Do campaign contributions have an influence on the price of public works?

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ABSTRACT

The objective of this article is to verify empirically how the campaign contributions have an influence on the price of public works. To achieve this objective, we used panel data of public works contracts bid between the years of 2008 and 2013, besides data from the accountability of the election campaigns occurred in 2008, 2010 and 2012. The results of the econometric models estimation indicated that companies that contributed to campaigns were able to increase the value of their contracts in 8 percentage points through contract amendments, in comparison with the amendments of the companies that did not contribute. They also indicated that bids won by companies that contributed to campaigns presented a discount lower than the bids won by non-contributing companies in 1 percentage point. We can conclude that it is essential to evaluate the legality of the contract amendments in the scope of the public works audits when companies that contract with the public authority contributed to campaigns.

Keywords: Bid, Public Works, Campaign Contributions.

1. INTRODUCTION

Currently, there is great concern over the funding of electoral campaigns in Brazil and abroad. This

concern is associated with the feeling that the private companies who fund the campaigns afterwards can have an influence on the government through political connections. This occurs because corporate funding of campaigns in Brazil is preponderant. According to data of the Supreme Electoral Court (TSE) for the 2010 elections, 75% of the contributions came from legal entities (companies), 15% from natural person and only 10% of resources from the candidates themselves.

Still according to TSE data, from the 10 greatest campaign contributions in the elections of 2012, 6 come from companies of the civil engineering industry. When the company contributions made by economic segments are compared, we find that the civil construction industries contributed with more than R$ 600 million. The second segment that contributed the most was the manufacturing industry, with amounts slightly over R$ 300 million.

Part of the international literature about the topic defends that there is a relation between companies that contributed to campaigns and benefits received by the government elected. Snyder Jr. (1990) states that great part of the researchers considers that campaign contributors view their contributions as an investment, expecting something in return in the future. However, the candidates expect the campaign contributions to help them win the elections. The explanation is intuitive: a return rate is expected from the campaign contributions, as well as from all the investments, forcing politicians to give any type of benefit to the contributors in exchange for campaign contributions.

Claessensa, Feijend and Laeven (2008) found empirical evidence for the hypothesis that campaign-funding purchases political favors for the companies that contribute. The authors explored a series of data at the company-candidate level in the campaign contributions for the elections of 1998 and 2002 in Brazil. The authors found that the access to bank financing is one of these favors.

2. CAMPAIGN CONTRIBUTIONS AND PUBLIC WORKS

The authors Boas, Hidalgo and Richardson (2014) argued that the history of campaign funding scandals in Brazil appears to have more relation with the civil engineering industry, which has a substantial amount of resources in contracts with the Federal Government. These of public works contracts can be directed at specific companies. The authors affirm that the victory of a candidate in elections in Brazil brings substantial increases in the number of contracts with the government to the campaign contributor.

Coviello (2016) used a set of data from bids under the responsibility of several mayors of Italian cities to provide empirical evidence regarding the power of influence of such politicians on public procurement. The main result obtained indicates that when the politicians

remain in power for a long period, there is a systematic deterioration of the bid mechanism operation. One observes less competition, higher cost of public works and increase in the probability of the contract being awarded to a company with political connections and greater probability of a company being awarded more frequently.

The author still emphasized that the works bid in the second mandate of a mayor have a discount in the bid 5.7% lower than the public works bid in the first mandate. In addition, competitiveness in the bid is reduced in 11.7%, in other words, the number of competitors decreases.

In their study, Goldman, Rocholl and So (2010), analyzed if the political connections in the United States affected the allocation of contracts awarded to companies with these connections after the 1994 midterm election, when the majority control of the House of Representatives and of the Senate changed from the Democratic Party to the Republican Party; and after the 2000 presidential election, when the Presidency changed from the Democratic Party to the Republican Party. The main conclusions of the authors show that, after these elections, companies connected to the republicans are more likely to attempt an increase in the total value of their contracts (greater number of contracts), while the democratic companies are more likely to go through a respective decrease. These results remain statistically significant after the control of the company characteristics, geography, as well as the industry where the company operates.

Therefore, the technical literature related indicates that there is evidence of favoring companies that were campaign donors in public procurement, whether they are from the construction industry or other sectors. Nevertheless, the study did not analyze how this favoritism occurs with regard to public works. The existing literature limited itself to evaluate: the number of contracts obtained by the companies that contributed with campaigns, according to what Bias, Hidalgo and Richardson (2014) and Goldman, Rocholl and SO (2010) analyzed; and the conditions at the time of the bid process, according to Coviello (2016). Thus, in this article we study how favoritism to companies that contributed with campaigns happens: if it is at the time of the bid process, throughout contract execution or at both moments. The amounts involved are also discussed.

3. METHODOLOGY

The goal of this article is to verify empirically how campaign contributions have an influence on the price of public works. The intention is to study the influence on the price of the works from two dependent variables (two econometric models): contract amendments signed during contract execution and discount offered in the bids in relation to the reference price.

More specifically, we try to test if companies that contributed with campaigns were able to increase the value of their contracts through amendments in comparison with the amendments of the companies that did not contribute; and if bids won by companies that contributed with campaigns had a lower discount than the bids won by those that did not contribute. For this purpose, we used panel data of public works, organized per construction companies (individual) and per 2-year periods, referring to the period of influence of the electoral contributions, periods of 2008-2009; 2010-2011; and 2012-2013.

3.1 DATA COLLECTION

Data related to the public works bids were collected on the site of the National Transportation Infrastructure Department (DNIT). Afterwards, data of the bids performed electronically through the Federal Government "Comprasnet" system, from the, were added. Following, data from the "Sindec" system, which is maintained by DNIT as a way to obtain information about the contracts, were collected. Thus, the primary database was created, with 423 works that refer to the period of 2008 to 2013, totalizing a value of about R$ 28 billion. It must be emphasized that for each company in each two-year period, the contract with higher value was selected, since a same company can have more than one contract each biennium.

The bids prior to 2008 are not included in the electronic systems of the government agency. In order to systematize the information of these works, the access to the hard copy of the processes, distributed to the DNIT Regional Superintendencies in the 26 Brazilian states, would be necessary. This was not possible in this study.

From the primary base of the 423 works, data related to the electoral campaign contributions collected from the accounting to Electoral Justice were added and separated into three groups.

The first group refers to the contributions by companies contracted by DNIT to the candidates for mayor and city-councilor, federal deputies and senators in 2010; lastly, the third and last group refers to the value of the contributions by the companies to the candidates for mayor and city councilor in 2012.

Below, is the complete description of the bid and contracts data used in this study (Table 1), followed by their respective statistics (Table 2).

Table 1:
Variables description

Variable	Description
Amendments	Dependent variable – model 1. Specifies the percentage of contract increase in relation to the initial value of the contract, obtained by the companies throughout the execution of the work.
Discount	Dependent Variable – model 2. Corresponds to the percentage range that the bid brought to the refference price of the work (estimated budget or maximum price). Its calculation occurs by the difference between the price offered by the wining company (PO) and the price estimated by the Administration (pe) over the (PE), according to the following equation: Yn=(pe-po)/(pe).
Donation	Dummy variable that identifies with 1 if The company Winner of the bid contributed with candidates or political parties in time t and 0, otherwise.
2008-2009; 2010-2011; 2012-2013	Dummy variable that attributes 1 for the period when the work wa bid and 0 fot the others.
Companies that submitted bids	Variable that specifies the number of companies that were enabled and submited of the bid - describes the competitors in the bid.
Work Type	The works were divided into three types, starting with the most complex ones. The first type represents the works of implantation, duplication and restauration; the second type the works of maintenance (Crema); and the third type the works of conservation. This manner, the variable Work Type has the values 1, 2 and 3, respectively, for each work type.
Work Value	Variable that specifies the value of the work that is in the advertiesement for bids. Values in million reais.
Total Asset	Variable that specifies the total of assets of the companies that submited bids in relation of the Year of 2013. Values in million reais.

Source: Own creation.

Table 2:

Variable	Condition	Average	Standard Deviation	Min.	Max.	Observations
Discount	overall	0.1255644	0.1361544	-0.0105592	0.5400617	N = 423
	between		0.1222388	0.000001	0.5280025	n = 257
	within		0.0666281	-0.1049047	0.36592	T-bar = 1.64591
Bidders	overall	6.799054	5.241088	1	34	N = 423
	between		4.229107	1	24	n = 257
	within		3.324772	-3.200946	20.46572	T-bar = 1.64591
Work cost	overall	66.14127	91.1214	0.1490619	605.4526	N = 423
	between		85.79571	0.1490619	605.4526	n = 257
	within		46.14628	-175.013	397.8735	T-bar = 1.64591
Kind of work	overall	1.817967	0.7894197	1	3	N = 423
	between		0.7667595	1	3	n = 257
	within		0.3123321	0.4846336	3.1513	T-bar = 1.64591
Donation	overall	0.4066194	0.4917843	0	1	N = 423
	between		0.4417286	0	1	n = 257
	within		0.2490107	-0.2600473	1.073286	T-bar = 1.64591
Total assets	overall	915.1781	14570.71	0	299686.2	N = 423
	between		18689.58	0	299686.2	n = 257
	within		0	915.1781	915.1781	T-bar = 1.64591
2008-2009	overall	0.3806147	0.4861129	0	1	N = 423
	between		0.3792509	0	1	n = 257
	within		0.3775911	-0.286052	1.047281	T-bar = 1.64591
2010-2011	overall	0.2576832	0.4378765	0	1	N = 423
	between		0.3225955	0	1	n = 257
	within		0.3424888	-0.2423168	0.9243499	T-bar = 1.64591
2012-2013	overall	0.3617021	0.4810622	0	1	N = 423
	between		0.3873731	0	1	n = 257
	within		0.3631963	-0.1382979	1.028369	T-bar = 1.64591

Source: Own creation.

3.2 ECONOMETRIC MODEL

To verify if the campaign donor companies were able to increase the value of their contracts through contract amendments in comparison with the amendments of companies that did not contribute, as well as to check if bids won by donating companies had a lower discount those won by the companies that did not contribute, the variables described in Table 1 were tested through the following econometric model:

$$Y_{it} = \alpha_t + \boldsymbol{X_{it}}.\boldsymbol{\beta_k} + \gamma.D_{it} + (u_i + \varepsilon_{it})$$

Where Y_{it} represents the dependent variable studied: contract amendments (model 1) or discount in the bid (model 2), α_t are *dummies* of period, $\boldsymbol{X_{it}}$ is a vector 1 x k of variables that variate throughout *i* (company) and *t* (period), β_k is a vector k x 1 of coefficients of $\boldsymbol{X_{it}}$, and γ is the coefficient of interest of the study, and D_{it} indicates if the company *i* contributed with electoral campaigns in the period *t*. The error term (u_i+ε_{it}) has a fixed parcel on the time, u_i, in what concerns the characteristics of company *i*, known as individual heterogeneity, and ε_{it} is the error term that variates throughout *i* and *t*, , known as idiosyncratic error.

It was chosen to use panel data because the individuals studied, the companies, can have effects not observed included in time, such as ability to negotiate with the public authority, technical qualification, etc. Below is the result of the econometric model estimation result, shown in Table 3.

4. RESULTS

4.1 AMENDMENTS TO THE CONTRACTS OF PUBLIC WORKS (FE AMENDMENT MODEL)

In public works, the companies propose contractual changes during the execution of the works, either to better adequate the project originally submitted to bid or to correct non-identified mistakes before the work initiates. These contractual changes are called amendments.

Table 3:
Estimation Results

Variable	(1) FE assets	(2) RE discount
Bidders	0.000527	0.00990***
	(-0.00392)	(-0.000808)
Work cost	-1.10E-06	-4.51E-06
	(-0.0001)	(-0.0000273)
Kind of work	0.0435*	0.0842***
	(-0.0236)	(-0.0075)
Donation	0.0812**	-0.0115
	(-0.0348)	(-0.00832)
2010-2011	-0.129***	0.0464***
	(-0.0358)	(-0.00924)
2012-2013	-0.163***	0.0451***
	(-0.0294)	(-0.00976)
Total assets	-	-2.07e-07***
	-	(-0.0000000385)
Constant	0.0716	-0.118***
	(-0.0497)	(-0.013)
Observations	423	423
R-squared	0.234	
Number of companies	257	257
robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Source: Own creation.

When the results of model 1 in Table 3 are analyzed, called FE amendments, it can be verified that companies that contributed with campaigns achieved amendments 8 percentage points higher than the amendments achieved by the companies that did not contribute, at a significance level of 2%. In other words, companies that contributed with campaigns were able to increase the value of their contracts in 8 percentage points in relation to the amendments made by the companies that did not contribute.

In this sense, the survey question is answered in the following manner: public works executed by companies that contributed with campaigns are 8% more costly than the public works executed by companies that did not contribute.

It is important to mention that the result of 8 percentage points was obtained through the control of several factors: number of companies that submitted bids (competition environment); value of work; type of work (work complexity); bid period (time factor).

In addition, the econometric technique of data estimation in panel by fixed effects was used aiming to eliminate sources of endogeneity of the model (related to the individual heterogeneity of the companies), according to what is described in Wooldridge (2010).

4.2 DISCOUT IN THE PUBLIC WORKS BIDS

In public bids, the companies offer a discount in relation to the reference price of the Administration to be awarded contracts. The bids won by the companies that contributed with campaigns presented a discount lower than the bids won by the companies that did not contribute, according to model 2 on Table 3, called RE discount. This difference between the discount offered by the donating companies and the ones that dis not donate, is approximately 1 percentage point, at a significance level of 16%.

Despite the low statistical significance, portrayed by a p-value of 16%, we can emphasize the economic sign of the estimated variable that remains negative. In other words, companies that contributed with campaigns win bids with discounts lower than the discounts offered by the companies that did not contribute that also won bids.

Some peculiarities of the econometric estimate used for the discount variable must be mentioned. In this case, the panel data model using random effects was estimated, which is more efficient than the fixed effect method when the individual heterogeneity portion is

not correlated with the other independent variables of the model. The Hausman test between the fixed effects model and the random effects model presented a result chi 2 of 0.3, which indicates that the random effects model is not rejected for model 2.

5. CONCLUSION

The results found in the proposed econometric models estimation showed that companies that contributed with campaigns were able to increase the value of their contracts in 8 percentage points through contract amendments in comparison with the amendments of the companies that did not contribute. In addition, the bids won by donating companies presented a discount 1 percentage point lower than the bids won by the companies that did not contribute.

Therefore, the results indicate that campaign contributions have an influence on the price of public works in approximately 9 percentage points, or, works executed by donating companies are 9% more costly than works executed by companies that do not contribute, which answers the survey question proposed in this article.

In the sample analyzed, 40% of the works were contracted with companies that contributed with campaign, according to statistics of the variables presented in Table 2. Considering that the value of these works in the sample studied totaled R$ 11 billion (40% x R$ 28 billion), we can conclude that campaign contributions are related to a R$ 1 billion (9% x R$ 11 billion) increase in the price of public works. This if we consider only the National Transportation Infrastructure Department in the period between 2008 and 2013 for the sample analyzed.

In this sense, the evaluation of the legality of the contract amendments is essential when companies that contract with the public authority are campaign donors, since the estimation of the econometric models indicated strong correlation between campaign contributions and greater values of contract amendments, when compared with the contract amendments of companies that did not contribute. It must be emphasized that this result was reached by controlling several variables, such as value of work, type of work, number of companies that submitted bids, period and individual heterogeneity at the company level. That is, there is statistical evidence that high values of amendments are intrinsically connected to the fact of the company contracted being a campaign donor.

Finally, it is important to mention that the methodology used in this study can be used for quantification of other variables that can influence the prices of public works. For instance, instead of using campaign contributions as a variable of study, other variables could have been used: changes in legislation of contracts and bids aiming to evaluate its impact on the price of public works; change of managers of govern-

ment agencies or state-owned enterprises to evaluate the performance of the new management, etc.

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