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The cost of favoritism in public procurement

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The Cost of Favoritism in Public Procurement[*]

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Abstract

Are political connections in public procurement harmful or efficiency-gaining for the public sector and what are the costs of favoritism towards politically connected firms? Exploiting detailed data on firm representatives' political affiliations in the Czech Republic, we find that favoritism to politically connected firms increases the price of procurement contracts by 8% of the estimated costs while no gains in terms of quality are generated. Interestingly, these adverse effects of political connections are not present for procurement contracts that get additional oversight from a higher level of the government, because they were co-funded by the European Union. Based on our estimates, the total procurement expenditures increased by 0.48% due to the favoritism. Finally, we discuss and document channels of such favoritism, and present suggestive evidence that politicians tailor technical specifications of projects to fit the comparative advantage of specific firms.

Keywords: Political connections, Public procurement, Costs and quality of public projects

JEL Codes: D44, D72, H57

1 Introduction

In 2005, Mr. Rebicek owned a relatively unknown company called Viamont specializing in the construction of railways, which won procurement contracts worth 25 million USD. In 2006, Mr. Rebicek got elected to the chamber of deputies and became the new Minister of Transportation of the Czech Republic. He sold the company due to a conflict of interest but remained an external consultant. In 2007 and 2008, the firm won public procurement contracts worth approximately 150 million USD.[1]

A broad body of academic literature finds evidence that political connections bring various benefits to connected firms inducing better access to loans, favourable legislation, relaxed oversight et cetera (Faccio, 2006). A recently growing body of empirical literature finds that political connections play an important role in the allocation of public procurement contracts as well, a huge market accounting for 12-20% of GDP in OECD countries. Following the seminal work of Fisman (2001), several studies show that personal connections to the politicians in power lead to a disproportionate amount of procurement contracts allocated to the connected firms (Goldman et al., 2013; Brogaard et al., 2019; Schoenherr, 2019).

Are political connections harmful or efficiency-enhancing for the public sector and what are the costs of the favoritism towards politically connected firms? This remains a largely open question. Preferential treatment of some firms may lead to misallocation of contracts to less competitive yet connected firms. And thus, this favoritism would be associated with inefficiencies and potentially also lower economic growth (Mauro, 1995; Shleifer and Vishny, 1993). Moreover, as Shleifer and Vishny (1993) argue, red tape (for non-connected firms) might increase dramatically because of corruption especially in countries with weak institutions which would again support the proposition that political connections induce additional costs for the public sector. On the other hand, personal connections might promote easier and cheaper cooperation between a firm and a government agency (Mauro, 1995). Similarly,

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[1]This is a well-known story documented by the investigative journalist from the major Czech media. See, e.g. https://www.idnes.cz/zpravy/domaci/firma-kterou-vlastnil-ministr-rebicek-ziskala-zakazky-za-3-5-miliardy.A080516_220226_domaci_zra.

if more productive firms are more likely to establish a relationship with politicians, favoritism might bolster efficiency. Our main contribution lies in answering the aforementioned question. We show that contracts allocated to politically connected firms are associated with adverse contract-level outcomes: they are overpriced and not of higher quality quality. We calculate costs of this favoritism. On top of that, we provide suggestive evidence that additional oversight from a higher level of government (in our case agencies set up by the Czech ministries provide additional oversight over regional and municipal procurement projects that are co-funded by the European Union) mitigates the effects of political connections on price.

The setting in the Czech Republic offers a good environment for studying the efficiency costs of favoritism for several reasons. Detailed data about public procurement, party affiliations and ownership of private companies are available. Importantly, we have reliable engineering estimates of the costs for most procurement contracts. We can thus see how the final price compares to the engineering estimate of the costs when the contract is allocated to a firm with a political connection, relative to a non-connected firm. Furthermore, we examine whether the higher prices are associated with higher quality of delivered works.

We begin by constructing an extensive database of links between politicians and firms. In the Czech Republic, each firm[2] has to publish details about both its ownership structure and its management (including names of board and supervisory board members). Using data about political candidates in 11 recent elections, we identify firms that have direct (personal) links to political parties. Next we collect information about the results of the elections. This allows us to identify parties in power and in opposition on all levels of the government.

Our results show that favoritism does not lead to better outcomes as contracts are persistently overpriced, by approximately 8%. We present a variety of different specifications using both cross-sectional and time-dependent variation in connections while controlling for project types and engineering cost estimates. In the most saturated specifications, we doc-

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[2]This includes also very small firms.

ument that this effect remains present even when controlling for relationship fixed effects; specific for each firm/procurer pair. Their connection disappears (emerges) because politicians – to whom the company is connected – get outvoted (elected) from (into) the office. The effect of connections appears only when firms are connected to the politician in power (not to the opposition parties).

Although the price increases are worrying by themselves, there are still scenarios where price increases might be compensated by better outcomes in another dimension. Public procurement contracts in our data consist of often heterogeneous services such as construction or IT. To examine whether higher prices are compensated by higher quality for the contracts delivered by politically connected firms, we first look at commercially available goods with presumably little quality differentiation such as raw materials or bricks. We isolate goods that are homogeneous and can be purchased in supermarkets or specialized stores. Even on this sub-sample, we find that the contracts are significantly overpriced when delivered by politically connected firms.[3]

Further, we also examine directly if politically connected firms deliver services of higher quality. Measures of quality are not generally available which makes this a complicated issue. Therefore, we propose a new method for calculating a measure of quality for construction projects. We make use of contract-level data (such as short descriptions, dates of award, procurers' and buyers' identity and so on) and use text analysis to link construction projects with their subsequent repairs. We can thus calculate a measure of total life-time costs of a particular construction project. The results show small and statistically insignificant decreases in quality for goods delivered by connected companies.

A possible concern with our approach could be endogeneity of political connections. This could be the case, for example, in a situation when more competitive/ambitious firms intentionally seek political connections and also contracts with higher profit margins. However,

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[3]This analysis was motivated by the scandal where the Czech Army bought 11,000 first aid tool-kits. These were virtually equivalent to the ones that every driver needs to have in the car as the law regulates the exact content. The average price of such a tool-kit is around 13 USD. However, the Czech army paid more than 56 USD per item.

in out setting, this appears unlikely. First, we study procurement contracts on three levels of government. Elections on different levels take place virtually every year in the studied period. For each procurer, a different political party can be in power (and they often are – there are at least 5 stable large parliamentary parties in the Czech Republic and a number of small local parties). This means that firms would have to quickly switch or acquire new connections to be able to obtain advantages from different procurers. This does not correspond to the reality when most firms are connected to one party only. Second, it is very difficult to predict the right party for specific ministries. The party in power in each ministry is decided only after the parliamentary elections during complicated coalition negotiation.[4] Thus, the process can be considered close to random. Third, the variation in political connections, that we exploit in our main specification, is in the majority of cases coming from losing political connection rather than gaining them. Hence, in most cases in our data, the scenario with competitive/ambitious firms intentionally seeking political connections is not possible.

Having explained institutional reasons that help us fight the endogeneity issues we nevertheless present two more specifications supporting the robustness of our main results but working under different identifying assumptions. We have constructed a measure of narrow elections and test empirically whether the estimates of the effects of political connections differ for contracts procured by procuring authorities where the party in power won narrowly. In narrow election, it is difficult for firms to seek political connections in advance as it is difficult to predict which party will win and assignment to treatment can be thus considered close to random. Furthermore we use an event study approach using variation in timing with respect to elections and demonstrate robustness of our results.

Our approach also allows us to calculate the total costs induced by the presence of favoritism. We conclude that this amounts to approximately 128 million USD in the span of our data from 2006 to 2018. We only use a subset of public procurement where elected

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[4]Of course, large political parties can have their candidates for each ministry. However, there is so much uncertainty attached to the exact composition of the parliament that predicting which party will hold which ministry is – in the Czech setting – virtually impossible. This is mainly due to a very fractionalized political scene at central level – currently, there are 9 political parties.

officials can decide about the allocation of procurement contracts. Extrapolating these results to all procurement in the country, we find that favoritism leads to an increase in procurement expenditures by .48% which is equal to .08% of GDP. However, these direct monetary costs are unlikely to be the only costs that are induced by favoritism. Such behavior of public institutions may also lead to a lower trust in the institutions, the government, the rule of law, and consequently, it can undermine the functioning of democracy in the country. Although, we can not take into account these threats of favoritism, we acknowledge their existence.

We analyze the mechanisms by which procurers allocate contracts to the favoured bidders. The discretion of procurers is relatively restricted compared to, for example, the United States where federal agencies often restrict competition in favour of a single firm (Kang and Miller, 2015). Coviello and Mariniello (2014); Coviello et al. (2017); Palguta and Pertold (2017); Titl and Geys (2019) find that procurers use discretion and restrict competition to favor specific firms. In the Czech Republic, procurers have several potential ways to affect allocation of contracts. First, for some contracts, they can choose the exact allocation mechanism. The most common one is an open auction where all interested bidders can participate and the lowest bidder wins. However, there are several other mechanisms that allow the government body to pre-select the set of bidders. Perhaps surprisingly, we do not see that the main channel of contract allocation relates to choosing restricted mechanisms, but we observe overall lower competition in contracts allocated to connected firms. An alternative channel is politicians' tailoring of the exact project specification to the comparative advantage of one firm. By tailoring the technical specifications procurers both (i) restrict competition and (ii) make the favoured bidder more competitive. A nice example could be the case of a public university that started a tender for the purchase of printers (Ginter, 2016). The university required a specific speed for printing out the first page after turning the printer on. It is difficult to imagine that such a feature of printers is crucial for the university and its staff. Also, it is obvious that this requirement either limits the competition or creates additional costs for firms that normally offer printers with a different initial speed.

To provide evidence of tailoring of procurement contracts, we show that politically connected firms receive contracts with a longer and more complicated description. Furthermore, such tailoring should imply that politically connected firms face softer competition. We indeed find that politically connected firms compete against a lower number bidders.

Procurers appear to use sophisticated methods to mask corruption which makes it difficult to suggest policies that would help alleviate this problem. One possibility is to have an independent agency overlook the allocation of contracts. The contracts that are subsidized via funds from the European Union have more oversight, because there are are both national agencies overlooking the allocation and the implementation, but also the European Commission that can decide to audit the project at any point of time. In our data, we can distinguish between contracts that are fully covered from national resources and those that are co-funded by the European Union. Our results show that projects that are allocated to politically connected firms are not overpriced if they are overseen by an agency set up at a higher level of government. This provides suggestive evidence that additional oversight might be beneficial as long as it is not done at the same level of government. This finding seems to contrast with the findings of Calvo et al. (2019); Giuffrida and Rovigatti (2018) that study the effects of oversight in the U.S. federal procurement and find that active procurement officers' oversight is associated with negative outcomes due to excessive red tape.

We structure the paper in the following way. Section 2 describes the institutional features of the Czech procurement market. Section 3 describes the data. Section 4 presents a motivating case study of favoritism in procurement. In Section 5, we present the empirical analysis of the effects of political connections on prices, quality of public works and other procurement market's outcomes. Section 6 presents the cost calculation. Section 7 concludes and lays out policy implications of our findings.

2 Institutional Setting

After the Velvet Revolution in 1989 and the split of Czechoslovakia in 1993, the Czech Republic transitioned from a communist centrally-planned economy to a modern market-based economy. Even though the Czech economy enjoyed a relatively fast average real GDP growth of 2.5% from 1997-2017, it still has not caught up with neighbouring developed countries such as Austria or Germany that were similarly rich in the pre-communist era. Numerous corruption scandals since the beginning of the 1990s suggested that creating reliable institutions might be one of the biggest challenges of this transition to a market-based economy. Indeed in 2010, The National Economic Council of the Czech Government identified corruption and weak institutions as the crucial factor hindering economic growth and contrasted this to good outcomes in areas such as the stability of the macroeconomic environment, good educational outcomes or the flexibility of the labor markets.[5] In terms of perceived institutional quality, the Czech Republic could be compared to high income countries with high corruption levels such as South Korea or Italy.[6]

The Czech legal system is trying to fight corruption by restricting potential conflict of interest of politicians. For example, the highest representatives of the government's executive power – ministers – are not allowed to be in management positions or on boards of any firms. They can however still (passively) own companies. The regulation becomes somewhat less strict and more vague for politicians on lower levels, such as municipal mayors. Faccio (2006) presents an overview of conflict of interest regulation among various countries. The regulation in the Czech Republic would rank amongst stricter regulations of the intersection of business and politics. However, as we show the official regulation does not prevent politically connected firms from receiving procurement contracts.

The actual procurement allocation decisions are not done by politicians directly though.

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[5]For details, see the report `https://www.vlada.cz/assets/media-centrum/aktualne/vyrocni-zprava_NERV.pdf`.

[6]According to The Corruption Perception Index which ranks countries by their perceived levels of corruption in the public sector, the Czech Republic ranked 38th, South Korea 45th and Italy 52nd in 2018 (Transparency International, 2019)

Public officers are in charge of running and designing public procurement contracts. Nevertheless, politicians have had and still have substantial influence over the public officers and their appointment. From our perspective, there are two important moments when politicians may influence the allocation. First, the contract specification including the qualification criteria, the evaluation criteria, the quality and accessibility of the project description et cetera play very important role at the beginning of the project. Second, the evaluation and possible disqualification of some bidders is important in the stage of determining the actual supplier. As reported by The European Commission (2016), there have been multiple instances of uncovered undue influences over public procurement in both moments mentioned above – it reported "... undue influence over the specification of contracts, subjective and unclear selection criteria, and bid rigging". An important additional peace of information supporting the hypothesis that politicians have influence over the public procurement contacts allocation in the Czech Republic is the fact how the evaluation committees – that are in charge of evaluation whether a bidder fulfills the qualification criteria and evaluation of the actual bids among other things – are set up. According to the law,[7] the committee should have at least 5 members[8] and only one third of them is required to be experts in the sector of the procurement project. The committee decides in majority voting. Usually, the local administration, the regional administration or the ministry suggest members of the committees and these are subsequently approved by the city council, regional government or the ministry. The original purpose of creating the committees was to allow professional civil servants to be in charge of the process. However, the appointees were often political which has been repeatedly criticized by the European Commission, the Council of the EU and (inter)national anti-corruption organizations.[9] This widespread politicization of the public sector highlights

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[7]The details of the law have changed in 2012 and 2016, nevertheless, the changes were rather cosmetic and did not significantly diminish the level of influence of politicians over public procurement procedures. For instance, majority of the officers in the committee still could have appointed in the direction of the politicians or officers appointed by the politicians.

[8]For large procurement contracts, the minimum raises to 9 members but the rest of the rules applies as for smaller contracts.

[9]See, for instance, the recommendation of the Council of the European Union from 19th June 2013 stating that there is a "need to adequately separate political appointees from non-political staff, guarantee

the capacity of politicians to influence procurement decisions as we document later in the paper.

3   Data

3.1   Public Procurement

The key part of our analysis are data about public procurement. A nationwide regulation governs the procedure of awarding public procurement contracts. The regulation describes the allocation processes. Nevertheless, the actual implementation of these regulatory procedures is administered by the procurers and they, thus, have substantial leeway in choosing allocation procedures and qualification and evaluation criteria. One of the important requirements is that procurers have to publish details about contracts in an on-line system. The data from this system is the basis of our paper.[10]

We use a subset of this data where the contracts are awarded by a public institution with an elected (i.e., not simply appointed) government. Our data, thus, includes the central, regional and municipal governments, and government owned businesses.[11] Note that we consider each ministry separately so that we can distinguish different coalition parties that are in power in different ministries. Our data covers the period from 2006 until 2018. The overall quality of the raw reported data is weak in some cases – it contained wrongly coded data on the one hand and some missing values on the other. A private company corrected and extensively cleaned the data, which ensures that the final dataset is of good quality. It contains 32,518 contracts that accrue to 491 billion CZK (22 billion USD) in total value.

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independence of state officials and create a well-functioning career system to reduce high staff turnover", p. 7. The recommendation is available at `http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2010626%202013%20REV%201`.

[10]Contracts above a specific threshold (circa 87,000 USD for public service contracts, 261,000 USD for public works) need to be published according to the law but a large number of smaller contracts are also published.

[11]In some cases, the ownership structure is more complicated and the state/region/municipality owns only part of the company. Such firms are not included in our data. There are also some (privately run) universities or hospitals that are not included since there is no politician in charge.

[Table 1 about here.]

This dataset contains project industry classifications (CPV codes), final prices, allocation mechanisms, numbers of competitors or identities of contractors and procurers. Basic summary statistics on these variables are provided in Table 1. Similar information is available for datasets from various countries. We will, however, use one more important variable available in this data, which is the engineering estimate of costs. This is a qualified price estimate of the costs of delivering the project at hand. It should reflect a conservative cost estimate for an average firm on the market. These engineering estimates seem to be a good predictor for the final price. The regression of the logarithm of the price on the logarithm of the estimate explains 91% of the total variation in prices.[12] Figure 1 shows the correlation between estimates and prices.

[Figure 1 about here.]

In terms of specific industries, the majority of projects are construction works (51%) and IT services (10%). A more detailed overview is provided in Table 2. Please note that in the table, we show the least detailed classification. In the analysis itself, we use 3 digits of the CPV (Common (public) Procurement Vocabulary) codes which then allows us to distinguish between the 983 types/industries of projects.

[Table 2 about here.]

3.2 Electoral Data and Parties in Power

For our analysis, we need to know what political party is in charge of each municipality, region and ministry of the central government at each moment of time. For the central government, we identified the political party in power of each ministry, for regions and the 50 biggest

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[12]Separate regressions (of the (log) of the price on the (log) of estimated cost) for procurement contracts delivered by connected and non-connected firms reveal that the estimated costs are similarly good predictors of the final prices in both cases.

municipalities, we identify the coalition of governing parties and for smaller municipalities we approximated the party in power by the party that won the elections.

In total, 11 elections took place in the studied period (see Table 3). These include 3 municipal elections (2006, 2010 and 2014), 3 regional elections (2008, 2012 and 2016) and 4 parliamentary elections (2006, 2010, 2013 and 2017) which results in about 370 relevant changes to the party in power.[13] This provides variation that will be used when studying political connections of firms.

[Table 3 about here.]

3.3 Political Connections

We create a novel dataset linking political candidates and companies so that we could obtain a measure of political connectedness for each firm. For this purpose, we combine several mainly publicly available data sources.

Identities of politicians We need to create a list of politicians associated with each political party. The actually elected politicians are only a very small fraction of people who could be associated with a party. All candidates from a given political party make up a much larger population. We scrape data from a publicly available server `www.volby.cz` that collects information about all candidates for each political party across the entire history of the Czech Republic. This dataset contains information about names, cities of residence, academic titles and ages of all candidates. We focus on the recent history and download data from 2004 till 2017. In Table 3, you can see for which elections we downloaded the information about candidates. To illustrate the size of the dataset of politicians, we note that, in total, we work with approximately 720,000 records (these are not necessarily unique people as politicians often candidate repeatedly). Most of them are candidates to municipal elections (about 660,000). Arguably, political connections may be also established through

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[13]By relevant, we mean changes to the party in power for procurers which procure at least two contracts from the same supplier. For details, see our empirical specification.

family members or friends/business partners. We do not observe these connections, and thus, are likely to underestimate total costs of all types of connections.

Identities of businessmen Each company in the country needs to be listed in the official business registry. The available information here consists of the names, ages and addresses of both owner(s) and members of the board.[14] The registry also contains all changes in either owners and members of the (supervisory) boards or of the addresses of the members. In total, our dataset contains about 3,200,000 records about all Czech companies. A challenge arises as not only people but also companies can own companies and complicated ownership structures are often used to disguise the real owner. However since our dataset contains information about owners – both legal and natural persons, we can run an algorithm that links politically connected companies to final owners even if there are numerous other firms in-between. The algorithm recursively checks whether there is a firm owning the firm we have already labeled as connected. If there is such a firm, we label this firm connected and check whether this firm is owned by another firm or not. If it is the case, we continue as above until there is no firm to continue with (i.e. the last firm is owned by natural persons or there is no information about owners – see below). This is an important step. A naive approach ignoring the possible tree structure of ownership would identify Andrej Babis (the Czech Prime Minister since 2017) as an owner of 1 firm whereas this more sophisticated procedure finds up to about 250 firms.[15] With the small exceptions of foreign owned firms and some stock companies that have very a fractionalized ownership structure[16], we ultimately uncover who is the real owner for each company delivering procurement contracts.

Defining connections We match these two datasets – i.e. political candidates with the dataset of members of boards and supervisory boards of all Czech firms based on their names, city of residence, age and some additional information such as academic titles and occupation. The algorithm is straightforward. We run a loop over all persons mentioned in

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[14]Or equivalently supervisory boards of stock owned companies

[15]The current prime minister Andrej Babis is ranked as the 2nd-$3^{r}d$ richest person in the country. So the high number of owned firms indeed reflects the reality

[16]Meaning that there is no shareholder with a share higher than 20%

the company registry records and then search the dataset of candidates for a person with the identical name, age and the city of residence. There are possible limitations to this approach. In big cities, there might be two people of the same name (especially for the most common Czech names) and age. To avoid the misidentification of firms that are actually not connected, we use information about the frequency of names in the Czech Republic[17] and use probabilities of the occurrence of two people of the same name and age in the city at hand. If the probability is higher than 50%, we drop such a connection from our data set.[18]

We consider firms that are owned by a person affiliated to a political party as politically connected to that specific party. In total, we identified 3,578 political connections between firm contractors and Czech institutions and their subsidiaries, which constitutes about 1.3% of all contractors.

Note that this approach differs from the usual definitions of political connections. A firm does not need to be connected to an elected politician but it suffices if the firm is connected to the unelected politician that belongs to a winning party. The underlying idea is that even if unelected, these politicians can still use their political intra-party networks to influence the allocation of public procurement.

Only 1.3% percent of all contractors are connected to a political party. Nevertheless these firms receive 2% of all contracts constituting 6% of the total volume of all procurement contracts. Several papers established how political connections help firms to win procurement contracts (Goldman et al., 2013; Schoenherr, 2019). Simple summary statistics of our data suggest a similar pattern - the average value of procurement contracts per procurer per year is 509,000 USD for connected firms and 96,000 USD for non-connected firms. In other words, firms connected to a given procurer tend to receive a disproportionate amount of contracts per year. Over the span of our data, these amount to the total of 35 billion CZK (1.6 billion USD) awarded to firms with political connections.

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[17]This dataset was provided by EconLab, z.s.

[18]For a similar approach, see Daniele and Geys (2015).

4 Case Study

We would like to demonstrate our story – i.e. the effect of a personal connection between a firm and a politician on the allocation of public procurement contracts – on a case of a well-known company.

On the 24th of April 2009, the Czech Antitrust Agency issued a ban on signing new contracts for the Czech Ministry of Agriculture. The reason was that the telecommunication company O2 won contracts of total value of 570 million CZK (26 million USD) under suspicious and non-transparent conditions and the ministry was about to sign even more new contracts with O2. The effort of the Antitrust Agency first did not succeed. The contracts were signed before the Antitrust Agency managed to issue an official ban. The fax prohibiting signing of new contracts arrived only a couple of hours after the contracts were finalized.

At that time several board members of the company were associated with the strongest party in the national government, the Civic Democratic Party. The responsible minister of agriculture stepped down later that year [19], the contracts were nullified and the ministry had to pay a substantial fine for misconduct.

The Ministry of Agriculture was controlled by the Civic Democratic Party until 2014.[20] After the elections in 2014, the Christian Party took control of the ministry and O2 lost their connection to this ministry. Suddenly in 2015, O2 unsuccessfully sued the ministry for non-transparent and competition inhibiting behavior in contract allocation.

This case study provides a nice example of how connections matter in the allocation of public procurement contracts. Figure 2 summarizes the prices of government contracts allocated to O2 before 2014 and after 2014. The company is still winning government contracts after the change in leadership but we can see a downward trend in the prices after the company lost the connection to the government. Indeed, the average prices dropped by

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[19]the main reason was the government crises and probably not this scandal

[20]With the exception of short periods of time when the country was run by a non-political government due to a government turmoil.

13.7% with respect to the estimated price after the company lost its ties to the minister.

[Figure 2 about here.]

5 Empirical Analysis

5.1 Specification

First, we use the following basic specification to explore the effect of a political connection on the price of the contract:

$$log(price)_i = \alpha * log(estimate_i) + \beta * connection_i + \gamma X_i + \epsilon_i$$

Where *price* is the final price the contract i was contracted for. The engineering estimate of the price is denoted *estimate*, while *connection* is a dummy variable that is equal to 1 if the contract is awarded to a firm that has a political connection to the agency procuring the contract and X_i is a set of controls. In particular, this vector includes industry fixed effects (defined as the 3 digit level of CPV codes, which contain 983 different industries). Further, we include both year and month fixed effects to control for time varying variables such as overall economic growth or seasonality.

The aforementioned specification could lead to biased results. It does not take into account specific selection problems. Certain procuring agencies might, for example, be systematically more corrupt and have worse overall outcomes for all contracts. Similarly, politically connected firms could specialize in contracts that are often overpriced. To tackle this issue, we use the panel structure of our data and include into the original specification firm, procurer, firm-year and procurer-year fixed effects. These fixed effects should control for the suggested patterns of matching of specific firms to specific contracts or procurers that could bias our results. Note that by including firm-year fix effects, we also control for size of the supplier. Potentially, our results could be driven by a mechanical correlation with the firm size: given that the linking of firms to political parties is based on the identity of individuals in boards of companies, the probability of finding a connection mechanically increases with the size of firms. And the firm size is likely to be correlated with productivity and proba-

bility of being able to win and perhaps search for procurement contracts with higher profit margin. However, in the specification with firm fixed effects and firm-year fixed effects, we implicitly control for firm sizes.

As we described in the previous section, our measure of political connections varies as a function of electoral outcomes. We also control for major changes in the government by including a dummy *pol_change* that is equal to 1 if there is a change in the governing party in the last elections and 0 otherwise.

The full specification including fixed effects is as follows:

$$log(price)_{i,p,f,t} = \alpha * log(estimate)_i + \delta_{p,f,pf} + \omega * pol\_change_{p,t} +$$
$$\gamma * X_i + \beta * connection_{p,f,t} + \epsilon_i$$

Studying a contract i that is awarded by procurer p to firm f in year t, we can include fixed effects δ_f and δ_p that control for matching of firms and procurers. In the most saturated specification, we can even include a relationship fixed effect δ_{pf} that isolates any time invariant relationship between a certain pair of a firm and a procurer. We then identify the effect of firm becoming connected (or not) within a firm-procurer pair. We believe this constitutes a nice setting with lots of identifying power to uncover the effects of political connections.

A similar specification will also be used for outcomes other than price. We will study intensity of competition or quality of contracts.

In the Appendix we also add numerous robustness checks. We analyze only close elections that presumably offer even more identifying power. And we also add an event study analysis.

5.2 Effects of Favoritism on Prices of Contracts

Our main focus, in this section, is on the prices of contracts allocated to politically connected firms. Studies by, for instance, Goldman et al. (2013) or Schoenherr (2019) show that

connected firms are awarded contracts of higher volume compared to other firms. Knowing what the final price should be (according to the administrative price estimates) will help us shed light on whether the disproportionate allocation of contracts to politically connected firms can be efficient or whether it should rather be labeled as a corrupt behavior.

In Table 4, we document that contracts allocated to politically connected firms are of higher price. This result is consistent across different specifications controlling for heterogeneity of procurers by including procurer FE (Column 3) and sorting of firms to different contracts by controlling for both firm and procurer FE (Column 4). This specification allows us to control for time invariant heterogeneity on both sides of the market. In the most saturated specification, we include a relationship fixed effect directly utilizing variation connections between firms and procurers due to the results of elections (Column 5). This specification allows us to control for any match specific heterogeneity, such as a comparative advantage of a firm due to a built-up of relational capital.

The size of the effect is consistent throughout specifications. The choice of specifications allows us to rule out the possibility that the results are driven by either *(i)* inefficient procurers to which there are many politically connected firms or *(ii)* by politically connected firms that focus predominantly on overpriced contracts. Note that bias in our simple specification (Columns 1 and 2) would require the engineering estimates of costs to be correlated with firm attributes or procurer attributes. This would mean that procurers systematically over/underestimate prices for a given firm. There is no obvious reason why this should be the case. The consistency of our results and the similarity of magnitudes of the coefficients reassures us that the bias, if any, is not of large magnitude. Overall, the results show that contracts delivered by politically connected firms are overpriced by 8% (see the last column with our preferred specifications).

[Table 4 about here.]

Political connections could be endogenous if more competitive/ambitious firms intentionally seek political connections and also contracts with higher profit margins. This appears

unlikely in our application for several reasons. First, we pull together procurement contracts procured on three different levels of government. Elections on these levels take place virtually every year in the studied period and different political parties are in power on different levels. This means that firms would have to quickly switch or acquire new connections to be able to obtain advantages from different procurers. This does not correspond to the reality when most firms are connected to one party only. Second, it is virtually impossible to predict which party will be in power in particular ministries as the party in power in each ministry is decided only after the parliamentary elections during complicated coalition negotiations that are highly unpredictable with a multiparty proportional system. We do not find any statistically significant differences between the effects of political connections on prices of contracts procured by ministries or other public institutions. Third, the variation in political connections, that we exploit, is from a large part coming from losing political connections rather than gaining them. In this case, competitive/ambitious firms intentionally seeking political connections would not bias our results. Last to fully rule out the possibility that our results are biased, we construct a measure of narrow elections and examine empirically whether the estimates of the effects of political connections differ for the contracts procured by the procuring authorities where the party in power won narrowly and it won more convincingly. In narrow election, it is close to impossible to seek political connections in advance as it is not possible to predict which party will be in power. We do not find any evidence that the estimates differ (see Section B.3 in Appendix). This suggests that the endogeneity concern is not a serious threat to our identification.

In the analysis above, we have considered the sample of all (heterogeneous) procurement contracts. Next, we focus on a more homogeneous market[21] – public procurement of commercially available goods. We include all goods that should be equivalent to the products on the commercial market, i.e., those where there is no or very little need for specific adjustments

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[21]It would be ideal to study a completely homogeneous market with the exact same product. Given that our data only include expensive goods of the value above 2,000,000 CZK (91,000 USD), we have a limited number of observations for each particular homogeneous good.

of the goods for a given procurer. Such contracts include for example cars, agricultural machines or raw materials. We repeat the analysis analogous to the one in Table 4 with the sample limited to homogeneous goods. The engineering estimate of costs should be a function of the market price in this case. This is an interesting setting because we are be able to study how much goods are overpriced in a market where quality is largely the same for all suppliers. Moreover, for market of homogeneous goods, our administrative estimates should be almost equal to the market prices. A simple predictive regression shows that 97% of price variation can be explained by the cost estimates. We can thus not only control for quality differences, but also for potential bias in cost estimates in this analysis. Figure 3 shows that the price estimates are particularly precise on this sub-market of goods.

The main motivation for studying the homogeneous market is that tailoring competition for a specific supplier might be a rational, albeit illegal, behavior of a contracting authority. The lowest price auctions are often criticized for not necessarily delivering the best quality project. For a very complicated project a connection could serve as a guarantee of quality. We would still see similar quantitative effects as in the previous section, but the behavior as such would actually be welfare improving. In case of homogeneous goods, this argument does not seem valid as the goods are identical to the products sold directly on the commercial market. Thus, this may serve as an additional check that the differences in price are socially undesirable.

[Figure 3 about here.]

We initially expected that the effects of political connections on the procurement market of goods would be smaller relative to the effect on the whole sample, because procurers are likely to have only limited discretionary power to favor specific firms in this market. Nevertheless, we see significant and actually even larger effects of political connections on prices in most specifications (see Table 5). Specifically, we estimate that if a connected firm wins the contract, it tends to be for a 13% to 21% higher price (see the last 2 preferred specifications).

5.3 Favoritism and Quality of Projects

Next, we present evidence that a connection between a procurer and a supplier is not likely to guarantee a higher quality of the project. To tackle this issue, we construct a novel measure of quality. We focus on construction projects that constitute about 51% of the market. In such a market, a natural way to assess quality is the amount of repairs which follow a project. Any required repairs need to be allocated via new procurement contracts and they will appear in our data. Unfortunately, repairs are legally considered new independent contracts and it is impossible to link them to original projects via a unique identifier. However, we have a rich text description for each project at our disposal.

A human reader is able to distinguish if a project is likely to be a repair of an original project. However, given the size of our data it is impossible to manually link projects to each other. Looking only at the biggest construction procurer in the country – the Road and Motorway Directorate – this would mean manually analyzing almost 10 million project combinations. We thus decide to automate the process.

We decrease the dimension of the problem by imposing several restrictions. Both the original project and the follow-up have to be procured by the same buyer and the tender for the original project has to precede the follow-up. No procurer can hold tenders for projects that are not in their competency and the latter assumption is trivial. Further we restrict the set of possible follow-ups only to projects that contain a word suggesting the project is actually a followup. These include key words such as *repair, maintenance, revision, follow-up, reconstruction,...* . Given the complexity of the Czech language the final library of key words consists of around 50 words.

We turn to text analysis tools to calculate the probability that each project tagged by a keyword is a follow-up of a particular previous project. We proxy this probability by the similarity of the text descriptions of the original project and the possible follow-up.

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To calculate the similarity of the project we employ the tri-gram text matching algorithm. Intuitively, such an algorithm translates a high-dimensional object, such as a word or a sentence, into a vector that contains all triplets of subsequent characters in a given text. Then the similarity of the text is calculated as the share of overlapping triplets.

We adjust the probability that a project is a follow-up by also considering how similar the project is to all other projects. Specifically, the probability $p_{i,j}$ that j is a follow-up of i is calculated as a function of the similarity of i and j denoted as $s_{i,j}$.

$$p_{i,j} = \frac{s_{i,j}}{\sum_{i' \in I} s_{i',j}}$$

Where I is the set of all projects. Finally we calculate the expected sum of repairs of a project i by:

$$R_i = \sum_j p_{i,j} P_j$$

P_j denotes the price of the repair j. For the subsequent empirical analysis we normalize this amount by the engineering estimate of costs of the original project. The variable *Followups* should thus be interpreted as the increase in repairs with respect to the engineering estimate of costs of the original project. The following table summarizes the repairs of each construction project.

[Table 6 about here.]

The positive signs throughout Table 7 indicate that favoritism towards connected firms induces more repairs. The statistically insignificant this finding, thus, strongly suggests that there are no quality gains (otherwise, we would see negative point estimates).

[Table 7 about here.]

5.4 Mechanism of Favoritism

Politicians have several available tools how to steer contract allocation towards their preferred firms. 53% of contracts are allocated via an open auction and the rest via more discretionary mechanisms in which the procurer can, to some extent, arbitrarily restrict the set of potential competitors. For each mechanism, the procurer can also choose to use either a lowest price allocation or a 'most economically advantageous allocation', which is equivalent to a scoring auction. Here, the winning vendor is the vendor with the lowest weighted average of price and a quality score. Finally, the procurer also specifies exact technical requirements for each project. There is vast anecdotal evidence that politicians tailor projects so that just the preferred firm is able to deliver this project for a competitive price. We will, in turn, investigate all these possible channels.

In Table 8, we analyze the probability that the contract is allocated through an open auction. Perhaps surprisingly, we do not find any significant effect of political connections. Talking to the experts in the industry revealed that procurers simply do not do this because it is an obvious sign of corruption and they try to engage in more sophisticated methods.

[Table 8 about here.]

Similarly in Table 9, we do not observe a higher probability of using a scoring auction. The procurer could use the less objective non-price criterion to bias the final score in favor of the connected companies. However, a close investigation of the Czech procurement legislation explains why this is not done in practise. Scoring auctions are heavily monitored as any firm loosing a scoring auction has the right to object the non-price score at a court. While this complaint is being investigated the project has to be interrupted. This regulation is often criticized and lead to marginalization of non-price criteria. Therefore, often even if a scoring-auction is used, it is de-facto a lowest price auction with the non-price criterion contributing only several percent of the weight. This decreases the appeal of scoring auctions both for the purpose of acquiring a high quality project but also for corruption.

[Table 9 about here.]

Even though tailoring of project characteristics seems to be a well known practise in this market, only a few cases of tampering were brought to the courts. This is likely because it is inherently difficult to measure contract tampering in the data. Just a single word in a several page long description of the project can cause the contract to be fitted to the needs of only firm. We focus on two potential measures that could shed light on whether procurers use such mechanisms for favoured firms.

First, we investigate overall competition for contract delivered by politically favored firms. In Table 10, we see that there is a decline in the number of competing bidders of approximately .3 to .5 bidders. This is relatively sizable as the average number of bidders is 4.5 when the contract is allocated to a politically connected firm.[22] Some non-favored firms might be either directly prohibited from participation due to restrictive qualification criteria or they might decide not to participate if they perceive that they couldn't reasonably compete with the favoured firm.

[Table 10 about here.]

Second, we look at project descriptions directly and provide a simple, albeit imperfect, measure of contract tempering. According to our industry sources project tempering is most often done by adding an unnecessary technical requirement. As this needs to be mentioned in project descriptions it leads to longer text descriptions compared to equivalent projects within the same product category. We calculate the length of this description and analyze if the length differs for contracts awarded to connected and non-connected firms. Using an analogous approach as in the main specification (Table 4), we see that contracts that are awarded to connected firms tend to have longer descriptions. The results of this analysis are presented in Table 11. Further in Table 12, we run a similar analysis with the dependent

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[22]Restricting competition explains partially but not fully the price increase from the previous section (see Table 19 in Appendix where we show that the effects on price persist but it attenuated after controlling for the number of bidders)

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variable being the length normalized by the size of the project [23], which is calculated as a fraction $\frac{length\ of\ description}{value\ of\ project\ in\ mil.}$. We can see that even after taking into account the value of the projects, the results remain and contracts allocated to politically connected firms have a longer description.

[Table 11 about here.]

A possible concern with the results in Table 12 could be that politically connected firms, which are probably larger firms, are better at dealing with complex contracts – that also likely have a longer description. However, at least in the last specification, we control for the firm-year fixed effects. This means that our result cannot be driven by larger complexity of contract that are also delivered by politically connected firms.

[Table 12 about here.]

5.5   Favoritism and Stricter Oversight

Many contracts in the Czech Republic are subsidized from the structural funds of the European Union (55% of public procurement contracts in our sample). For procurers, this has two main consequences. They bear only a fraction of the cost of the project and these contracts are overseen by the local agency for redistribution of European funds, as well as the EU itself in case of an audit. From 2007 to 2013, subsidies from the EU funds were allocated though 8 "Thematic Operational Programmes" (to support innovation, infrastructure, environment and others; 21.23 billion euros were allocated to these programmes), 7 so-called "Regional Operational Programmes" (to allocate support for these "less developed" regions; 4.66 billion euros allocated), and a few smaller programmes focused mostly on supporting cross-border cooperation and similar. Then, the regional programmes were merged into one "Integrated Regional Operational Programme" for the funding period 2014 to 2020 (about 23.83 billion euros were allocated for the Czech operational funds in this period). The other

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[23]A similar proxy for product specificity was used by Baltrunaite (2019).

programmes remained largely unchanged. I.e. throughout the studied period, the EU funds were allocated at either ministerial (90%) or, in a much smaller scale, regional level (10%). We later exploit this to examine whether there is a difference in mitigating effects for the oversight done by a higher level of government over a lower level of government (henceforth, inter-government level oversight) and the oversight over a ministry done by an agency set up by the same ministry (henceforth, intra-government level). Furthermore, in an event of misconduct during procurement contract allocation and execution, it is possible that the Czech Republic might have to return the subsidy back to the EU. This creates incentives for both the procurer to behave in a transparent way as well as for the national overseeing agency to inspect subsidized contracts more thoroughly. We thus hypothesize that the effect of political connections on prices would be lower for procurement contracts that are co-funded by the EU.

In Table 13, we present results of a model similar to the one employed in Table 4 to which we add an interaction of *connection* with a dummy *subsidized* (equal to 1 when the contract is co-funded by the EU and 0 otherwise). We see that this interaction has a large, negative mitigating effect on the overpricing. The sum of the coefficients for political connection and higher oversight is jointly statistically indistinguishable from zero.[24] It is not random which contracts receive a subsidy from the EU, so we cannot make a causal claim that higher inter-government level oversight mitigated fully the effects of political connections. However, our results suggest that oversight matters and is a policy instrument that needs to be inspected both in practice and in future research as a tool to fight corruption in public procurement.

[Table 13 about here.]

In the analysis in Table 13, we cannot distinguish whether the mitigating effect comes from the oversight by the Commission and/or the national and regional agencies. We cannot

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[24]Note that the coefficient on the variable measuring higher oversight (EU Funded) appears to be insignificant and close to 0 for contracts delivered by non-connected firms. The coefficient is also insignificant when we run the same regression but without the variable political connection. Nevertheless, we should keep in mind that these coefficients cannot be interpreted causally.

examine this question directly, however, we can test whether the oversight matters only if it is done by a superior level of government (e.g. a ministry) supervising a lower level (a region or a municipality). If the mitigating effect observed in Table 13 is concentrated and can be fully explained by either inter- or intra-government level oversight, it is unlikely that the Commission oversight matters for the effect of political connection. We examine this in Table 14. In Columns (1) and (2), we focus on inter-level oversight in which a ministry (or more precisely its agency) oversights a procurement project contracted by a city a region, and in Columns (3) and (4), we focus on intra-government level oversight in which a ministerial agency oversight projects procured by a (potentially different) ministry.[25] Our results provide suggestive evidence that the oversight by the Commission does not play a major role, however, an inter-government level oversight matters. Also, the results imply that intra-government oversight does not seem to mitigate the effects of political connections.

[Table 14 about here.]

6   Cost Analysis

Our final goal is to evaluate the cost of inefficiencies caused by the existence of favoritism. Specifically, we are interested in the savings coming from eliminating the connection between procurers and firms. We make several simplifying assumptions. If we see a connected firm winning, then there is exactly one connected firm competing and if we see a non-connected firm wining, then there are no connected firms competing. We, thus, omit scenarios where the technical specifications are tailored to one firm but another nevertheless wins the auction. It is likely that such a firm will need to bid more compared to the case where bidding conditions

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[25]Unfortunately, we cannot distinguish fully whether a project was supported from regional or national operational programme. However, given that only 10% of contracts were supervised by the regional agencies, we consider the oversight to be done on the ministerial level for all contracts in our analysis. This is, of course, a simplification that introduces some additional measurement error in the estimation. We argue that the bias introduced by the measurement error would drive our estimates down in the case of inter-government level oversight and up in the case of the same government level oversight.

are not tailored. This will lead to an underestimation of the total cost as such cases inflate the prices of the control group.

Under these assumptions, we can use the fact that we already see the counterfactual scenario in our data. We observe prices of contracts that are not allocated to the connected firms. Furthermore, assuming a homogeneous effect of connections (which seems reasonable based on our analysis of heterogeneity), we calculate the total cost as:

$$\Delta_{cost} = \Delta_{price} * (value\ of\ connected\ contracts) \tag{1}$$

This calculation leads to the total cost of favoritism of 128 million USD in the studied period of 13 years.[26] This translates to an overall increase in procurement expenditure by 0.48%. It is important to remember that our definition of connection likely does not capture all personal connections among the procurers and firms, and thus, the real additional costs caused by favoritism is likely larger. Assuming the effect is homogeneous across the whole market for public procurement, this translates to *yearly* savings of 124 million USD. To put this number in context: it is roughly half of the budget of the third biggest city in the country or slightly higher than the government's spending on social benefits for handicapped people.[27]

Even though these are significant losses, they are an order of magnitude less than what is found in the literature. Schoenherr (2019) calculates a back-of-the-envelope welfare cost of political connections equal to 1% of GDP. Abstracting from clear institutional differences among countries, we need to stress that most studies were only able to perform a back of the envelope calculation not distinguishing between volume of misallocation and the the actual costs of missalocation.

Consider the following example. A contract worth 1 USD is awarded to a favoured firm that would have not won it without a connection. Then we define the total misallocation as

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[26]Using the effect from the last column in Table 4.

[27]Remember our analysis only uses the subset where officials are elected.

equal to 1 USD. However, the social costs are only equal to the difference in costs between the actual scenario and the counterfactual where the contract is delivered by the firm with the lowest costs (assuming no changes in the quality of the delivered work) – i.e. if there was a firm that could have delivered the contract in the same quality for 0.80 USD, then the cost is 0.2 USD. Even though favoured firms receive about 6% of all procurement contracts, the actual costs of this kind of favoritism are much lower as only the overpricing of the contracts and the quality of the project necessarily matters for the government. The cost is thus only a fraction of the volume of misallocation. Our approach isolates the costs from misallocation.

7 Conclusion

In this paper, we study the costs of favoritism in public procurement. We find evidence that contracts supplied by politically connected firms are procured for a higher price. Moreover, we establish that there are no quality gains associated with buying from connected firms. These socially undesirable effects of political connections are highlighted by the fact that even contracts of homogeneous goods (where there are no quality differences between different suppliers and the procurers should simply buy the cheapest good) contracts are overpriced when delivered by connected firms. Our conservative estimate suggests that tenders allocated to favored firms are overpriced by 8% summing up to a total loss of 128 million USD (approximately 0.5% of the value of the market). We contribute to the previous literature by showing the effects on price while controlling for expected costs of procurement contracts and by calculating the welfare cost induced by favoritism in public procurement. Finally, we also provide suggestive evidence on the channels and the mechanisms of favoritism.

Our calculations likely result in an underestimation of favoritism and corruption in this market. We can only analyze contracts that are awarded to firms that have an explicit connection to a procuring agency. It is impossible to collect a data set capturing all personal connections and measuring corruption is, by definition, very hard. Thus, our estimates of

the welfare cost should be interpreted as a lower bound of the total cost.

The findings of this paper offer a somewhat negative picture in terms of policy recommendations. Misusing discretion or restricting competition in favor of connected firms might have clear policy prescriptions but if the source of favoritism is contract manipulation then it is not exactly clear how to enforce a policy preventing such behavior. It is also very hard to pinpoint which particular contract has been tampered with from the data that is typically available. One potential policy recommendation would be a stricter oversight over contract allocation/ Our results provide suggestive evidence that oversight can be beneficial if a higher level of government provides oversight over a lower level government.

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Appendix

A   Heterogeneity of the Effects of Political Connections

Throughout the analysis, we group together contracts procured by 3 different levels of government and we also do not distinguish between the effects of connections relatively close to the times of elections and in the middle of election terms. There are competing theories for the amount of corruption on different levels of governance. There is less public oversight over procurement contracts that are procured by smaller procuring authorities. This would lead to the hypothesis that the effect of political connections is smaller for ministries than for regions or even municipalities. But perceived corruption appears to be higher at the highest levels of government which would lead to the opposite hypothesis (François and Méon, 2018).

Regarding the timing, politicians might try to increase the probability of their re-election and because of that try to avoid any scandals and corrupt behavior.[28] This leads to the hypothesis that the effects of political connections would be lower shortly before elections. On the other hand, they might know that the probability of being elected is very low and they could then rather try to help themselves by giving away contracts to firms they are connected to.[29]

To determine whether these hypotheses are valid, we empirically test for the differences in the effects (see Table 15). In Column 1, we study heterogeneity across levels of governance, and in Column 2, we look at heterogeneity based on the timing in the electoral cycle.

In Column 1, we interact the level of governance dummy with the connection dummy. The

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[28]This is inspired by an extensive literature on political business cycles. The theoretical grounds of this broad stream of literature is laid out in Rogoff and Sibert (1988) in which the authors argue that there are similar electoral cycles in, for instance, taxes and government spending.

[29]This idea is similar to the argument of Besley and Case (1995) who study the behavior of the U.S. governors between 1950 and 1986 and show that there are differences in the behaviour of the governors that can run again and those in the last term (those facing binding term limit). This according to the authors results in fiscal cycle. In our setting, there are no binding limits, however, there can still be reasons why politicians would either do not consider running (family reasons etc.) or their chances of winning are very low (because of, for instance, policy of the politician's party at the national level). And then, these politicians might arguably change their behavior as well.

baseline group are municipalities. The estimate of the effect is close to the original estimates but it is more noisy in the smaller sample and, thus, the coefficient is not statistically significant. The effect on regional levels seem to be the largest and on the other hand ministries have the lowest size of the effect. However all three coefficients are insignificant on conventional levels and are not statistically different from each other. This is because we effectively split the sample into 3 sub-samples, and consequently, lack statistical power. We are rather inclined to interpret these results as not having sufficient evidence that the effects differ.

In Column (2) of Table 15, we examine two different issues: *(i)* whether there are differences between the effects of political connections in time relatively to the time of elections and *(ii)* whether there is any pattern in time for non-connected contracts only. The answer to our first hypothesis is in the last 3 coefficients. We see that there are no differences in the estimated coefficient in time – i.e. it does make a difference whether a contract is awarded just after elections (the reference group in the 1st row) or 2, 3 or 4 years after elections (7th, 8th and 9th row, respectively).

Our identification relies on the variation in connections that changes by elections (a different party overtakes power). Thus, we are interested whether the time from elections (the number of year before/after elections) affect the non-connected firms. In such a case, our identification would not be valid. This is reflected in 4th up to 6th row of Column (2). We can see that there is no time pattern for non-connected firms either.

[Table 15 about here.]

B Robustness

B.1 Manipulation of Estimated Costs

A systematic bias in the engineering estimates would be a potential threat to our empirical analysis. We already demonstrated that the estimates are a very good predictor of

the realized price. However, we want to further discuss the potential incentives of procurers to manipulate them. Palguta and Pertold (2017) show that some projects might have downwards manipulated estimates so that procurers fit the projects below the threshold where they enjoy more discretion and they can award the project under less transparent conditions. First, we showed that politically connected firms are not more likely to receive contracts through discretionary methods and so the incentive to undercut estimates should not be prevalent in this scenario. To further support this claim we plot the estimates and wee see that there is no significant bunching (see Figure 4). There are only 17 contracts that are allocated to connected firms in our sample and their estimated prices are in a generous 500,000 CZK bandwidth below the discretionary threshold. These thresholds were 10M and 20M CZK.

A more likely scenario might arise where procurers overestimate the cost estimate to mask the potential overpricing of the final contract. We cannot completely rule out such a scenario and in this case we would only get a lower bound for how overpriced contracts are.

[Figure 4 about here.]

B.2 The Effect of Placebo Connections

We assume that only connections to the party in power matters. However, one can imagine that in some cases being connected to the opposition could help. Thus, we redefine connections as connections to any other party than the party in power and call them *Placebo Connections*. Subsequently, we re-run the analysis with this new measure of connections. Such test can be seen as either *(i)* a test of the mechanism behind favoritism (i.e. whether a firm must be connected to the "right" party or it is sufficient to be connected to any political party) or *(ii)* a placebo test for our preferred measure of political connections. We present the results in Table 16. The point estimates are insignificant and very close to 0. The negative sign on most of them would suggest that companies connected to the opposite bid even

lower than others (perhaps as they might fear that they have disadvantage). However, the size of the effect is negligible.

[Table 16 about here.]

B.3 Narrow Elections

A possible concern with our approach could be endogeneity of the measure of political connections – as the ambitious firms could be at the same time seeking sectors with high profit margin (i.e. we would find the positive effect of connections on prices) and actively seeking for political connections. This would likely lead to upward bias of our estimate of the effect of political connections. We construct thus a measure for narrowly won elections. Subsequently, we test whether the effect of political connections differ for procuring authorities where the party won very convincingly. The effect of political connections for contracts procured by procuring authorities where the party in power won narrowly can be considered a valid estimate as contracts can be randomly assigned to treatment – it is difficult to imagine that firms get connected to the party in power that will be in power when it is very uncertain which party will win.

We consider election narrowly won if the difference between the winner and the second strongest party is less than 5% of votes. Otherwise, we call them convincing election. If there was no effect of political connection on contracts that were procured by procuring authorities where the party in power won narrowly, it would suggest that the effect we find in our main specification (Table 4) is biased. If the effect was significantly larger for contracts procured by procuring authorities where the party in power won convincingly, then the parties in power were able to better make use of their political power in favor of their favored firms if winning more convincingly. The results in Table 17 suggest that our approach is valid and the effect of political connection is significant, positive and similar in magnitude to the estimates from our main specification.

B.4 Renegotiation of Contracts

In previous works (see e.g. Decarolis, 2014; Decarolis and Palumbo, 2015), it has been pointed out that renegotiation can be another way how costs of contracts can be increased (often in exchange for lower initial bid price in, for instance, lowest price auctions). The renegotiation is more strictly regulated than in other countries. In the Czech Republic, the final cost of the contract needs to be equal to the winning bid. If there is a serious reason for additional cost increase due to unexpected circumstances and the additional works are technically or economically inseparable from the initial contract, the additional contract is handled in the following way. The procurer starts a new tender using the "negotiation without publication procedure" framework and awards this contract directly to the original supplier. The cost increases due to this are capped at 10%. In Table 18, we examine whether the average renegotiation is higher for contracts delivered by politically connected firms and find that this does not seem to be the case.

B.5 Event Study

Throughout our analysis, we exploit variation in the parties in power. Given that 11 elections took place in different moments in our data, it appears rather difficult to imagine that our results could be driven by particular pre-trends. Nonetheless, we would like to better illustrate that this is unlikely, therefore, we plot the coefficients from regressions as in Table 4 – i.e. the final prices on political connections with a full set of controls and fixed effects – but interact the effect of connections with the number of years before and after elections. This also provides us with information about how the effects evolve over time. In Figure 5, we plot the effects of political connection on the relative prices of public procurement

contracts before and after elections while before the elections (on the left) we focus on the contracts delivered by firms that were not yet political connected in that period and after the elections (on the right) we focus on the contracts that delivered by connected firms. The figure shows the expected pattern, i.e. the effect of future political elections is close to 0 and insignificant and the effect of political connections starts to be significant after the elections (when the parties to which the suppliers are connected get voted in power).

[Figure 5 about here.]

Finally in Figure 6, we plot coefficients from similar regions as in the event study above using another version of placebo political connections. In this specification, we use dummy variables for each time period (4, 3, 2, 1[30] years before elections and 1, 2, 3, 4 years after elections) as a placebo measure of political connections on contracts that were delivered by non-connected firms (in Column (2) of Table 15, the coefficients in line 4 to 6 represent similar idea). We can see that the coefficients are very close to 0 and insignificant which further supports the choice of our specification.

[Figure 6 about here.]

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[30]The coefficients come from 2 regressions so that we are able to plot the coefficients for all 4 years not for 3 of them

C   Theoretical Model

We describe a model where a subset of bidders – politically connected firms – receive preferential treatment in the process of public procurement allocation. Specifically, the buyer tailors the technical specification to favor the connected firms, which induces asymmetries among interested bidders.

This approach mimics the analysis of bidding subsidies in public procurement (Marion, 2007; Krasnokutskaya and Seim, 2011; Athey et al., 2013). In this class of models, the auctioneer uses bidding subsidies to achieve specific distributional goals, most often favoring smaller businesses. As a by-product, this might change the prices of the procurement contracts. Our setting differs in that there is no explicit bidding subsidy; rather the auctioneer artificially changes the underlying cost structure of the bidders. By employing technical requirements, he forces the bidders with costs c_i to bid as if they had costs $\tilde{c}_i$.

For each contract, there are two types of bidders – favored ones and non-favored ones. In the first stage, all potential bidders (we will use the word bidder and supplier interchangeably) receive an entry cost shock FC_i. Based on this shock and the knowledge of the number and types of potential bidders, they decide whether to pay this FC_i and enter the procurement auction. This reflects the costs of preparing the technical proposal of the project, which is a necessary condition for submitting a bid. Bidders might also be heterogeneous on other dimensions so entry costs and bidding costs might be drawn from different distributions.

Upon paying the participation costs and entering, the bidders learn their costs of delivering the project c_i and the number and types of other entrants. The cost of firms are drawn from the distribution F_i.

$$c_i(z) \sim F_i(X_z)$$

where X_z is a vector of the characteristics of auction z. We assume an independent private value setting which is the standard in the procurement literature. Afterwards all bidders

compete in a lowest price auction.[31]

Political connections are thus going to affect this game by increasing costs for non-connected firms. If contract z is such that there is a connection between the procurer and some supplier, then all non-connected bidders are going to suffer a cost penalty δ when bidding. This means that the costs for completing such a project are now $(1+\delta)c_i$ instead of the original cost c_i for all non-connected i. We will denote by $\mathcal{F}$ all contracts such that there is a connection between the procurer of the contract and some supplier and we denote by $\mathcal{F}_j$ all suppliers that are connected to the procurer j.

Summing up the setup of the game, there are actions completed in the following order:

- t $= 0$: Connections between procurers and suppliers are exogenously established through an affiliation to a political party.

- t $= 1$: Tender for contract z starts. Suppliers learn costs of entering and decide whether to pay $FC_i(z)$ to enter the tender.

- t $= 2$: Suppliers submit bids according to either realized costs $c_i(z)$ or costs including the penalty if $z \in \mathcal{F}$ and $i \notin \mathcal{F}_j$.

The following propositions summarize the effect of favoritism on the outcome of the procurement auctions:

Theorem 1 *There is an uncertain effect of favoritism on both the final price and the intensity of competition (number of bidders).*

There are several effects that affect the final outcome in the opposite way.

Theorem 2 *Favoritism weakly increases the costs of the winning firm.*

This statement is trivially true as the costs are either unchanged or artificially increased.

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[31]A similar model is used by Krasnokutskaya and Seim (2011) to describe bidding behavior in highway constructions.

Theorem 3 *Holding the set of participants constant, favoritism has an uncertain effect on the expected minimum bid.*

Inflating costs of a subset of bidders increases the bidders' costs but it will also change the bidders' equilibrium behavior. Intuitively we would expect a cost increase. However, this favoritism might also decrease prices if the auctioneer favors firms that are otherwise less competitive. Such examples are often discussed in the literature studying bidding subsidies. See Maskin and Riley (2000) or Marion (2007) for further discussion.

Theorem 4 *Favoured (nonfavoured) bidders are more (less) likely to enter which drives the prices down (up).*

Our final proposition shows the differential effect of favoritism on entry probabilities. Roberts and Sweeting (2013) discuss the issue of entry in much more detail.

The model does not give us exact qualitative predictions. However, it is useful for fixing ideas about which channels could be impacted by favoritism and we will use it to specify assumptions that are needed to calculate the costs of distortions caused by favoritism.

The empirical literature generally finds that preferential treatment of a subgroup of bidders.[32] leads to an inefficiency and higher prices (Marion, 2007; Krasnokutskaya and Seim, 2011) Such results are consistent with our finding. We document that costs increase both through the channel of restricted entry and through implicit bidding penalties in the bidding stage.

[Table 19 about here.]

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[32]Albeit not due to corruption but due to an explicit bidding subsidy

Table 1: Descriptive Statistics - Dataset of Public Procurement Contracts

	mean	sd	p25	p75
Price	15,000	128,000	1,585	11,000
Estimated Costs	18,300	160,000	2,066	13,600
Relative Price	.878	1.184	.693	.999
Open	.526	.499	0	1
No. of Bidders	4.486	3.981	2	6
N		34,357		

Notes: These are descriptive statistics of contract level procurement data. The price and estimated costs are in thousands of CZK. Note that for the number of bidders, there are few missing observations and the total number of observations is 31,754.

Table 2: Types of Projects

	Count	Percentage	Cumulative percentage
Transport	1,669	4.858	4.858
Energy	848	2.468	7.326
IT and telecommunication	3,624	10.548	17.874
Others	1,250	3.638	21.512
Office equipment	811	2.361	23.873
Forestry and agriculture	771	2.244	26.117
Medical equipment	1,391	4.049	30.166
Clothes, shoes and other similar equipment	594	1.729	31.895
Legal and other advisory	1,650	4.803	36.697
Natural resources	83	.242	36.939
Construction	16,945	49.320	86.259
Industrial machinery	911	2.652	88.911
Technical services	,1597	4.648	93.559
Healthcare, social care and educational services	2,213	6.441	100
N		34,357	

Notes: An overview of the most common types of contracts. These types are derived from 1 digit CPV codes and represent broadly defined industries in which particular contracts can be assigned.

Table 3: Election Terms Within the Studied Period 2004-2018

Municipalities	Regions	Parliament	Total
2006-2010	2004-2008	2006-2010	3
2010-2014	2008-2012	2010-2013	3
2014-2018	2012-2016	2013-2017	3
	2016-	2017-	2
3	4	4	**11**

Note: This table presents elections terms at all levels of government that are studied in this paper. Note that parliamentary elections are decisive for the central government and ministries.

Table 4: Effects of political connections on contract price

	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Connection	0.0416***	0.0420***	0.0519**	0.116***	0.0834**
	(0.0141)	(0.0145)	(0.0209)	(0.0337)	(0.0389)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	34357	34357	31403	22681	34357

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm throughout all specifications.

Table 5: Effect of connections on the final price for contracts for goods

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price
Connection	0.0598*	0.0774**	0.112	0.387**	0.201***
	(0.0353)	(0.0343)	(0.0692)	(0.1807)	(0.0773)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	7270	7270	6071	3982	7270

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications. Compared to Table 4, the sample is limited to homogeneous goods.

Table 6: Descriptive Statistics - Repairs of Construction Contracts

	mean	sd	p25	p75
Followups	.542	3.876	0	.270
N		13,667		

Notes: These are the descriptive statistics of the construction repairs calculated by our new methodology. The variable described is equal to the total number of repairs divided by the size of the original project.

Table 7: Effect of connections on quality

	(1) Followups	(2) Followups	(3) Followups	(4) Followups	(5) Followups
Connection	0.0761***	0.0305	0.0157	0.0141	0.0105
	(0.0246)	(0.0243)	(0.0248)	(0.0288)	(0.0775)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes
Procurer FE	No	No	Yes	Yes	No
Firm FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	15,631	15,631	15,631	15,631	15,631

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is $\frac{value\ of\ repairs}{engineering\ estimate\ of\ costs}$. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 8: Effects on whether the auction is open

	(1) Open	(2) Open	(3) Open	(4) Open	(5) Open
Connection	0.0218	0.0150	-0.0112	-0.0382	0.0127
	(0.0181)	(0.0327)	(0.0213)	(0.0310)	(0.0591)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	No
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	No	Yes
Firm/procurer FE	35184	35184	32196	23360	35184

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: *Notes*: The outcome variable is a dummy equal to 1 if an open auction was used. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 9: Effects on whether scoring criteria are used

	(1) Scoring	(2) Scoring	(3) Scoring	(4) Scoring	(5) Scoring
Connection	-0.0324*	-0.0325	-0.00343	0.0493*	-0.0404
	(0.0172)	(0.0302)	(0.0183)	(0.0259)	(0.0369)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	No
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	No	Yes
Firm/procurer FE	35184	35184	32196	23360	35184

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: *Notes*: The outcome variable is a dummy equal to 1 if scoring criteria were used. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 10: Effects on the number of bidders

	(1) Bidders	(2) Bidders	(3) Bidders	(4) Bidders	(5) Bidders
Connection	-0.411***	-0.362***	-0.253**	-0.377*	-0.237
	(0.1005)	(0.0945)	(0.1234)	(0.2011)	(0.2373)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	33089	33089	30107	21440	33089

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the number of participating bidders. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 11: Length of description

	(1)	(2)	(3)	(4)	(5)
	Length	Length	Length	Length	Length
Connection	4.643***	2.766*	4.845***	2.432	6.478**
	(1.4051)	(1.6526)	(1.7065)	(2.6474)	(3.0400)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	35184	35184	32196	23360	35184

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: *Notes*: The outcome variable is the length of the text string describing the product. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 12: Complexity of the projects' description

	(1) Complexity	(2) Complexity	(3) Complexity	(4) Complexity	(5) Complexity
Connection	18.27***	17.31**	18.69***	13.30	19.25*
	(6.2201)	(8.4429)	(6.5020)	(11.9675)	(10.5863)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	35184	35184	32196	23360	35184

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is $\frac{length\ of\ description}{value\ of\ project\ in\ mil.}$. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 13: Interaction of connections and higher oversight

	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Connection	0.0733***	0.0636***	0.0681***	0.140***	0.0737*
	(0.0167)	(0.0165)	(0.0227)	(0.0357)	(0.0391)
Subsidized	-0.0177***	-0.0158	0.00438	-0.000630	0.0138
	(0.0054)	(0.0116)	(0.0070)	(0.0101)	(0.0099)
Connection × Subsidized	-0.149***	-0.100***	-0.0743*	-0.0786	-0.0386
	(0.0278)	(0.0235)	(0.0431)	(0.0563)	(0.0366)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	31714	31714	28915	20894	31714

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. Additionally we include an interaction of political connection and subsidy from EU. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 14: Interaction of connections and higher oversight

	(1) Price	(2) Price	(3) Price	(4) Price
Connection	0.130***	0.0903**	0.113***	0.0833**
	(0.0348)	(0.0397)	(0.0350)	(0.0390)
Inter-level Oversight	0.00478	0.0191*		
	(0.0111)	(0.0106)		
Connection × Inter-level Oversight	-0.130	-0.0904		
	(0.0803)	(0.0616)		
Intra-level Oversight			-0.0556**	-0.00281
			(0.0251)	(0.0264)
Connection × Intra-level Oversight			0.0206	0.00385
			(0.0751)	(0.0363)
Estimated price	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Procurer FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Procurer-year FE	Yes	No	Yes	No
Firm-year FE	Yes	No	Yes	No
Firm/procurer FE	No	Yes	No	Yes
N	22681	34357	22681	34357

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. Additionally we include an interaction of political connection and a dummy for either inter-government level oversight (Columns (1) and (2)) or a dummy for intra-government level oversight (Columns (3) and (4)). The dummy for inter-government level oversight is equal to 1 if a project was subsidized by the EU and procured by either a region or a municipality, otherwise equal to 0. The dummy for intra-government level oversight is equal to 1 if a project was subsidized by the EU and procured by either a ministry, otherwise it is equal to 0. We also control for the logarithm of the engineering estimate of costs, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 15: Heterogeneity

	(1) Rel. Price	(2) Rel. Price
Connection	0.0896	0.0770
	(0.0554)	(0.0483)
Connection × Region	0.0758	
	(0.1630)	
Connection × Ministry	-0.0431	
	(0.0684)	
2 Years After Elections		0.00269
		(0.0251)
3 Years After Elections		-0.0152
		(0.0150)
4 Years After Elections		-0.00436
		(0.0155)
Connection × 2 Years After Elections		0.00812
		(0.0456)
Connection × 3 Years After Elections		0.00879
		(0.0383)
Connection × 4 Years After Elections		-0.00688
		(0.0729)
Year FE	Yes	Yes
Firm FE	No	No
Procurer FE	No	No
Firm/procurer FE	Yes	Yes
N	32,518	32,518

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the estimated price, industry fixed effects, year and month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications. Additionally in rows 1-3 we interact connection with dummies covering governance levels (region, ministry, baseline is municipality). In rows 4-6, we test for changes in the final price as a function of the electoral cycle. And in rows 7-9, we interact connection with the number of years after the election.

Table 16: Placebo test

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price
Placebo Connection	-0.00696	-0.000280	-0.00810	0.00342	-0.00643
	(0.0071)	(0.0108)	(0.0147)	(0.0240)	(0.0376)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Firm/procurer FE	No	No	No	No	Yes
N	33908	33908	30971	22343	33908

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The specification is a replication of Table 4 with connection defined as connection to any party that is not in power. The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the estimated price, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 17: Narrow Elections

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price
Connection	0.0211	0.0506**	0.0429	0.134***	0.0641
	(0.0207)	(0.0239)	(0.0284)	(0.0433)	(0.0471)
Convincing Elections	0.0149***	0.00811	0.00626	-0.00246	0.00986
	(0.0054)	(0.0132)	(0.0095)	(0.0774)	(0.0155)
Connection	0.0310	-0.0322	-0.0320	-0.0611	-0.0345
× Convincing	(0.0302)	(0.0299)	(0.0408)	(0.0652)	(0.0633)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	27880	27880	25193	17772	27880

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The specification is similar to the one of Table 4. Additionally, we include interaction with a dummy variable equal to 1 when a party won convincingly and 0 otherwise (narrow elections). We define narrow election as the situation when the difference in votes between the winner and the second strongest party is 5% or less. The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the estimated price, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 18: Renegotiation of contracts

	(1)	(2)	(3)	(4)	(5)
	Avg. Reneg.	Avg. Reneg.	Avg. Reneg.	Avg. Reneg.	Avg. Reneg.
Connection	-0.000575	-0.00265	-0.00265	-0.00815	0.00399
	(0.0061)	(0.0063)	(0.0068)	(0.0134)	(0.0044)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes
Procurer FE	No	No	Yes	Yes	No
Firm FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	5,460	5,460	5,460	5,460	5,460

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The specification is similar to he one of Table 4. The outcome variable differs and here it is the measure of average renegotiation. We also control for the logarithm of the estimated price, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm are included throughout all specifications.

Table 19: Effects of political connections on contract price - the number of bidders included as a control

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price
Connection	0.0327**	0.0309**	0.0457**	0.107***	0.0784**
	(0.0133)	(0.0146)	(0.0207)	(0.0337)	(0.0359)
Estimated price	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Procurer FE	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Procurer-year FE	No	No	No	Yes	No
Firm-year FE	No	No	No	Yes	No
Firm/procurer FE	No	No	No	No	Yes
N	33592	33592	30645	21966	33592

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The outcome variable is the logarithm of the winning bid. We also control for the logarithm of the estimated price, the number of bidders, industry fixed effects, month fixed effects, a dummy capturing whether the party in power changed in the last elections, and also a dummy capturing whether the contract is awarded to a local firm throughout all specifications.

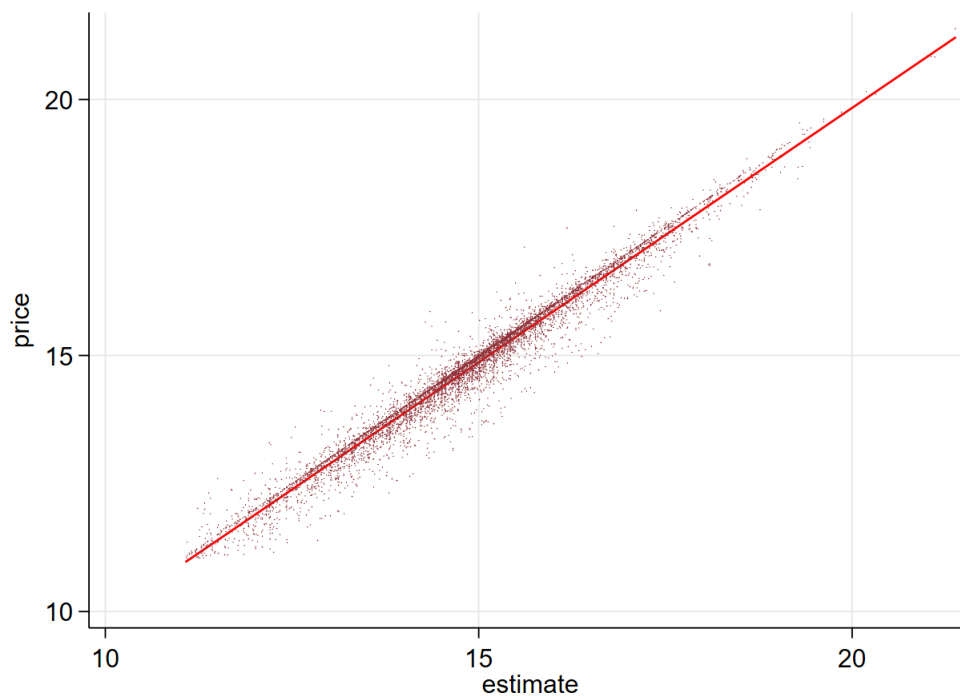Figure 1: Correlation of estimates and realized costs
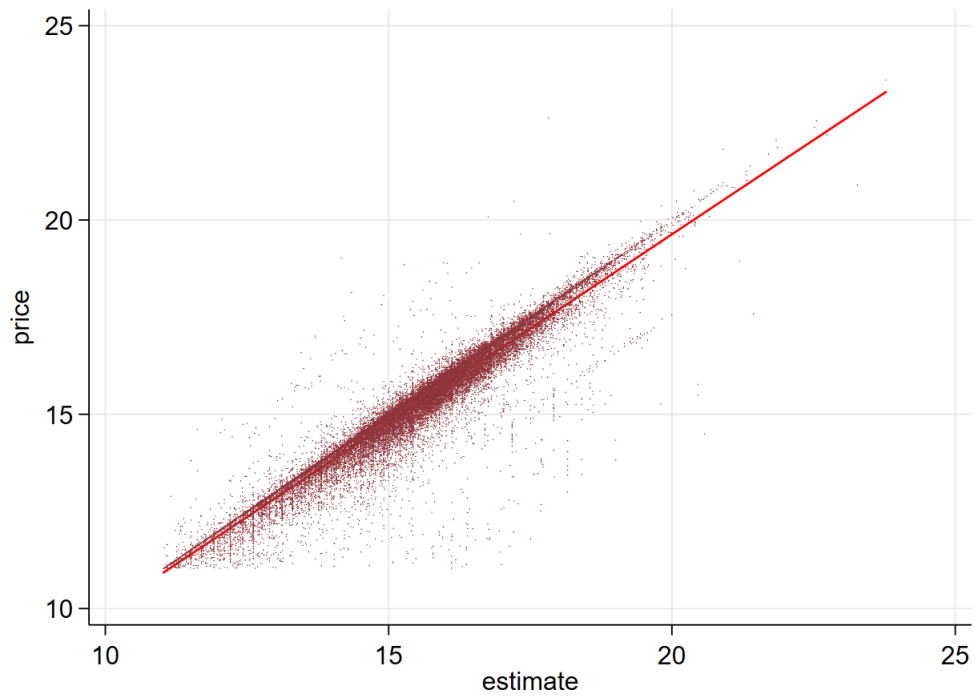
Notes: The log of the engineering estimate of costs is on the horizontal axis and the log final price on the vertical one. Each dot represents one public procurement contract. The red solid line is a regression line.

Figure 2: Procurement contracts between O2 and Ministry of Agriculture
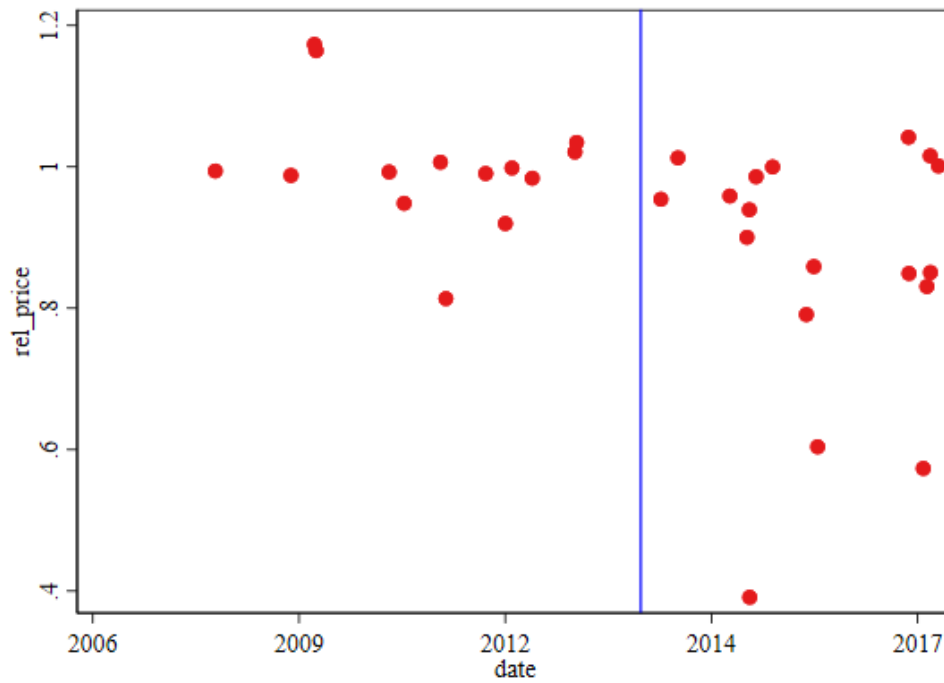
Notes: This figure presents relative prices ($\frac{price}{estimate}$) for contracts allocated from the Ministry of Agriculture to the company O2. The blue vertical line marks the point in time when O2 lost the political connection to this institution.

Figure 3: Cost estimates and prices of goods

Notes: The log of the engineering estimate of costs is on the horizontal axis and the log final price on the vertical one. Each dot represents one public procurement contract. The red solid line is a regression line. Note that compared to Figure 1 the sample is limited to procurement contracts of homogeneous goods.

# Figure 4: Bunching around thresholds
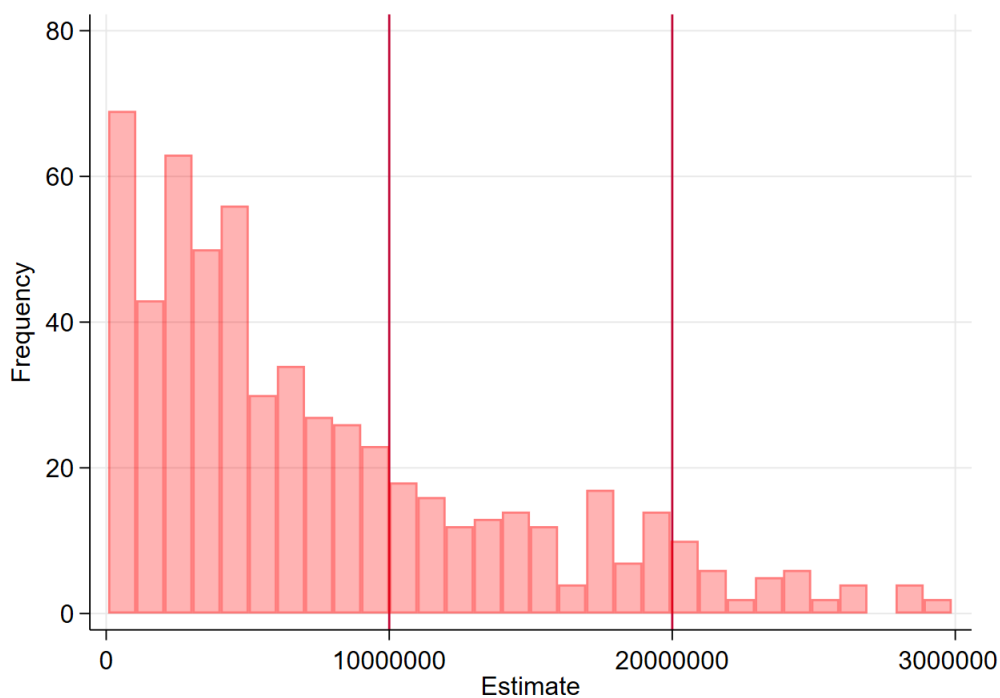
Notes: In this figure, we study possible bunching of contracts allocated to politically connected firms around discretionary threshold. On the horizontal axis, there is the estimated price of a contract and, on the vertical one, frequency. The two vertical lines mark thresholds for changes in discretion.

Figure 5: Event Study
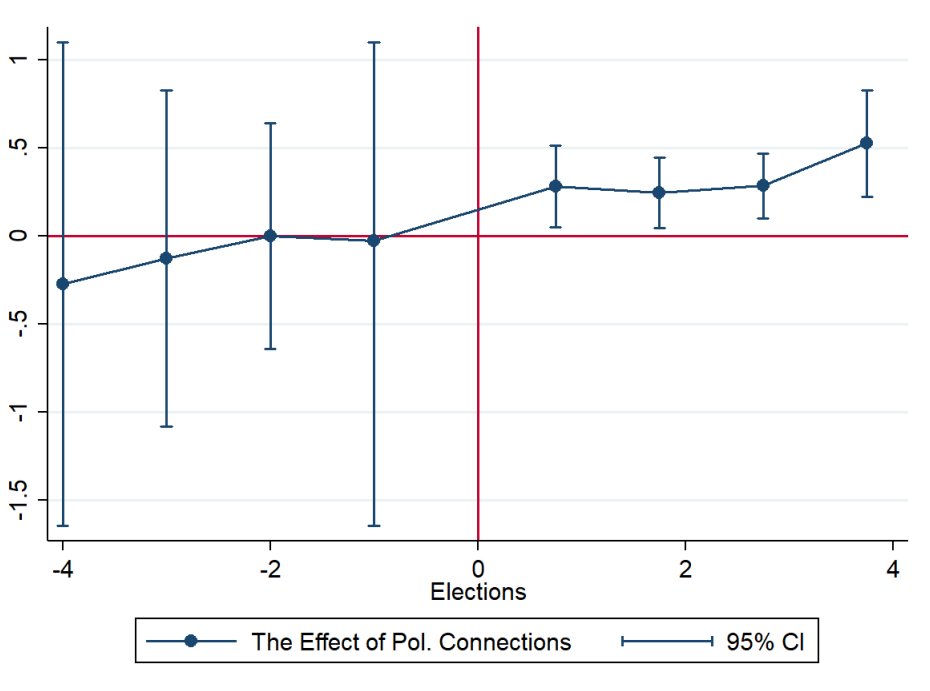
Notes: The point estimates and confidence intervals (95%) presented in the figure are from regressions similar to the one in Table 4. The line in years -4 to -1 represent the effect of political connections before the elections (taking place in year 0). For 1 to 4, we then present the estimates of the effects of political connections for connected firms that became connected to the party in power after the elections. Note that we have removed procurement contracts taking place just around (3 months before or after) the elections to rule out possible issues with timing of elections (elections terms are no exactly 4 years). This did not substantially change the figure.

Figure 6: Event Study with Placebo Connections
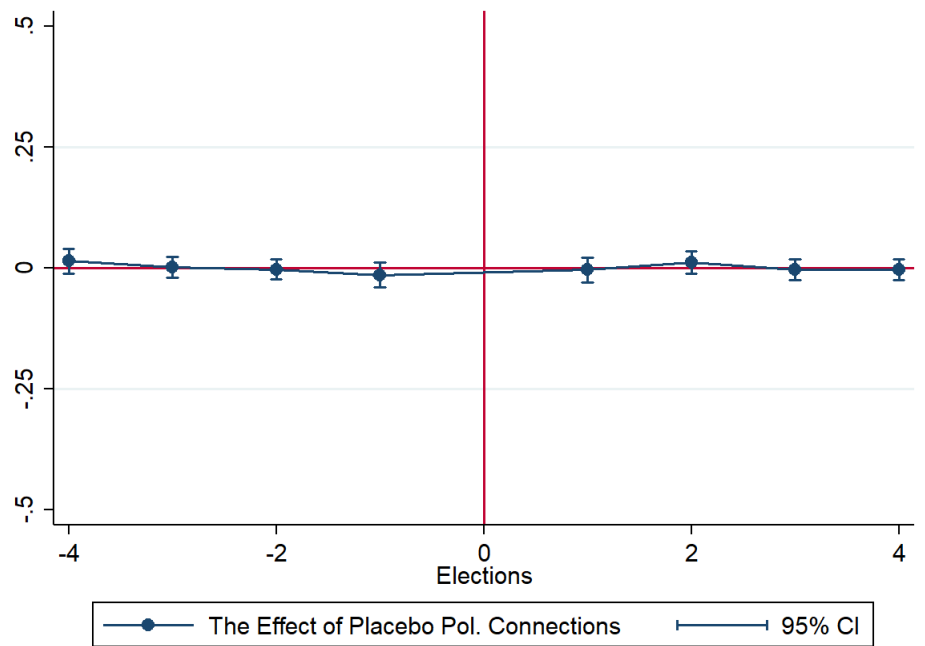
Notes: The point estimates and confidence intervals (95%) presented in the figure are from regressions similar to the one in Table 15. They are coefficients for each dummy variable for time period (4, 3, 2, 1 years before elections and 1, 2, 3, 4 years after elections) for non-connected firms. These can be seen as an alternative placebo measures of political connections.