Political Competition and Public Procurement Corruption Risks in

Hungarian Municipalities between 2010 - 2019

By

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Author's Declaration

I, the undersigned Olivér Pilz hereby declare that I am the sole author of this thesis. To the best of my knowledge this thesis contains no material previously published by any other person except where proper acknowledgement has been made. This thesis contains no material which has been accepted as part of the requirements of any other academic degree or non-degree program, in English or in any other language.

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Abstract

This paper examines the relationship between political competition and corruption risks in the public procurement process. To this purpose, a data set on Hungarian public procurement contracts reported by municipalities and municipality-owned enterprises between 2010 – 2019 are matched with data on municipal elections from 1990 until 2014, and data on the characteristics of Hungarian municipalities. Logistic regressions are used in order to analyse how political competition and public procurement corruption risks are related. The results imply that mayors and political parties in power for three or more consecutive electoral terms are more likely to be associated with procurement contracts ridden with corruption risks than those in their first or second terms. Similarly, mayors who are members of the ruling party are more likely to have worse procurement outcomes than independent and opposition mayors. The paper finds no relationship between corruption risks and how close the electoral race was in municipalities. The paper contributes to the literature on low political competition's adverse effects on public sector performance, especially within the framework of dominant party systems, for which Hungary serves as a most likely case.

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Table of Contents

1	Intro	roduction1				
2	Lite	erature and Theory				
	2.1	Public Procurement	5			
	2.2	Corruption in Public Pr	ocurement5			
	2.2.	Public Procuremen	nt Corruption in Hungary7			
	2.3	Political Competition a	nd Corruption9			
	2.3.	Political Competit	ion and Corruption in Hungary11			
3	Met	nodology				
	3.1	The Data				
	3.2	Public Procurement Co	rruption Risks15			
	3.3	Independent Variables				
	3.3.	Tenure				
	3.3.	Margin				
	3.3.	Pro-Government				
	3.4	Control variables				
	3.5	Estimation Strategy				
4	Res	llts				
	4.1	Bivariate Analysis				
	4.2	Multivariate Analysis				
5	Con	clusion				
R	eferences					
A	ppendix					

Figures

Figure 1 - Single Bidding in Public Procurement Contracts	15
Figure 2 – Number of Contracts by Mayors' Length of Tenure	17
Figure 3 - Frequency Distribution of Variable Margin and its Logarithm	19
Figure 4 – Number of Contracts by Mayors' Political Alignment.	20
Figure 5 - Single Bidding by Mayors' Length of Tenure and Political Affiliation	24
Figure 6 - Single Bidding by Mayors' Winning Margin	25

Tables

Table 1 – Descriptive Statistics of Variables Used	21
Table 2 - Predictors of Single Bidding.	27
Table 3 – Overall Vote Share as a Predictor of Single Bidding.	30
Table 4 – Frequency Distribution of Variable CPV	42
Table 5 – Frequency Distribution of Variable NUTS 2.	43
Table 6 – Frequency Distribution of Variable Tender Year.	43
Table 7 – Frequency Distribution of Variable Municipality Status.	44
Table 8 – Frequency Distribution of Margin as a Categorical Variable	44
Table 9 – Frequency Distribution of Tenure as a Categorical Variable	44
Table 10 - Correlation Matrix	45
Table 11 – Single Bidding, Tenure x Pro-Government Interaction and Categorical Margin	and
Vote Share Variables	46

1 Introduction

The word corruption originates from the Latin *rumpere*, meaning 'to break' (Merriam-Webster 2020). In a corrupted state, antagonistic factions function as centres of power, pursuing not the public interest but their own prosperity (Dobel 1978, 964). As Machiavelli put it:

True it is, that some divisions injure republics, while others are beneficial to them. When accompanied by factions and parties they are injurious; but when maintained without them they contribute to their prosperity. The legislator of a republic, since it is impossible to prevent the existence of dissensions, must at least take care to prevent the growth of a faction (*The History of Florence* VII.I.)

But how can we ensure that those in power remain concerned with not their own but society's prosperity? Plato illustrates the challenge of ordinary people's struggle for power with his famous Ship of State metaphor. Likening their struggle for power to inept sailors quarrelling to control a ship, Plato holds that average citizens lack the necessary moral and intellectual virtues to govern. Renouncing democratic principles, Plato's proposed solution to the question of who should govern is the rule of the philosopher king. Able to control the ship independently of their own self-interest, the philosopher king is driven by superior knowledge: "... for the true pilot must of necessity pay attention to the seasons, the heavens, the stars, the winds, and everything proper to the craft if he is really to rule a ship" (*The Republic* 488d). Similar to Plato's omniscient benevolent dictator, Thomas Hobbes' Leviathan rules and brings about peace as the absolute sovereign through ultimate power and authority (Hobbes 1968).1

ו In stark contrast with the etymology of the word corruption, leviathan is assumed to originate from the Hebrew word לוה meaning 'to join' (Bláha 2013, 261)

However, the principles of democratic thought challenge the rule of an unconstrained despot. The founders of modern-day democracy held markedly different views on statecraft and ensuring the pursuit of public interest; in order to protect society from the potential malevolence of the dictator, they sought to constrain the power of the ruler. As noted by Alexander Hamilton in *Federalist Paper* No. 51;

In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself. A dependence on the people is, no doubt, the primary control on the government; but experience has taught mankind the necessity of auxiliary precautions (Hamilton, Jay, and Madison [1788] 2013, No. 51).

While Hamilton's ideas go contrary to those of Plato or Hobbes, advocating for a system of checks and balances is not the only aspect of power-sharing in modern democracies (for an economic analysis on constitutions see Persson and Tabellini 2003). In the Schumpeterian theory of democracy, market-like competition between elites serves safeguard of executing the public will (Schumpeter 2008). Indeed, the principle that politicians held accountable through the process of elections is has been elaborated by many authors (see Alt and Lassen 2003; Barro 1973; della Porta 2004).

To analyse the relationship between political competition and whether politicians act according to the public interest, central to the focus of this paper is public procurement, a domain which connects the political and the economic elites (Broms, Dahlström, and Fazekas 2019, 3). Public procurement has been increasingly used by institutions such as governments, local governments and publicly owned enterprises to achieve their objectives (OECD 2017). Despite

a number of measures implemented by countries to ensure the appropriate allocation of resources, public procurement remains vulnerable to risks of inefficiency and corruption (Goldman, Rocholl, and So 2013). Corruption, often defined as "the abuse of public office for private gain" (Pope 2000, 2) is notoriously difficult to measure; however, indicators of corruption risks have been used to estimate corruption.

The purpose of this paper is to evaluate whether political competition is associated with corruption risks in the public procurement process in Hungarian municipalities between 2010 -2019. Due to its relatively high level of public procurement corruption (GKI 2009), Hungary is assumed to support the hypothesis of this paper that a low level of political competition is associated with higher public procurement corruption risks. Yet the case of Hungary offers a unique opportunity to examine the relationship between political competition and corruption in a political system dominated by a single political party (A. Horváth and Soós 2015). Since 2010, the Hungary experienced large-scale centralisation and state capture (Fazekas and Tóth 2016), making it a most likely case for testing whether low political competition as a result of a municipality's leadership being affiliated with the ruling party also increases corruption risks.

The paper finds that public tenders are more likely to obtain only one bid under specific circumstances of low political competition. Specifically, in municipalities where mayors or political parties have been in power for multiple election terms at the time of contract award, public tenders are more likely to obtain only one bid. Mayors who belong to the ruling party also display a higher likelihood of single bidding compared to independent or opposition mayors. However, the paper finds no relationship between how close the electoral competition in a municipality was and the probability of single bidding.

The rest of the paper is structured as follows. Section 2 reviews the existing literature on political competition and public procurement corruption with special emphasis on the case of Hungary. Section 3 describes the operationalisation of key concepts, presents the key variables and outlines the estimation strategy. The results are analysed and discussed in Section 4. Section 5 concludes and discusses the results in light of the existing literature as well as their policy implications.

2 Literature and Theory

2.1 Public Procurement

The term public procurement refers to "the process by which public authorities, such as government departments or local authorities, purchase works, goods or services from companies" (European Commission 2016). Public procurement has been widely used in the public sector to outsource certain tasks to private contractors. According to its proponents, outsourcing is "more cost-efficient and better stimulates innovation than direct service delivery" (Brown, Potoski, and Van Slyke 2006, 326). There is no exact measure of how costefficient contracting is: contrary to the popular "20%" rule of thumb (Domberger 1998), Christoffersen, Paldam, and Würtz (2007) found that outsourcing school cleaning in Danish schools resulted in an average 30% reduction. On the other hand, Hodge (2000) estimated the discount of contracting between 7-12% (Greve and Ejersbo 2005, 5). However, there seems to be a consensus in the literature about the relative cost-effectiveness of contracting, making public procurement a favoured tool under the New Public Management regime (Dunleavy and Hood 1994; Hood 1991). While some of its benefits are undeniable, outsourcing does come with its challenges. Most importantly, an information asymmetry can arise between the buyer and the seller, especially in terms of product pricing (McCarthy, Silvestre, and Kietzmann 2013). Therefore, perfect competition, i.e. a sufficiently large number of buyers and sellers is required to prevent opportunistic behaviour from private companies (Brown, Potoski, and Van Slyke 2006).

2.2 Corruption in Public Procurement

Sufficient competition and information are not the only necessary ingredients of preventing private companies' opportunistic behaviour; the principles of free market are often violated by public authorities themselves. Competition restricted by a public authority does not

unquestionably count as corruption according to the definition of Pope (2000); discriminatory contractor selection can fall within the bounds of providing a perceived public good, e.g. when a public authority awards the contract to a local, rather than a foreign firm in order to bolster the economy (Vagstad 1995). On the other hand, choosing the winning firm for a public tender can be driven by private interests. While multiple competing definitions of corruption exist, the particular type of corruption which is the subject of this paper is large scale and institutional in nature, occurring in the realm of public procurement. Therefore, the definition of public procurement corruption employed by this paper is "the allocation and performance of public procurement contracts by bending prior explicit rules and prior explicit rules and principles of good public procurement" (Fazekas and Tóth 2016, 321). It has been widely reported that the public procurement process is often affected by corrupt practices not just in countries with relatively weak institutional capacity (Ferraz and Finan 2011; Ntayi, Ngoboka, and Kakooza 2013; Klašnja 2015), but also in developed Western states (Broms, Dahlström, and Fazekas 2019; Burguet and Che 2004; Coviello and Gagliarducci 2017; Goldman, Rocholl, and So 2013; Hyytinen, Lundberg, and Toivanen 2007). Based on existing literature on public procurement corruption, this paper hypothesises that politicians holding public office interfere in the procurement process by restricting competition in order to favour specific contractors.

Politicians engaging in corrupt practices are assumed to do their best to conceal their behaviour. As a consequence, corruption has been notoriously difficult to measure, leading scholars to design multiple methods and indicators aimed at its discovery (Knack 2007). Public procurement corruption has been operationalised in various ways ranging from qualitative investigative methods such as anticorruption audit reports (Ferraz and Finan 2011) and newspaper articles (Nyblade and Reed 2008) to various governance indicators, e.g. tender procedure type (Auriol, Flochel, and Straub 2011; Chong, Klien, and Saussier 2015), price

differences (Di Tella and Schargrodsky 2003), various other contract-level risk indicators (Ferwerda, Deleanu, and Unger 2017) or a corruption index created by aggregating different indicators (Fazekas 2016) (for an in-depth overview of governance indicators used to measure public procurement corruption, see Fazekas, Cingolani, and Tóth 2018).

2.2.1 Public Procurement Corruption in Hungary

Public works, goods and services represented approximately 16% of the Hungarian GDP in 2017, slightly above the 12% OECD average (OECD 2017, 173). Due to the aforementioned methodological problems, it is difficult to precisely evaluate how corrupt public procurements in Hungary are. In 2009, a study by GKI involving 120 in-depth interviews and surveying 900 public procurement practitioners concluded that around 70% of Hungarian public procurement tenders are permeated by corruption (GKI 2009). Corrupt practices in the Hungarian public procurement procedure are also demonstrated by the fact that in 2018, the European Anti-Fraud Office recommended the European Commission to recover 3.84% of its payments to the country, the highest rate among all EU member states (OLAF 2018, 39). Despite such glaring evidence, the Hungarian public seems not to be completely aware of the extent of public procurement corruption (Aftab, Pilz, and Tummalapalli 2020).

While perception-based estimations may not adequately capture the real extent of Hungarian public procurement corruption, analyses based objective indicators corroborate the presumption that public procurement corruption is relatively widespread in the country, at least by European standards. In 2008, Transparency International Hungary reported that the share of both single bidding contracts and non-advertised public tenders substantially exceed the EU average (Martin, Nagy, and Ligeti 2018, 28). Furthermore, current Hungarian regulations on public procurement transparency trail behind many European countries, especially in terms of

requirements to provide detailed tender documentation (Cingolani et al. 2016, 15), limitations on the number of reporting templates allowed (Fazekas and Mendes 2017, 11), and specifications about the machine-readability of the data published (Cingolani et al. 2016, 20). In 2017, a study by the Corruption Research Center Budapest found significant distortion below the reporting threshold above which contracts are legally required to be disclosed on the National Public Procurement Portal (Tóth I. J. and Hajdu 2017). The distortion implies that public institutions may deliberately design the contracts in order to avoid exceeding the threshold and thus having to report a suspicious contract. Finally, public procurement in Hungary does not only show a relative lack sufficient competitiveness and transparency; these indicators, along with corruption risks in have all stagnated or worsened in Hungary since 2008 (I. J. Tóth and Hajdu 2018).

While mayors in Hungary formally do not participate in the procurement process, qualitative research on public procurement corruption identified mayors and high-level politicians as drivers of public procurement corruption (GKI 2009, 236), substantially more so than professionals or bureaucrats (M.Á.S.T. 2009, 75). Similar to the case of India, where it has been observed that bureaucrats supervising the procurement process are often replaced by new politicians (Iyer and Mani 2012), it is assumed that Hungarian mayors exert their control on the procurement process by employing loyal bureaucrats and through their informal power. 'Corruption techniques' commonly used in Hungarian public procurements summarised in Fazekas, Tóth, and King (2013) and GKI (2009). Such techniques involve tailoring the conditions of a public tender to only one or a few selected bidders; unfairly excluding bidders from the process; tinkering with the reporting threshold and using exceptional rules to restrict competition; setting impossibly short submission deadlines while providing information to a desired bidder in advance; only publishing a call for a tender on the buyer's homepage; or

making tender documents hard to access, just to list a few techniques. By focussing on single bidding, the analytical method employed by this paper is able to capture the outcomes associated with many of these methods. However, buyers are also able to influence the tendering process at the phases of tender evaluation or contract implementation (Fazekas, Tóth, and King 2013); the effects of such techniques will not be picked up by an analysis on single bidding. Public procurement corruption does not originate exclusively from the buyers' side. Bidders often collaborate in order to divide the market among themselves (B. Tóth et al. 2014). Cartels usually submit more than one bid, with all but the desired winner offering slightly worse conditions (GKI 2009, 242; B. Tóth et al. 2014, 10); therefore, these contracts will not be evaluated as potentially risky cases in the analysis.

2.3 Political Competition and Corruption

This paper views political competition as the extent to which incumbent politicians' seats are endangered by challenger candidates. It has been argued that the electoral process in democratic states results in the electorate exerting control on politicians by punishing those who diverge from serving the public interest (Alt and Lassen 2003; Barro 1973; della Porta 2004). That is, out of two otherwise identical candidates, voters are assumed to elect the one they perceive to be less corrupt. According to this view, elections serve as both incentives for, and constraints on politicians, guiding them to act according to the public interest (Kunicová and Rose-Ackerman 2009). Therefore, despite political competition potentially leading to fragmented governments and less efficiency (Ashworth et al. 2006), current literature on political competition and public sector performance generally associates the former with better and more efficient governance outcomes (G. S. Becker 1983; Broms, Dahlström, and Fazekas 2019; Coviello and Gagliarducci 2017; Stigler 1972; Wittman 1989). In essence, public procurement corruption can be illustrated using a classical principal-agent problem. Voters, the democratic principal, elect politicians as their agents based on their ability to attain certain goals such as serving the public interest through clean governance. Due to an information asymmetry between principal and agent, voters might not be completely aware of their elected politicians' actions or ability. Therefore, opposition politicians in competitive political environment make voters more informed about the incumbent and increase political accountability (Schleiter and Voznaya 2014).

While it may seem logical that voters punish corrupt politicians, the relationship between electoral competition and corruption is not as straightforward. The phenomenon that corrupt politicians often do win elections has been reported and investigated by scholars. As noted previously, insufficient information about politicians' performance may lead to voters supporting corrupt politicians (Vries and Solaz 2017). Even when the electorate is aware of mayor being corrupt, the lack of feasible alternative or the assumption that the costs of corruption might be compensated by the incumbent's efficient administration can win corrupt mayors elections (Muñoz, Anduiza, and Gallego 2016). Furthermore, perceived welfare gains for the electorate as a result of corrupt practices may also increase the support of corrupt mayors (Fernández-Vázquez, Barberá, and Rivero 2016). It may also be worth noting that the extent to which an individual voter is willing to punish corrupt politicians depends on a multitude of variables including both macro-level factors such as the economic and institutional context or the independence of media, and micro-level considerations such as individual voter characteristics (de Sousa and Moriconi 2013).

Nonetheless, the relationship between political competition and corruption is empirically corroborated by a robust literature. It has been shown in Brazil, that mayors in their final term in office are significantly more corrupt than those who are seeking re-election (Ferraz and

Finan 2011). That is, mayors who are eligible for running for office are assumed to anticipate that they might be electorally punished for any corruption scandals. In Japan, it has been shown that politicians whose seats are stable are more likely to engage in using public power for their own private benefit than marginal candidates, who are less likely to remain in power regardless of their actions (Nyblade and Reed 2008). Analysing the effects of decentralisation on corruption, Albornoz and Cabrales (2013) found that decentralisation, i.e. increasing the decision-making power of local governments is only effective in reducing corruption when a sufficiently high level of political competition is present. Klašnja (2015) has shown that Romanian voters are sensitive to corruption, as the electorate's perception of widespread corruption actually contributes to an *incumbency disadvantage* for mayors. That political competition and public procurement corruption are related is perhaps best reported in two developed European countries. Coviello and Gagliarducci (2017) have shown that public procurement outcomes such as the number of bidders and contract price deteriorate in Italian municipalities as a mayor's tenure increases. Perhaps more strikingly, similar patterns have been found in Sweden by Broms, Dahlström, and Fazekas (2019). They reported that single bidding in Swedish municipalities is associated with mayors' length of tenure; furthermore, the rate of single bidding increases in municipalities in which the same party has been ruling for a long period of time.

2.3.1 Political Competition and Corruption in Hungary

In 2010, Hungary has experienced a major change in its party structure. Fidesz, the current ruling party won a two-thirds supermajority in 2010 and managed to maintain this position after subsequent general elections in 2014 and 2018. As Horváth and Soós argue, post-2010 Hungary in many respects bears resemblance to a *dominant party system*, which has been identified as a party winning multiple subsequent elections or regularly winning by a

significant margin, while having a clearly defined voter base (Duverger 1954; Pempel 1990; Sartori 2005, cited in Horváth and Soós 2015, 275). Fidesz' dominance since 2010 can be illustrated with the fact that at both the 2010 and 2014 municipal elections, Fidesz won in every single Hungarian county, winning at least double the number of county-level local government seats than the party coming second (NEO 2020).2 Therefore, regardless of whether or not post-2010 Fidesz qualifies as a dominant party, it is evident that the party's major success comes at the price of relatively low political competition. As it has been outlined above, political competition has been conceptualised by scholars using different measures such as the number of candidates running for office (Albornoz and Cabrales 2013), predicted vote margin (Nyblade and Reed 2008; Stigler 1972), and volatility or length of tenure (Ashworth et al. 2006; Broms, Dahlström, and Fazekas 2019; Coviello and Gagliarducci 2017). However, due to Fidesz' relatively unique dominance, the number of candidates might not adequately capture the level of competitiveness. It has long been argued that the Hungarian opposition can only challenge Fidesz' dominance through collaboration (Erdélyi 2017) and analysts have generally attributed the opposition's partial success at the 2019 municipal election to its ability to coordinate (László and Molnár 2019). Therefore, a low number of candidates running for office in the Hungarian case usually implies successful opposition coordination, thus increased political competition.

Political competition is not merely about providing a viable alternative to the electorate to replace an underperforming incumbent; it is also "viewed as essential in giving rise to opposition parties that can inform the electorate about corruption" (Schleiter and Voznaya

² Using county-level local government results instead of looking at the municipal level is a better measure of party competition due to the high number of independent candidates at the municipality level

2014, 676). From this perspective, Fidesz' supremacy, which is especially dominant in smaller municipalities (László and Molnár 2019) where corruption is less likely to be picked up by the media, can effectively block this information-providing role of opposing politicians if other parties are sufficiently weak. The argument put forward by this paper that a politician's progovernment affiliation increases corruption risks in Hungary is not purely limited by Schleiter and Voznaya's reasoning of opposition politicians as information providers (2014, 676). Considering the extent to which the Hungarian media market has been distorted and centralised since 2010 by the government (Bátorfy and Urbán 2020; Dragomir 2019; Urbán and Bátorfy 2018; Pethő 2016), it seems plausible to argue that pro-government mayors are on average more likely to be able to conceal rent-seeking. Furthermore, the post-2010 Hungarian government has been criticised since for undermining the independence of the judiciary (Freedom House 2020; Kovács and Scheppele 2018) and for its State Prosecutor's Office serving the interest of the government rather than the public (Átlátszó 2016; A. Becker 2019). While there have been cases of Fidesz politicians being prosecuted (C. L. Horváth 2020; Horváth C. L. 2020; Thüringer 2019), critics of the current government would argue that a progovernment politician might be less likely to be punished by the law for corruption than those who do not belong to the ruling party.

Political competition is therefore measured using three indicators, to be operationalised in the next chapter: length of tenure, electoral competition and pro-government affiliation. While the former two have been employed by other papers to measure political competition, to the author's knowledge, the relationship of political affiliation with public procurement corruption risks has not been previously studied. This makes a unique contribution to the existing literature, especially within the framework of a dominant party system.

3 Methodology

3.1 The Data

Public procurement contracts are legally required to be published on the National Public Procurement Portal if the contract value exceeds the minimum reporting threshold: HUF 15 million (€45.257) for goods and services and HUF 50 million (€301.716) for works (Act LXXI of 2019). Contracts below these thresholds are not published and are therefore missing from the data. As it has been mentioned before, Tóth I. J. and Hajdu (2017) found significant distortion below the reporting threshold, implying that some contracts might be priced less than the threshold in order to avoid publishing it. Since contracts published on the Procurement Portal are in a html format, in multiple different kinds of information templates (Fazekas and Mendes 2017; Cingolani et al. 2016), contracts are only accessible individually by default. However, most Hungarian procurement contracts between 2009 - 2019 have been processed and structured by the Digiwhist Project (Digiwhist 2020), allowing for data analysis. After selecting contracts in which the buyer was either a municipality or a municipality-owned enterprise, and filtering out incomplete and missing data, the procurement database contains 46921 contracts from 2412 municipalities. Data on Hungarian municipal elections are available from the website of the National Election Office (NEO 2020). Election results between 2014 and 1990, the first free elections since the fall of socialism have been matched to the procurement database. In the matched data set, variables describing political competition (see Section 3.3) are assigned to each public procurement contract based on its municipality. Finally, data on the size and type of settlements are obtained from the Hungarian Central Statistical Office (KSH 2015) and matched with the main data set. A limitation of the data used in this paper is that by-elections are not incorporated. As by-elections are not particularly common, the resulting error is assumed to be offset by the robustness of the data. To ensure

reliability, a random sample of the data set has been manually checked, as well as data related to the 25 municipalities with the highest number of public procurement contracts.

3.2 Public Procurement Corruption Risks

This paper uses single bidding to measure corruption risks. Single bidding refers to the occurrence in which only one bid is submitted by a firm which is awarded the public procurement contract. It has been shown that contracts with only one bidder are on average more expensive than competitive tenders (Fazekas and Kocsis 2015), and while single bidding does not equate to corruption *per se*, it is often "associated with corrupt practices" (Fazekas 2019, 21). It has also been widely used by scholars as a corruption risk indicator (Bauhr et al. 2019; Broms, Dahlström, and Fazekas 2019; Charron et al. 2017; Klašnja 2015).



Figure 1 - Single Bidding in Public Procurement Contracts.

Note. *n* = 46921

Single bidding is a dummy variable which takes the value of 1 if only one bid was submitted in the process, and 0 otherwise. In the data set, 9446 contracts out of 46932 only have one bidder, contributing to 20.13% of all contracts. While single bidding represents perceived corruption risks, not all markets are equally competitive; some naturally have substantially less suppliers, increasing the likelihood of single bidding. This bias is addressed by controlling for the subject of procurement contracts (see Section 3.4).

3.3 Independent Variables

Political competition is measured using three key variables. In the model employed by this paper, political competition is assumed to be independent of corruption risks. That is, the proportion of single bidding public procurement contracts associated with a mayor does not affect the electoral outcomes of given municipality. As it has been outlined in Chapter 0, this may not be the case: the expectation that high levels of political competition decrease corruption risks rests on the assumption that the electorate punishes corrupt politicians. However, political competition is viewed as independent based on the assumption that this correction effect does not influence the outcome of elections at low levels of political competition. To measure political competition, three variables are used: mayors' or their parties' length of *tenure*, their *margin* of win at the election preceding the contract, and whether or not mayors belong to the governing party (*pro-government*).

3.3.1 Tenure

Tenure is a categorical variable with three levels. It compares mayors or their parties serving their third or higher electoral term with those in their second and first terms. Until 2014, municipal elections in Hungary were held every four year. Therefore, mayors in the base category have been in power for at least eight years at the time of awarding the contract, while the other two categories are comprised of mayors who are at least in their fifth and first year of tenure respectively. Importantly, *tenure* is not limited to the same person governing a

municipality. In some cases, a new mayor is elected in a municipality without any significant change in the electorate: these can be consequences of personal reasons, deaths and conflict of interest, as mayors cannot simultaneously serve as Members of Parliament since 2011 (*Act CLXXXIX of 2011*). Drawing partially on Broms, Dahlström, and Fazekas (2019), this paper considers not just the same person but also the same party elected at subsequent elections as a continuation of tenure, a method which also accounts for potential changes in mayors' names over time. To avoid inconsistencies, mayors nominated by Fidesz alone or ruling coalition Fidesz-KDNP are considered to be supported by the same party.3



Figure 2 – Number of Contracts by Mayors' Length of Tenure.



Based on the mechanisms described in Chapter 0, mayors serving for more years are on average expected to have higher associated corruption risks due to their assumed growing informal

³ KDNP, the Christian Democratic People's Party is often considered as Fidesz' satellite party rather than coalition partner, see Bátory (2010) influence and confidence that corruption scandals will hurt them less. Figure 1 demonstrates that contracts in the data set are distributed relatively equally by mayors' tenure.

3.3.2 Margin

Margin is a continuous variable describing mayors' margin of win at the election prior to contract award. A high margin is assumed to increase potential corruption risks through two mechanisms. First, mayors who win by an overwhelming majority might worry less about being punished by voters. Secondly, when it comes to political parties, voters are expected to vote consistently in both the mayoral and the local representative votes. Therefore, a high margin is likely to result in a municipal general assembly generally loyal to the mayor, and potential suspicions of corruption are less likely to emerge. Conversely, mayors winning only by a slight margin are assumed to be particularly careful about avoiding raising suspicions of corrupt practices. Certain limitations of *margin* need to be taken into account, especially in the Hungarian context. In many municipalities especially after 2010, the outcome of elections has often been related to the question of whether opposition parties supported the same candidate or entered the electoral race separately. This issue is partly addressed in the next chapter by looking at the winner's overall vote share instead of the difference between the winner and the second place. However, since opposition all supporting the same candidate is likely to increase turnout, even looking at total vote share may not measure competitiveness adequately.

Figure 3 depicts the distribution of contracts by their corresponding mayors' margin of win. In order to normalise the distribution, the natural logarithm of *margin* is used in the model. *Log margin* has a mean of 3.08 with a standard deviation of 1.05, ranging from -2.17 to 4.61. The two end points represents contracts by mayors winning by 0.11% and 100% respectively, the latter referring to mayors who ran for office as the only candidate.

Figure 3 - Frequency Distribution of Variable Margin and its Logarithm



Margin

Log Margin

Note. *n* = 49053

3.3.3 Pro-Government

Finally, *pro-government* is a dummy variable which takes the value of one if the mayor belongs to the ruling party at the time of contract award, and zero if not. Mayoral candidates in Hungary are often nominated by more than one organisation including both parties and local civil society organisations. Therefore, mayors whose list of nominating organisations either include 'MSZP' before 2010, or 'Fidesz' are considered pro-government. A major limitation of this variable is that mayors often run win as independent candidates, at the same time receiving support from a party. This does not mean that they are concealing their affiliation, rather; that the ballot paper, which this paper's data base is ultimately based on, will not show the relationship. Independent mayors supported by parties is most common in rural areas; however, two mayors at the 2019 won as independent but supported by Fidesz in Budapest districts (Bita and Spirk 2019) – resulting in neither being recorded as pro-government in this paper.

Nevertheless, as it is shown in Figure 3, the majority (63.2%) of municipal public procurement contracts reported in Hungary between 2009-2019 have been awarded under pro-government mayors, signalling Fidesz' dominance in the 2010s.



Figure 4 – Number of Contracts by Mayors' Political Alignment.

3.4 Control variables

In order to address potential omitted variable bias when analysing the relationship between political competition and public procurement corruption risks, a comprehensive set of control variables need to be included into the equation which may correlate with both the independent and the dependent variables. In order to address the differences related to municipalities' characteristics, the model considers their (logged) population size, municipality status, (logged) municipality procurement expenditure and region fixed effects.⁴ To control for contract-level differences, contracts' (logged) is included in the model, as well as contracts'

⁴ Categorical variable with seven categories equivalent to Hungary's NUTS 2 level Planning and statistical regions. Since Digiwhist data was partly incomplete, NUTS2 codes have been updated using the KSH database (2015) and Eurostat (2018)

subject.⁵ Finally, year fixed effects are included to capture variation in single bidding over time, not attributed to other explanatory variables. Summary statistics of all variables used in this paper are reported in Table 1, and Tables Table 4,

Table 5, Table 6 and Table 7 of the Appendix.

	Mean	Std	Min	Max	Ν
Single bidding	0.201	0.401	0	1	46921
Tenure					
First term	0.261	0.439	0	1	49248
Second term	0.344	0.475	0	1	49248
Third term	0.395	0.489	0	1	49248
Log margin	3.083	1.047	-2.169	4.605	49053
Log vote share	4.047	0.256	3.006	4.605	49053
Pro-government					
Pro-government	0.632	0.482	0	1	49248
Non pro-government	0.368	0.482	0	1	49248
Log contract value (EUR)	11.867	1.511	0	20.626	42918
Log municipality population	9.766	1.760	2.303	14.379	49064
Log municipality procurement					
expenditure	17.345	2.407	9.892	21.791	49177
CPV code		S	ee Appendi	ix	
NUTS 2 code	See Appendix				
Tender year	See Appendix				
Municipality status		S	ee Appendi	ix	

Table 1 – Descriptive Statistics of Variables Used.

3.5 Estimation Strategy

⁵ Standardised Common public Procurement Vocabulary (CPV) codes are assigned to each contract to signal its subject. Complete CPV codes have multiple levels, only the first level (two digits) have been used to ensure sufficiently large categories (PublicTendering 2013).

Binary logistic regression has been used to investigate the predictors of single bidding in public procurement contracts. The relationship of independent variables with *single bidding* has been analysed both independently and together, interacting with one another. Compared to ordinary least square (OLS) regression aimed at establishing a linear relationship between dependent and independent variables, a logistic model attempts to predict the outcome of a dichotomous dependent variable. That is, the coefficients determined logistic model can be used to estimate the odds ratios of each independent variable. Specifically, a logistic regression model estimates the natural logarithm of the odds of the dependent variable taking the value of 1 - in this case, that a procurement tender only has one bidding firm. In order to estimate the log-odds of *single bidding*, the following equation is used:

$$logit(p(Single \ bidding)) = ln\left(\frac{p(Single \ Bidding)}{1 - p(Single \ Bidding)}\right) = \beta_0 + \beta_1 Margin + \beta_2 Tenure + \beta_3 Pro - government + \beta_4 Margin x Pro - government + (1)$$
$$\beta_5 Controls$$

where *Single bidding* is a dummy variable which takes the value of 0 if the procurement contract has more than one bidder and the value of 1 if it only has one; *Margin* denotes the electoral margin of win of the mayor under whom the contract is awarded; *Tenure* is a categorical variable describing whether the mayor or its party has been in office for one, two, or three or more electoral terms; *Pro-government* is a dummy variable which takes the value of 0 if the mayor does not belong to the ruling party and 1 if they do; *Margin x Pro-government* is an interaction between the two variables; and *Controls* include the log of each contract's final price, the log of the municipality's population, the log of the municipality's overall public procurement spending, the subject of each contract, the NUTS 2 region the municipality is

located in, year fixed effects, and municipality status fixed effects. Applying this model to the data, the estimated probability of *single bidding* can be described as follows.

$$\hat{p} = \left(\frac{e^{\beta_0 + \beta_1 Margin + \beta_2 Tenure + \beta_3 Pro - government + \beta_4 Margin x Pro - government + \beta_5 Controls}{1 + e^{\beta_0 + \beta_1 Margin \hat{p} + \beta_2 Tenure + \beta_3 Pro - government + \beta_4 Margin x Pro - government + \beta_5 Controls}\right)$$
(2)

It needs to be reiterated that while this model aims to account for as much unobserved variable bias as possible for example through introducing various contract- and municipality-level fixed effects, the assumed relationship between independent and dependent variables are predictive rather than causal. That is, despite the theoretical underpinning of how the lack of political competition may lead to increased corruption risks, the statistical model employed by this paper is not sufficiently refined to assert such claims.

4 Results

4.1 **Bivariate Analysis**

A simple bivariate analysis of *single bidding* and the three independent variables is used to look for a general relationship between political competition and public procurement corruption risks. As it is shown in Figure 5, neither mayors' or their parties' length of tenure nor their political affiliation seems to have the relationship hypothesised in Section 0 with *single bidding* without using control variables. While third-term mayors or parties have a higher rate of *single bidding* than those in their second term, first-term mayors are associated with the highest percentage of single bidding contracts. As for political affiliation, progovernment mayors seem to be *less* likely to end up with single bidding contracts than those not affiliated with the government.



Figure 5 - Single Bidding by Mayors' Length of Tenure and Political Affiliation.

Tenure



Note. Tenure: n = 46.921. Pro-government: n = 46.921 Pearson's correlation coefficients of *single bidding* remain insignificant both in relation to *tenure* as a categorical and as an ordinal variable, as well as in relation to *pro-govrenment*. Correlation coefficients are reported in Table 10 of the Appendix.

The bivariate relationship between mayors' winning margin and *single bidding* is depicted in Figure 6. Mayors winning by a margin of between 0% and 75% display a relatively stable rate of *single bidding* of around 20% which increases to almost 40% of contracts having only one bidder under mayors who had won by a margin of between 86.25% and 89.7%, after which point *single bidding* normalises. The relationship revealed by bivariate analysis between electoral closeness and the dependent variable therefore seems to be generally in line with the hypothesis of this paper, although the effects of *margin* are only visible at a particular point at a margin of win between 80 and 86%.



Figure 6 - Single Bidding by Mayors' Winning Margin.

Note. Tenure: n = 46731. Pearson's correlation coefficient of *margin* and *single bidding* = .0157, p < .001. The coefficient of *log margin* and *single bidding* = .017, p < .001 (See Table 10 of the Appendix)

4.2 Multivariate Analysis

Logit results from fitting equation **Error! Reference source not found.** to the data are reported in Table 2. In the first column, all three key independent variables are left out of the model. As it is seen in the table, contract value, the municipality's population and overall procurement spending significantly decrease the odds of single bidding. Together with CPV fixed effects (controlling for the subject of contracts), region fixed effects and municipality status fixed effects, the associated pseudo R-squared equals 0.1. While this number alone does not have a similar meaning to OLS regressions' R-squared, it can be compared to pseudo R-squared of subsequent columns to interpret their relative predictive power. *Tenure*, the main independent variable is introduced in column 2. Compared to contracts awarded in municipalities where the mayor or their party has been in power for at least three electoral terms, contracts by both firstand second term mayors and parties have lower probabilities of single bidding, holding other variables constant. Specifically, compared to contracts by mayors in their third or higher term, the log-odds of contracts awarded under mayors in their second term to have only one bidder company are expected to decrease by 0.115, holding all other predictors constant (p < .001). Similarly, compared to the base category, a 0.86 decrease is expected in the log-odds of public procurement contracts awarded during the tenure of mayors in their first electoral term to have only one bidder (p = .016). That is, holding all other variables constant, single bidding is less likely for both first- and second term mayors on average than those in their third or higher term; however, mayors in their second term have on average lower odds of single bidding compared to third- or higher term mayors than those in their first term. This relationship between *tenure* and single bidding remains stable in subsequent columns where more independent variables are added to the model. In column 4, margin is introduced as a predictor. Perhaps surprisingly, the results indicate no statistically significant relationship between log margin (Column 3) and the dependent variable. As hypothesised, mayors' political affiliation is related to single bidding. As column 4 of Table 2 demonstrates, a 0.93 increase is expected in the log-odds of single bidding in pro-government municipalities compared to municipalities where the mayor is not from the ruling party (p = .004). The effect of *pro-government* only disappears with the introduction of the interaction term and remains consistent in all regression models in this paper, indicating of the robustness of its effect. Finally, introducing the interaction term in

column 5 does not seem to predict *single bidding*, also rendering the effect of *pro-government* insignificant.

			Single bidding		
-	(1)	(2)	(3)	(4)	(5)
Tenure					
Third or higher term (bas	e)	-	-	-	-
Second term		115***	117***	132***	132***
		(.032)	(.032)	(.032)	(.032)
First term		086**	096***	099***	099***
		(.034)	(.036)	(.036)	(.036)
Log margin			011	016	016
			(.014)	(.014)	(.018)
Pro-Government				.093***	.094
				(.033)	(.086)
Log Margin x Pro-govern	nment				000
					(.025)
Log value	061***	061***	062***	061***	061***
	(.011)	(.011)	(.011)	(.011)	(.011)
Log population	116***	110***	111***	117***	117***
	(.027)	(.027)	(.027)	(.027)	(.027)
Log total spending	029*	034**	033**	034**	034**
	(.015)	(.015)	(.015)	(.015)	(.015)
Constant	4.000***	4.155**	4.197***	4.197***	4.197***
	(.691)	(.696)	(.699)	(.699)	(.699)
Observations	41352	41352	41342	41342	41342
Pseudo R ₂	.1018	.1022	.1021	.1023	.1023
CPV FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Municipality status FE	Yes	Yes	Yes	Yes	Yes

Table 2 - Predictors of Single Bidding.

Note. Dependent variable: single bidding. Robust standard errors in parentheses; *** p<0.01 ** p<0.05 * p<0.1

Results from Table 2 indicate that of the three key independent variables, only *tenure* and *progovernment* predict *single bidding*. The finding that mayors' tenure affects corruption risks is hardly surprising, as similar results have been reported (see Broms, Dahlström, and Fazekas 2019; Coviello and Gagliarducci 2017). Interestingly, the results in Table 2 seems to suggest that freshly elected mayors are *more likely* to restrict competition and engage in single bidding than those in their second term. Comparing contracts by new mayors and those who are reelected twice convolutes this relationship; as it is shown in Table 11 of the Appendix, there is no statistically significant difference between term 1 and term 2 mayors' likelihood of single bidding. The positive relationship between *pro-government* and *single bidding* is from a purely theoretical standpoint is, while not unexpected, a substantial finding. Accepting the claim by A. Horváth and Soós (2015) about post-2010 Hungary being a dominant party system, the lack of feasible local opponents, the centralisation of domestic media (Bátorfy and Urbán 2020) and relative safety from the law (Átlátszó 2016) might provide more incentives to pro-government politicians for rent-seeking than to those in the opposition. It is also expected that the ruling elite is associated with institutionalised grand corruption (see CRBC 2020). While the mechanisms through which government affiliation affects single bidding is yet to be revealed, the relationship between public procurement corruption and political affiliation at the municipal level has so far not been documented, at least in the context of Hungary. Furthermore, to analyse the joint predictive power of the two statistically significant variables, the interaction term between tenure and pro-government has been tested. Table 11 of the Appendix reports the results, indicating that while the length of mayors' rule and their political affiliation are both related to the likelihood of single bidding, these effects remain separate. That is, including the interaction term in the equation renders the effect of both tenure and progovernment insignificant, while the interaction term also fails to predict *single bidding*.

Contrary to earlier assumptions, *margin* seems not to predict public procurement risks. However, as it has been noted in Section 3.3.2, the winning margin of a candidate might not adequately capture electoral closeness in a given municipality due to Hungary's unique post2010 party structure. That is, a mayoral candidate from the ruling party might win by a relatively big margin while not winning the majority of the vote share if their opponents run separately. Conversely, an opposition candidate might defeat their pro-government opponent by only a slight margin in an 'easy' municipality if opposition votes are distributed between more than one opposition candidates. Table 3 explores the possibility of *vote share* better capturing electoral closeness, and ultimately political competition than *margin* does.

Table 3 corroborates previous findings about the relationship between tenure and progovernment with public procurement corruption risks. Compared to the previous model, firstand second-term mayors and parties seem to be even slightly less likely to engage in single bidding compared to third- or higher term mayors and parties when instead of winning margin, overall vote share is included in the equation. Vote share also seems to be a better overall predictor of *single bidding* than *margin*. The model's pseudo R-squared is higher, and the log of vote share remains significant except in column 5 when the pro-government – vote share interaction is introduced. Findings in Table 3 therefore seems to suggest that mayors with a higher overall vote share are less likely to engage in single bidding than those whose electoral race was closer. That is, as column 4 suggests, one percent increase in a mayor's total vote share is associated with an expected *decrease* in the log-odds of *single bidding* on average, holding other predictors constant. Close electoral races leading to worse public procurement outcomes go directly against not just the literature on political competition and public procurement corruption (Broms, Dahlström, and Fazekas 2019; Coviello and Gagliarducci 2017) but would also challenge some of the tenets of how elections generally incentivise good governance (Alt and Lassen 2003; Barro 1973; della Porta 2004).

			Single bidding		
	(1)	(2)	(3)	(4)	(5)
Tenure					
Third or higher term (base	e)	-	-	-	-
Second term		115***	121***	135***	137***
		(.032)	(.032)	(.032)	(.032)
First term		086**	114***	114***	114***
		(.034)	(.036)	(.036)	(.036)
Log vote share			133**	141**	071
			(.058)	(.058)	(.076)
Pro-Government				.091***	.674
				(.033)	(.427)
Log vote share x Pro-gove	ernment				143
					(.104)
Log value	061***	061***	062***	062***	062***
	(.011)	(.011)	(.011)	(.011)	(.011)
Log population	116***	110***	118***	123***	124***
	(.027)	(.027)	(.027)	(.027)	(.027)
Log total spending	029*	034**	030**	031**	031**
	(.015)	(.015)	(.015)	(.015)	(.015)
Constant	4.000***	4.155**	4.732***	4.746***	4.474***
	(.691)	(.696)	(.745)	(.745)	(.775)
Observations	41352	41352	41342	41342	41342
Pseudo R ₂	.1018	.1022	.1022	.1024	.1024
CPV FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Municipality status FE	Yes	Yes	Yes	Yes	Yes

Table 3 – Overall Vote Share as a Predictor of Single Bidding.

Note. Dependent variable: single bidding. Robust standard errors in parentheses; *** p<0.01 ** p<0.05 * p<0.1

In order to better understand the relationship between electoral competition and public procurement corruption risks, a third model is being employed, this time including both *margin* and *vote share* as categorical variables. Findings are reported in Table 11 of the Appendix, reinforcing earlier results about both mayors' and parties' length of tenure and mayors' progovernment affiliation. To further investigate the differences between first- and second-term mayors and parties, these two categories have been directly compared against each other;

results in Table 11 indicate no statistically significant difference between the two. In line with previous theory-based assumptions, findings in Table 11 also challenge the negative relationship between *vote share* and *single bidding*, reported in Table 3. Dividing both margin of win and overall vote share into categories and introducing them to the model as dummy variables reveals that only the first and the last groups, i.e. the closest and farthest electoral races are significantly different. Depending on which variable is considered, the log-odds of contracts by mayors who won unchallenged to only have one bidder are on average between .143 - .146 lower than for mayors whose electoral race was the closest in the data set. That is, the relationship between electoral competition and *single bidding* is at best ambiguous, compared to length of tenure and political affiliation, both of which seem to consistently - albeit only to a limited extent – predict single bidding in public procurement contracts.

5 Conclusion

It has been hypothesised that political competition, measured as the length of tenure of mayors and their parties, mayor's political affiliation, and electoral competitiveness predicts public procurement corruption risks, measured as contracts having only one bidder. Data from 2010 - 2019 Hungary including public procurement contracts reported on the National Procurement Portal by municipalities and municipality-owned companies indicate that length of tenure and political affiliation are both related to single bidding. The analysis reported a lower likelihood of single bidding for mayors and parties in power for both one and two electoral term compared to those ruling for three or more terms. Data seem to suggest that mayors or their parties reelected once have an even lower probability of single bidding contracts than freshly elected mayors or parties; however, comparing these two categories directly against each other yielded no significant differences. Government affiliation has a slightly less substantial relationship with corruption risks than length of tenure, although it has a comparable significance. That is, public procurement contracts awarded under pro-government mayors have a higher chance of having only one bidder. Finally, no relationship has been uncovered between single bidding and electoral competition; regardless of how the latter was operationalised, mayors' rate of single bidding seems to be independent of how close their competition was with their opponent candidates.

The findings of this paper are in line with the expectations set by substantial literature on the relationship between political competition and public sector performance (G. S. Becker 1983; Broms, Dahlström, and Fazekas 2019; Coviello and Gagliarducci 2017; Stigler 1972; Wittman 1989). Furthermore, the finding that mayors' pro-government affiliation is associated with increased corruption risks corroborates the assumption based on dominant party system

literature (e.g. Schleiter and Voznaya 2014) that higher levels corruption is expected in connection with the dominant party.

Finally, the findings of this paper call for a number of recommendations for policymakers and civil society. Firstly, echoing the policy recommendations by Coviello and Gagliarducci (2017), the findings of this paper advocate policies that favour political turnover in order to increase public procurement competition and reduce corruption risks. Imposing limits on how long Hungarian mayors can hold office could be a relatively simple policy aimed at achieving such outcomes. Furthermore, in light of the increasing size of public procurement over time (Kutlina-Dimitrova 2018, 8) and the expected additional boost in public expenditure driven by the COVID-19 pandemic (Ekeruche 2020), anti-corruption organisations are encouraged to utilise the findings of this paper in their activities. Indeed, it has already been reported that the non-competitive contracts have been increasingly awarded to crony companies in the wake of the pandemic (CRCB 2020), calling for an increased scrutiny of public procurement contracts awarded by public institutions expected to engage in corrupt practices.

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Appendix

 Table 4 – Frequency Distribution of Variable CPV.

Frequency	Percent
204	0.41%
3731	7.58%
15	0.03%
2105	4.28%
361	0.73%
150	0.30%
31	0.06%
236	0.48%
46	0.09%
866	1.76%
148	0.30%
159	0.32%
3255	6.61%
1537	3.12%
160	0.32%
355	0.72%
191	0.39%
1367	2.78%
1	0.00%
298	0.61%
125	0.25%
583	1.18%
24068	48.88%
213	0.43%
425	0.86%
13	0.03%
442	0.90%
120	0.24%
23	0.05%
92	0.19%
24	0.05%
543	1.10%
29	0.06%
2438	4.95%
354	0.72%
53	0.11%
13	0.03%
4	0.01%
368	0.75%
1818	3.69%
	Frequency 204 3731 15 2105 361 150 31 236 46 866 148 159 3255 1537 160 355 191 1367 1 298 125 583 24068 213 425 13 442 120 23 92 24 543 29 2438 354 53 13 4 368 1818

	Table 4 – continue	d
80	482	0.98%
85	390	0.79%
90	1072	2.18%
92	172	0.35%
98	152	0.31%
EA	3	0.01%
FB	2	0.00%
IA	1	0.00%
Total	49238	100.00

 Table 5 – Frequency Distribution of Variable NUTS 2.

NUTS 2	Region	Frequency	Percent
HU11	Budapest	6414	13.07%
HU12	Pest	4366	8.90%
HU21	Central Transdanubia	4761	9.70%
HU22	Western Transdanubia	4882	9.95%
HU23	Southern Transdanubia	5385	10.98%
HU31	Northern Hungary	6993	14.25%
HU32	Northern Great Plain	8981	18.30%
HU33	Southern Great Plain	7282	14.84%
Total		49064	100.00%

 Table 6 – Frequency Distribution of Variable Tender Year.

Tender year	Frequency	Percent
2009	20	0.04%
2010	141	0.29%
2011	832	1.69%
2012	686	1.39%
2013	7524	15.28%
2014	9131	18.54%
2015	6787	13.78%
2016	6015	12.21%
2017	6016	12.21%
2018	9049	18.37%
2019	3049	6.19%
Total	49248	100.00%

Municipality status	Frequency	Percent
Capital	531	1.08%
Budapest district	5886	12.00%
County seat	12192	24.85%
County town	1530	3.12%
City	17647	35.97%
Major township	1641	3.34%
Township	9637	19.64%
Total	49064	100.00%

 Table 7 – Frequency Distribution of Variable Municipality Status.

 Table 8 – Frequency Distribution of Margin as a Categorical Variable.

Margin of win	Frequency	Percent
0-4.9%	4542	9.26%
5-9.9%	5076	10.35%
10-19.9%	9425	19.21%
20-59.9%	24286	49.51%
60-98.9%	2645	5.39%
99-100%	3079	6.28%
Total	49053	100.00%

Table 9 – Frequency Distribution of *Tenure* as a Categorical Variable

Total vote share	Frequency	Percent	
20-39.9%	2992	6.10%	
40-49.9%	12749	25.99%	
50-74.9%	26517	54.06%	
75-98.9%	3716	7.58%	
99-100%	3079	6.28%	
Total	49053	100.00%	

Table 10 - Correlation Matrix

Variables	Single	Tenure –	Tenure –	Tenure –	Pro-	Log	Log vote	Log contract	Log	Log total
	bidding	1st term	2nd term	3rd term	government	margin	share	value	population	expenditure
Single bidding	1.000									
Tenure – 1st term	0.006	1.000								
Tenure – 2nd term	-0.003	-0.430***	1.000							
Tenure – 3rd term	-0.003	-0.480***	-0.585***	1.000						
Pro-government	0.001	-0.213***	0.234***	-0.036***	1.000					
Log margin	0.017***	-0.306***	0.043***	0.234***	0.058***	1.000				
Log vote share	0.014***	-0.233***	0.006	0.204***	-0.111***	0.809***	1.000			
Log value	-0.112***	-0.047***	0.015***	0.028***	0.039***	-0.045***	-0.068***	1.000		
Log population	-0.037***	-0.153***	0.105***	0.036***	0.474***	-0.170***	-0.338***	0.122***	1.000	
Log total	-0.037***	-0.182***	0.090***	0.076***	0.465***	-0.105***	-0.266***	0.169***	0.904***	1.000
expenditure										

*** *p*<0.01, ** *p*<0.05, * *p*<0.1

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	Single bidding			
	(1)	(2)	(3)	(4)
Tenure				
Third or higher term	.084**	.029	111***	.101***
	(.034)	(.049)	(.037)	(.037)
Second term	044	.010	025	035
	(.035)	(.058)	(.037)	(.037)
First term (base)	-	-	-	-
Pro-Government	.087***	.057	.093***	.090***
	(.033)	(.054)	(.033)	(.033)
Tenure x Pro-Government				
0 (base)		-	-	-
1		.102		
		(.070)		
2		058		
		(.075)		
3		0		
		(omitted)		
Margin				
0-4.9% (base)			-	
5-9.9%			007	
			(.062)	
10-19.9%			010	
			(.056)	
20-59%			041	
			(.050)	
60-98.9%			091	
			(.074)	
99-100%			146**	
			(.072)	
Vote share				
20-39.9% (base)				-
40-49.9%				018
				(.063)

Table 11 – Single Bidding, Tenure x Pro-Government Interaction and Categorical Margin and Vote Share Variables

50-74.9%				052
				(.059)
75-98.9%				011
				(.074)
99-100%				143*
				(.078)
Log value	061***	061***	061***	061***
	(.011)	(.011)	(.011)	(.011)
Log population	114***	111***	124***	120***
	(.027)	(.027)	(.027)	(.027)
Log total spending	035**	035**	033**	035**
	(.015)	(.015)	(.015)	(.015)
Constant	4.051***	4.040***	4.143***	4.147***
	(.694)	(.694)	(.698)	(.691)
Observations	41352	41352	41342	41342
Pseudo R ₂	.1023	.1025	.1024	.104
CPV FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Municipality status FE	Yes	Yes	Yes	Yes

Notes. Dependent variable: single bidding. Robust standard errors in parentheses; *** p<0.01 ** p<0.05 * p<0.1