

Manipulation in public procurement auctions with endogenous entry¹

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1. Motivation

Public procurement is often treated as one of key instruments of economic policy worldwide. However, a variety of rent-seeking activities - from bid rigging to poor contract performance – generates high amount of public waste that makes this sphere inefficient all over the world. Governments in many countries try to solve this problem by conducting reforms in this sector, and introduction of electronic procurement (hereinafter e-procurement) is among most popular reforms. This reform usually change a variety of different rules: lower entry costs of companies, higher transparency, a wider range of public procurement procedures etc. – so it is impossible to capture the separate effect of each change.

Meanwhile we have unique situation in Russia where the second step of e-procurement reform means only shift from open-bid auctions to e-auctions. Since January 2011 new introduced e-auctions have been organized online, instead of prior open-bid auctions, which were organized in traditional way in public offices. All other procurement rules were exactly the same both before and after the reform. Hence, in terms of the model proposed by Ostrovnaya and Podkolzina (2015), the shift from outcry auctions to e-auctions induces the decrease in the entry cost of companies, mainly, by reduced paperwork and transport costs of participation in auctions.

2. Short literature review

Models of auctions with endogenous entry examine how characteristics of a public auction, such as the entry cost, the reserve price and the number of companies in the market, affect the entry of companies and contract prices. However none of empirical papers explores how the entry cost affects the contract price in the potentially corrupt environment. As corruption is wide-spread in public procurement of different countries (e.g. Auriol, Straub, & Flochel,

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2016; Boehm & Olaya, 2006), we believe that filling this gap in the literature is important for both theoretical and practical reasons.

Ostrovnyaya and Podkolzina (2015) propose a theoretical model of endogenous entry in public procurement auction. They show that lowering entry cost decreases the contract price if the procurer is non-corrupt and may have no impact on it or even increase it if the procurer is corrupt. This difference comes from higher incentives to make a corrupt deal in the latter case. Lower entry cost increases an optimal bribe that a company is ready to pay; hence, a corrupt behavior will be more probable.

3. Purpose of the study

The purpose of this project is to examine the impact of two entry barriers: entry cost related to paperwork and restrictions set by the procurer - on price competition in public procurement auctions. Although it is questionable to point on corruption without information of side payments, one can easily observe procurement outcomes of different strategies chosen by different public procurers and use them as proxies for their incentives.

4. Methodology and data

We analyze differences in relative contract prices and numbers of bids between two groups of auctions (sealed-bid auctions and open-auctions) and two periods (2008-2010 and 2011-2013 – before and after e-procurement reform, respectively). The introduction of e-auctions changed entry costs, so quasi-experimental group consists of traditional and electronic open-bid auctions on gasoline. Control group includes sealed-bid auctions, because there was no change in this public procedure.

Gasoline procurement via gas stations best suits the purpose of our analysis. First, gasoline is a homogenous product, and gasoline delivered via gas stations has the same quality level in the public procurement and the private market. Hence, differences in contract prices reflect the public waste caused by the rent-seeking rather than the quality difference. Second, a typical project of a gasoline public contract is clearly organized. It contains information about the subject of the contract, the expected contract duration and different requirements to potential bidders. Such a well-organized structure makes possible to indicate objective criteria of contract manipulation schemes.

As the number of bids is endogenous to the restrictions set by the public procurer, we implement 2SLS regression. In several specifications of the model we use different restrictions and combination of them as instrumental variables in the first step regression (e.g. requirements to the geographic location or number of gas stations, high volume of gasoline per day in the contract, admission of network companies only).

To ensure greater comparability of data we narrowed the dataset to public auctions of public procurers located in the capital of Nizhnii Novgorod region, Nizhny Novgorod, which purchased gasoline both before and after the reform. We collected the data on public auctions held in 2008-2010 from the regional web-site (www.goszakaz.nnov.ru) and in 2011-2013 from the federal web-site (www.zakupki.gov.ru). The final dataset consists of 603 observations, which contain full information about the public auction and the corresponding contract.

5. Main results

Our results show joint impact of entry costs and restriction techniques used by procurers on number of bidders and relative prices in procurement auctions. Decrease in the entry cost did not encourage significantly more bidders to enter, but encourage them to bid more aggressively that lowered contract prices. However if a procurer set restrictive contract terms, they decreased entry of bidders and thus led to higher contract prices. The detailed case analysis of two procurers situated in one district of Nizhnii Novgorod confirms this result. Several robustness checks (with different types of restrictions, negative binomial regression for the first step, inclusion of additional control variables) demonstrate that results do not change.

References

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