Set-asides: the not-so-clear side of public procurement

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Abstract

Set aside procedures in public procurement are those reserved for a sub-class of bidders, such as small and medium enterprises (SMEs) only, as a tool of the preferential treatment of SMEs by many governments. Prior studies and our results indicate these set-asides reduce costs of government contracting. If they are cheaper, why should regulations enforce them, and why do so on a limited scale? Using the public database of procurement procedures in the Russian Federation, we first show that SME-focused set-aside procedures indeed attract a larger number of participants and result in a larger rebate for contracting authorities (CA), however the vast majority of CAs strictly prefer non set-aside procedures: the share of set-asides is significantly below the threshold dictated by the Russian regulation. We then turn to factors that make CAs avoid set-asides – these are regional, CA-specific and contract-specific – and relate them to uncertainty and asymmetric information problems, which may be elevated in set-asides and thus counteract the cost-reduction argument. Our findings suggest results on economic benefits of set-aside procedures should be taken with a pinch of salt, and more attention should be paid to perceived risks of procurement from SMEs.

Keywords: small and medium enterprises, public procurement, preferential treatment, set-asides, rebate.

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1. Introduction

Governments support small and medium enterprises (SMEs) to improve competition, promote innovation, contribute to economic development, reduce poverty, among other reasons.[1] Support programmes include limiting administrative pressure and reducing fiscal burdens on SMEs, simplifying the registration and licensing, concessional lending and improving access of small business to procurement of goods, works, services for public and municipal needs and to procurement for the needs of companies with state participation. Our focus is on the preferential treatment of SMEs in public procurement, namely on the approach to set aside a fraction of contracts for them.[2] On the one hand, the policy of requiring a certain proportion of public purchases to be done through SMEs, is internationally widespread (see, e.g., Denes, 1997; Nakabayashi, 2013). On the other hand, empirical evidence increasingly suggests procurement from SMEs through such set-aside procedures is no more costly than purchases through other, unrestricted, procedures, where large businesses may participate, too (see, on top of the above, Reis and Cabral, 2015, for SME support; Marion, 2009, for the support of disadvantaged businesses[3]; Jehiel and Lamy, 2019, for a theoretical justification of entry restrictions in auctions). If the latter argument holds, why don't contracting authorities voluntarily shift towards working with SMEs where possible? We draw on the Russian public procurement data, including federal, regional and municipal contracting authorities (CAs), their territorial bodies and enterprises financed from the

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[1] See, e.g., discussions of reasons and policies of SME support in Curran (2000) and Benett (2008) for advanced economies, and Smallbone and Welter (2001) for transition economies.

[2] A second approach is to provide bid subsidies to firms. Athey et al. (2013) compare the two in the context of the U.S. Forest Service timber sale programme and find set-asides reduce efficiency and revenue from timber auctions, while subsidies do not. It is still unclear if results are generalisable to procurement auctions (the main difference being participants in the latter are competing for the opportunity to earn money, not to spend it). Krasnokutskaya and Seim (2011) emphasise that subsidies not only increase SME participation but also force larger companies to bid more aggressively, which helps lower the cost of procurement, yet a distortion to incentives to participate limits or even reverses the effect.

[3] While Marion (2009) finds removal of preferential treatments of disadvantaged businesses is associated with a 5.6% drop in procurement prices, this drop is not due to lack of productivity of minority firms in general, but rather due to higher costs of firms operating in high-minority areas.

Federal budget, to investigate factors that make contractors unwilling to purchase from SMEs.

In Russia, public contractors are required to dedicate at least 15% of their total annual procurement volumes to SMEs. Similar provisions exist in the U.S. (where SMEs benefit from having exclusive access to federal procurement contracts between $25,000 and $100, see, e.g., Athey et al., 2013) and in Japan (Nakabayashi, 2013, reports a spending target to SMEs of 50,1%, as of 2007, yet this was only with respect to the central government). The relatively low threshold in Russia, on the one hand, signals the government's priority to support SMEs, yet, on the other hand, provides a lot of freedom for contractors to decide whether a particular procedure should be set aside or not. Our objective is to investigate what drives these decisions. Are set-asides more efficient, as in the studies we reviewed above? How likely are contractors to use set-asides? What other factors interfere? These are our primary questions.

Rather uniquely, public procurement in Russia is regulated by two different legislations (federal laws 44FL and 223FL) applicable to different types of contractors. The 44FL covers all government (federal, regional and municipal) bodies and publicly financed institutions, while the 223FL applies to state corporations, natural monopolies, and other companies with over 50% state participation; publicly financed institutions that engage in profit-generating activities, use the 44FL for their purchases from public funding and the 223FL for those from the extra revenue generated. Importantly, the 44FL is more prescriptive with respect to procedures and the whole procurement process, while the 223FL only governs the main principles to adhere to, leaving the choice of procedures to the contractors (we discuss this difference in more detail below, when we describe the institutional setting). We would thus expect contractors under 223FL to be able to more flexibly select procedures and make almost unconstrained decisions with respect to set aside or not to set aside.

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Theoretically, if set-asides are more beneficial, the legislative threshold should be non-binding, and contractors under 223FL should use set-asides more frequently than under 44FL. This, however, is at odds with what we find.

Using data on over 20 000 contracts concluded in 2017, covering 720 contractors in 40 (out 85) regions of the Russian Federation in all the 8 Federal districts, we first find set-aside procedures on average generate an about 6% higher rebate than procedures open to all participants; the number of participants in set-asides is on average by 17-20% higher. Along with that, only a quarter of procedures in our 44FL sub-sample were set aside for SME participation (which is higher than the legal threshold), and just under 5 per cent of procedures in the 223FL sub-sample were set aside (under the 10% threshold dictated by 223FL in 2017). The threshold is clearly non-binding for 44FL but the less constrained 223FL-contractors use set-asides significantly less frequently. Factors that affect the decision of contracting authorities not to set aside may be related to a high degree of asymmetric information between the contractor and the suppliers, and high perceived uncertainty with respect to meeting contractual obligations.

Our results thus support the view that purchasing through SME-dedicated set-aside procedures brings about economic benefits: the economic efficiency and competition appear higher in them. At the same time, we shed some light on the apparently paradoxical unwillingness of contractors to set aside more procedures for SMEs only. Given the factors we detect relate to perceived uncertainty and asymmetric information, the effectiveness of SME support through preferential treatment in public procurement could be improved by harnessing their impact. This would involve improving the quantity and the quality of information available to contractors about SME-suppliers (e.g. through standardized questionnaires, databases of suppliers, pre-tender communication and other means of

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reputation signalling), and reducing economic risks of non-performance (possibly, through insurance and/or risk-sharing in an assisted consortium building between SMEs).

2. Theoretical background and institutional framework

A small enterprise is a commercial organization that carries out entrepreneurial activities in order to derive benefits at a certain level of risk and has various legal forms that are regulated by legislative acts of every country. In Russia, small and medium enterprises are companies in which the average number of employees for every preceding year does not exceed 250 people.[4] As of 2017, Russia had more than 6,5 million small and medium enterprises (ROSSTAT database), accounting for 27% of the country's GDP. In OECD countries, their contribution to GDP amounts 50-60%. However, the share of public contracts won by SMEs is significantly less than the share of SMEs in the economy (in particular, according to the turnover and the value added). Policy measures (preferential treatment) to attract SMEs in public contracts has not changed this gap and has not led to an even greater increase in the share of SMEs in the economy. In addition, over the period 2008–2014, the number of SMEs (average over the year) decreased in 14 EU countries: in Spain, Portugal, Greece, Estonia, Italy and a number of others, despite the fact that the productivity of small business grew in almost all these countries (World Bank Report, 2016).

In Russia, the law on the contract system (44-FL) includes the requirement that small business should be given a "quota" (purchases only from the SMEs) no less than 15% of the total annual volume of the CAs purchases (Federal Law No. 44). This Law regulates on public bodies: federal, regional and municipal. Another Federal Law No. 223 FL "On Procurement of Goods, Works, Services by Certain Types of Legal Entities" regulates the

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[4] Federal Law No. 209-FL "The development of small and medium enterprises in the Russian Federation" (January 1, 2008). Researchers debate the appropriateness of this indicator, arguing it should depend on the region, industry, recruitment systems in companies (Balsevich, Pivovarova, 2012). Nevertheless, many see advantages in using this threshold, such as transparency (complexity in manipulation), inflationary independence and accessibility (Kutenkov, 2010).

purchases of companies with governmental support. Interesting fact is that preferential treatment for SMEs is not stated directly in 223 FL. Preferences are designated in Government Decree No. 1352 "On the Specifics of the Participation of Small and Medium Enterprises in the Procurement of Goods, Works and Services by Certain Types of Legal Entities" (Decree No. 1352). The Decree in 2017 stipulated that the annual volume of purchases from SMEs should not be less than 10% (currently 18%) of the aggregate annual volume of contracts (in 44 FL this indicator was at 15%).

Theoretically, the increasing involvement of small firms in the public contracts, and the expansion of the range of procurement preferences should lead to an increase in a variety of innovative solutions. And there are countries that are very sensitive to this question. For example, in the UK, the title structures assume that the reduction of barriers for SMEs to enter the market brings to the public sector the best economic result for the same money. The case is that SMEs have lower administrative and other transaction costs than large firms, and therefore (taking into account the subject of procurement), they can offer products at lower prices. Moreover, SMEs supply better quality services (Maslova, Eremenko, 2016). The supply and bureaucracy chains in SMEs are shorter, they respond faster to changed contract terms. In addition, SMEs work in small market niches and can immediately respond to what is happening. Also the fact is that SMEs brings more innovation. SMEs introduce new technologies that are in earlier stages of development and generate new markets themselves. Innovation is both strength and weakness of a small business that attracts some contracting authorities (aimed at upgrading) and scares others (which prefer standard purchases).

Some authors implicate that supporting SMEs through set-aside (SA procedures) procurement procedures is inefficient, other claim that SA procedures brings more economy and competition in purchases to CAs that is why are efficient mechanism of SME support. For instance, Bandiera & Pratt (2009) evaluated the efficiency of state and municipal

purchases in furniture industry and found that the difference between rebates of CAs in Italy had a high positive correlation with the institutional regional characteristics. Moreover, 10% of CAs with the worst budget expenditures had procurement prices higher by 55% than those of contracting authorities at the bottom expenditure of the rating (Bandiera, Prat, 2009).

Brannman (2000) describes the price effect in procedures with mergers and acquisitions, as well as in the system of consumer's preferences. They find, in particular, that the price of contracts for SMEs was, on average, lower by 72$ compared to large companies (over 500 employees). The authors used their own auction model, as well as econometric binary model to assess the feasibility of preferential treatment (Brannman, Froeb, 2000).

Some authors investigated to what extent auctions designed for small and medium enterprises raise state and municipal costs. Nakabayashi (2013) studies construction contracts in Japan were more than a half of the state purchases were carried out by small and medium enterprises. Using a nonparametric econometric model, she finds that about 40% of SMEs were prepared to participate in procurement procedures without special preferences. According to Nakabayashi (2013) the lack of competition would gradually raise cost. Hence the conclusion is made that the program of government support for SMEs in Japan through the allocation of special procedures for small businesses had both positive and negative effects. On the one hand, participating in auctions only for SMEs, companies won more often (in comparison with procedures where large business participated), and, consequently, developed and expanded their production intensively and extensively. On the other hand, such procurement procedures could demotivate small and medium enterprises and might lead to stagnation (Nakabayashi, 2013).

Denes (1997) tested the hypothesis of increased costs (contract prices) in auctions held only for small and medium enterprises in dredging services. Based on the dataset of 500 contracts, they obtained that procurement costs in these auctions are nor higher. In all

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contracts, except one, prices in set-aside procedures and in procedures without restrictions on participation were comparable; in the only case with a significant difference, the set-aside actually offered a lower price. Denes (1997) explains this by higher competition: in set aside auctions the average number of bidders was 3.6, while in procedures without restrictions on participation it was 3.1.

Marion (2007) shows that price preferences in auctions reduce efficiency, but they have a dual effect on costs – both reducing and increasing them. Marion (2007) used data on road construction contracts in California, where small and medium companies received a price preference of 5%. For each contract, the price per unit and the volume of purchases were taken into account. Costs in auctions with price preferences were higher by 3.8% in comparison with the usual procurement procedures. The purchase price in auctions was higher for procedures constructed only for SMEs, since these procedures took place without the participation of large companies with low marginal costs (Marion, 2007).

Not all countries adopt policies of preferential treatment of SMEs. Critiques of such policies claim that preferential treatment offers little support, but instead significantly restricts competition, redistributes taxpayer funds in favor of less efficient and weak companies and etc. (Anchishkina, 2018). Public contractors may see outsourcing to small businesses as highly risky with respect to performance (Ivory, 2012). Even major government suppliers, such as defense contractors, report obtaining quality bids for small business subcontracts is problematic (Grammich et al., 2011). Some studies report small suppliers feel discouraged from bidding on public contracts due to perceived – in many cases non-existent – stringent financial and performance standards (Withey, 2011). Risks and asymmetric information are an important element of contractual relationships between public and private sectors. Vinogradov et al. (2014) highlight how uncertainty considerations affect the optimal contract design in public procurement, while Vinogradov and Shadrina (2018) illustrate how

information asymmetries and uncertainty differently manifest in different services, and therefore dictate different optimal contracts. Similarly, if one considers the choice of the procedure – set aside or not set aside – from the optimal design perspective, uncertainty and asymmetric information considerations should matter, too: the more uncertainty contractors perceive regarding outsourcing to small business, the more reluctant they would be to set aside procedures for small businesses. And vice versa, those contractors that are more likely to overcome issues of asymmetric information would be also more likely to set aside.

All in one, the mechanisms of preferential treatment of SMEs are law invariant. However, the two laws contain no constraints or recommendations for contracting authorities on how to decide which procedures to set aside only for SMEs and what to purchase through procedures open to all. In the next section we will build an empirical model describing the choice of contracting authorities and try to prove the efficiency of state support of SMEs through the set-aside mechanism.

3. Main variables and hypotheses

We use the indicator of rebate (or "savings") of contracting authorities carrying out different procurement procedures. This savings may be represented as the difference between the initial price of the contract and the actual price, expressed in percentages:

$$\text{Rebate}_{ij} = \frac{\text{Reservation price}_{ij} - \text{Actual price}_{ij}}{\text{Reservation price}_{ij}} * 100, \tag{1}$$

where Rebate_{ij} – the economy for the i-th contracting authority in the j-th bidding procedure; $\text{Reservation price}_{ij}$ – the initial (maximum) price of the contract, set by the i-th contracting authority in the j-th procurement procedure; Actual price_{ij} – the actual price that was obtained in the procurement procedure by i-th supplier in the j-th procedure.

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Drawing on results of earlier studies, like Denes (1997) for the U.S. and Nakabayashi (2013) for Japan, we expect set aside procedures to be more efficient:

$$\text{Rebate}_{SA} \geq \text{Rebate}_{NSA}, \tag{2}$$

where Rebate_{SA} – average savings for CAs in procedures only for small and medium companies, and Rebate_{NSA} – average savings for CAs in other procedures ($\text{Rebate}_{NSA} = 1 - \text{Rebate}_{SA}$). This is our first hypothesis to test.

To analyze the decision of CAs whether to hold a special procurement procedure only for SMEs, we introduce a binary variable that takes a value of 1 when i-th contracting authority purchases from SME in the j-th procedure:

$$\text{SA}_{ij} = \begin{cases} 1, \text{if CA}_i \text{ declares procedure } j \text{ only for SMEs}, \\ 0, \text{otherwise}. \end{cases} \tag{3}$$

We hypothesize that the decision to set aside a procedure for SMEs, i.e. the value of SA_{ij}, depends on the value of the contract for the contracting authority (proxied by the reservation price), on the restrictions and guidance provided by the relevant legislation (44FL or 223FL), and on the type of the contractor (federal, regional or municipal government bodies, or other institutions or organizations). The latter, on the one hand, proxies for the "distance to the government" (which shows how important it is for the respective authority to demonstrate alignment with the official SME support priorities declared by the government), and on the other hand, it proxies for the familiarity with the local market (municipal authorities should be more familiar with their local market and are more likely to know their suppliers first-hand). If the incentives to align with official policy declarations prevail, we

anticipate the federal authorities to be more likely to set aside; if it is the problems of asymmetric information that dominate in the decision to set aside or not to set aside, then we should expect municipal authorities to be more likely to set aside. We also anticipate the decision to depend on the type of the procurement procedure chosen to correlate with the decision of CA to set aside or not. We expect that in electronic procedures more SMEs participate and win than in other types of purchases, because e-auctions are transparent and easy to implement. The dependence of SA on these factors is our second (joint) hypothesis to be tested.

4. Data

We collected data from the Unified Information System on public procurement in the Russian Federation.[5] Our main focus is on the decisions of contracting bodies at different levels and subject to different laws. Given the size of the Russian Federation, it is computationally challenging and time consuming to analyse the database of all procedures run by all contractors in the country. We therefore selected a stratified sample by using the following procedure, aimed at a balanced representation of all government levels and non-government institutions across the country, and yet resulting in a sample of a reasonable size. Randomly selecting 3 authorities from each of the three government levels gives us 9 authority under 44FL. To balance, we also randomly select 9 organization under 223FL, giving us a total of 18 entities per region. Given each organization on average conducts about 30 procedures per year, we, in order to limit the size of the sample, restricted our attention to 40 regions, randomly chosen from a total of 85 regions in Russia. This number, on the one hand, halves the computational and sampling efforts, and on the other hand provides a good

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[5] http://www.zakupki.gov.ru

coverage of all 8 Federal districts in the Russian Federation. This gives us about 22 000 observations in total. The raw sample contained 10 541 observations on 44FL and 11 784 observations on 223FL. After removing those with missed values and errors, as well as eliminating outliers, the final database contains 719 contractors, covering 3 128 set aside procedures for small and medium enterprises in the 44FL sub-sample and 560 SME set-asides in the 223FL sub-sample. The full list of variables collected and computed is in Table 1.

[TABLE 1 HERE]

5. Results

To address our first hypotheses, we first compare the averages for the rebate and for the number of participants in the two subsamples of interest – set aside and no set-aside (SA = 1 and SA = 0) under two each of the two legislations. As shown in Table 2, the savings of CAs in the procurement procedures where only SMEs participate (44-FL) exceed the same indicator in other procedures by 4.5%, which confirms the feasibility of supporting small and medium enterprises through the quota mechanism. Comparing the same indicator with the savings of CAs in 223 FL in the procedures for small and medium enterprises, the economy is higher by 6.6%. This fact drives attention to the need of improving support measures for SMEs in 223 FL. We assume that the variables in Table 2 are measures of the competition in procurement (the more participants in procurement procedure, the higher is the competition), as used, for example, in (Yakovlev, 2016). Table 2 shows that more developed competition is in the procurement procedures under 44-FL.

[TABLE 2 HERE]

We further complement this analysis of differences in means by a more sophisticated regression analysis, using all available controls. The result in Table 3 proves an even stronger advantage of using set-asides. The table shows three linear regressions, estimated by OLS, with the dependent variable "REBATE" to assess the feasibility (efficiency) of small and medium enterprises support through the state procurement mechanisms in the Russian Federation. The first and the second columns describe the relationships in the 44FL and 223FL samples respectively, while the third column pools the two subsamples together and introduces an extra variable LAW to identify significance of differences between the two subsamples.

[TABLE 3 HERE]

The variable "SA" is significant in all specifications of the model, which indicates a difference in "REBATE" in procedures for SMEs and other procedures (this fact is also confirmed by the results of the analysis of the average values). In procurement procedures with preferential treatment of small and medium enterprises, savings of contractors are higher than in other types of procedures in both subsamples, i.e. statistically the rebate in SA-procedures is higher than rebate in non set-aside procedures and we can make a preliminary conclusion that policy of SME support by giving SA to business is efficient.

In Table 3 we also introduce variable $WINNER_{ij}$, which equals 1 if procurement procedure j of contractor i includes a winner of any previous procedure of this contractor during the sample period. There is no guarantee of no collusion between the contractor and the previous winner, yet the purpose of this variable is to control for the reduction of

asymmetric information between the contractor and the previous winner. The previous winner may bid more aggressively, leading to a higher rebate. In contrast, collusion would rather lead to lower rebates, implying a negative coefficient for WINNER, which is not what we observe.

The last specification of the model (column 3 in Table 3) indicates that if the contractor follows 44 FL the CAs savings will increase by 2.31% compared to purchases under 223 FL (the actual price under 44 FL is statistically lower than under 223 FL). Moreover, the interaction term LAW*SA is positive, which means that contractors under 44 FL indeed benefit more from set aside procedures than those under 223FL. As for the interaction LAW*WINNER, the negative coefficient may reflect the fact that under a less strict regulation 223FL, it is easier for previous winners to exploit their information advantage and bid more aggressively, reducing the price and increasing the rebate. Under 44FL, all participants are more equally informed, which sharply reduces any information advantage. Indeed, according to 44 FL all procedures are uniform and follow the exact prescriptions of the Law; under 223FL, in contrast, the procurement strategy is determined by every contractor separately, including the possibility of re-bidding and setting special auction rules. The latter allows contractors to design procedures so as to get the maximum benefit and may lead them to search for their most preferred supplier. Suppliers will have to read the regulations of every procedure of the public body they want to participate in and this may explain lower activity and decline of SME participation under 223 FL.

Despite the apparent benefits of the set aside procedures, the vast majority of CAs strictly prefers non set-asides. In our sample (the threshold under 44 FL in 2017 was 15%; under 223 FL - 10% (only SAs) the average share of set-asides in the total volume of purchases is 25% (10% higher than in the 44-FL). In the subsample for 44 FL there are those (166 public bodies) who do not purchase at all from SMEs and 197 CAs who purchase in

volumes above the threshold. The average value is biased due to the large number of outliers - i.e. those customers who directly purchase 70-80% from SMEs. As for the 223FL subsample, the average share of purchases from SMEs in the total volume of purchases is only 4%, which is below the law prescription. Only 26 out of 360 public bodies buy in volumes dictated by the law. 334 customers either do not buy from SMEs at all, or they do a very small number of set-asides. In our data, contractors from the top quartile (with the highest number of purchases from SMEs) are municipal public bodies with less repeated winners and higher average number of participants in the procedures. Those, who are in the lower quartile, are mostly federal and regional CAs with more repeated winners in the sample, holding procedures in any form, but mostly non e-auctions.

We now turn in more detail to the determinants of decisions to set aside. This is done by estimating probit regressions with SA as a dependent variable. All estimations are by maximum likelihood, marginal effects (at the mean) are in Table 4.

[TABLE 4 HERE]

Table 4 represents the margins calculated for coefficients of three probit regressions. In all three model specifications (first built for 44-FL, second – for 223 FL and third – for the whole sample) reservation price of every procedure has a negative effect on probability of holding procedure only between SMEs, i.e. if the maximum price of procedures increases on 10 mln. rubles, the probability of granting preferences for SMEs decreases by 0,7 percentage points on average. It may well be that CAs give to small businesses purchases with lower price to ensure that this type of firms definitely participate in the procurement process. Equally, many small businesses will not participate in bidding for large contracts.

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However, non-price factors are of an even greater importance for the decision of SA's to conduct SA or not. For example, if procurement is done by an electronic auction, the probability of holding the SA procedure increases y 3.1 per cent under 223 FL and by 4.6 percentage points under 44 FL compared to single supplier procedure. Electronic auctions are special in that the Law strictly formalizes the design of the procedure and there is only one criterion for determining the winner – the price of the contract. The procedure itself is rather transparent and more convenient than other procedures, this is why contractors use e-auctions to set-aside more often than other types of procedures.

Turning to the influence of state power of CA on the decision whether to set-aside or not, we can conclude that municipal authorities may have advantages of knowing their local suppliers. At the same time, at the municipal level, in general, purchases are smaller (their number is larger, since there are more municipalities, but the amount is much smaller than that of the regionals and federals). Therefore, these small purchases are easier to give to set-aside procedures compared to regional and federal procurers who need to choose which purchases to set-aside.

Under control variables (not reported in Table 4), we identified the probability of holding SA procedures in manufacturing and construction is smaller than in other sectors. The variable "WINNER" is significant in all of three model specifications and has a negative coefficient sign. This indicates that there is likely a large turnover among small businesses, and those who won in the past are less likely to participate in the new set aside procedures (note we only consider a period of one year, hence small suppliers may still be delivering on the previously won contract). In contrast, big suppliers are more likely to participate again in new procedures. This is in line with what the negative coefficient tells us.

The remaining variable to interpret is "LAW" in the third column in Table 4: if the procurement procedure follows 44 FL, the probability of holding procedure for SME is

16,1% higher than under 223 FL. This is a striking result: under the less restrictive law, the contractors are less likely to arrange for set-aside procedures even though the latter are more efficient in terms of rebate and competition (Table 2)! We attribute this result to the fact that 44FL is more prescriptive, and all procedures within it are pretty much standard. This removes a large bit of information asymmetry for suppliers. There still remains opaqueness for contractors, but as shown above, being closer to local businesses allows municipal authorities to conduct more set-asides.

6. Conclusions

Current policy of the Russian Government aims at supporting small and medium enterprises through the public procurement mechanisms. While set aside procedures ensure higher rebates than those open to all businesses, they are not very popular among contractors and are not as widely used as, for example, in the U.S. (where all small contracts are set asides) or in Japan (where a half of central government procurement are set aside). Analyzing the factors influencing decision of CAs whether to hold set-aside procedure or not, we conclude that most of them point towards higher performance uncertainty and information asymmetries between contractors and small businesses.

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Appendix: Tables.

Table 1. Description of variables

Variables	Description
SA	The binary variable on holding special procurement procedures where only SMEs can participate (SA=1) or not (SA=0)
RES_PRICE	The initial (residual) price of procurement procedure. There is no need to estimate the factual price of the contract because CA does not know it at the stage of making the choice about holding SA procedure (in 10 mln. RUR)
CFO, DFO, PFO, SIBFO, SKFO, SZFO, URFO, UFO	Eight federal districts of the Russian Federation. The variable takes the value "1" if the purchase belongs to one of the eight federal districts, "0" - in other cases. In the research only "DFO", "SIBFO" and "URFO" are included in the models, because authors wanted to evaluate if there is a geographical impact on the decision of CA.
SPEND_FED, SPEND_REG, SPEND_MUN	The cost of public procurement on federal, regional and municipal levels in the regions of the Russian Federation (in 10 mln. RUR).
GRP	The gross regional product of the region per capita (RUR).
SME	The number of small and medium enterprises in the region per capita.
FED, REG, MUN	Federal, regional and municipal CAs. It takes the value "1" if the CA belongs to one of the three levels of power, "0" - in other cases. In the models only "FED" and "REG" will be used in order to eliminate the multicollinearity.
EAUCTIONS	Electronic auction. It takes the value "1" if the purchase was in the form of an electronic auction, "0" - in other cases.
ED_POST	Purchase from a single supplier. Takes the value "1" if the purchase was in the form of a single supplier, "0" - in other cases.
ZAPR_KOT	Purchase in the form of price inquiry. Takes the value "1" if the purchase was in the form of a single supplier, "0" - in other cases. In the models only "ZAPR_KOT" and "EAUCTIONS" will be used in order to eliminate the multicollinearity problem.
CONSTR	Construction industry. Takes the value "1" if the subject of purchase is related to construction, 0 - in other cases.
MANUF	Industry (sector of economy). Takes the value "1" if the subject of procurement is related to industry, "0" - in other cases.
OTHER	Other branches of the economy (except industry and construction). Takes the value of "1" if the subject of procurement is related to sectors of economy other than construction or industry, "0" - in other cases. In the models only "CONSTR" and "MANUF" will be used in order to eliminate the multicollinearity.
WINNER	A repeated supplier from big companies in the sample. Takes the value "1" if the supplier (only big company, not SME) who won the purchase is repeated as a winner in other procedures, "0" - if this supplier won only once in the sample. This variable is the posterior measure of transparency in public procurement.
LAW	44 FL and 223 FL. Takes the value "1" if the CA purchases under 44-FL, "0" - if this CA purchases under 223 FL.

Table 2. Preferential treatment indicators (averages)

Indicator	Value when SA=1	Value when SA=0	p-value (t-statistics)
44-FL			
CAs benefit	14,9%	10,4%	0,003
Number of submitted applications	3,4	2,9	0,006
Number of admitted applications	3,06	2,6	0,023
223 FL			
CAs benefit	8,3%	6,1%	0,002
Number of submitted applications	2,1	1,8	0,03
Number of admitted applications	1,8	1,5	0,001

Table 3. Efficiency of set-asides

	Linear regression (SA_44) (1)	Linear regression (SA_223) (2)	Linear regression (Law) (3)
LAW	-	-	0.0231*** (0.004)
SA	0.094*** (0.006)	0.031*** (0.008)	0.062*** (0.012)
WINNER	-0.017*** (0.004)	-0.0058 (0.0037)	-0.011** (0.003)
LAW*WINNER	-	-	-0.009**
LAW*SA	-	-	0.0415***
Controls	yes	yes	yes
Constant	-0.09*** (0.026)	-0.09*** (0.016)	-0.065*** (0.011)
R^2 Adjusted (%)	33,27	33,07	31,59
Number of observations	10333	11 577	21 910

Notes: Dependent variable *Rebate*. Controls = federal districts (geographical remoteness and regional economic characteristics), level of CA power, object of procurement (industry). Statistical significance levels: 1% (***), 5% (**) and 10% (*).

Table 4. Determinants of the decision to set aside

	LAW_44 (1)	LAW_223 (2)	LAW (3)
RES_PRICE	-0.006***	-0.007**	-0.009***
Controls	yes	yes	yes
FED	-0.0788***	-	-
REG	-0.057***	-	-
EAUCTIONS	0.046***	0.031***	0.197***
ZAPR_KOT	0.057***	0.032***	0.195***
WINNER	-0.045***	-0.004	-0.022***
LAW	-	-	0.161***
Number of observations	*10333*	*11 577*	*21 910*

Notes: Probit regression, marginal effects et the mean. Dependent variable *SA*. Controls = federal districts (geographical remoteness and regional economic characteristics), level of CA power, object of procurement (industry). Statistical significance levels: 1% (***), 5% (**) and 10% (*).