

Political Finance Reform and Public Procurement: Evidence from Lithuania*

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Abstract

Can political donations buy influence? This paper studies whether firms trade political contributions for public procurement contracts. To answer this question, I focus on the Lithuanian political economy. Combining data on a large number of government tenders, the universe of corporate donors and firm characteristics, I examine how a ban on corporate donations affects the awarding of procurement contracts to companies that donated in the past. Consistent with political favoritism, contributing firms' probability of winning goes down by five percentage points as compared to that of non-donor firms after the ban. Among different mechanisms, the hypothesis that corporate donors get confidential information on competing bids prevails. The empirical results are in line with predictions from a first-price sealed-bid auction model with one informed bidder. Evidence on firm bidding and victory margins suggests that contributing firms adjust their bids in order to secure contracts at a maximum revenue. I assess that tax payers save almost one percent of GDP thanks to the reform.

Keywords: political finance, public procurement, contributing firms, rent-seeking.
JEL classification: D72, H57.

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1 Introduction

Can political donations buy influence? This question has recently triggered a heated debate in the US presidential campaign. Views of an American entrepreneur and a Republican candidate Donald John Trump comprise both business and political perspectives:

“I gave to many people. Before this, before two months ago, I was a businessman. I give to everybody. When they call, I give. And you know what? When I need something from them, two years later, three years later, I call them. They are there for me. And that’s a broken system.”

GOP debate; August 6, 2015

“I turned down \$5 million last week, \$5 million. So I said I can’t take it. You know, I go like this. I just close my eyes. (...) because I know the game. Once they give you, you sort of owe them.”

Campaign Rally Speech in Dallas, TX, USA; September 14, 2015

The controversial role of private donations is a salient issue in many other countries including Brazil, which recently passed a law to ban corporate donations, the UK, the Netherlands and Japan. Supporters of private donations believe that they increase political information, foster civic involvement and ensure that a diversity of views is heard. They also argue that private financing of politics is more desirable than public financing, which may result in lower political competition and give an advantage for incumbent parties. In contrast, critics claim that private donations lead to corruption and political favors to donors.

Key to this debate is whether public policy can be insulated from the strings potentially attached to political contributions. In particular, government procurement is an important policy outcome: with around 15% of GDP, it accounts for a substantial part of the global economy. This paper studies Lithuania, which is a small relatively well-functioning Eastern European country that ranks similar to Spain (and far ahead of, e.g., Italy and Greece) in terms of perceived corruption (Transparency International, 2014). The procedures for public procurement are strictly monitored. The regulation of political donations is more stringent than in many other European countries (e.g., Sweden). If political contributions influence policy in this environment, then similar effects are likely to exist in a large set of countries.

In 2012, Lithuania enacted a law that banned corporate donations to political parties and campaigns. This paper analyzes whether this ban affected firms’ chances of winning and their

bidding behavior in public tenders. I investigate a novel data set of 250,000 procurement contracts with 600,000 bids from 8,600 unique firms in 2008-2013, combined with data from the Central Election Commission on corporate donors in 2007-2013, including the firm name, the recipient and the amount.

I find that corporate money does indeed buy preferential treatment in procurement auctions. Figure 1 shows the probability of winning¹ for corporate donors and other tender participants before and after the ban on corporate donations came into force on January 1, 2012. In the 40 months before the reform, for which the data is available, the contributing firms have a steady and unexplained higher chance of winning the contracts. Consistent with political favoritism, this gap vanishes after the reform. In a difference-in-difference regression framework, I estimate that the chances of winning for corporate donors decrease by five percentage points as compared to non-donor firms after the reform.

[Figure 1 here]

The findings are robust to altering the regression specification. In the preferred specification, firm fixed effects control for time-invariant firm-level heterogeneity and industry-specific non-parametric time trends ensure that economic cycles in different industries do not confound the results. To validate the identifying assumption, I show there are no pre-trends, as the probability of winning a contract for contributing and non-contributing firms moves in parallel before 2012. It is also robust to trimming the sample to improve the overlap between the covariates' distributions of contributing firms and other firms (Crump et al., 2009; Imbens and Wooldridge, 2009).

Then, I investigate the possible mechanisms through which procurement bureaucrats can favor donor firms. The typical procurement procedure is a first-price sealed-bid auction which is open to an unrestricted number of participants and in which the bids are simultaneously made public. This procedure is strictly monitored by the Public Procurement Office,² which severely limits the options of the bureaucrat. Two channels of influence seem most plausible. The first is that the bureaucrats affect the *contract design*, i.e. stipulate tender calls so that only a contributing firm can satisfy the necessary requirements. The other is that they leak information about competing bids to the contributing firms (*price information channel*). These two channels have very different empirical implications. The *contract design channel*

¹To account for heterogeneity in the procurement data, I net out year, 4-digit Common Procurement Vocabulary code, contracting authority type and procurement procedure type fixed effects, and indicators for goods, services and goods.

²Public officials have high incentives to comply with the procurement regulations. The Lithuanian Public Procurement Office actively monitors tenders and bureaucrats are directly responsible for infringements in administering tenders. Since 2008, on average 300 law suits related to procurement were filed to the first instance courts per year.

affects the number of sole-bid tenders won by contributing firms. However, I find that the ban on political contributions had little effect on sole-bid tenders' allocation to contributing firms, which makes it possible to rule out the *contract design channel*. *Price information channel* instead only changes the outcome of multiple-bid tenders. I find that the effect of the ban on the probability of winning comes from competitive tenders with several participants. This is consistent with leaked information about competing bids playing the main role in Lithuanian political favoritism.

To further examine the *price information channel*, I propose a simple first-price sealed-bid auction model with private and independent values, in which one bidder is informed about the bid by the opponent. The model setup closely resembles the actual implementation of Lithuanian procurement procedures and provides theoretical predictions regarding the bidding behavior of firms. The empirical results are consistent with these insights. First, I find that contributing firms lower their bids after the reform. This suggests that corporate donors were charging higher markups thanks to political favoritism. Second, distributions of the victory margin – the percentage difference between the second lowest bid and the winning bid – reveal that before the ban, corporate donors more frequently win by narrow margins as compared to other firms. This difference is substantially lower after the reform. Unconditional quantile regressions (Firpo et al., 2009) show that the ban on corporate donations mainly affects victory margins between the third and the sixth deciles. Extremely low margins are not used to manipulate tenders, perhaps in order to avoid undesirable monitoring by the Public Procurement Office. All in all, this evidence is consistent with leaked information on competing bids being the main channel whereby political money translates into favors in procurement. It allows corporate donors to adjust their bids in order to secure contracts and increase the markup for the contracts they win.

I present a range of additional findings. Large donations give more advantage in public procurement. The effects are largest for top and middle levels of public administration, perhaps because close connections between politicians and bureaucrats are mostly prevalent there. Moreover, a more pronounced effect of the reform after the 2012 parliamentary elections indicates that political turnover may contribute to the dismantling of political business networks. I also analyze in more detail contracts in health care, which is the largest procurement sector. In this sector, donations to the party that holds the Chair of the Committee of Health Affairs significantly explain which firm wins procurement tenders.

An important conclusion of this paper is that the additional procurement costs induced by corporate donations are large, despite the strict regulation and monitoring of procurement procedures. Although *a priori* the effects of leaked information about competing bids may seem small in magnitude, around 14% of GDP in Lithuania is spent for public procurement

purchases. Moreover, previously contributing firms win 29% of all contracts and are estimated to lower their prices by 24% after the ban on corporate contributions. A back-of-the-envelope calculation yields that costs-increases in procurement caused by corporate donations are almost one percent of GDP.³ In addition, five percent of the contracts were misallocated because of corporate donations, thereby causing inefficiencies. These large economic effects have strong policy implications.

Pre-existing evidence on the effect of political contributions on policy is rather weak. Findings from the United States show that contributions do not systematically affect legislative behavior (Ansolabehere et al., 2003). Moreover, being mostly made by individuals and in small amounts, political donations are often seen as a form of political participation. On the other hand, giving money may work as an investment in political favors for a subset of donors, such as corporations (e.g., Gordon et al., 2007; Hansen et al., 2005). Yet, these correlations could arise because of confounding factors, such as firm-politician links that would persist after, e.g., a campaign-finance reform. My paper instead exploits a complete ban on corporate donations to analyze its effects on policy benefits to previously contributing firms.

Evidence also shows that political contributions or lobbying expenditures are positively related to firms' stock market performance (e.g., Jayachandran, 2006; Ferguson and Voth, 2008; Cooper et al., 2010)⁴ or effective tax rates (Richter et al., 2009). Different from this literature,⁵ I focus on public procurement sector. The preferential allocation of contracts to donating firms may be one of the most important tools, under control of politicians, to directly affect firm outcomes. Not only do government purchases constitute an important source of revenues for firms, but they may also affect their growth dynamics in a longer run (Ferraz et al., 2015).

Moreover, this paper is related to a broad literature on firm-politician connections and stock-market valuations (e.g., Fisman, 2001; Faccio, 2006; Faccio et al., 2006; Coulomb and Sangnier, 2014), access to credit (Khwaja and Mian, 2005), or procurement contracts' allocation (Goldman et al., 2013; Straub, 2014; Koren et al., 2015; Mironov and Zhuravskaya,

³I also analyze the prices paid for public purchases in the health care sector. The price growth in two standardized quality categories – pharmaceuticals and medical equipment – decelerates following the ban on corporate donations. A back-of-the-envelope calculation implies a large cost reduction in the health care sector alone, around 0.15% of 2013 GDP per year. The results are available upon request.

⁴The existing literature is not conclusive on the topic, however. For instance, Ansolabehere et al. (2004) do not detect any differences in the performance of firms that give “soft money”; Aggarwal et al. (2012) find a negative correlation between donations and firms' returns.

⁵Boas et al. (2014) analyze federal-deputy elections in Brazil and show that firms donating to the Worker's Party (PT) receive more government contracts when their candidate wins a seat. The causally identified *effect of electoral victory*, however, is not informative about the *effect of political donations* on the allocation of government contracts. Brogaard et al. (2015) document that contributing firms in the United States are more likely to receive government procurement contracts, although it is not clear which factors lead to this better performance.

2015; Schoenherr, 2015). Despite its focus on effects of campaign finance rather than on connections, my paper is also relevant to this literature because political donations may be seen as a means of building political links.

Finally, this study complements the limited understanding of mechanisms in political favoritism by documenting the prevalence of the *price information channel*. This novel idea is in part similar to Ovtchinnikov et al. (2015) who argue that donating firms are informed about future legislation. The detailed study of mechanisms in my paper suggests that even under relatively strong institutions political favoritism may slip in through rather sophisticated channels of influence.

The remainder of the paper is organized as follows. Section 2 presents the Lithuanian institutional setting. Section 3 describes the data and the empirical strategy. Section 4 shows the main results and section 5 assesses their robustness. Section 6 discusses the mechanisms at work. Section 7 concludes the paper.

2 The institutional framework

Lithuanian political system. Lithuania is an Eastern European country, situated along the southeastern shore of the Baltic Sea. After World War II, it was annexed by the USSR and remained under Soviet rule until March 11, 1990, when Lithuania was the first Soviet Republic to declare its independence. The country is currently a democratic semi-presidential republic with a well-functioning market economy. Lithuania has been a full member of NATO and the European Union since 2004.

Lithuania has a directly elected President. Regular parliamentary elections have been held every four years since 1992. The Lithuanian Parliament, *Seimas*, has 141 seats and a mixed electoral system: in the proportional tier, 70 seats are assigned in one national multi-member district and in the majoritarian tier the remaining seats are allotted in separate single-member districts. In each parliamentary election since the independence, on average, 15 political parties have presented lists and at least six parties have obtained seats. The core of this multi-party system consists of two blocks. The center-left parties are the Social Democratic Party of Lithuania (LSDP) and the Labour Party (DP). The center-right parties are the Homeland Union - Lithuanian Christian Democrats (TS-LKD), the Liberal and Center Union (LiCS) and the Liberal Movement (LRLS).⁶ Shifts in political power are common: left-wing and right-wing coalitions alternated over the last decade (Figure 2).

[Figure 2 here]

⁶Order and Justice (TT) is the center-right party which did, however, join a left-wing opposition coalition in 2008 and a left-wing majority coalition in 2012.

Political finance reform. In Lithuania, the financing of political parties and political campaigns has been regulated by the national legislation since 1996.⁷ The size of individual donations and campaign expenditures is capped. Public disclosure of political finance accounts is mandatory for all political parties. Compliance with the law is monitored by the Central Electoral Commission (henceforth - CEC), which supervises elections and implements independent audits.

This paper studies the most recent substantial reform of political finance in Lithuania. It was introduced by Law No.XI-1777 which was passed on December 6, 2011 and came into force on January 1, 2012.⁸ The law imposed the following changes:

- i) Donations by all legal entities to political parties and campaigns were banned.
- ii) The maximum size of an individual donation was reduced from 44,000LTL to 22,000LTL (from 12,700EUR to 6,400EUR) and donations were only allowed during the electoral campaign period.
- iii) Party financing from the state budget was introduced.

The reform resulted in a major shift in the sources of political finance from corporate donations to public funding. Table 1 describes the funding structure of the six main Lithuanian parties in 2011. Prior to the reform, on average 62% of the total party finance were raised from private donations, coming almost exclusively from firms. Party ideology did not have a substantial effect on the amount of corporate donations. Even though right-wing parties are more business-oriented, firms did not direct their donations solely along ideological lines: the extent to which political parties relied on corporate donations was rather similar. In particular, left-wing parties on average raised 55% of their money from corporations, whereas this share stood at 63% for right-wing parties.

[Table 1 here]

Figure 3 plots corporate and individual donations received by political parties during the period 2008-2013. An unprecedented spike in contributions by firms in December 2011 highlights an evident “donation rush” immediately after the law was passed in the Parliament on December 6, 2011. In particular, 158 out of 162 donations received in December were made after this date. They account for more than one third of the total corporate support to parties

⁷Financing of political parties and financing of political campaigns differ in that the latter happens during the pre-election years and is explicitly targeted to political campaign expenditures.

⁸the aim of reducing political influence by private interests. Stopping political corruption in Lithuania was the third of her presidential term goals and she strongly urged for legislative action in order to interrupt the existing links between private interests and politicians.

in 2011. Thereafter, political parties registered no official corporate donations,⁹ showing a strong enforcement of official rules in Lithuanian politics.¹⁰ Moreover, individual donations did not substitute for corporate ones: the yearly amount of private party donations declined throughout the entire 2008-2013 period and the yearly amount of private donations in the 2008 and 2012 parliamentary campaigns was very similar. Finally, Figure 3 illustrates that the ban on corporate donations did not coincide with changes in political power, as regular parliamentary elections took place in October 2008 and 2012.

[Figure 3 here]

Public procurement in Lithuania. Public procurement spending in Lithuania amounts to approximately 14% of GDP (Public Procurement Office, 2014).¹¹ The Lithuanian Public Procurement Office co-ordinates public procurement activities and supervises their compliance with the Law on Public Procurement and other regulations. It also audits procurement procedures.¹² The majority of tenders are carried out by individual contracting authorities: on average, only nine percent of the procurement value are purchased through a centralized system. Administrative staff in charge of organizing the tender bears administrative responsibility for potential violations of the law. Infringements are punished by monetary fines, or fines and firing (in cases of repeated violation).

A procurement procedure starts with a contracting authority forming a Public Procurement Commission (henceforth – Commission) which is in charge of organizing the tender. The Commission prepares and publishes a contract notice with information about the procurement object, the chosen evaluation criterion, the qualification requirements for suppliers and the deadline for submission of tenders.

The most typical procurement is a first-price sealed-bid auction which is open to an unrestricted number of bidders and in which the bids are simultaneously made public. In theory, the law allows for restricted procedures in which only selected suppliers are invited to

⁹One may be concerned that official donations are substituted with bribes. However, the evidence in the paper is not consistent with this hypothesis. In general, corruption in Lithuania has systematically decreased over time, as shown by its CPI rank. Moreover, the Global Corruption Barometer survey shows that the percentage of people who report having paid bribes in 2010 is 34% and it goes down to 26% in 2012, and the percentage of people who think that parties are very corrupt goes down from 83% to 78%. This suggests that the levels of political corruption do not increase after the reform.

¹⁰Political parties' financial reports are audited by the CEC. In cases of non-compliance with the law, i.e. a donation from a firm is received by a party, it has to be returned to the donor or, if that is impossible, transferred to the state budget.

¹¹In the European Union, the public purchase of goods and services is estimated to account for 16% of GDP (the European Commission).

¹²The controversial role of political donations is a salient issue also in Lithuanian procurement. To quote the Director of the Lithuanian Public Procurement Office, Diana Vilyte, "*business' connections to politicians exist. I know it, and you know it.*" (*Conversation with Diana Vilyte: Corruption Will Be Fought Also in the Top*, February 11, 2015, *Vakaru ekspresas*.)

participate or procedures which involve negotiations between the contracting authority and individual suppliers before the submission of final tender documents.¹³ In practice, however, they are rare: in my data 90% of all bids are submitted to open procedures. Similarly, the contracting authority may choose to award the tender to the most economically advantageous tender or the lowest price tender, but the vast majority of tenders in Lithuania are awarded using the latter one.¹⁴

3 Data and empirical design

In this section, I describe the data. I also outline my empirical strategy to estimate the impact of the corporate donations ban on the procurement contracts awarded to (previously) contributing and other firms.

3.1 Data

I rely on three main datasets: i) the registry of procurement procedures from the Public Procurement Office; ii) information on corporate donors from the Central Electoral Commission; iii) data on firms' financial accounts from the Orbis database.

Procurement data. I obtain data from the public procurement registry for the period 2008-2013.¹⁵ As the Centralized Public Procurement Information System (CPP IS)¹⁶ was launched in September 2008, data collected earlier is not entirely consistent with that from the CPP IS. Hence, I exclude this period of the data from the analysis.¹⁷ The sample covers 50,000 procurement procedures with 250,000 procurement contracts in 129 3-digit Common Procurement Vocabulary (henceforth - CPV) codes.¹⁸ It represents a substantial

¹³The Law on Public Procurement No.I-1491 prescribes that the contracting authority may choose among the following procedure types: open procedure, restricted procedure, negotiated procedure and competitive dialogue. Open and restricted procedures are the main types and can be used in all cases. The negotiated procedures are organized for more complex services or goods. A detailed description of different procedures and their use is provided in the Law No.I-1491.

¹⁴Although buying the cheapest products may be detrimental to quality and result in a waste of public resources, the official statistics show that only 7% of all Lithuanian tenders are awarded using the most economically advantageous tendering criterion.

¹⁵The data for a fraction of procurement contracts awarded in 2014 was also made available by the Public Procurement Office. However, it is not a representative sample of contracts awarded in 2014, and it is not used in the main analysis. The findings are robust to the inclusion of the 2014 data.

¹⁶The CPP IS made it easier for contracting authorities to publish tender calls online. The percentage of auctions published online reached 99% in 2008 (Public Procurement Office, Annual Report 2008). Moreover, the CPP IS could be used to publish official reports about implemented procurement procedures.

¹⁷None of the findings are driven by dropping observations in this period. Unless explicitly stated, there are no substantial differences in magnitudes or significance of the key estimated coefficients.

¹⁸The coverage of the CPV codes is based on the criterion that at least one campaign corporate donor in 2008 participated in a tender within a given 3-digit CPV. To define this set, I scrape the public procurement

share of the overall procurement volume in Lithuania over the period. Figure 4 shows that, on average, it corresponds to 66% of the total procurement value and 80% of the total number of procurement procedures. The data contains information on the identity and type of the contracting authority, the procurement procedure type, the CPV code, the type of object procured, the dates of announcement, award and expected delivery, the supplier identity and the bid price, the winning supplier and the procurement procedure value.¹⁹

[Figure 4 here]

The top category in terms of procurement sectors is medical equipment, pharmaceutical products and personal care products. Other important categories are repair and maintenance services, food and beverages and construction works. A list of the 10 most frequent CPV 2-digit codes and their descriptions is shown in Table 2.²⁰

[Table 2 here]

The structure of the tender-participant level data is illustrated by a large procurement procedure No.76266 by Klaipeda Children's Hospital in 2009 containing different lots for specific pharmaceutical products (Figure 5). The tender is carried out under the open simplified procedure and according to the lowest price criterion. Individual firms' bids are ranked in an ascending order and the supplier with the lowest price wins a contract for a specific lot.

[Figure 5 here]

Table 3 shows the descriptive statistics of the main procurement variables. The final sample consists of 596,068 firm-by-tender observations. The probability of winning for an average tender participant is 43%, reflecting a low number of competing suppliers at 3.5. Most tenders are open procurement procedures and roughly three quarters of all tenders are carried out by middle-level public administration units, which are directly subordinate to the central administration. Finally, 79% of all tenders are organized to procure goods, 16% to procure services and 5% to procure works.

[Table 3 here]

database and search for the 2008 campaign corporate donors among tender participants. I extract the full CPV code for tenders in which these firms have participated and strip the first three digits of CPV codes. I then obtain information of all tenders within the set of resulting CPV codes upon a formal application to the Public Procurement Office.

¹⁹This information is aggregated by procurement procedure and by supplier. Given that there is no data on quantities, the monetary value at the contract level is not known.

²⁰The frequencies are shown for contract level data. The top categories remain similar when the data is cut at the procurement procedure level.

Data on corporate donors. Information on political donors in Lithuania is publicly available on the CEC website. I collect data on the universe of corporate donors, i.e., all legal entities that contribute to political parties or political campaigns during the period 2007-2011. The data contains the following information for more than 1,500 firms: the legal name of a firm, the amount of the contribution and the recipient’s identity (party or candidate name). The median party donation is 10,000LTL (2,960EUR) and 25% of the corporate donors donate several times, thereby suggesting the existence of repeated interactions between firms and politicians. Moreover, corporate political ideology is not very pronounced: 17% of the firms support several different parties over the period of interest and the same firm can donate to both right-wing and left-wing politicians.

Firm-level data. Finally, I obtain information on firm characteristics from the Orbis database. Due to its broad coverage of Lithuanian firms, I match over 90% of the firms in public procurement data. In particular, I collect information on size, sector, number of employees, number of subsidiaries and shareholders, corporate group size, revenue, net income, total, fixed and current assets and capital.²¹

A comprehensive overview of the coverage of and matches between different types of data is shown in Figure 6.²² Out of 1,500 corporate donors, roughly one third participates in procurement tenders after having donated. These firms submit around 27% of all bids. A vast majority of them have also won at least one contract during 2008-2013. Moreover, corporate donors are awarded procurement contracts that account for almost 32% of the overall contract value.

[Figure 6 here]

3.2 Empirical strategy

I examine the data on a large number of tenders during 2008-2013. I use a difference-in-differences estimation and distinguish between contributing firms (*treatment group*) and other firms (*control group*). In tender-participant level regressions, I compare the change in procurement outcomes for contributing and non-contributing firms before and after the ban on corporate donations. In the main analysis, I focus on the probability of winning in order to test the hypothesis that political contributions grant preferential treatment in the awarding of procurement contracts. If political contributions facilitate the collaboration between firms

²¹While the coverage is nearly perfect for time-constant firm characteristics, it is substantially lower for time-varying indicators, such as net income or capital. This is likely due to the fact that yearly filing of company information is not mandatory for firms.

²²The information on procurement and corporate donors is merged by the exact match of firms’ legal name. Firm characteristics extracted from the Orbis database are merged by the national firm identification number.

and politicians, (previous) corporate donors should experience a decrease in their probability of winning as compared to other firms in the period after the reform.

Specifically, I estimate the following panel regression:

$$Winner_{ict} = \alpha + \beta_1 Contribute_i + \beta_2 Ban_t + \beta_3 Contribute_i \times Ban_t + X_{ct}^p \delta + X_{it}^f \gamma + \varepsilon_{ict}, \quad (1)$$

where $Winner_{it}$ is an indicator variable taking the value of 1 if a tender participant i wins a contract c in a year t . $Contribute_i$ is an indicator variable taking the value of 1 if a tender participant has donated to a political party or a political campaign in any preceding year.²³ Ban_t is an indicator variable taking the value of 1 for contracts signed after the ban on corporate donations came into force, i.e. January 1, 2012. The variable $Contribute$ makes it possible to control for the unobserved time-invariant characteristics that may differ across the two groups of firms, whereas Ban captures the temporal trend common to both groups, including the impact of other provisions of the 2011 ban. $Contribute_i \times Ban_t$ is the interaction between the two indicator variables and β_3 measures the effect of interest. X_{ct}^p is a vector of *procurement controls*, which includes year indicators μ_t , CPV 4-digit code indicators μ_s , indicators for public procurement procedure types, for goods, services and works procured and for contracting authority types. X_{it}^f is a vector of *firm controls*, which includes firm size category and firm NACE 2-digit industry dummies, and firm age. ε_{ict} is the error term.

The causal interpretation of the coefficient of interest β_3 rests on the assumption that in the absence of reform, the probability of winning would have evolved similarly in the group of contributing and non-contributing firms. In Section 4, I investigate the validity of this assumption by studying the development of the dependent variable in the pre-reform period for the two groups of firms. Moreover, I limit the remaining concerns regarding diverging trends for contributing and non-contributing firms by stringent regression specifications. I include industry-specific non-parametric time trends $\pi_s \times \mu_t$ in equation (1). This ensures that potentially different time trends for firms in certain industries do not drive my results. I also augment equation (1) with firm fixed effects μ_i in order to control for firm-level time-invariant observed and unobserved heterogeneity. The identification in such specifications comes from the within-firm variation over time. Finally, in Section 5, I use a trimming procedure (Crump et al., 2009; Imbens and Wooldridge, 2009) to ensure that differences in the observables for the two groups do not confound the results.

²³I consider that the political connection becomes active from the year subsequent to the donation. In other words, a firm which never participates in an auction after having donated is coded as a non-contributing firm.

4 Empirical analysis

Do political contributions grant favorable treatment in the awarding of procurement contracts? To assess if this is the case, I start by validating the parallel trends assumption and then proceed with descriptive statistics and regression analysis.

I first graphically examine time changes in the main outcome variable for contributing and other tender participants. Figure 7 shows the probability of winning for the two groups of firms: those that have donated before participating in procurement and those that have not. Figure 7(a) plots locally smoothed means of the *Winner* indicator variable. Analogously, Figure 7(b) inspects the residuals of the regression of this variable on *procurement controls* (as defined in section 3.2). Contributing firms face a constantly higher probability of winning than non-contributing firms during 2008-2011. Most importantly, the two groups parallel each other fairly well during this period. In line with the expected effects of the reform, corporate donors' probability of winning a contract starts decreasing from the first months of 2012. The drop is marked: contributing and other firms face similar chances of victory towards the end of the period.

[Figure 7 here]

I examine changes in the awarding of procurement contracts to corporate donors before and after the ban on corporate donations in a regression analysis. Columns 1 to 5 in Table 4 show the estimation results when I gradually add controls to the specification in equation (1). Standard errors clustered at the firm level are shown in parenthesis.²⁴

The specification in column 1 includes *procurement controls* (year and CPV 4-digit code indicators, indicators for procurement procedure types, for contracting authority types and for goods, services and works procured). The coefficient on the *Contribute* indicator variable shows that corporate donors are approximately nine percentage points more likely to win a contract in the period before the reform.²⁵ The coefficient on the interaction term *Contribute* \times *Ban* shows that the probability of winning for contributing firms decreases by four percentage points after the ban on corporate donations, as compared to other tender participants. Column 2 adds *firm controls* (size, industry and age). Firm-level characteristics account for roughly one fourth of “the victory premium” of corporate donors, as the coefficient on the interaction term *Contribute* falls to 0.065. The effect of the reform increases in absolute magnitude and is more precisely estimated (a point estimate of -0.044, a standard error of 0.017). Column 3 adds industry-specific non-parametric time trends. These ensure that economic cycles in different industries do not confound the results. Columns 4 and 5

²⁴The results are robust to clustering standard errors at the CPV 4-digit code level.

²⁵This difference is 12 percentage points if the whole 2008 data is included.

include firm fixed effects without and with industry-specific time trends, respectively. The coefficient on the interaction term *Contribute* \times *Ban* remains stable with an even lower standard error. In column 5, the estimated reduction in contributing firms’ chances of winning is 4.8 percentage points, with a standard error of 0.015.²⁶

[Table 4 here]

The results imply that the “victory premium”, possessed by corporate donors in the pre-reform period and unexplained by firm-level variables, decreases substantially after political contributions have been banned. The reform caused a five percentage point drop in the probability of winning a procurement contract for firms that used to support politicians financially.

I formally test the identifying assumption by implementing placebo regressions (column 6, Table 4). I define an indicator variable *Placebo* taking the value of 1 for contracts awarded after a placebo reform on January 1, 2010 and include the interaction term *Contribute* \times *Placebo* in my preferred specification of equation (1). The coefficient on *Contribute* \times *Ban* remains stable (point estimate of -0.056, a standard error of 0.022), whereas the coefficient on *Contribute* \times *Placebo* is positive, small and not significant (point estimate of 0.021, a standard error of 0.029). This evidence excludes that diverging trends for the two groups of firms in the pre-reform period drive the results.

5 Robustness checks

Contributing firms are different from other tender participants. On average, they offer lower price bids and are more likely to win a contract. At the firm level, while the majority of contributing firms belong to the medium-sized company category, other firms are mostly small companies (Panel A, Table 5). The former are also three years older and more frequently belong to a (larger) corporate group.²⁷

[Table 5 here]

One potential concern is that the estimated reduction in the probability of winning for contributing firms is driven by the difference in firm characteristics. I show that the average treatment effect remains stable in the sample of firms with similar covariates. For this

²⁶This most stringent regression specification is my preferred one and is used to report the results in all subsequent sections, unless otherwise specified.

²⁷Moreover, 17% of the corporate donors have at least one subsidiary as compared to 5% of the other firms. Financial indicators show that contributing firms have more employees and larger revenues and make higher profits.

purpose, I adopt the trimming method proposed in Crump et al. (2009). In a cross-section of firms, I regress the contribution status (0 or 1) on the firm-level observable characteristics and compute their predicted scores (\hat{p}) of being in a contributing or not contributing group.²⁸ Then, I discard observations on the two extremes of the propensity score \hat{p} distribution.²⁹

There is a considerable improvement in the overlap of firm covariates in the trimmed sample of firms (Panel B, Table 5). Firm size categories and corporate group size are balanced; the age difference goes down to less than one year; the number of subsidiaries and shareholders is much better matched. Finally, the difference in financial indicators in the trimmed sample shrinks by at least 50% for each of the variables considered.

I replicate the regression analysis with my preferred specification in order to study the effects of the reform in the trimmed sample in column 1 of Table 6.³⁰ Moreover, as the density of the predicted propensity \hat{p} is very low above 0.6 (Figure A.1 in the Appendix), I also discard observations in this interval with few control group firms in column 2. The estimated effect of the reform is robust in the sample of firms with similar observable characteristics.

[Table 6 here]

I further address concerns related to the heterogeneity between contributing firms and other firms in regression specifications. I augment the preferred regression specification with the predicted propensity of being a corporate donor, \hat{p} , interacted with year-fixed effects in Table 6 columns 3 and 4 and with the *Ban* indicator in columns 5 and 6. This controls for a temporal change in the dependent variable that is due to the observable differences between contributing and other firms. Finally, I control for the predicted propensity score non-parametrically, by interacting 10 percentage point bins in \hat{p} with the *Ban* indicator in columns 7 and 8.³¹ Moreover, I only consider firms with the \hat{p} in the interval [0.1;0.9] in columns 4, 6 and 8. The results are substantively unchanged throughout.³² Hence, the findings are not driven by time trends correlated with the observables in which contributing and not contributing firms differ.

Moreover, I check the robustness of the results to alternative choices to model cross-sectional and time variation. I modify the preferred specification in Table 4, column 5 and

²⁸The estimation results are shown in Section A.1.1 in the Appendix.

²⁹I use the proposed rule of thumb and trim all firms with the estimated propensity score \hat{p} outside the range [0.1;0.9]. I also calculate the optimal rule for trimming by the algorithm proposed in Crump et al. (2009). This interval is wider, which implies that more firms are kept in the sample. However, the covariates' balance achieved by this rule is less satisfactory. The results are robust to using this alternative choice of the trimming interval.

³⁰Figure A.2 in the Appendix confirms the parallel trends assumption in the trimmed sample.

³¹Within these bins, large and very large firm categories and nearly all NACE sectors are balanced. Moreover, the difference in firm financial variables shrinks even further. The results are available upon request.

³²The point estimates are smaller in absolute magnitude in some specification, but not by more than one half of a standard deviation. They remain significant at 5% in all columns.

substitute *procurement controls* with procurement procedure fixed effects³³ in order to partial out procurement procedure level heterogeneity in the dependent variable. Next, I replicate the regressions when replacing CPV 4-digit code fixed effects with more coarse CPV 3-digit code fixed effects. Finally, I substitute year fixed effects with month fixed effects in order to have a finer specification for time variation. The results are robust to these alternative specifications and are available upon request.

6 Mechanisms

A bureaucrat’s options to influence procurement outcomes are severely limited by institutional constraints. As mentioned, the most common procurement is a first-price sealed-bid auction which is open to an unrestricted number of bidders and in which the bids are simultaneously made public. Procurement procedures are strictly monitored by the Public Procurement Office and public employees bear direct responsibility for misconduct and infringements related to procurement procedures which they carry out. Because non-contributing firms observe their own bids, these cannot be manipulated (if they were, firms would report the altered bids to the Public Procurement Office for investigation).

Given these constraints, two channels of influence seem plausible. The first is that the bureaucrats affect the contract design, i.e., stipulate tender calls so that only a contributing firm can satisfy the necessary requirements. The other is that they leak information on competing bids to the contributing firms. Both channels imply that the expected benefits of participating in auctions change both for contributing and non-contributing firms. Hence, entry into and exit from the procurement market may be affected, which I analyze empirically in Section 6.4.

These two channels have different empirical implications. The *contract design channel* affects the number of sole-bid tenders won by contributing firms. If this is the main mechanism, then contributing firms should win less sole-bid tenders after the ban on corporate donations. Column 1 in Table 7 shows the results from a regression in which the dependent variable is defined as an indicator for firms that participate (and win) in a sole-bid tender. A small and non-significant coefficient indicates that the ban had little effect on contributing firms’ victories in tenders with a sole bidder. Hence, the *contract design channel* does not pass the first necessary test and can be ruled out.

[Table 7 here]

³³Typically, one procurement procedure contains several lots and a separate contract tendered for each of them.

The *price information channel* instead changes the outcome of multiple-bid tenders, as only in such tenders does the price bid determine the winner. If this is the main channel, then the probability of winning in multiple-bid tenders should fall for contributing firms after the ban on corporate donations. Column 2 of Table 7 shows that the effect of the ban does, in fact, come from competitive tenders with several participants. This suggests that the *price information channel* is the active one.

The *price information channel* has featured both in the public debate and in criminal investigations. A number of newspaper articles propose the idea that information regarding price bids in public tenders leaks to agents with political connections. In 2012, the Lithuanian Criminal Police Bureau initiated a pre-trial investigation regarding the breach of security conduct in the CPP IS. The main allegation was that third parties – with suspected political connections – would have access to confidential information stored in the system.³⁴ This mechanism affects both bidding behavior of firms and allocation of tenders, which I discuss in a simple standard model.

6.1 Theoretical bidding behavior

A typical procurement procedure in Lithuania closely resembles the following theoretical setup. A buyer needs to procure 1 unit of a good. There are I firms which can supply the good. The cost of producing the good for firm i is c_i , which is privately known by i , and (c_1, c_2, \dots, c_I) are independently and uniformly distributed on $[0,1]$. Simultaneously, each firm i sets a price p_i , and the procurer buys from the firm with the lowest price.³⁵ The payoff for firm i is:

$$\Pi_i = \begin{cases} p_i - c_i, & \text{if } i \text{ wins} \\ 0 & \text{otherwise.} \end{cases}$$

In the symmetric Bayes-Nash equilibrium of this game, firms set the following bids and the firm with the lowest cost wins the auction:

$$p(c_i) = \frac{1}{I} + \frac{I-1}{I}c_i, \quad \text{with } I=2: \quad p(c_i) = \frac{1}{2}(1 + c_i).$$

I consider the case where one firm is informed about the bid by its competitor. Suppose that the informed firm is $i = 2$ and the uninformed firm $i = 1$ knows that its competitor is

³⁴see, e.g., “*LiCS donors won more than 2.7 billion LTL in public procurement contracts over last 3 years*”, Sarunas Cerniauskas, www.delfi.lt, November 24, 2011; “*Director of the Public Procurement Office Zydrunas Plytnikas: The state has become a political business*”, July 21, 2014, www.respublika.lt; “*Who trades the million-worth information about public procurement?*”, Tomas Dapkus, September 18, 2012, www.alfa.lt.

³⁵If $k > 1$ firms charge the same lowest price, the buyer purchases from one of those firms randomly, each selling with probability $1/k$.

informed. In the Perfect Bayesian Equilibrium of this sequential game, firm 2 bids:

$$p_2 = \begin{cases} p_1, & \text{if } c_2 < p_1, \\ p_1 + \Delta, & \text{if } c_2 \geq p_1 \text{ and } \Delta > 0. \end{cases}$$

The bidding strategy for the informed firm implies that it can outbid its competitor whenever its cost c_2 is below the price bid by its opponent p_1 .³⁶ The result is an inefficient allocation of contracts as the informed firm now also wins a fraction of contracts in which it is not the lowest cost bidder (see Figure 8).

[Figure 8 here]

Given the bidding behavior of firm 2, firm 1 maximizes its expected profit:

$$(p_1 - c_1) \Pr(p_1 < c_2) \implies \text{FOC: } p_1 = \frac{1}{2}(1 + c_1)$$

The bidding strategy for the uninformed firm 1 is the same as in the auction with no informed bidder. Although the probability of winning the contract $\Pr(p_1 < c_2)$ is smaller than in the case when no firm is informed, the elasticity with respect to p_1 is the same (firm 1 cannot affect its probability of winning in the range of prices for which firm 2 can profitably win).

To obtain the predictions³⁷ for the empirical analysis, I consider the scenario in which contributing firms are informed about price bids by other tender participants before the ban on corporate donations and no firm is informed after the ban.

Prediction 0. Contributing firms' probability of winning decreases after the ban on corporate donations.

Prediction 1. Contributing firms reduce their price bids after the ban on corporate donations.

Prediction 2. Contributing firms win by narrower margins as compared to other firms before the ban on corporate donations. Contributing firms win at higher victory margins after the ban than before the ban.

The model predicts that when contributing firms are informed about competing bids, they win more contracts and bid higher prices in order to get a contract at maximum revenue. Moreover, contributing firms submit bids which are closer to their competitors thanks to this information. This results into reallocation of surplus from the buyer to the informed firm as the latter can charge higher prices even for contracts under the efficient allocation (being the lowest cost firm). If the ban on corporate donations eliminates the *price information*

³⁶Intuitively, firm 2 should always bid above its cost: $\Delta > c_2 - p_1$.

³⁷The analytical derivations are presented in Section A.1.2 in the Appendix.

channel, contributing firms’ probability of winning a contract should decrease after the ban. This theoretical prediction is consistent with a five percentage point reduction in chances of winning for contributing firms, documented in Section 4. Moreover, as contributing firms are no longer able to adjust their bids to match their opponent’s bid after the ban, they should lower their prices and win at larger margins than before.

In addition, the comparison of costs and prices in the two cases provides the following predictions:

Prediction 3. More efficient (i.e. lower cost) firms cater to procurement after the ban.

Prediction 4. Procurement goods are purchased at lower prices after the ban.

6.2 Empirical bidding behavior

To test Prediction 1 empirically, I study changes in corporate donors’ bidding behavior in response to the reform. In Table 8, I analyze prices that are bid before and after the ban on corporate donations. The regression specifications in columns 1-5 are analogous to those shown in Table 4. The coefficient on the interaction term *Contribute* \times *Ban* implies that corporate donors submit around 24% lower bids after 2012 (Table 8, column 5). Former corporate donors bid more aggressively due to the reform: they are constrained to offer lower prices when competing for the allocation of public funds after the reform.³⁸

[Table 8 here]

In order to validate the causal interpretation of these results, I verify the existence of parallel trends in bidding. Figure 9 plots locally smoothed means of the logarithm of the price bid (analogous to Figure 7). Before 2012, there is no systematic difference in the bidding behavior of contributing and other tender participants.³⁹ Following the political finance reform, prices offered by contributing firms decrease.

[Figure 9 here]

The evidence on the reaction in the bidding behavior of formerly donating firms allows me to rule out several alternative channels. Political favoritism may work through the imperfect enforcement of tender contracts (Guasch and Straub, 2009), whereby contributing firms rely on the lax enforcement of, e.g., quality requirements to outbid other competitors. This mechanism would predict that after the ban donor firms can no longer sustain low bidding,

³⁸Table A.2 in the Appendix replicates the robustness checks analogous to those in Table 6 for the probability of winning.

³⁹The level difference in the raw data is due to the different composition of procurement objects for which contributing and other firms tender. It disappears after controlling for the CPV 4-digit code.

because they are now obliged to deliver according to the contract provisions. The evidence on bidding points to the opposite direction, suggesting that this channel is not very plausible in the Lithuanian political favoritism. Another possibility is that mean reversion in corporate donors' performance drives the reallocation of procurement contracts. If firms contribute because of a positive shock in their performance (e.g., low cost c_i), the reduction in the probability of winning could result from the fact that, in a few years, these firms return to their average costs and hence are less competitive in tendering. While this is a possible scenario, it is not consistent with contributing firms' bidding behavior: higher costs would predict higher rather than lower bids.

6.3 Victory margin

The *price information channel* also implies that contributing firms undercut their competitors by a small amount in order to secure contracts (Prediction 2). Therefore, I examine victory margins in multiple-bid tenders won by contributing and other firms.⁴⁰ Figure 10 shows kernel density plots of the relative victory margin – the logarithm of the difference between the second lowest bid and the winning bid, normalized by the winning bid – for the two groups of winners and distinguishes between contracts awarded before and after the ban on corporate donations. In line with Prediction 2, corporate donors more frequently win by narrow margins as compared to other firms before the ban. This difference is substantially smaller after the reform.

[Figure 10 here]

I estimate unconditional quantile regressions (Firpo et al., 2009) to examine distributional effects of the ban on victory margins. Specifically, I estimate the following contract-level regression:

$$Margin_{ct}^{QUANTILEx} = \alpha + \beta_1 CWinner_c + \beta_2 Ban_t + \beta_3 CWinner_c \times Ban_t + X_{ct}\gamma + \varepsilon_{ct}, \quad (2)$$

where $Margin_{it}$ is defined as the logarithm of the difference between the second lowest and the first lowest bid (normalized by the first lowest bid) in a contract c in a year t ; $CWinner_c$ – as an indicator variable for contracts which were awarded to contributing firms; Ban_t – as an indicator variable for contracts signed after January 1, 2012 and X_{ct} – as a vector of controls that includes indicators for year, CPV 2-digit code, procurement procedure type, contracting authority type and for goods, services and works procured. Standard errors are computed by bootstrap with 200 replications.

⁴⁰To better match the set-up of the model, I exclude tenders in which more than one contributing firm participates.

Figures 11(a) and 11(b) plot the coefficients β_1 and $\beta_1 + \beta_3$, respectively, from the unconditional quantile regression for each decile, together with the OLS coefficient from an analogous specification. These coefficient show, respectively, the difference in the victory margins between the contracts won by contributing and other tender participants before the ban in Figure 11(a) and after the ban in Figure 11(b). In particular, before the reform contributing winners are, on average, closer to their runners-up, as compared to other winners (a point estimate of -0.232, with a robust standard error of 0.014).⁴¹ Although there is no marked difference between margins of victory in contracts awarded to contributing firms and other firms at the lowest deciles, it amplifies in the third to the sixth deciles and then remains constant. In theory, the bid deviation is negligible but, in practice, extremely low victory margins may increase the risk of undesirable monitoring.⁴² In fact, the data suggests that very narrow margins are avoided and political favoritism mainly operates via intermediate ones. After the ban the difference in victory margins between tenders won by contributing and other firms is much smaller, which implies that the advantage of contributing firms is, at large, eliminated.

[Figure 11 here]

This evidence shows strong empirical support for the *price information channel* whereby political money translates into favors in procurement. It allows corporate donors to adjust their bids in order to secure contracts. After the reform, however, they need to engage in competitive bidding.

6.4 Entry and exit

The lost advantage of contributing firms may trigger more intense entry by potential competitors. To study this possibility, I plot the share of sole-bid tenders and the average number of bidders in procurement contracts awarded during the period 2008-2013 in Figure 12. The data shows a slight decrease in the level of competition after the ban. Moreover, I study contributing and other firms' participation in tenders by competition level, measured by the numerosity of competing bidders. Column 1 in Table 7 shows the results from Poisson regressions with the dependent variable being *#bidders* defined as the number of bidders in

⁴¹The results are available upon request.

⁴²I model the bid deviation to be nearly zero, but in practice extremely low victory margins may look suspicious. To quote the President of INFOBALT, Vytautas Vitkauskas, “*In an auction of 5 million LTL worth, the winner outbids the runner-up by 8 thousand LTL. Let's be (...) fair: miracles don't happen.*” (Tomas Dapkus, *Where is confidential information on public procurement illegally traded?*, September 25, 2012, www.alfa.lt).

a tender.⁴³ If anything, there is a slight reduction rather than an increase in the level of competition in tenders in which contributing firms participate. Hence, the reduction in the probability of winning for corporate donors cannot be explained by changes in the nature of competition in procurement after the ban.

[Figure 12 here]

Second, if corporate donors' participation in procurement is driven by the size of the expected political rents, contributing firms may no longer participate in public tenders after the ban on corporate donations. However, the data does not support this explanation. Figure 13 shows that the share of tenders in which a contributing firm participates does not change substantially after the political finance reform. Moreover, I investigate to what extent entries to and exits from the procurement firms' sample explain my findings. In order to isolate this selection channel, I focus on the sample of firms that have participated in procurement tenders in each year during 2008-2013 and repeat the main set of regressions. The result remains virtually unchanged, as shown by the point estimate of -0.047 (a standard error of 0.019) in column 1 in Table 7. All in all, movements in or out of the procurement market do not drive the patterns in the data.

[Figure 13 here]

6.5 Which donations matter?

Donations to core parties. Although the Lithuanian political system is rather fragmented, six core parties (see Section 2.1) have held seats in the three most recent legislatures. In this section on heterogeneous effects, I restrict the analysis to these parties, as donations to them constitute the majority of all donations. Column 1 of Table 9 shows that the reduction in the probability of winning is slightly more pronounced in this sample of donors as compared to the preferred specification including donations to all parties.

[Table 9 here]

Large donations. To study whether politicians reward more generous donors, I use the information on the size of donations. For every contributing firm, I construct a cumulative amount of party and campaign donations paid during the period 2007-2011. Among contributing firms in the procurement sample, the median cumulative donation value is

⁴³I also implement regressions with the outcome being indicator variables for tenders with one/two/three/four or more bidders. The results (available upon request) illustrate that a small increase in participation in duel tenders is offset by a reduction in tenders with four or more bidders.

42,500LTL(\approx 13,000EUR).⁴⁴ I define an indicator variable *Big Contributions (Small Contributions)* taking the value of 1 if a tender participant has donated an above-median (below-median) cumulative value to a political party or a political campaign over the period of interest. Column 2 in Table 9 shows that the reduction in the probability of winning is almost three times larger for donors with generous donations: the point estimate implies a reduction of 6.8 percentage points for donors with above-median cumulative donations, whereas it is 2.6 percentage points for donors with smaller contributions. I also consider the logarithm of the cumulative value of donations as a continuous measure in column 3. Similarly, the point estimate on the interaction term with the *Ban* indicator is negative and significant, in line with a more pronounced effect for firms which have donated larger amounts to politicians. This shows that returns to corporate political support respond to the monetary value of contributions.

Donations to powerful politicians. Next, I study whether connections to political parties with relevant power positions are more lucrative. I focus on the health care sector and collect information on parties which were in charge of political leadership assignments to the Ministry of Health and the Committee on Health Affairs in the Parliament before 2012. I distinguish between three types of connections: i) connections to parties which appointed the Minister of Health (*Minister of Health*); ii) connections to parties which mandated the Chair/Vice-chair of the Committee on Health Affairs (*Chair of Committee on Health Affairs*); and iii) connections to other parties (*No power position*). Then, I estimate the reduction in the probability of winning for firms with the three types of connections. Column 4 in Table 9 shows that firms, with donations to parties choosing the Chair (Vice-chair) of the Committee on Health Affairs, suffer from the most pronounced reduction in the probability of winning. The effect is smaller for connections to parties with a major stake at the Ministry of Health and is negligible for firms which have donated to parties with no power positions in the health care sector. In addition, I estimate equation (1) with the interaction between an indicator variable *Big contributions to Health Committee* taking the value of 1 for tender participants which have donated an above median cumulative amount to one of the parties with assignments to Chair/Vice Chair of the Committee on Health Affairs and the *Ban* indicator. A negative coefficient of 0.081 (a standard error of 0.011) in column 5 of Table 9 suggests that the large effect of connections to the leadership of the Committee on Health affairs is driven by firms which directed substantial amounts to these parties.

Party and campaign donations. The majority of political donors support the general activity of parties. In particular, out of 550 contributing firms that participate in procure-

⁴⁴In the cross-section of 550 contributing and procuring firms, the median cumulative amount donated is 15,000LTL(\approx 4,500EUR). The difference is due to the fact that bigger donors participate in procurement more often.

ment, only 83 firms are exclusively campaign donors. Given a potentially different nature of the two types of donations – e.g., electoral motive may be more salient in campaign financial support – I check that the results are not sensitive to the definition of *Contribute* that only comprises firms’ contributions to political parties.⁴⁵ The estimated reduction in the probability of winning (a point estimate of -0.047, a standard error of 0.015) is unchanged when I exclude firms that exclusively support political campaigns.⁴⁶

Strength of political influence. Strong links between politicians and bureaucrats are likely to facilitate favoring of contributing firms in procurement auctions. Therefore, donation-based connections to national politicians may yield higher returns in tenders administered by top-level bureaucrats: they are closer to national politics and the politician-bureaucrat influence chain is shorter. On the other hand, tenders carried out at the national level are subject to a stronger scrutiny by the public, which may limit the prevalence of political favoritism. To examine this relationship, I study the heterogeneous effects of the reform in tenders organized by contracting authorities at different levels of public administration.⁴⁷

I interact the main variable of interest – *Contribute* \times *Ban* – with indicators for tender contracts administered at the central (*Center*) and at the local level or by public utility companies (*Local/PUC*).⁴⁸ Column 1 of Table 10 shows that the overall reduction in the probability of winning comes from tenders organized at central level institutions and at institutions under their direct control. Compared to intermediate levels of public administration, the effect is virtually the same in central administration. In contrast, the reform does not affect the awarding of tenders administered at the local level or by public utility companies. The positive relationship between the level of public administration and political favoritism appears to flatten out at the top level, in which rent seeking is likely to face a stronger public scrutiny. Political favoritism instead remains strong in tenders administered at intermediate

⁴⁵In the main part of the analysis, I use the most natural definition of a contributing firm *Contribute* and consider as such all firms that have donated to a political party or a political campaign and have participated in a procurement auction afterwards.

⁴⁶In fact, the reduction in the probability of winning for firms which are exclusively campaign donors is larger in absolute magnitude (yet, I cannot reject the equality of the two coefficients). Moreover, I find no differential returns to political connections for firms that have donated to several parties, suggesting that politically non-loyal firms go unpunished in Lithuanian political favoritism (the results are available upon request). Altogether, this suggests that there may be political rents attached to campaign donations as well.

⁴⁷The Government of the Republic of Lithuania approves the list of contracting authorities that purchase through the public procurement system. Each organization is categorized according to the criteria that are instrumental for the application of the Law of Public Procurement. I use these categories in order to distinguish between tenders organized by: i) central public administration bodies (e.g., ministries, central government agencies, national defense, etc.); ii) middle level units that are directly controlled by state authorities (e.g., hospitals, prisons, educational institutions, etc.); iii) local units (e.g., municipalities and their administration bodies); iv) public utility companies.

⁴⁸The prevalence of political favoritism at intermediate levels of public administration (which is the omitted category) is shown directly by the coefficient on *Contribute* \times *Ban*.

levels, in which the link between politicians and bureaucrats is close and the exposure to public attention is more limited.

[Table 10 here]

Political turnover. Political donations may create persistent links between firms and politicians, lasting even if monetary transfers from firms are banned. In this vein, political favoritism may continue until new political power takes over. I investigate the heterogeneous time effects of the political finance reform before and after the 2012 Parliamentary elections to verify this empirically.

I split the *Ban* dummy into two – an indicator variable *Old Government* for contracts signed in 2012, under the old right-wing government, and an indicator variable *New Government* for contracts signed in 2013,⁴⁹ under the new left-wing government – and interact them with the *Contribute* dummy. Column 2 in Table 10 shows that corporate donors suffer the largest reduction in the probability of winning – I estimate a negative effect of 7.6 percentage points – after the change in political power.

I also study how political change interacts with this heterogeneous time effect by distinguishing between donations to parties with strong and weak persistence. *Contribute to persistent parties* is an indicator for firms with donations to parties in which an above-median number of party members persist from the 2008 legislature to the 2012 legislature. I augment the regression specification with the interaction between this persistence measure and *New Government* indicator. Column 3 in Table 10 shows that the large reduction in the probability of winning after the political change is attenuated for firms with donations to parties which maintain more politicians in the parliament. All in all, this evidence is consistent with the idea that political favoritism is based on personal connections: while the same politicians persist in office, the negative effect of the reform is mitigated. It is only after a shift in political power that the loss of political favors affects the procurement performance of corporate donors to the full extent.

7 Concluding remarks

Money in politics receives a great deal of attention from both scholars and policy-makers. Even though donations made by individuals are usually seen as a form of political expression, political giving by firms – as legal entities possessing no ideological preferences – is more debatable. This study sheds light on how such political donations shape government procurement, and suggests that corporate money can indeed buy political influence and secure preferential treatment in the allocation of public resources.

⁴⁹ The new government was formed on December 13, 2012.

I find that the disruption of contribution-based connections between firms and politicians results in worse procurement outcomes for these businesses. Firms favored under a less stringent regulation experience a significant loss in their victory advantage in public tenders when corporate donations are banned. Following the reform, they are also forced into more aggressive bidding. Overall, the ban on corporate donations proves to be an effective means to discontinue political favoritism in the awarding of public procurement contracts.

How general is the understanding of the role of political money drawn from the Lithuanian context? According to the Transparency International Corruption Perceptions' Index (CPI), Lithuania ranked 39 on a global scale in 2014. Figure 14(a) shows that among countries with developed political rights (Freedom House, 2014), it is positioned around the middle of the ranking. Furthermore, concerns regarding the transparency of political donations and procurement procedures are common. In fact, Figures 14(b) and 14(c) show that numerous countries publish political finance accounts and monitor procurement procedures.

[Figure 14 here]

A simple theory predicts that political favoritism may induce less efficient firms to cater to the public sector and incur higher costs for public purchases. To assess the effect of the ban on public finances, I provide back of the envelope calculations. I estimate that contributing firms, on average, lower their price bids by 24%. Moreover, they win 29% of the tender contracts in the post-reform period.⁵⁰ Since procurement purchases are 14% of GDP, this amounts to large savings of almost 1% of GDP. Although these simple calculations should be taken with a grain of salt, this implies a substantial cost reduction in the public sector: eliminating political favoritism saves almost 1.25 billion LTL for Lithuanian tax payers (\approx 362 million EUR).

The legislative stance regarding the transparency of corporate donations differs across countries. Some countries have restricted or banned contributions; in other countries they are allowed and sometimes not even regulated. The Lithuanian case shows that banning corporate donations may result in reallocation of tenders and important gains in public finance. Given the substantial money in procurement, the evidence in this paper should attract the attention of regulators of public procurement and political finance.

⁵⁰The reduction in costs for the public sector only comes from tenders in which the contributing firm wins and instead of matching the opponent's bid p_1 now bids its competitive price p_2 . The price in tenders reallocated from informed firms to uninformed firms does not change: the bidding strategy for firm 1 is the same and firm 2 bids p_1 in the informed case. Hence, the buyer pays the same price in tenders that were previously captured by contributing firms and pays a lower price and pays a lower price in tenders that are awarded to previously contributing firms after the ban.

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Tables and figures

Table 1: Political party funding in 2011

| Party | Total funds, LTL | % donations | % corporate/donations | % corporate/total funds |
|------------|------------------|-------------|-----------------------|-------------------------|
| LSDP | 1,872,815 | 51% | 97% | 49% |
| DP | 1,395,153 | 62% | 98% | 61% |
| TT | 1,377,261 | 53% | 100% | 53% |
| TS-LKD | 2,474,269 | 47% | 99% | 47% |
| LiCS | 1,935,698 | 77% | 91% | 70% |
| LRLS | 1,761,992 | 84% | 99% | 83% |
| Average | 1,802,864 | 62% | 97% | 60% |
| Left-wing | 1,633,984 | 56% | 97% | 55% |
| Right-wing | 1,887,305 | 65% | 97% | 63% |

Notes. Own calculations from the Central Electoral Commission data.

Table 2: Procurement sectors

| CPV | Description | Frequency |
|-----|--|-----------|
| 33 | Medical equipments, pharmaceuticals and personal care products | 140,093 |
| 50 | Repair and maintenance services | 22,838 |
| 15 | Food, beverages, tobacco and related products | 12,820 |
| 45 | Construction work | 9,757 |
| 71 | Architectural, construction, engineering and inspection services | 8,461 |
| 34 | Transport equipment and auxiliary products to transportation | 6,880 |
| 80 | Education and training services | 5,786 |
| 44 | Construction structures and materials | 5,027 |
| 22 | Printed matter and related products | 4,822 |
| 30 | Office and computing machinery, equipment and supplies | 4,060 |

Notes. CPV 2-digit code descriptions for 10 most frequent codes.

Table 3: Descriptive statistics

| | Total | Contribute | Other |
|------------------------------------|----------------|----------------|----------------|
| <u>Main dependent variables:</u> | | | |
| Probability of winning | 0.43 (0.49) | 0.47 (0.50) | 0.41 (0.49) |
| Log price bid | 7.55 (3.24) | 7.00 (3.33) | 7.75 (3.18) |
| # bidders | 3.49 (2.37) | 3.29 (2.09) | 3.56 (2.46) |
| <u>Procurement procedure:</u> | | | |
| Open | 0.90 (0.29) | 0.93 (0.25) | 0.89 (0.31) |
| Negotiation | 0.05 (0.21) | 0.03 (0.18) | 0.05 (0.22) |
| Other | 0.05 (0.22) | 0.03 (0.18) | 0.06 (0.23) |
| <u>Public administration unit:</u> | | | |
| Central | 0.07 (0.25) | 0.04 (0.19) | 0.08 (0.27) |
| Middle | 0.76 (0.43) | 0.84 (0.36) | 0.73 (0.45) |
| Local/territorial | 0.08 (0.28) | 0.06 (0.23) | 0.09 (0.29) |
| Public utility company | 0.09 (0.29) | 0.06 (0.24) | 0.10 (0.30) |
| <u>Procurement object:</u> | | | |
| Goods | 0.79 (0.41) | 0.82 (0.39) | 0.77 (0.42) |
| Services | 0.16 (0.37) | 0.11 (0.31) | 0.19 (0.39) |
| Works | 0.05 (0.22) | 0.08 (0.27) | 0.04 (0.19) |
| Observations | 592,957 | | |

Notes. Sample covers tenders awarded from Sep 2008 to Dec 2013.

Table 4: Main results

| Dependent variable: | Winner | | | | | |
|------------------------------|---------|-----------|-----------|-----------|-----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Contribute | 0.094* | 0.065** | 0.066** | | | |
| | (0.048) | (0.028) | (0.028) | | | |
| Contribute \times Ban | -0.041* | -0.044*** | -0.051*** | -0.042*** | -0.048*** | -0.056** |
| | (0.021) | (0.017) | (0.017) | (0.014) | (0.015) | (0.022) |
| Contribute \times Placebo | | | | | | 0.021 |
| | | | | | | (0.029) |
| Procurement controls | X | X | X | X | X | X |
| Firm controls | | X | X | | | |
| Industry FE \times Year FE | | | X | | X | X |
| Firm FE | | | | X | X | X |
| R ² | 0.08 | 0.09 | 0.09 | 0.16 | 0.15 | 0.15 |
| N | 596,039 | 575,835 | 575,835 | 593,477 | 575,527 | 575,527 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Winner* defined as an indicator variable for firms which win a contract. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. *Placebo* is an indicator variable for contracts awarded after a placebo reform on January 1, 2010. Procurement controls are year, CPV 4-digit code, contracting organization type and procurement procedure type indicators and indicators for goods, services and works procured. Firm controls are size categories, NACE main industry fixed effects and firm age. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table 5: Firm characteristics: contributing and non-contributing firms

| | Panel A: Full sample | | | | | | Panel B: Trimmed sample | | | | | |
|-------------------------|----------------------|-----|-------|-------|------------|-------|-------------------------|-----|-------|-------|------------|-------|
| | Contribute | N | Other | N | Difference | p-val | Contribute | N | Other | N | Difference | p-val |
| <u>Firm size:</u> | | | | | | | | | | | | |
| Very large | 0.03 | 522 | 0.01 | 7,374 | 0.02*** | 0.00 | 0.04 | 303 | 0.03 | 1,137 | 0.01 | 0.39 |
| Large | 0.17 | 522 | 0.06 | 7,374 | 0.11*** | 0.00 | 0.27 | 303 | 0.23 | 1,137 | 0.04 | 0.12 |
| Medium-sized | 0.56 | 522 | 0.36 | 7,374 | 0.20*** | 0.00 | 0.63 | 303 | 0.66 | 1,137 | -0.03 | 0.27 |
| Small | 0.23 | 522 | 0.57 | 7,374 | -0.34*** | 0.00 | 0.06 | 303 | 0.08 | 1,137 | -0.02 | 0.24 |
| Age | 13.44 | 517 | 10.57 | 7,336 | 2.88*** | 0.00 | 15.27 | 303 | 14.36 | 1,137 | 0.91*** | 0.00 |
| <u>Corporate group:</u> | | | | | | | | | | | | |
| None | 0.56 | 521 | 0.77 | 7,366 | -0.22*** | 0.00 | 0.44 | 303 | 0.48 | 1,137 | -0.04 | 0.26 |
| Two | 0.28 | 521 | 0.15 | 7,366 | 0.13*** | 0.00 | 0.35 | 303 | 0.34 | 1,137 | 0.01 | 0.77 |
| Three or more | 0.16 | 521 | 0.08 | 7,366 | 0.08*** | 0.00 | 0.21 | 303 | 0.18 | 1,137 | 0.03 | 0.28 |
| <u># subsidiaries:</u> | | | | | | | | | | | | |
| None | 0.82 | 522 | 0.95 | 7,374 | -0.12*** | 0.00 | 0.76 | 303 | 0.80 | 1,137 | -0.04 | 0.13 |
| Single | 0.08 | 522 | 0.04 | 7,374 | 0.04*** | 0.00 | 0.09 | 303 | 0.11 | 1,137 | -0.02 | 0.28 |
| Two or more | 0.10 | 522 | 0.02 | 7,374 | 0.08*** | 0.00 | 0.15 | 303 | 0.08 | 1,137 | 0.06*** | 0.00 |
| <u># shareholders:</u> | | | | | | | | | | | | |
| None | 0.37 | 522 | 0.69 | 7,374 | -0.32*** | 0.00 | 0.17 | 303 | 0.24 | 1,137 | -0.07** | 0.01 |
| Single | 0.23 | 522 | 0.16 | 7,374 | 0.07*** | 0.00 | 0.26 | 303 | 0.26 | 1,137 | -0.00 | 0.94 |
| Two or more | 0.41 | 522 | 0.15 | 7,374 | 0.26*** | 0.00 | 0.57 | 303 | 0.50 | 1,137 | 0.07** | 0.03 |
| <u>Financials:</u> | | | | | | | | | | | | |
| Log # employees | 3.66 | 517 | 2.50 | 7,289 | 1.16*** | 0.00 | 4.35 | 303 | 3.81 | 1,137 | 0.55*** | 0.00 |
| Log Turnover | 14.19 | 484 | 12.49 | 5,995 | 1.71*** | 0.00 | 14.86 | 297 | 14.22 | 1,088 | 0.63*** | 0.00 |
| Log Net Income | 11.73 | 386 | 10.92 | 2,731 | 0.81*** | 0.00 | 11.93 | 276 | 11.63 | 876 | 0.30** | 0.02 |
| Log SHLDR funds | 13.19 | 423 | 12.10 | 3,307 | 1.10*** | 0.00 | 13.60 | 291 | 13.17 | 1,009 | 0.43*** | 0.00 |
| Log Total assets | 14.07 | 430 | 12.89 | 3,532 | 1.18*** | 0.00 | 14.41 | 293 | 13.89 | 1,033 | 0.52*** | 0.00 |
| Log Fixed assets | 12.67 | 425 | 10.92 | 3,496 | 1.75*** | 0.00 | 13.18 | 289 | 12.42 | 1,018 | 0.76*** | 0.00 |
| Log Current assets | 13.53 | 426 | 12.43 | 3,479 | 1.09*** | 0.00 | 13.90 | 289 | 13.34 | 1,026 | 0.55*** | 0.00 |
| Observations | 7,896 | | | | | | 1,440 | | | | | |

Table 6: Robustness checks

| Dependent variable: | Winner | | | | | | | |
|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Contribute \times Ban | -0.044** (0.018) | -0.044** (0.018) | -0.039** (0.017) | -0.042** (0.018) | -0.039** (0.017) | -0.042** (0.018) | -0.046*** (0.016) | -0.047*** (0.017) |
| $\hat{p} \times$ Year FE | | | X | X | | | | |
| $\hat{p} \times$ Ban | | | | | X | X | | |
| \hat{p} bins \times Ban | | | | | | | X | X |
| Trimmed sample | X | X | | X | | X | | X |
| Full controls | X | X | X | X | X | X | X | X |
| R ² | 0.13 | 0.13 | 0.15 | 0.13 | 0.15 | 0.13 | 0.15 | 0.13 |
| N | 362,026 | 358,611 | 569,487 | 362,026 | 569,487 | 362,026 | 569,487 | 362,026 |
| # clusters | 1,289 | 1,271 | 5,610 | 1,289 | 5,610 | 1,289 | 5,610 | 1,289 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Winner* defined as an indicator variable for firms which win a contract. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. \hat{p} is the predicted propensity of being a contributing firm. \hat{p} bins are 10 percentage point bins of the predicted propensity \hat{p} . Full controls correspond to the specification in column 5 of Table 4. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table 7: Mechanisms

| Dependent variable: | Winner in tenders: | | # bidders | Winner |
|-------------------------|--------------------|---------------------|-------------------|----------------------|
| | sole-bidder | multi-bidder | | |
| | (1) | (2) | (3) | (4) |
| Contribute \times Ban | -0.007 (0.013) | -0.047** (0.019) | -0.008 (0.015) | -0.048*** (0.015) |
| Full controls | X | X | X | X |
| Multiple-bid tenders | | X | | |
| Poisson regression | | | X | |
| No-selection sample | | | | X |
| R ² | 0.28 | 0.08 | | 0.13 |
| N | 575,527 | 476,108 | 575,559 | 475,998 |

Notes. The table reports the difference-in-differences coefficient from OLS regressions. The dependent variable in column 1 is defined as an indicator variable for firms which participate (and win a contract) in a sole-bid tender and in column 2 as an indicator variable for firms which win a contract in a multiple-bid tender. The dependent variable in column 3 is *# bidders* defined as the number of bidders in a tender. The dependent variable in column 4 is *Winner* defined as an indicator variable for firms that win a contract and the sample only includes firms that participate in procurement tenders in each year during 2008-2013. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. Full controls correspond to the specification in column 5 of Table 4. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table 8: Bidding

| Dependent variable: | Price bid, log | | | | |
|------------------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Contribute | -0.039 (0.102) | 0.001 (0.126) | 0.004 (0.127) | | |
| Contribute \times Ban | -0.275* (0.154) | -0.263* (0.152) | -0.279* (0.165) | -0.242 (0.173) | -0.240 (0.177) |
| Procurement controls | X | X | X | X | X |
| Firm controls | | X | X | | |
| Industry FE \times Year FE | | | X | | X |
| Firm FE | | | | X | X |
| R ² | 0.42 | 0.42 | 0.42 | 0.48 | 0.48 |
| N | 570,710 | 557,071 | 557,071 | 568,204 | 556,714 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Price Bid* defined as a logarithm of the price offer made by firms. The sample only includes tenders which were awarded to the lowest price bidder. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. Procurement controls are year, CPV 4-digit code, contracting organization type and procurement procedure type indicators and indicators for goods, services and works procured. Firm controls are size categories, NACE main industry fixed effects and firm age. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table 9: Heterogeneous donations

| Dependent variable: | Winner | | | | | |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Contributions to core \times Ban | -0.049*** (0.015) | | | | | |
| Big contributions \times Ban | | -0.068*** (0.011) | | | | |
| Small contributions \times Ban | | -0.026* (0.014) | | | | |
| Contribution amount \times Ban | | | -0.004*** (0.001) | | | |
| Minister of Health \times Ban | | | | -0.009 (0.011) | | |
| Chair of CoHA \times Ban | | | | -0.080*** (0.011) | | |
| No power position \times Ban | | | | -0.001 (0.012) | | |
| Big contributions to CoHA \times Ban | | | | | -0.081*** (0.011) | |
| Party contributions \times Ban | | | | | | -0.047*** (0.015) |
| Full controls | X | X | X | X | X | X |
| Health care sector | | | | X | X | |
| R ² | 0.15 | 0.15 | 0.15 | 0.13 | 0.13 | 0.15 |
| N | 575,527 | 575,527 | 575,527 | 346,475 | 346,475 | 575,527 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Winner* defined as an indicator variable for firms which win a contract. The sample in columns 4 and 5 includes only tenders in health care institutions. *Contributions to core* is an indicator variable for firms which have donated to one of the core political parties. *Big contributions/Small contributions* is an indicator variable for firms which have donated the amount above/below the median value. *Contribution amount* is the logarithm of the cumulative amount of contributions made by a firm. *Minister of Health* is an indicator for firms which have donated to one of the parties that appointed the Minister of Health. *Chair of CoHA* is an indicator variable for firms which have donated to one of the parties which appointed the chair/vice-chair of the Committee on Health Affairs. *No power position* is an indicator variable for firms which have donated to one of the parties with no power positions in health care. *Party contributions* is an indicator variable for firms which have donated to political parties. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table 10: Heterogenous donations (2)

| Dependent variable: | Winner | | |
|--|----------------------|----------------------|---------------------|
| | (1) | (2) | (3) |
| Contribute \times Ban | -0.054*** (0.018) | | |
| Contribute \times Ban \times Central | 0.001 (0.087) | | |
| Contribute \times Ban \times Local/PUC | 0.057** (0.024) | | |
| Contribute \times Old government | | -0.020 (0.013) | -0.018 (0.013) |
| Contribute \times New government | | -0.076*** (0.030) | -0.089** (0.035) |
| Contribute to persistent parties \times New government | | | 0.049 (0.045) |
| Full controls | X | X | X |
| R ² | 0.15 | 0.15 | 0.15 |
| N | 575,527 | 575,527 | 575,527 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Winner* defined as an indicator variable for firms which win a contract. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. *Central* is an indicator variable for tenders administered at the central level, *Local/PUC* – at the local level or by public utility companies. *Old Government* is an indicator variable for contracts signed in 2012 under the old right-wing government and *New Government* is an indicator variable for contracts signed in 2013 under the new left-wing government. *Contribute to persistent parties* is an indicator for firms with donations to parties in which an above-median number of party members persist from the 2008 legislature to the 2012 legislature. Full controls correspond to the specification in column 5 of Table 4. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

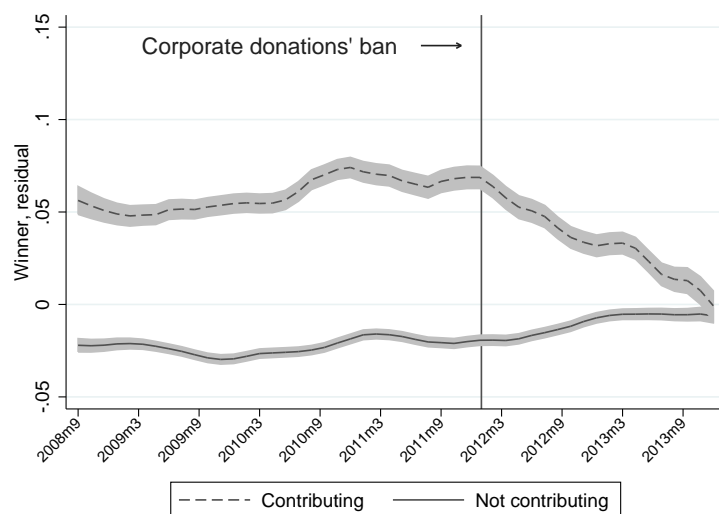


Figure 1: Probability of winning, residual
 Notes. Locally smoothed means of the residual from the regression of the *Winner* indicator variable on procurement controls.

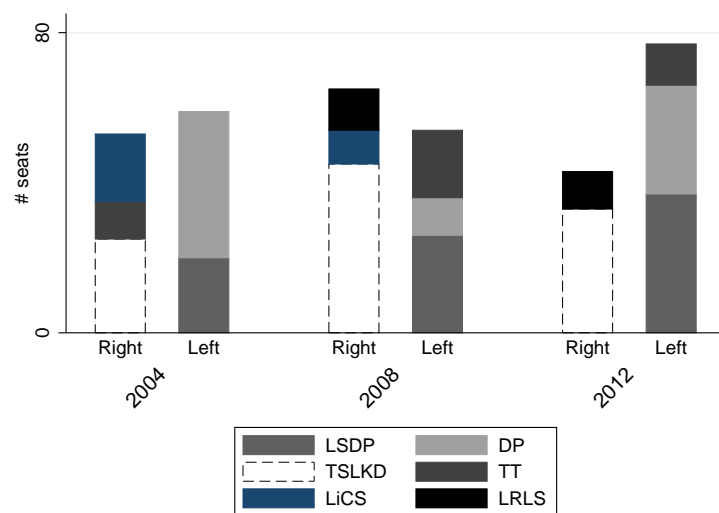


Figure 2: Main parties in the Parliament
 Notes. Left-wing coalition is formed by LSDP and DP. Right-wing coalition is instead formed by TSLKD, LiCS and LRLS. TT is the center-right party, which, however, joined left-wing coalitions in 2008 and in 2012.

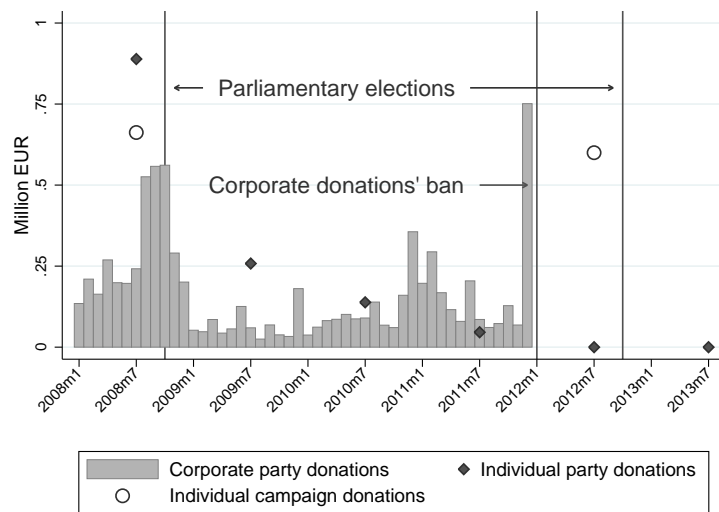


Figure 3: Corporate donations to parties

Notes. Data from the Central Electoral Commission of Lithuania. Monthly amount of corporate party donations and yearly amount of individual party and campaign donations are shown.

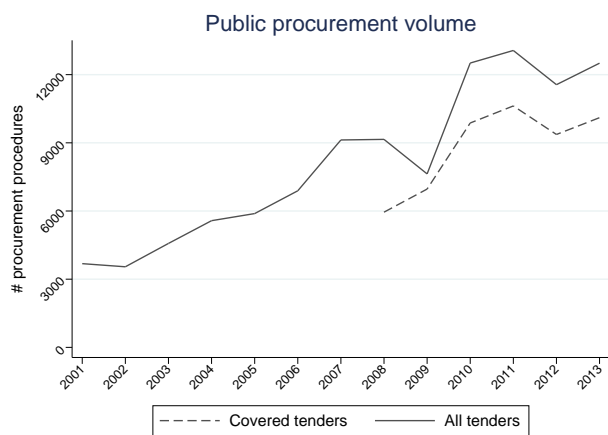
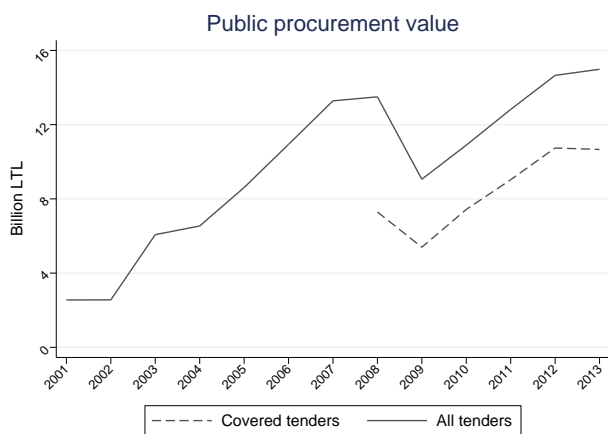


Figure 4: Data coverage

Notes. Data from the Public Procurement Office of Lithuania.

Purchase object part 1. Miconazolium mouth gel 20mg/g 40g N1 (33600000-6)

| Rank | Bidder | Price bid |
|------|----------------|-------------|
| 1 | UAB "MEDIKONA" | 1413,00 LTL |
| 2 | UAB "ARMILA" | 1422,75 LTL |
| 3 | UAB "Limedika" | 1442,20 LTL |

Purchase object part 2. Aluminii hydroxidum/magnii hydroxidum susp (100g with 4g/1,38g) (33600000-6)

| Rank | Bidder | Price bid |
|------|----------------|-----------|
| 1 | UAB "MEDIKONA" | 5,61 LTL |
| 2 | UAB "ARMILA" | 6,71 LTL |
| | UAB "Limedika" | 5,61 LTL |

Rejection reason: a different pharmaceutical product was offered.

Purchase object part 3. Aluminii hydroxidum/magnii hydroxidum susp (15ml with 0,5235/0,5985g) (33600000-6)

| Rank | Bidder | Price bid |
|------|----------------|-----------|
| 1 | UAB "Limedika" | 14,17 LTL |

Purchase object part 4. Ranitidine tablets 150mg (33600000-6)

| Rank | Bidder | Price bid |
|------|-----------------|------------|
| 1 | UAB "MEDIKONA" | 383,33 LTL |
| 2 | UAB "ARMILA" | 392,04 LTL |
| 3 | UAB "Limedika" | 452,81 LTL |
| 4 | UAB "ENTAFARMA" | 718,09 LTL |

Figure 5: Sample procurement procedure

Notes. Procurement procedure for pharmaceutical products No.76266, carried out by Klaipeda Children's Hospital in 2009.

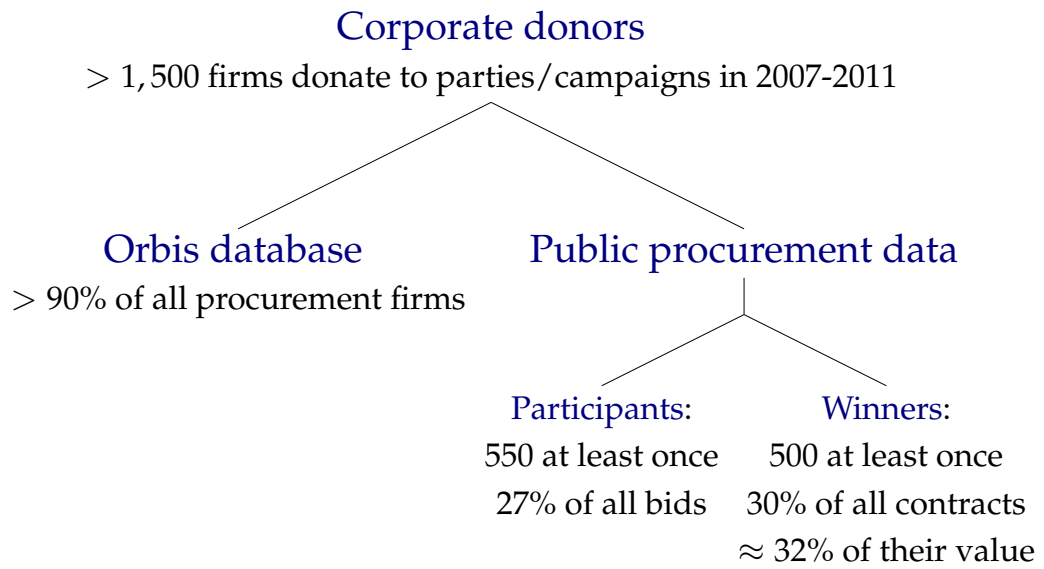
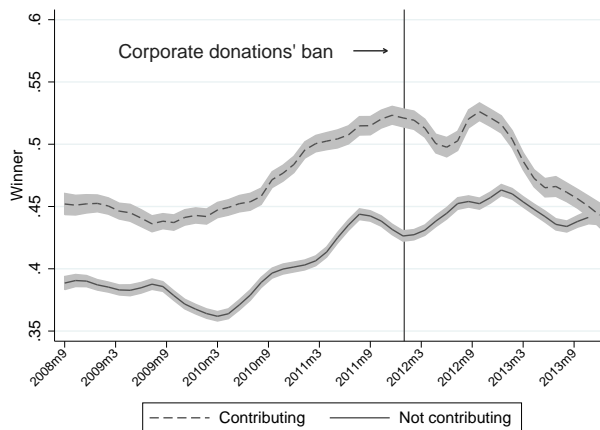
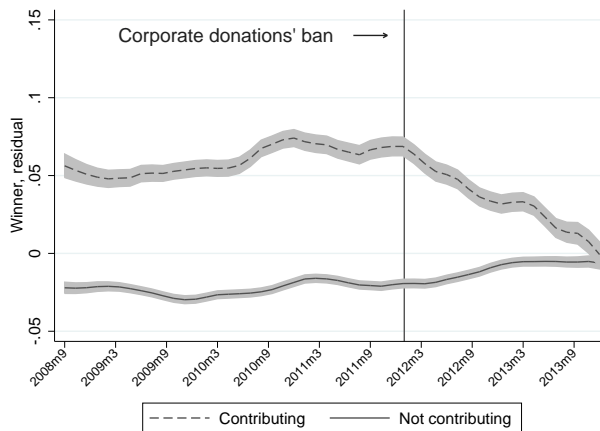


Figure 6: Data sources



(a) Level



(b) Residual

Figure 7: Probability of winning

Notes. Figure (a) shows locally smoothed means of the variable *Winner* defined as an indicator for firms which win a contract and Figure (b) – of the residual from the regression of the *Winner* indicator on procurement controls.

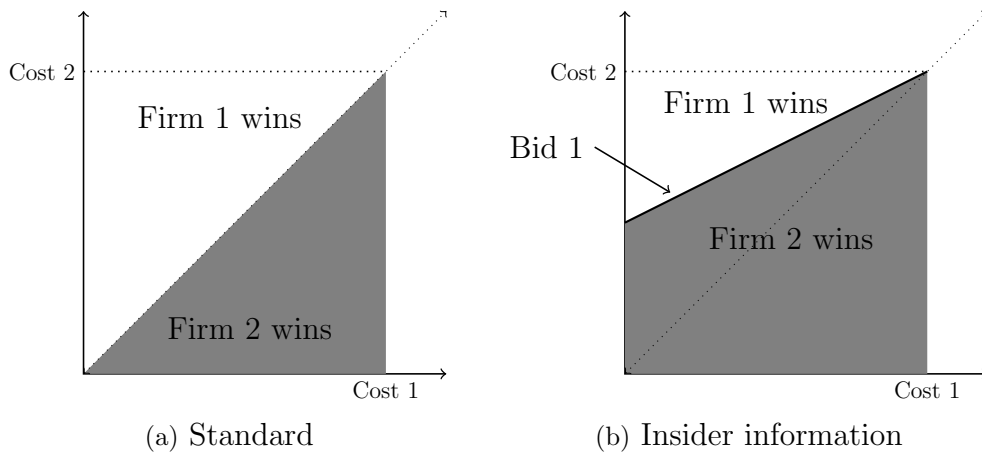
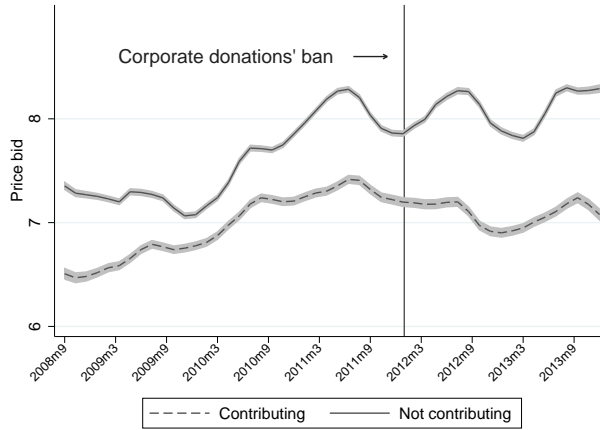
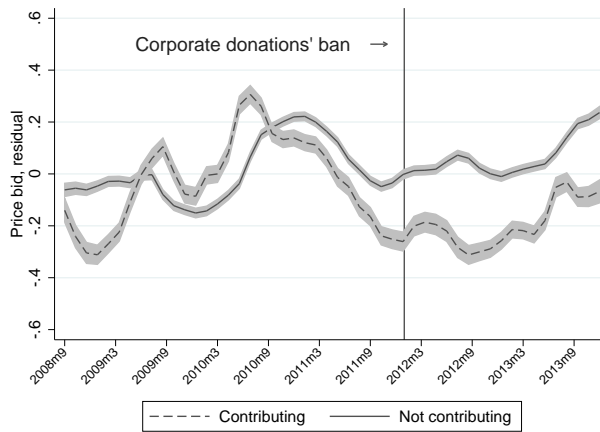


Figure 8: Reallocation of tenders

Notes. Figure (a) illustrates the allocation of tenders in the standard first-price sealed-bid auction model, whereas Figure (b) shows the reallocation of a fraction of tenders to the firm with information on the opponent's bid.



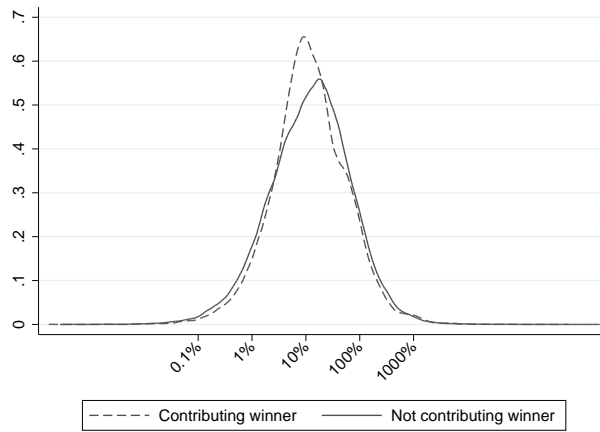
(a) Level



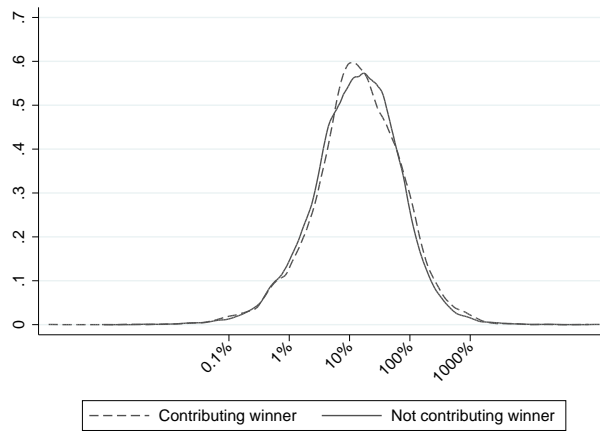
(b) Residual

Figure 9: Price bid, log

Notes. Figure (a) shows locally smoothed means of the variable *Price bid* defined as the logarithm of the price offer made by firms and Figure (b) – the residual from the regression of the *Price bid* on procurement controls.



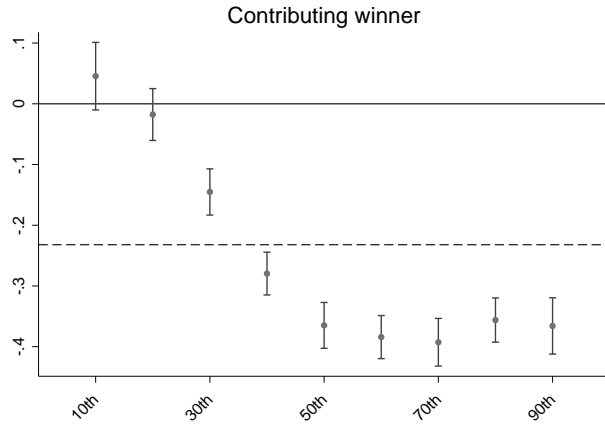
(a) Before



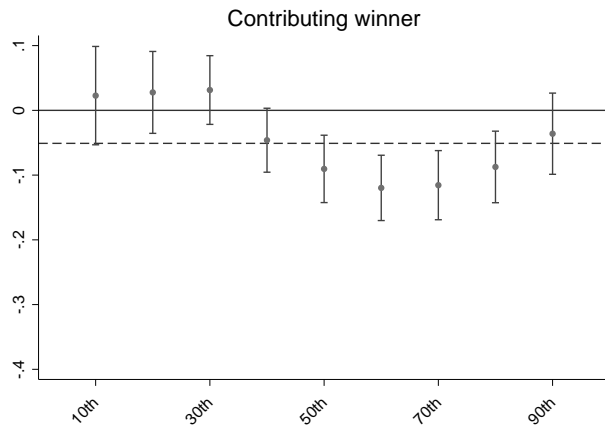
(b) After

Figure 10: % victory margin, log

Notes. The dependent variable is the victory margin defined as the decimal logarithm of the difference between the second lowest bid and the winning bid, normalized by the winning bid. Figure (a) and Figure (b) show kernel density plots of the victory margin in contracts awarded to contributing and non-contributing firms, respectively, before and after the ban on corporate donations. The sample excludes tenders with more than one contributing firm among bidders.



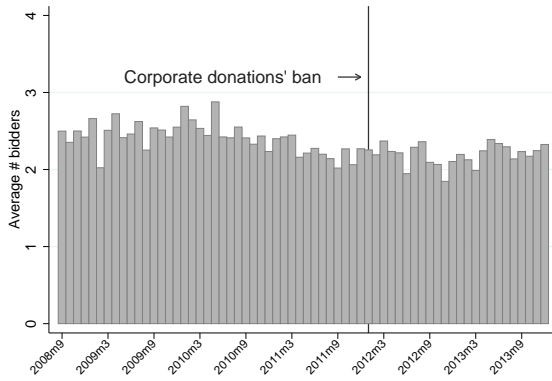
(a) Before



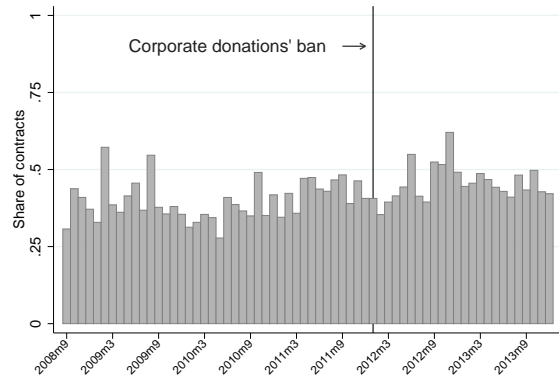
(b) After

Figure 11: % victory margin, log

Notes. The dependent variable is the victory margin defined as the decimal logarithm of the difference between the second lowest bid and the winning bid, normalized by the winning bid. Figures (a) and (b) plot, respectively, the coefficients β_1 and $\beta_1 + \beta_3$ from unconditional quantile regressions in equation (3) for each decile. They show the difference in the victory margin in contracts awarded to contributing and non-contributing firms, respectively, before and after the ban on corporate donations. The dashed line plots the average effect from an analogous specification estimated by the OLS. The sample excludes tenders with more than one contributing firm among bidders.



(a) Number of bidders



(b) Sole-bid tenders

Figure 12: Participation in procurement

Notes. Figure (a) shows the average monthly number of bidders in tenders and Figure (b) – the monthly share of sole-bid tenders.

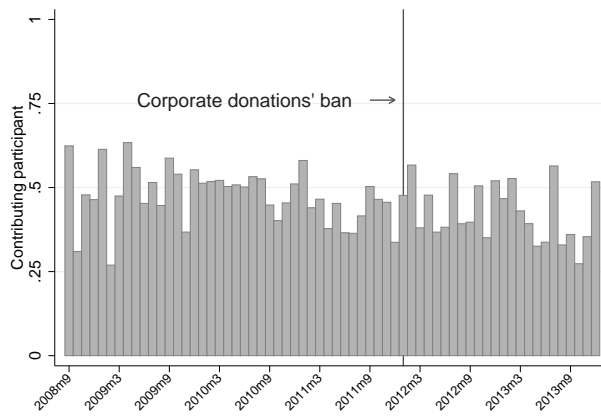
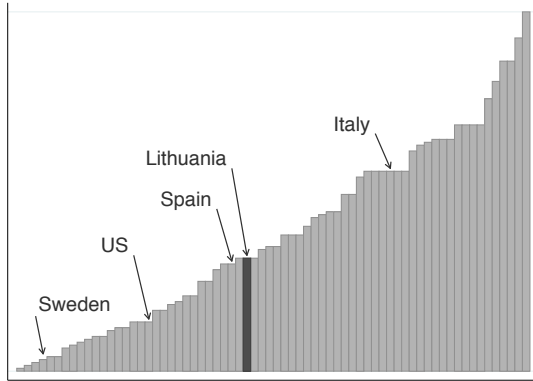
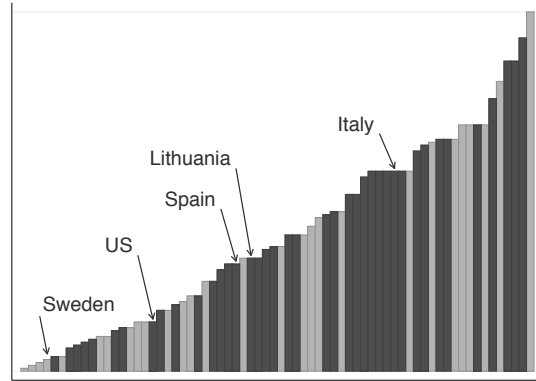


Figure 13: Tenders with a contributing firm

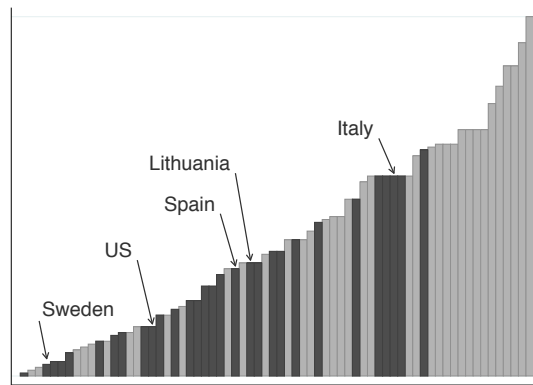
Notes. Figure shows the monthly share of tenders in which at least one contributing firm participates.



(a) Corruption Perceptions' Index



(b) Public information on donors



(c) Procurement supervision body

Figure 14: Institutional context

Notes. Figure (a) shows Corruption Perceptions Index in 2014 for 68 countries with free political rights (score of 1 or 2, Freedom House). Among them, Figure (b) indicates in black countries in which information on political donors is publicly available and Figure (c) – countries in which procurement procedures are monitored by a supervision body. Countries with missing information are not highlighted.

Appendix

A.1.1 Predicting the contribution status

I estimate the propensity to be a contributing firm using a logistic regression:

$$\log \left(\frac{p_i}{1 - p_i} \right) = \alpha + X_i \gamma + \varepsilon_i \quad (3)$$

where p_i is the probability that a firm contributes and X_i is a vector of controls that includes measures for i) time constant firm characteristics (size, NACE industry, corporate group structure and the number of subsidiaries and of shareholders), ii) firm age (the year of incorporation and the firm's age, computed as the difference between the first year in the procurement dataset and the year of incorporation), iii) broadly available firm financial indicators (the logarithm of turnover and of number of employees) and iv) other firm financial indicators (the logarithm of capital, of fixed assets and of current assets).⁵¹ Columns 1-4 in Table A.1 show the regression results with the different specifications i)-iv).⁵²

[Table A.1 here]

Firm time-invariant characteristics are important in predicting contributing firm status. For example, firm size is positively associated with being a contributing firm. However, there is no considerable increase in the predictive power of the model when financial indicators are added. In fact, augmenting equation (3) with variables that are not much correlated with the probability of being a contributing firm (e.g., capital, fixed assets and current assets) results in a marked reduction of the sample size and also lowers the pseudo- R^2 of the model (Table A.1, column 4). Hence, I base the trimming procedure on the specification in column 2, which is estimated for most firms in the sample and has the highest pseudo- R^2 .⁵³ Given a heavy left tail of the propensity score distribution (Figure A.1), trimming results in discarding 6,456 firms out of 7,896. They are mostly control group firms that are distant from the contributing firms in their covariates' distribution and do not frequently participate in tenders. The sample obtained after trimming consists of almost 360,000 observations.

[Figure A.1 here]

⁵¹For time-varying characteristics in the latter two specifications, I take their value in 2005 (or in the year of incorporation for firms founded after 2005).

⁵²Specifications in columns 3 and 4 include a considerably smaller number of observations due to the fact that extensive coverage of firm-level variables is not available for all firms in Orbis database.

⁵³Virtually the same pseudo- R^2 is achieved in the specification in column 3. As the latter can only be estimated for a considerably smaller fraction of firms, the model in column 2 is preferred. The results are robust to using this specification for trimming.

A.1.2 Analytical predictions

First-price sealed-bid auction

The expected cost:

$$\begin{aligned}
& E(\min(c_1, c_2)) \\
&= \int_0^1 \int_0^{c_1} c_2 dc_2 dc_1 + \int_0^1 \int_{c_1}^1 c_1 dc_2 dc_1 \\
&= \int_0^1 \frac{1}{2} [c_2^2]_0^{c_1} dc_1 + \int_0^1 c_1 [c_2]_{c_1}^1 dc_1 = \frac{1}{3} \quad (S1)
\end{aligned}$$

The expected price:

$$E(p(c_i)) = \frac{1}{2} + \frac{1}{2}E(\min(c_1, c_2)) = \frac{2}{3} \quad (S2)$$

The expected profit, conditional on c_i is:

$$(p_i - c_i) \Pr(p_i < p_j) = \frac{1}{2} (1 - c_i) (1 - c_i) = \frac{1}{2} (1 - c_i)^2 \quad (S3)$$

First-price sealed-bid auction, with insider information

The expected cost:

$$\begin{aligned}
&= \int_0^1 \int_0^{\frac{1}{2}(1+c_1)} c_2 dc_2 dc_1 + \int_0^1 \int_{\frac{1}{2}(1+c_1)}^1 c_1 dc_2 dc_1 \\
&= \int_0^1 \frac{1}{2} [c_2^2]_0^{\frac{1}{2}(1+c_1)} dc_1 + \int_0^1 c_1 [c_2]_{\frac{1}{2}(1+c_1)}^1 dc_1 \\
&= \int_0^1 \frac{1}{2} \left(\frac{1}{2} (1+c) \right)^2 dc_1 + \int_0^1 c \left(1 - \frac{1}{2} (1+c) \right) dc_1 = \frac{3}{8} \quad (I1)
\end{aligned}$$

The expected price:

$$E(\min(p_1, p_2)) = E(p_1) = \int_0^1 \frac{1}{2} (1 + c_1) dc_1 = \frac{3}{4} \quad (I2)$$

The expected profit for firm 1, conditional on c_1 :

$$(p_1 - c_1) \Pr\left(\frac{1}{2}(1 + c_1) < c_2\right) = \frac{1}{2} (1 - c_1) \frac{1}{2} (1 - c_1) = \frac{1}{4} (1 - c_1)^2 \quad (I3a)$$

The expected profit for firm 2, conditional on c_2 :

$$(p_1 - c_2) \Pr\left(\frac{1}{2}(1 + c_1) > c_2\right) = \begin{cases} (1 - c_2)(1 + c_1 - 2c_2) & \text{if } c_2 \geq \frac{1}{2} \\ \frac{1}{2} + \frac{1}{2}c_1 - c_2 & \text{if } c_2 < \frac{1}{2} \end{cases} \quad (I3b)$$

Predictions 1, 2, 3 and 4

Prediction 1: The comparison of the firm 2 bidding differs for different combinations of the relationship between the costs of the two firms and the strategy for firm 2.

- $c_1 > c_2$. Firm 2 is more efficient than firm 1 and it can always outbid firm 1. Then its bid with information p_2^i is always higher than its bid p_2^{ni} in the case with no information due to its lower cost:

$$p_2^i = \frac{1 + c_1}{2} > p_2^{ni} = \frac{1 + c_2}{2}$$

- $c_1 < c_2$. Firm 2 is less efficient than firm 1. It can, however, win as long as $c_2 < p_1$. Then its bid p_2^i is lower than its bid with no information p_2^{ni} due to its higher cost:

$$p_2^i = \frac{1 + c_1}{2} < p_2^{ni} = \frac{1 + c_2}{2}$$

Now consider the case when it is not profitable for firm 2 to win ($c_2 \geq p_1$). For Δ large enough price p_2^i bid is larger than its bid p_2^{ni} in the case with no information:

$$p_2^i = \frac{1 + c_1}{2} + \Delta > p_2^{ni} = \frac{1 + c_2}{2} \quad \text{if } \Delta > \frac{c_2 - c_1}{2}$$

Under the assumption about the cost distributions, the average price bid by the informed firm is higher than its bid with no information.⁵⁴

Prediction 2: To see this, define the victory margin M as the relative difference between the second lowest bid (runner-up) and the first lowest bid (winner).

$$M = \frac{p_{2nd} - p_{1st}}{p_{1st}}$$

Moreover, note that the informed firm in order to secure the victory has an incentive to bid very close to the uninformed firm. However, when the informed firm would rather lose the contract, Δ is set arbitrarily large to make sure that the firm does not get a contract which is not profitable:

$$M_{F2wins} = \frac{p_1 - p_2}{p_2} = \frac{p_1 - p_1}{p_1} = \frac{0}{p_1} \approx 0$$

$$M_{F1wins} = \frac{p_2 - p_1}{p_1} = \frac{p_1 + \Delta - p_1}{p_1} = \frac{\Delta}{p_1} > 0$$

In the case with no information, the margin of victory if firm 2 wins is given by the difference in costs:

⁵⁴I use a simulation that mimics costs drawn from the $U[0, 1]$ distribution to compare patterns in winning and bidding, on average, in the standar case and in the case with one informed firm. Numeric calculations of the overall change in bidding show that bids by informed firms are, on average, higher than their bids with no information.

$$M_{F2wins} = \frac{c_1 - c_2}{c_2} > 0$$

Prediction 3: follows from *S1* and *I1*.

Prediction 4: follows from *S2* and *I2*.

A.1.3 Additional results

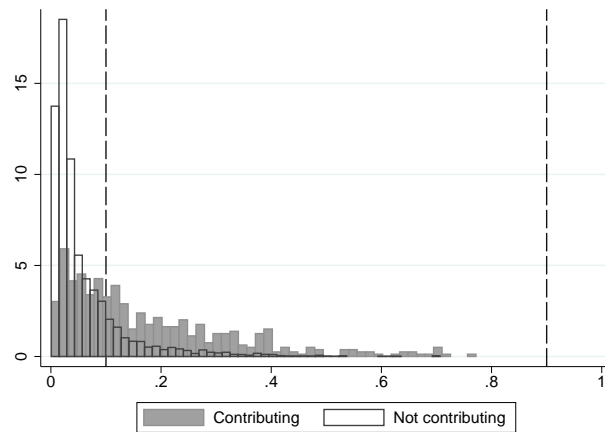
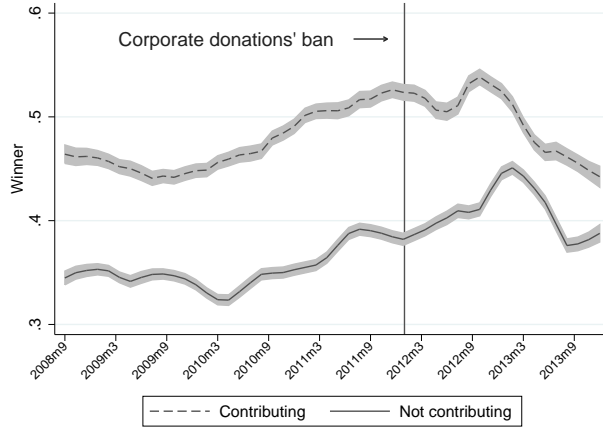
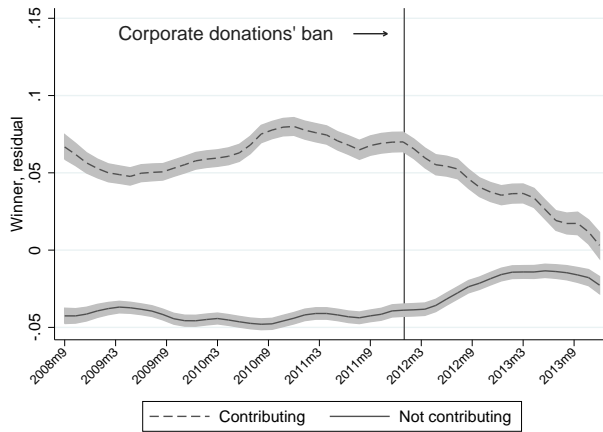


Figure A.1: Being a contributing firm

Notes. Figure shows the density of the predicted propensity to contribute \hat{p} for the two groups of firms. Dashed lines indicate the trimming interval $[0.1, 0.9]$.



(a) Level



(b) Residual

Figure A.2: Probability of winning, trimmed sample

Notes. Figure (a) shows locally smoothed means of the variable *Winner* defined as an indicator for firms which win a contract and Figure (b) – of the residual from the regression of the *Winner* indicator on procurement controls in the trimmed sample.

Table A.1: Predict contribution status

| Dependent variable: | Contribute | | | |
|-----------------------|---------------------|---------------------|---------------------|--------------------|
| | (1) | (2) | (3) | (4) |
| Very large company | 1.835*** (0.365) | 1.439*** (0.396) | 0.372 (0.436) | -0.019 (0.471) |
| Large company | 1.463*** (0.186) | 1.192*** (0.190) | 0.635*** (0.222) | 0.394 (0.249) |
| Medium-sized company | 0.906*** (0.127) | 0.781*** (0.130) | 0.577*** (0.144) | 0.407** (0.176) |
| Log # of employees | | | 0.090 (0.064) | 0.008 (0.084) |
| Log Turnover | | | 0.195*** (0.045) | 0.192** (0.080) |
| Industry FE | X | X | X | X |
| Age controls | | X | X | X |
| Other firm controls | | | | X |
| Pseudo-R ² | 0.15 | 0.17 | 0.17 | 0.15 |
| N | 7,834 | 7,823 | 6,448 | 3,393 |

Notes. Firm-level logistic regression results are shown. The dependent variable in all columns is an indicator *Contribute* for firms that have donated to a political party or to a political campaign. Controls in column 1 include time-invariant firm characteristics (size and industry). Column 2 adds the year of incorporation and the firm's age at the entry in procurement. Column 3 adds the logarithm of turnover and of the number of employees. Column 4 also includes the logarithms of capital, of fixed assets and of current assets. In the interest of space, only coefficients of selected variables are shown. Robust standard errors are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.

Table A.2: Robustness checks

| Dependent variable: | Price bid, log | | | | | | | |
|-----------------------------|-------------------|-------------------|--------------------|-------------------|--------------------|-------------------|-------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Contribute \times Ban | -0.282 (0.240) | -0.282 (0.243) | -0.363* (0.189) | -0.316 (0.197) | -0.363* (0.190) | -0.318 (0.197) | -0.240 (0.193) | -0.283 (0.208) |
| $\hat{p} \times$ Year FE | | | X | X | | | | |
| $\hat{p} \times$ Ban | | | | | X | X | | |
| \hat{p} bins \times Ban | | | | | | | X | X |
| Trimmed sample | X | X | | X | | X | | X |
| Full controls | X | X | X | X | X | X | X | X |
| R ² | 0.47 | 0.46 | 0.48 | 0.47 | 0.48 | 0.47 | 0.48 | 0.47 |
| N | 350,000 | 346,664 | 550,987 | 350,000 | 550,987 | 350,000 | 550,987 | 350,000 |
| # clusters | 1,283 | 1,265 | 5,513 | 1,283 | 5,513 | 1,283 | 5,513 | 1,283 |

Notes. The table reports the difference-in-differences coefficients from OLS regressions. The dependent variable is *Price Bid* defined as a logarithm of the price offer made by firms. The sample only includes tenders which were awarded to the lowest price bidder. *Contribute* is an indicator variable for firms which have donated to a political party or to a political campaign in any previous year. *Ban* is an indicator variable for contracts signed after January 1, 2012. \hat{p} is the predicted propensity of being a contributing firm. \hat{p} bins are 10 percentage point bins of the predicted propensity \hat{p} . Full controls correspond to the specification in column 5 of Table 4. Standard errors clustered at the firm level are shown in parenthesis. *** - significant at 1 percent, ** - significant at 5 percent, * - significant at 10 percent.