Journal of Public Economics 109 (2014) 76–100

Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/jpube

Publicity requirements in public procurement: Evidence from a regression discontinuity design ☆

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ARTICLE INFO

Article history:
Received 11 December 2012
Received in revised form 2 October 2013
Accepted 15 October 2013
Available online 6 November 2013

JEL classification:
D02
D44
C31
L11

Keywords:
Publicity
Procurement
Regression discontinuity
Public spending

ABSTRACT

We document whether and how publicizing a public procurement auction causally affects entry and the costs of procurement. We run a regression discontinuity design analysis on a large database of Italian procurement auctions. Auctions with a value above the threshold must be publicized in the Regional Official Gazette and two provincial newspapers. We find that the increased publicity requirement induces more entry and higher winning rebates, which reduces the costs of procurement and rationalizes public spending. The evidence suggests that the number of bidders is the channel through which publicity affects rebates. Increased publicity also selects different winners: it increases the likelihood that the winner hails from outside the region of the public administration and that the winner is a large company. Such companies tend to win repeated auctions gaining market share. Publicity seems to have no adverse effect on the ex-post renegotiations of the works, as measured by the percent of works delivered with delay or that are subcontracted. Estimates are robust to alternative measures of publicity, alternative model specifications, different sample selections, to a falsification analysis at simulated thresholds and to the possibility that firms learn about auctions from a web-based for-profit information provider.

1. Introduction

Policy makers believe that public procurement auctions need to be publicized more. Regulators, both at the national and at the supranational level, have therefore moved to mandate publicity. These regulations typically take the form of enhanced publicity requirements for auctions exceeding a certain value threshold. The EU mandates such advertising requirements, as does the US Federal Government.[1] Lack of publicity is seen as a sign of limited competition, insufficient transparency, and possibly of corruption.[2]

Despite this widespread regulatory intervention, there is, to date, no empirical evidence showing that publicity increases bidder participation, nor that increased participation lowers procurement costs. In fact, the academic literature seemingly casts doubt on the first channel: surprisingly, lowering entry costs (i.e., enlarging potential competition) for bidders is predicted to decrease entry. The data utilized in the literature (e.g., Li and Zheng, 2009; Marmer et al., 2013a; Roberts and Sweeting, 2011), it should be stressed, do not feature exogenous variation in potential competition and entry costs, and so their predictions are out-of-sample counterfactuals coming from a structural model.[3]

☆ We thank Josh Angrist, Alessandro Gavazza, Andrea Ichino, Nicola Persico, and Marcello Sartarelli for their innumerable suggestions. We also thank seminar participants at ASSET2007, CSEF, CONSIP, EER-Clinique, EIEF-IO, EUI, University of Bologna, MIT, University of Naples, University of Padua, University of Siena, FGV-Sao Paulo, Oxford University, Queen's University and PUC-RIO, for useful comments. A special thanks goes to G. Brienza, A. Leggio and R. Oliva from the Italian Authority for the Surveillance of Public Procurement (*A.V.C.P.*), and to Telemat-Reed Business Information *S.p.A* for making the auction data available. The views expressed in this article are the authors' own.

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[1] Directive 1159/2000 European Commission. In the U.S., the Federal Acquisition Regulation (5.101) mandates all procurement agencies to publicize the procurement contracts with a value exceeding $25,000 on the Commerce Business Daily, while those with a value below the threshold need only be publicized in a public place, or on any appropriate electronic mean.

[2] The WTO and the OECD recently published two documents describing how publicity increases transparency and accountability, and prevents corruption in procurement (see World Trade Organization and Working Group on Transparency in Government Procurement, 2003; and OECD, 2005). Bandiera et al. (2009) and Ferraz and Finan (2011) document the incidence of corruption on public spending analyzing public procurement data for Italy and Brazil, respectively.

[3] Despite the fact that Li and Zheng (2009) and Marmer et al., 2013a use the same data set, the two papers disagree on whether the costs of procurements are reduced with a reduction of entry costs. Roberts and Sweeting (2011) find the same effect as Marmer et al. (2013a) using data on USFS timer auctions. The discrepancy is due to different modeling assumptions.

0047-2727/$ – see front matter.
http://dx.doi.org/10.1016/j.jpubeco.2013.10.008

This paper attempts to provide direct evidence about whether, and how, publicity affects entry and the costs of public procurement, in the context of Italian procurement auctions. This paper identifies the effect of increased publicity, a proxy for the increase in the number of (potential) entrants that are more likely to be informed about upcoming auctions, from a discontinuity in publicity requirements. Auctions with a value (reserve price) that exceeds 500,000 euros, are required by law to be publicized more broadly in the Regional Official Gazette and in two provincial newspapers, while those below the threshold may be publicized only on the notice board in the premises of the public administration. By carefully comparing outcomes in auctions around this threshold, we are able to directly identify the causal effect of publicity on entry and the costs of procurement.

Our main finding is that an increase in publicity increases the number of bidders participating in the auctions by 9.3%, and increases the winning rebate by 7%. A back-of-the-envelope calculation suggests that a hypothetical public work with a value of 500,000 euros costs the government about 35,000 euros more if it is publicized at the local level compared to the regional level.[4] This finding seems to lend support to the regulator's view that procurement entities need to be forced to advertise.

The auction mechanism we study is somewhat unconventional. It has some "beauty contest" features whereby the highest bidder does not necessarily win.[5] This mechanism is used in procurement auctions around the world. Decarolis (2011) shows that the specific features of this mechanism raise the theoretical possibility that increased participation in the auction need not result in greater competition. If so, then an increase in publicity need not have any effect on the cost of procurement. However, Conley and Decarolis (2012) show theoretically that in such an auction, increased participation may indeed result in more aggressive bidding.[6] Their theoretical result is consistent with Fig. 2 in this paper, which documents a positive and significant relationship between the number of bidders and the rebates submitted by these bidders (i.e., their bidding strategies).[7] Taken together, the theory and the evidence suggest that, despite the fact that the auction mechanism is unconventional, greater participation is good for the auctioneer just as in a conventional auction.[8]

Our empirical results are obtained relying on two building blocks. First, we rule out the possibility of perfect manipulation of an auction's value (reserve price) around the discontinuity threshold, using graphical and statistical tests discussed by McCrary (2008) and Lee (2008). This procedure supports the assumption that the publicity requirements (the treatment) are quasi-experimentally assigned across auctions. Second, the institutional setting is such that no another policy (i.e., a change in the adjudication mechanism) changes around the threshold. If there was such a change it would confound the estimates of the causal effect of publicity.

Our findings suggest that local procurement authorities do in fact underinvest in publicity limiting the pool of (potential) participants by rising search (entry) costs. This underinvestment may reflect collusive relationships between the auctioneer and some favored bidders, reducing entry and winning rebates, and increasing the costs of procurement.[9] Such collusion has been found in other aspects of Italian procurement auctions (Coviello and Gagliarducci, 2012). Our paper is the first, to our knowledge, to provide empirical support for mandatory publicity as a regulatory tool to increase transparency.

The paper proceeds as follows. In Sections 2 and 3 we present the institutional framework and the data. In Sections 4 and 5 we illustrate the regression discontinuity design analysis and present the evidence.

In Sections 6 we discuss extensions. We look at a variety of auctions' outcomes (i.e., the distribution of the rebates, the identity of the winning firms, the delays in the delivery of the works and the probability that works are subcontracted), and repeat our RDD analysis in a small sub-sample of first-price auctions. Consistent with publicity requirements being important, we find that an increase in the level of publicity shifts the distribution of the bids toward higher rebates. It increases the minimum rebate, the anomaly threshold and the maximum rebate by 8%, 7%, and 7%, respectively. Publicity also increases the number of excluded rebates above the anomaly threshold by 10%.[10] When we look at the effects of publicity on the type of the winner, we find that publicity also increases the probability that the contract is awarded to a firm that hails from outside the region of the public administration by 12%, to a small firm by −9.3% and to the same firm repeatedly by 12.6%. Increased publicity has no effect on ex-post renegotiations of the procurement contract, since it has no effects on the probability that works are delivered after the contractual deadline and that are subcontracted. Thus enlarging the pool of potential entrants does not seem to generate any relevant trade-off between price and ex-post renegotiations for these public works. Publicity also increases the number of bidders and the winning rebate in a small sub-sample of first-price auctions managed by the municipality and county of Turin.

In Section 7 we assess the robustness of the results. In Section 7.1 we: redefine the treatment variable; experiment with different model specifications; select different samples (bandwidths) around the threshold as in Imbens and Kalyanaraman (2013) and include to the baseline model a large number of characteristics of the works and the public administration managing the auction. Estimates are robust and confirm the effects of publicity. In Section 7.2 we show that our results are not driven by random chance or by other thresholds; we find no effects of publicity when we repeat the (falsification) analysis considering four simulated thresholds above and below the true publicity threshold.

In Section 8 we inspect the mechanism of the effects of publicity. Specifically, we test whether or not publicly provided publicity (official publicity) might not matter when privately provided publicity (unofficial publicity) is available on-line and not particularly expensive. We empirically test this possibility by showing that publicly provided publicity causes a substantial increase in privately provided publicity. In addition, we find that there is possibly another channel. We find that after controlling for privately provided publicity, publicly provided publicity significantly increases winning rebates. This evidence, however, is not conclusive since we only control for unofficial publicity provided by one information provider.

In Section 9 we conclude that publicizing the procurement notice increases the overall level of competition reducing the costs of procurement. Publicity also selects different winners, and does not affect the ex-post renegotiations of the works.

[4] Net of the costs of publicity.

[5] See Section 2 for institutional details.

[6] In their Proposition 3 this outcome is the result of competition among cartels and independent bidders.

[7] We find a similar positive and significant relationship between the number of bidders and the winning rebate (the maximum rebate) in a (small) sub-sample of first-price auctions managed by the municipality and county of Turin from the 2003, which we analyze in Section 6.3.

[8] This is in line with the experimental study of Chang et al. (2013), which shows that the average bid mechanism performs quite well: a) at preventing bidder losses; b) at reducing the price paid by the auctioneer.

[9] In our data, one standard deviation increase in corruption is associated with a 7.3% increase in the probability that the call for tender is not published. We measure corruption at provincial level using the Golden and Picci (2005) Index. This index measures the differences between the expenses in public infrastructures and the availability of infrastructures. This correlation is not reported but available on request.

[10] The auction mechanism is explained in Section 2.