is that the number of contracts won by a firm depends positively on the number of contracts awarded by the same party in other municipalities. The key independent variable (**Same party** (t-1) (t)) is the number of contracts granted by the same political party to this firm in all other municipalities. Three specifications are includes to test this. The first is the number of contracts granted by the same political party to the same firm considered in other municipalities, that is, in all country with the exception of the municipality of analysis. The second is the same variable but in the previous year to account for a lagged and more continued effect. The third is a dummy that marks a change of the political party of the mayor in power (1 when a new party assumes the government and 0 otherwise). Although a substantively different variable, it permits to extend the analysis for the effect of changing the political party holding power. Accordingly, the expectation is that a changes leads to a decrease of the probability of a given firm to win a contract, and, therefore, the number of contracts.

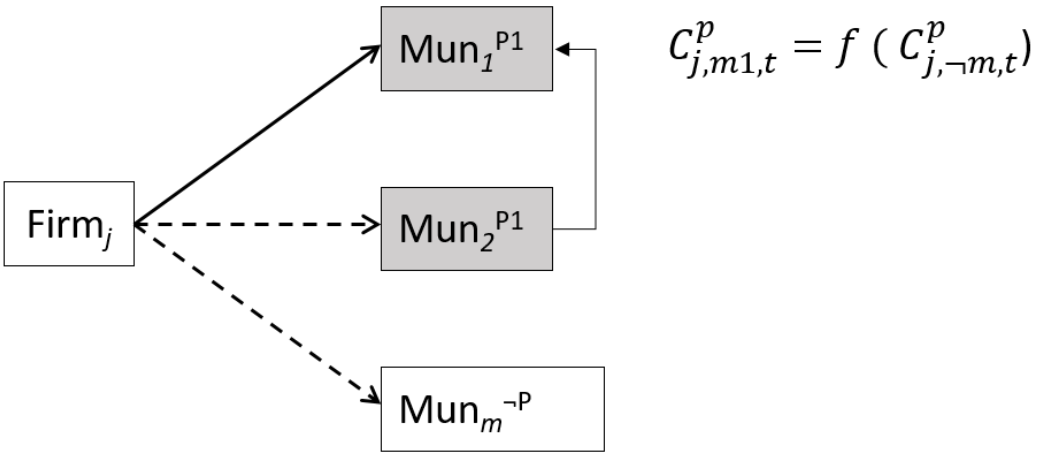

Figure 4: Research Design and Unit of Analysis

Two control variables have to be included in order isolate the effect of interest. One is the total number of bids presented by the firm in the municipality of interest. The other is total number of contacts granted by the municipality in the same period.

Accordingly, the estimated model is the following Equation:

$$C^p_{j,m,t} = \delta WC_{j,t} + \beta C^p_{j,\neg m,t} + \alpha \mathbf{X}_{j,m,t} + Mun_m + Year_t + \epsilon_{j,m,t} \tag{1}$$

Table 1 shows the descriptive statistics for the variables of the analysis. All variables are strongly right skewed. This is magnified by size differences of Portuguese municipalities that are higher than normal. Finally, all econometric estimations include municipal and year fixed effects.

Table 1: Descriptive Statistics

	n	mean	sd	min	p25	p50	p75	max
Tot. firm cont. mun.	248 880	0.9	1.5	0	0	1	1	147
Same party (t)	248 880	2.0	5.7	0	0	0	1	125
Firm's total bids	248 880	11.4	22.9	0	0	2	12	230
Municip. tot. contr.	248 880	159.4	213.3	1	58	101	183	1716

6. Empirical Evidence

Table 2 shows estimations for the main model, the one that accounts for the spatial effects. To begin with, the global results are very promising in the sense that they generally support the main conjectures of the paper. The coefficient for the independent variable of interest is positive and

statistically significant, which provides unequivocal support for the main hypothesis. The more a firm wins contracts in other municipalities dominated by the same party of the mayor, the more chances the firm has of winning more contracts in the municipality (for an additional contract in other, 0.016 more contracts won in the municipality). With respect to contracts won in the previous year, the effect is also robustly significant but not as strong (for an additional contract in other, 0.004 more contracts won in the municipality). This means that the contemporaneous and immediate effect is stronger than the during effect.

Table 2: Spatial Analysis Results

	OLS 1	OLS 2	I.V. 1	I.V. 2	I.V. 3
W (Same Party)	0.136***	0.162***	0.280***	0.277***	0.280***
	(12.596)	(7.602)	(14.310)	(14.238)	(14.409)
Same party (t)	0.014***		0.004***		0.005***
	(9.480)		(2.621)		(2.928)
Same party (t-1)		0.004**		0.004***	
		(2.308)		(2.922)	
Firm's total bids	-0.003***	-0.001	-0.002***	-0.002***	-0.002***
	(-7.241)	(-1.509)	(-5.042)	(-4.856)	(-4.633)
Municip. tot. contracts	0.001***	0.001***	0.001***	0.001***	0.001***
	(2.910)	(2.694)	(8.725)	(8.711)	(8.724)
Year f.e.	yes	yes	yes	yes	yes
Municipal f.e.	yes	yes	yes	yes	yes
Endogenous var.	n.a.	n.a.	Lag_t	Lag_t	Lag_t SParty_t
Instrument	n.a.	n.a.	Lag_{t-1}	Lag_{t-1}	Lag_{t-1} SParty_{t-1}
Observations	223,891	58,028	58,028	58,028	58,028

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

On the opposite side, the effect of a party is non-significant either as an additive or multiplicative effect. Nevertheless, the results needs to be seen with caution since the number changes is rare.

The results on the control variables are as expected, confirming the relevance of the main results that can be interpreted as controlled for the total number of bids by the firms and the total number of contracts by the municipality.

6.1. Robustness Tests

As robustness tests to these results we separate the sample in three interval according to prices. Tables 3, 4, and 5 presents the results that basically corroborate the main results.

Table 3: Spatial Analysis Results (5,000 to 20,000 euros)

	OLS 1	OLS 2	I.V. 1	I.V. 2	I.V. 3
W (Same Party)	0.068***	0.090***	0.145***	0.147***	0.149***
	(8.128)	(5.906)	(5.211)	(5.305)	(5.417)
Same party (t)	0.018***		0.018***		0.014***
	(9.776)		(7.432)		(4.697)
Same party (t-1)		0.009***		0.009***	
		(4.463)		(4.629)	
Firm's total bids	-0.003***	-0.001**	-0.004***	-0.002***	-0.003***
	(-6.848)	(-2.307)	(-6.954)	(-3.874)	(-4.540)
Munic. total contracts	0.001***	0.001***	0.001***	0.001***	0.001***
	(3.034)	(4.116)	(5.48)7	(5.519)	(5.492)
Year f.e.	yes	yes	yes	yes	yes
Municipal f.e.	yes	yes	yes	yes	yes
Endogenous var.	n.a.	n.a.	Lag_t	Lag_t	Lag_t SParty_t
Instrument	n.a.	n.a.	Lag_{t-1}	Lag_{t-1}	Lag_{t-1} SParty_{t-1}
Observations	126,057	27,136	27,136	27,136	27,136
R-squared	0.260	0.165	0.166	0.163	0.166

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7. Conclusions and Next Steps

OECD and other international organizations have been very keen in recommending principles and institutional safeguards to curb corruption and to enhance transparency and integrity in public procurement. Despite the fact that Portugal is being considered a good example of e-procurement policies and practices among European countries, this is, as also recognized, a very sensitive issue.

Table 4: Spatial Analysis Results (20,000 to 75,000 euros)

	OLS 1	OLS 2	I.V. 1	I.V. 2	I.V. 3
W (Same Party)	0.081***	0.061***	0.147***	0.133***	0.149***
	(11.272)	(3.797)	(4.223)	(3.841)	(4.357)
Same party (t)	0.019***		0.020***		0.018***
	(9.970)		(9.133)		(6.810)
Same party (t-1)		0.013***		0.012***	
		(4.541)		(6.585)	
Firm's total bids	-0.003***	-0.001**	-0.004***	-0.002***	-0.003***
	(-8.563)	(-2.547)	(-7.559)	(-3.731)	(-5.246)
Munic. total contracts	0.000	0.001	0.001***	0.001***	0.001***
	(1.615)	(1.444)	(3.119)	(3.204)	(3.130)
Year f.e.	yes	yes	yes	yes	yes
Municipal f.e.	yes	yes	yes	yes	yes
Endogenous var.	n.a.	n.a.	Lag_t	Lag_t	Lag_t SParty_t
Instrument	n.a.	n.a.	Lag_{t-1}	Lag_{t-1}	Lag_{t-1} SParty_{t-1}
Observations	81,944	14,971	14,971	14,971	14,971
R-squared	0.222	0.159	0.162	0.157	0.161

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Spatial Analysis Results (> 75,000 euros)

	OLS 1	OLS 2	I.V. 1	I.V. 2	I.V. 3
W (Same Party)	0.130***	0.147***	0.443***	0.422***	0.437***
	(9.877)	(5.673)	(6.796)	(6.634)	(6.834)
Same party (t)	0.014***		0.015***		0.018***
	(11.210)		(7.567)		(7.306)
Same party (t-1)		0.013***		0.012***	
		(5.632)		(7.113)	
Firm's total bids	-0.001***	-0.001**	-0.004***	-0.003***	-0.004***
	(-4.177)	(-2.509)	(-7.240)	(-5.353)	(-6.503)
Munic total contracts	0.000**	0.001*	0.001***	0.001***	0.001***
	(2.314)	(1.940)	(3.452)	(3.474)	(3.426)
Year f.e.	yes	yes	yes	yes	yes
Municipal f.e.	yes	yes	yes	yes	yes
Endogenous var.	n.a.	n.a.	Lag_t	Lag_t	Lag_t SParty_t
Instrument	n.a.	n.a.	Lag_{t-1}	Lag_{t-1}	Lag_{t-1} SParty_{t-1}
Observations	43,359	9,436	9,436	9,436	9,436
R-squared	0.147	0.153	0.126	0.128	0.126

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Based on the the literature that provides evidence of a politicized administration of public procurement contracts, but limited to a specific municipality, this paper aimed to extend the analysis of political effects to other municipalities by making the conjecture that the benefit of favoured travel to other municipalities dominated by the same political party. The existence of this political party spillover for privileged firms was empirically tested and the results presented in the previous sections. The results provided evidence of a moderate and mostly contemporaneous effect.

This is a very preliminary paper. At least, two further steps are still necessary. One is to perform the appropriate robustness checks that will permit exclude other possible explanations namely the spatial autoregressive structure of the data. Spatial autocorrelation could arise because the winning parties tend to be spatially clustered. Traditionally, in Portugal, left wing parties dominate municipalities located in south while center-right wing parties dominate municipalities in the northern regions of the country. If firms are more prone to bid for contracts close to their headquarters, then some type of spatial correlation will arise. The other, more substantive, is the analysis of the channels through which this relationship operates. This means to investigate how spillover operates.

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Appendix A - Spatial econometrics

The two dimensional spatial information is mathematically expressed by (1)

$$\mathbf{W} = \begin{pmatrix} 0 & w_{1,2} & w_{1,3} & ... & w_{1,n} \\ w_{2,1} & 0 & w_{2,3} & ... & w_{2,n} \\ w_{3,1} & w_{3,2} & 0 & ... & w_{3,n} \\ ... & ... & ... & ... & ... \\ w_{n,1} & w_{n,2} & w_{n,3} & ... & 0 \end{pmatrix} \tag{2}$$

row standardized to sum 1

The spatially lagged variable is mathematically expressed by (2)

$$\mathbf{x} = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ ... \\ x_n \end{pmatrix}, \mathbf{Wx} = \begin{pmatrix} \sum_{j=1}^{n} w_{1j}x_j \\ \sum_{j=1}^{n} w_{2j}x_j \\ \sum_{j=1}^{n} w_{3j}x_j \\ ... \\ \sum_{j=1}^{n} w_{nj}x_j \end{pmatrix} \tag{3}$$

each element expresses a weighted average of the neighbouring regions of region i

Similar to the time lag, the spatial lag can also define higher orders.

The second order spatial lag of variable x is defined in (3)

$$\mathbf{W^2x} = \mathbf{W}.(\mathbf{Wx}) \tag{4}$$

The pth order spatial lag of a variable x is defined as

$$\mathbf{W^p x} \tag{5}$$

Appendix B - OLS, IV, and Count Models

Table 6 shows OLS and IV estimations for the proposed model. To begin with, the global results are very promising in the sense that they generally support the main conjectures of the paper. The coefficient for the independent variable of interest is positive and statistically significant, which provides unequivocal support for the main hypothesis. The more a firm wins contracts in other municipalities dominated by the same party of the mayor, the more chances the firm has of winning more contracts in the municipality (for an additional contract in other, 0.016 more contracts won in the municipality). With respect to contracts won in the previous year, the effect is also robustly significant but not as strong (for an additional contract in other, 0.004 more contracts won in the municipality). This means that the contemporaneous and immediate effect is stronger than the during effect.

On the opposite side, the effect of a party is non-significant either as an additive or multiplicative effect. Nevertheless, the results needs to be seen with caution since the number changes is rare.

The results on the control variables are as expected, confirming the relevance of the main results that can be interpreted as controlled for the total number of bids by the firms and the total number of contracts by the municipality.

Given the count nature of the dependent variable under analysis, Poisson regression is the standard recommended estimator. But, within this approach, when the conditional variance exceeds the conditional mean, which is usually called over-dispersed count data, the alternative is the Negative binomial regression. This is a generalization of Poisson regression since it has the same mean structure and it has an extra parameter to model the over-dispersion. The confidence intervals for the Negative binomial regression are also likely to be narrower as compared to those from a Poisson regression model.

7.1. Count models

Since the data is over-dispersed, Table 7 shows the results of the negative binomial estimations for the additive models. Clearly, the results are very similar to the OLS estimations, so the same substantive interpretation applies.

Given the count nature of the dependent variable under analysis, Poisson regression is the standard recommended estimator. But, within this approach, when the conditional variance exceeds the conditional mean, which is usually called over-dispersed count data, the alternative is the Negative

Table 6: OLS and I.V. results

	OLS 1	OLS 2	I.V.
Same party (t)	0.018***		0.008***
	(11.834)		(4.038)
Same party (t-1)		0.005***	
		(2.687)	
Firm's total bids	-0.002***	0.001	0.000
	(-5.091)	(1.361)	(0.346)
Municip. total contracts	0.001***	0.001***	0.001***
	(2.884)	(2.624)	(8.296)
Year fixed effects	yes	yes	yes
Municipal fixed effects	yes	yes	yes
Endogenous var.	n.a.	n.a.	SameParty_t
Instrument	n.a.	n.a.	SameParty_{t-1}
Observations	223,891	58,028	58,028
R-squared	0.148	0.102	0.103

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Count Model Results

	Negative Binomial	Marginal Effects	Poisson I.V.
Same party (t)			0.019***
			(0.001)
Same party (t-1)	0.004***	0.005***	
	(0.002)	(0.002)	
Firm's total bids	0.001	0.001	-0.001**
	(0.000)	(0.000)	(0.000)
Munic. total contracts	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
Year fixed effects	yes		yes
Municipal fixed effects	yes		yes
Endogenous variable			SParty_t
Instrument			SParty_{t-1}
Observations	58,028	58,028	223.891

t statistics in parentheses Robust standard errors

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

binomial regression. This is a generalization of Poisson regression since it has the same mean structure and it has an extra parameter to model the over-dispersion. The confidence intervals for the Negative binomial regression are also likely to be narrower as compared to those from a Poisson regression model.

Appendix C - Types of procedures

Types of procedures that can be used in formation phase:

- Direct award pre-contractual procedure - the contracting entity directly invites freely one or more entities to submit a bid. The PCL also allows the contracting entity to invite one entity only and establishes no limit to the number of entities to be invited.
- Open tendering procedure - In the case of contracts for leasing or purchasing goods and services, the contracting entity may use the electronic auction, thus allowing bidders to progressively improve their bids. In the case of contracts for public works and public service concessions, the contracting entity may adopt a negotiation phase.
- Urgent open tender procedure - In case of emergency, an ultra-quick procedure to award a contract, provided that the contract value does not exceed the EU thresholds. The minimum deadline for submitting tenders in an urgent open tender procedure is 24 hours (based on working days only). This type of procedure requires the contract to be awarded to the lowest-price tender.
- Restricted tender procedure - If the contract notice is published only in Portugal, only contracts with a value below the EU thresholds (EUR 5,225,000 for public works contracts; EUR 135,000 for the purchase of goods and services, if by the State; EUR 209,000 for the purchase of goods and services, if by any other contracting entity) can be concluded. If the notice is also published in the Official Journal of the European Union, contracts can be of any value.
- Negotiation - When can the negotiated procedure be used? According to the PCL, the use of a negotiated procedure is limited to those cases permitted by the EU directives and provided for in its Article 29.
- Competitive dialogue - This new procedure was introduced by EU legislation and can be used only for particularly complex contracts, where the contracting entity needs to enter into a dialogue with potential tenders in order to establish the specifications. The PCL regards as particularly complex those contracts for which it is objectively impossible to determine.