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**Working Paper**

## Discretion and Public Procurement Outcomes in Europe

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**CITP**  
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TRADE POLICY

# Discretion and Public Procurement Outcomes in Europe

Bernard Hoekman and Bedri Kamil Onur Tas

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Centre for Inclusive Trade Policy  
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Economic  
and Social  
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# Abstract

Public procurement regulations aim to ensure the state obtains 'value for money' by specifying the processes to be used in issuing calls for tender and award of contracts. Value for money goals may be complemented by ancillary objectives such as supporting small or disadvantaged firms. Recent theory suggests procurement regulations constraining the ability to exercise discretion in awarding contracts may increase average procurement costs in countries with high levels of government effectiveness. Using detailed data on procurement awards in 33 European countries, we find a positive, significant relationship between more restrictive practice towards exercise of discretion in procurement awards and average contract prices that increases in countries with above average government effectiveness. We also show that realizing efficiency benefits from exercising greater discretion where permitted by law reduces the probability small firms win contracts and continue to do so, pointing to a tradeoff between the potential cost reduction benefits of exercising discretion and other goals of procurement policy.

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# Non-Technical Summary

Public procurement regulations aim to ensure that public authorities and state bodies obtain value for taxpayer money by requiring e.g., publication of calls for tender, full transparency as regards the criteria that will be used to evaluate bids, and the use of specific processes such as open competitive bidding, sealed bids and mandatory award to the lowest cost bidder satisfying the technical specifications laid out in the call for tender. These procedural requirements reduce the ability of public entities to exercise discretion in the award of contracts.

Value for money goals may be complemented by ancillary public policy objectives. In practice, public procurement is frequently used as an instrument to pursue noneconomic objectives, such as reducing greenhouse gas emissions, assisting disadvantaged communities, or supporting small and medium sized enterprises (SMEs). This is reflected in specific mandates and processes may be embodied in procurement law and regulation to constrain the ability of government buyers to award contracts to the lowest cost bidder.

There may be a tension between value for money and other policy goals, but in both cases law and regulation has the common feature of constraining discretion. Economic theory suggests procurement regulations constraining the ability to exercise discretion in awarding contracts may increase average procurement costs in countries with public bureaucracies (civil service officials) that are highly competent and effective in implementing their tasks. Conversely, relaxing constraints on the exercise of discretion may undercut the realization of noneconomic objectives insofar as procuring entities become free to pursue the economic goal of minimizing procurement costs.

This paper builds on recent research pointing to a potential tradeoff between regulations requiring the use of procurement processes that are expected to promote the realization of value for money objectives and possibility that the exercise of discretion by knowledgeable officials may result in lower contract prices and higher quality projects. We use data from the European Union's Tenders Electronic Daily database for 2016-2019. This provides detailed data on public procurement awards for 33 European countries including the UK. This data source provides detailed data on the price of awarded contracts and the identity of the winning bidder. Information is also reported on whether the winning company is a small or medium-sized enterprise. Combined with information characterizing the degree to which discretion is constrained by law and the extent to which procuring entities utilize whatever discretion is permitted, the detailed data on procurement awards provide the basis for an empirical analysis of the relationship between discretion and procurement outcomes (prices).

We find a positive, significant relationship between more restrictive practices as regards the exercise of discretion in procurement awards and average contract prices. This relationship is stronger in countries that have higher levels of government effectiveness. We also show that realizing efficiency benefits from exercising greater discretion where this is permitted by law reduces the probability small firms win contracts and continue to do so. Our finding points to a tradeoff between the potential cost reduction benefits of exercising discretion in countries with high government effectiveness and the noneconomic objective of supporting participation of smaller companies in public procurement.

We also find evidence that estimated contract values in calls for tender are bunched just below the value thresholds established in procurement law. This phenomenon indicates that procuring entities have incentives to seek to exercise discretion and do so in practice. Because EU procurement regulations do not apply to contracts that are less than the minimum value thresholds defined in EU law, procuring entities can obtain greater scope to exercise discretion by setting the estimated value of a call for tender below the threshold. We assess whether such bunching of estimated contract values is associated with the restrictiveness of procurement law and practice towards use of discretion. We find that the probability of bunching behavior is less in countries where discretion is subject to greater restrictions.

Our findings are specific to the 33 European countries in our sample. While these nations are diverse with respect to government effectiveness, they are more like each other in terms of economic and political governance than is the case if the analysis were to span a global cross-section of countries. Our results are unlikely to hold in settings where levels of corruption are much higher and/or government effectiveness indicators are far below those characterizing our European sample.

WORKING PAPER

# Discretion and Public Procurement Outcomes in Europe\*

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## Abstract

Public procurement regulations aim to ensure the state obtains ‘value for money’ by specifying the processes to be used in issuing calls for tender and award of contracts. Value for money goals may be complemented by ancillary objectives such as supporting small or disadvantaged firms. Recent theory suggests procurement regulations constraining the ability to exercise discretion in awarding contracts may increase average procurement costs in countries with high levels of government effectiveness. Using detailed data on procurement awards in 33 European countries, we find a positive, significant relationship between more restrictive practice towards exercise of discretion in procurement awards and average contract prices that increases in countries with above average government effectiveness. We also show that realizing efficiency benefits from exercising greater discretion where permitted by law reduces the probability small firms win contracts and continue to do so, pointing to a tradeoff between the potential cost reduction benefits of exercising discretion and other goals of procurement policy.

**JEL codes:** H57; O31; O32

**Keywords:** Public procurement; contract prices; discretion; SMEs; government effectiveness

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## 1. Introduction

European Union (EU) countries spend the equivalent of 14% of GDP (€1.9 trillion annually) on public procurement (PP), allocated by over 250,000 public authorities responsible for acquiring services, works and supplies (Gourdon and Messent, 2019). The associated contracts are awarded through legally mandated procedures that are intended to identify and select suppliers that can satisfy the terms of a contract at lowest cost to the government. A central objective of PP legislation and related procedures is to achieve ‘value for (taxpayer) money’. Procurement laws and regulations limit the discretion of authorities in awarding PP contracts by requiring competitive bidding for contracts and use of mechanisms that constrain the potential for rent-seeking behavior, collusion, corruption, and fraud.<sup>1</sup> At the same time, procuring authorities have significant discretion in how to implement PP regulations, e.g., when it comes to using procurement to achieve noneconomic objectives.<sup>2</sup> They may also manipulate the procurement process, e.g., by issuing calls for tender with estimated contract values that fall below value thresholds defined in procurement law.

Drawing on the extant literature, in this paper we analyze the relationship between the regulation of discretion in procurement processes and outcomes, using data on procurement awards for 33 European countries sourced from the EU Tenders Electronic Daily (TED) database and indicators characterizing prevailing procurement law and practice in these countries constructed by Bosio et al. (2022). We focus on two research questions. The first concerns the relationship between restrictions on the exercise of discretion and average procurement costs (contract prices). The question here, drawing on the recent literature, is whether, conditional on the overall quality of governance (measured by World Bank government effectiveness indicators), greater scope to exercise discretion in awarding procurement contracts is associated with lower contract prices. The underlying mechanism

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<sup>1</sup> The United Nations Office on Drugs and Crime (UNODC) (2013) estimated that “... 10-25 per cent of a public contract’s value may be lost to corruption”. The direct cost of corruption in public procurement in the EU has been estimated at some €120 billion per year (European Commission, 2014).

<sup>2</sup> Bogojevic et al. (2019) discuss the scope for exercise of discretion in EU procurement law. There is substantial policy space for procuring entities to pursue ‘strategic’ goals. These often are associated with noneconomic objectives, e.g., pertaining to the environment or social inclusion. The goals pursued by associated procurement procedures are often characterized by terms such as ‘green’, ‘social’, ‘smart, sustainable and inclusive’ (Andhov 2021).

for such a potential relationship is that procuring entities in countries with high government effectiveness may be able to utilize discretion to select high quality bidders using information and processes such as negotiation that otherwise would not be feasible under the procedures that apply to procurement awards.

The second question concerns the tradeoff between the ‘value for money’ objective motivating much of procurement regulation and the participation of small firms in public procurement. Because regulation of the process of procurement involves fixed costs that may be more challenging for small firms to incur, and efficiency (cost minimization) may be associated with larger procurement contracts (e.g., because of economies of scale), small firms may be at a disadvantage in bidding for and winning government contracts. In many jurisdictions, procurement policy includes instruments such as price preferences for local (national) or small firms or reservation of a share of procurement for certain types of firms deemed to be at a disadvantage in bidding for contracts. In the EU context that is the focus of our analysis, policy seeks to attenuate such de facto discrimination against small firms through a requirement that large contracts be subdivided, unless this increases costs significantly.<sup>3</sup> Given that in practice the implementation of such measures will increase costs for procuring entities, conditional on value for money being the main goal they can be expected to prefer to simply allocate contracts to the lowest cost bidder. In countries where government effectiveness is high, greater scope to exercise discretion in the award of contracts may then be associated with fewer contracts being won by small firms. We therefore analyze whether restrictions on the exercise of discretion reflected in formal procurement regulation and laws or in applied practice are associated with a higher probability that small and medium-sized enterprises (SMEs) win public contracts and continue to participate in procurement markets, again conditioning on government effectiveness.

We find that although the restrictiveness of procurement regulations towards the exercise of discretion is not associated with average procurement contract prices, there is a statistically significant positive relationship between contract prices and restrictions on the extent to

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<sup>3</sup> The EU regime as it pertains to SMEs is described in Hoekman and Taş (2020).



which discretion is applied in practice. The association between restrictiveness of applied PP practices and contract prices is larger in countries with higher government effectiveness, suggesting that in these jurisdictions PP practices that restrict discretion may impede the scope for public authorities to eliminate low-quality bidders. We also find that in countries in which procurement practices are more restrictive towards exercise of discretion, there is a higher probability that SMEs win contracts and continue to participate in procurement markets. This relationship is stronger in countries with below average government effectiveness. The results suggest discretion-restricting PP regulation induces more awards for SMEs than would obtain absent such controls, i.e., point to a tradeoff between economic (efficiency) and noneconomic objectives: discretion may lower procurement prices but at the cost of SME participation.

Finally, we investigate whether more restrictive law and practices towards the exercise of discretion affect the probability that procuring entities design calls for tender to fall below EU value thresholds, thereby increasing the scope to use discretion. The procurement literature has found evidence of such manipulation, reflected in bunching of calls for tender fall just below the value thresholds laid out in applicable legislation in the US and EU (Carril, 2022; Palguta and Pertold, 2017; Szucs, 2023; Taş 2023). We replicate this result, in that we observe bunching of contracts just below value thresholds, and extend the literature by showing that in countries where procurement law and practice provides less scope to use discretion, the probability of bunching is lower.

The remainder of the paper is organized as follows. Section 2 discusses the literature to which this paper contributes. Section 3 describes the datasets used, empirical strategy hypotheses that motivate the analysis. Section 4 reports estimation results, focusing on the relationship between PP law and practice scores and outcomes, measured as average PP contract prices and SME participation in procurement. Section 5 reports the results of several robustness checks. Section 6 concludes.

## **2. Related literature**

There is a substantial literature on the law and economics of public procurement. Much of this is motivated by governance concerns – the design of procurement mechanisms to attain

efficient outcomes and reduce the scope for collusion, corruption, and theft (e.g., Laffont and Tirole, 1993; Vagstad, 1995; Tadelis, 2012; Hassami, 2014; Gnip, 2022). This paper contributes to two strands of literature: the design of processes to attain value for money objectives in government contracting, and (ii) the use of government demand for goods and services to assist small firms by enhancing the prospects that such firms participate in procurement opportunities. The latter is a common element of economic development policy in many countries.

### ***Discretion and efficient public procurement***

Most of the literature on discretion and public procurement focuses on potential implications for corruption and collusion. Although there is substantial evidence that procurement regulations that constrain the ability to exercise discretion are associated with attaining value for money objectives (e.g., Coviello and Mariniello, 2014; Baldi et al. 2016; Knack et al. 2019), public entities may be able to lower procurement costs or increase the quality of bids by engaging in dialogue or negotiations with firms. Banerjee and Duflo (2000) and Malcomson (2013) highlight the importance of reputation of suppliers and productive long-term relationships between firms and public officials. Reputable firms are more likely to provide high quality products and have lower probabilities of cost overruns. Scope to exercise discretion may improve PP outcomes by allowing authorities to select better suppliers.

Using data for Italy, Bandiera et al. (2009) and Coviello et al. (2018) find that procurement costs are lower when public officials can exercise discretion. Coviello et al. (2018) employ a regression discontinuity model to examine the effect of increasing procuring entities' ability to exercise discretion. They find that greater discretion lowers the duration of works and cost overruns. Carril (2022) analyzes the trade-off between rules and discretion in the context of US federal procurement. In the United States, procurement contracts below threshold values may be awarded using procedures subject to fewer and less stringent rules and oversight. Carril documents substantial bunching of contracts at the relevant threshold value and shows that rules constraining discretion distort the award amount of some contracts, while discouraging other purchases altogether, and that contracts subject to more scrutiny perform worse ex-post. Based on a model that is consistent with these findings, a

simulation exercise indicates that raising the threshold value will leave the government better off.

Best et al. (2023) use data on 16 million public purchases of homogenous goods in Russia and find that 39 percent of the variation in prices paid for narrowly defined items is due to the individual officials and organizations who manage procurement, and that low-price official buyers display higher spending quality. They show that bid preferences for domestic suppliers (as a form of industrial policy) substantially improves procurement performance but only when implemented by less effective bureaucrats.<sup>4</sup>

On the other side of the debate, Baltrunaite et al. (2021) use Italian data on municipal public works tendered in the period 2009–13 to evaluate a 2011 policy reform that expanded the scope of bureaucratic discretion. They find that the share of contracts awarded to politically connected firms increased after the reform and that the labor productivity of winning firms declined, suggesting increased discretion is associated with a potential increase in misallocation of public funds. The effects on supplier selection are primarily concentrated among less qualified and less transparent public administrations.<sup>5</sup> Palguta and Pertold (2017) find that introduction of minimum value thresholds in the Czech Republic that determine when public procurement regulations apply caused manipulation of estimated costs. Procuring entities set procurement values just below thresholds to be able to use discretion when awarding contracts, resulting in an increase in contracts awarded to “anonymous” firms, and higher prices.

Other studies find evidence for a tradeoff between allowing for more discretion by procuring entities that may permit attainment of greater efficiency and the associated potential for creating more opportunities for fraud or theft (Decarolis et al. 2020).<sup>6</sup> Bosio et al. (2022) suggest that this tradeoff is likely to be greater in contexts characterized by high

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<sup>4</sup> In cases where state officials are effective, procurers set lower reservation prices, encouraging greater participation (more competition), thus attenuating the effect of a price preference program discriminating against foreign bidders in inducing greater participation by local firms. Best et al. (2023) measure bureaucratic effectiveness based on prices paid as well as non-price (quality) outcomes, with effectiveness measured using a set of procurement process indicators that correlate with estimated procurement performance.

<sup>5</sup> Bessonova (2023) finds similar misallocation results for the case of Russia. See also Hassami (2014) for evidence for OECD countries.

<sup>6</sup> Fazio (2023) exploits a shift in policy in Brazil that permitted greater use of discretion and finds that while this resulted in higher average prices, it also led to higher quality, suggesting an inefficiency-quality trade-off.

government effectiveness and control of corruption. They show that stricter procurement practice is positively correlated with the integrity and quality of PP in lower-income jurisdictions with weaker public sector capacity, but negatively associated with outcomes in jurisdictions with higher per capita incomes and stronger public sector capacity. They find that (i) PP laws tend to be more restrictive than applied practice towards discretion in lower capacity countries, but less strict than applied practice in higher capacity jurisdictions, and (ii) exercise of discretion in countries with high government effectiveness is less likely to result in fraud or corruption and thus may result in better PP outcomes. More specifically, they conclude that constraining discretion is more likely to be effective in enhancing PP quality and integrity in countries with low public sector capacity than in high-capacity countries because restrictive PP regulation in the latter may constrain the ability of procuring entities to exclude low quality bidders. Bosio et al. (2022) did not have access to granular data on actual procurement contract awards for the large cross-section of countries covered in their policy dataset. Such data are available for the European countries that are the focus of our analysis.<sup>7</sup>

### ***Public procurement and SMEs***

Specific characteristics of SMEs may constrain participation in bidding for public contracts. SMEs may have limited capacity to incur the cost of lengthy payment delays, satisfy bid security, minimum turnover or experience requirements, and have difficulties in obtaining loans for the working capital needed to bid for or execute a contract on a timely basis. Both financial and human resource capacity constraints are likely to be more severe for SMEs than for large firms, with negative implications for the capability to incur the (opportunity) costs of dealing with the administrative requirements associated with bidding for public contracts.<sup>8</sup>

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<sup>7</sup> Because of the lack of actual procurement data, Bosio et al. (2022) investigate the relationship between PP law and the exercise of discretion by focusing on measures of (i) procurement quality (proxied by time between decision to procure and the start of work by the winning bidder; delays associated with contract management; cost overruns; and frequency of contract execution not meeting technical specifications), and (ii) integrity (proxied by the frequency of procuring entities interpreting selection criteria to favor a specific bidder; payment of bribes to circumvent public procurement rules; prevalence of collusion to exclude competitors; and incidence of noncompetitive procurement methods).

<sup>8</sup> Hoekman and Taş (2022) discuss the relevant literature.

Policy in many countries often aims to support SMEs, with public procurement used as one mechanism to pursue this goal. Open competitive bidding and the associated administrative requirements are likely to be associated with a greater likelihood that larger, more efficient firms win contracts, reflecting scale economies and ability to incur procurement process related transactions costs. As mentioned, to help offset this dynamic, procurement policies in the EU aim to increase participation by SMEs in public contracts by encouraging procuring entities to reduce the average size of contracts where possible; consider subdivision of contracts into smaller lots where this is not detrimental to the realization of project objectives; and (iii) ensure timely payments (Hoekman and Taş, 2022). All such measures imply a reduction in discretion on the part of procuring entities, suggesting that utilizing the scope that exists in procurement regulations to exercise discretion may be detrimental to SME participation in government procurement.

### 3. Data and Empirical Strategy

Our data on procurement contracts span the 27 EU member states, the UK,<sup>9</sup> EEA countries, Switzerland, and the Former Yugoslav Republic of Macedonia. These data are obtained from the Tenders Electronic Daily database.<sup>10</sup> TED distinguishes between three categories of PP: purchases of (contracts for) services, supplies (goods) and works (construction and infrastructure-related projects). Data is reported on the number and value of contracts issued by procuring entities for each of these three categories, as well as the procurement procedure that applies to each call for tender. These include open (competitive) bidding, restricted procedures, and so-called competitive dialogue. The first two procedures account for the largest share of procurement opportunities. Under open procedures, contracting authorities are required to publish procurement opportunities in the Official Journal of the EU, specify the technical criteria that bidders must satisfy and evaluate bids and allocate contracts on the basis only of the bids received. Restricted procedures, used for higher-value contracts, involve a process where contracts are awarded based on competition between pre-qualified suppliers that express interest in participating. Some 85 percent of PP contracts are allocated through open procedures in the EU and EEA countries, accounting for about three-fifths of total government procurement by value (Kutlina-Dimitrova and Lakatos. 2016).

Common EU procurement regulations apply in EU member states and European Economic Area (EEA) signatories (Iceland, Liechtenstein, and Norway). In principle, all EU and EEA member states must apply the same PP processes and criteria to calls for tender and contract awards that exceed the EU-determined threshold values. Public authorities are obliged to publish their tender invitations on TED for all contracts exceeding EU public procurement thresholds. For the period under analysis the thresholds were €135,000 for public sector supply and service contracts issued by central government entities (€209,000 for other authorities); €431,000 for all supplies and service contracts; and €5,382,000 for construction works and services concession contracts. Whether to apply EU PP regulations to below-threshold procurement is at the discretion of national authorities. For PP contracts

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<sup>9</sup> We assume the UK in 2019 still applies EU procurement laws and regulations.

<sup>10</sup> At <https://ted.europa.eu/TED/main/HomePage.do>.

with estimated values that are less than EU thresholds, nationally determined administrative processes and requirements apply. These are heterogeneous across countries.<sup>11</sup> As mentioned, EU Member states and national procuring authorities more broadly have substantial discretion in how procurement law is implemented, with greater latitude for contracts that fall below EU value thresholds.

Important for the empirical analysis that follows, TED includes many contracts that fall below the thresholds, as procuring authorities often use TED to publicize tenders independent of contract values. The TED data are available online in CSV format starting in 2006.<sup>12</sup> The European Commission extracts the data from standard forms pertaining to the initial contract notice and final contract award notice that must be provided by each procuring authority.<sup>13</sup> For each contract, the TED database includes fields for the estimated contract value (determined by the procuring entity), the actual contract (award) price, the Common Procurement Vocabulary (CPV) code identifies the type (sector) of procurement,<sup>14</sup> the procurement method used, the type(s) of contracting authority, and the names and locations of both the procuring agencies and the winning firms.

We focus on contracts where estimated costs (expected value of procurement) specified in the associated calls for tender are below the value thresholds that apply in the EU that determine when procurement processes must comply with the provisions of EU procedural regulations pertaining to transparency, publication of calls for tender, timelines, procurement award procedures, etc. In 2019, a total of 668,406 contracts are reported in TED, of which 209,850 have contract award values that are below applicable EU thresholds. Of these below threshold contracts, 103,483 were won by SMEs (Appendix Table 1).<sup>15</sup> The

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<sup>11</sup> Because common regulatory requirements do not apply to below threshold value public procurement contracts, procuring entities may have incentives to structure projects to fall below applicable thresholds, in itself an exercise in discretion. We evaluate the extent of such behavior in our sample data in Section 4.4.

<sup>12</sup> We use the contract award notices csv files available at: <https://data.europa.eu/euodp/data/dataset/ted-csv>.

<sup>13</sup> The standard forms are available at <http://simap.ted.europa.eu/web/simap/standard-forms-for-public-procurement>.

<sup>14</sup> The CPV establishes a single classification system for public procurement aimed at standardizing the references used by contracting authorities and entities to describe the subject of procurement contracts. The economic sector that contracts are associated with is identified by the first two digits of the CPV code. The CPV distinguishes 45 major sectors. See <https://simap.ted.europa.eu/web/simap/cpv>.

<sup>15</sup> TED defines SMEs following the descriptions in Commission Recommendation 2003/361/EC. The main factors determining whether an enterprise is an SME in TED are staff headcount and either turnover or balance sheet total. Firms with a headcount between 50 and 250 and a turnover below €50 m are considered medium-sized. Firms

average contract price for all contracts and contracts won by SMEs is reported in Appendix Table 2.

Procurement law and practice scores are sourced from Bosio et al. (2022). These authors construct measures for 187 countries characterizing the degree to which (i) the exercise of discretion by public entities is constrained by procurement legislation; and (ii) applied practices regarding discretion differ from what is mandated by formal procurement regulations. These indicators are based on surveys in which national procurement specialists with detailed knowledge and experience regarding a specific type of procurement (a hypothetical US \$2.5 million road maintenance project) are asked questions regarding the applicable legal framework for transparency, competition, exclusion of bidders, and integrity of contracts, and views on the extent to which the legal requirements were applied in practice, allowing for both less than full application and more than full compliance.<sup>16</sup> Their survey instrument includes questions regarding the mandatory procurement process-related rules in a country, and the ways in which regulations reduce the discretion of procuring agencies. The resulting measures of the extent to which law constrains discretion are complemented with an identical set of questions that ask to what extent actual practice conforms to the law. Responses are used to generate an index score comprising four themes around which the questionnaire is organized: transparency, competition, limits to exclusion, and integrity of contract.<sup>17</sup>

Figure 1 plots the Bosio et al. law and practice scores for the countries included in TED, sorted on their law scores. The indices range between 0 and 4. Lower scores reflect greater latitude for the exercise of discretion by procuring entities when deciding on contract awards; higher values indicate more restrictive regulation (less discretion). Switzerland (0.82), Denmark (0.84), Finland (1.01) and Norway (1.01) have the least restrictive laws, while Portugal (2.81), Italy (2.92), Latvia (2.92) and Greece (3.01) impose the most restrictive regimes towards exercise of discretion. Actual practice differs substantially across countries.

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with a headcount between 10 and 50 and a turnover below € 10 m are considered small. Firms with a headcount below 10 and a turnover below €2 m are considered micro.

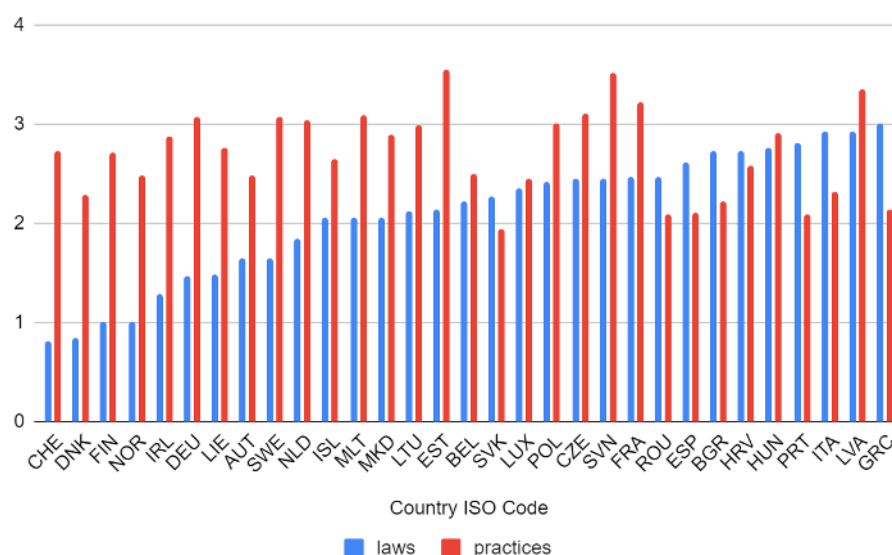
<sup>16</sup> Bosio et al. (2022) also construct measures of procurement outcomes, including practitioner assessments of process integrity and quality. In the analysis below we use data on actual contract awards.

<sup>17</sup> Appendix A of Bosio et al. (2022) provides details on the questionnaire used and the creation of the scores.



Of specific interest for the analysis that follows is that countries where the legal framework permits more discretion do not utilize this “policy space.”

**Figure 1. Discretion: Law and practice scores of EU countries**

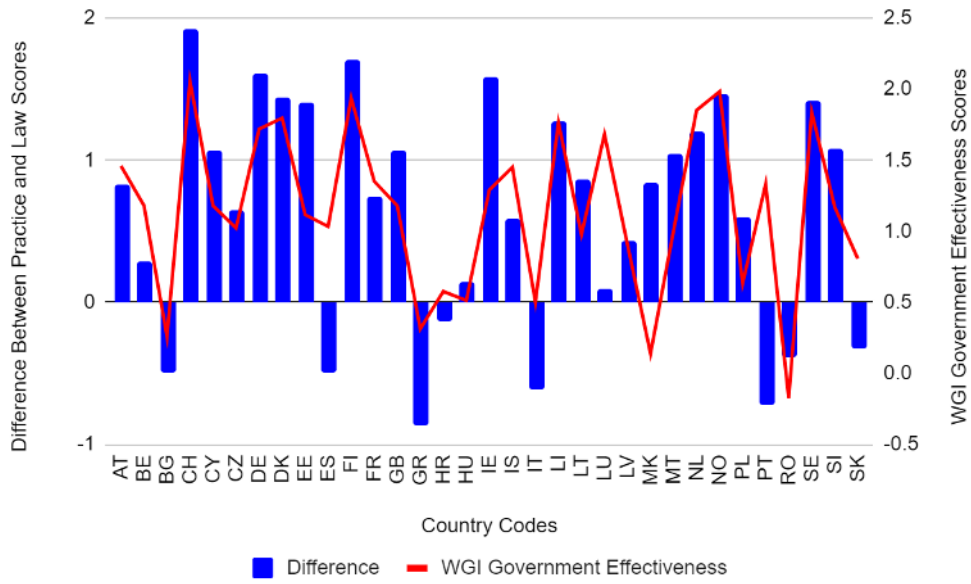


Note: Lower law or practice scores reflect greater scope for exercise of discretion.  
Source: Bosio et al. (2022).

Figure 2 plots the difference between PP practice and law scores for each country, together with the World Bank government effectiveness measures. The mean law score across countries is 2.09, with a standard deviation of 0.63. The mean and standard deviation of the practice score is 2.73 and 0.55, respectively. In two-thirds of the countries in the sample, laws are less strict than applied practice. The figure reveals a tendency that countries with higher government effectiveness are associated with substantial unused ‘policy space’ to exercise discretion. As our measure of government effectiveness, we use the indicators compiled in World Bank Worldwide Governance Indicators dataset.<sup>18</sup>

**Figure 2. Difference between PP practice and law scores and government effectiveness**

<sup>18</sup> <https://databank.worldbank.org/source/worldwide-governance-indicators>



Notwithstanding that our sample spans mostly high-income European nations, there is substantial heterogeneity across countries regarding government effectiveness (see Appendix Table 1). EU countries with high government effectiveness scores have high practice and low law scores (Figure 2). In other words, public authorities in high government effectiveness countries refrain from exercising discretion (PP practice is more restrictive than the applicable legal framework).<sup>19</sup>

### Empirical strategy

We estimate the following equation using OLS:

$$Price_c = \beta_0 + \beta_1 law(practice)_c + \beta_2 openprocedure_c + \beta_3 estimatedcost_c + \sum_{a=2}^9 \beta_{a+3} authority_a + \sum_{s=2}^{45} \beta_{s+12} sector_s + \varepsilon_c \quad (1)$$

where contract price ( $Price_c$ ) is the dependent variable and  $\beta_1$  is the coefficient associated with law or practice scores, respectively, with higher scores indicating greater restrictions on the exercise of discretion. We use dummies to control for whether open competitive procedures (first-price auction) are used,<sup>20</sup> the type of public authority issuing a call for tender ( $\beta_a$ , distinguishing between eight types of authorities), type of procurement (goods

<sup>19</sup> The correlation between the difference in practice and law scores and government effectiveness is 0.69.

<sup>20</sup> 94.6 percent of the contracts in the sample are awarded using open procedure.

or services), and the sector using the first two digits of the sectoral CPV codes reported for contract awards ( $\beta_s$ ).<sup>21</sup>

As discussed, we only examine contracts that have estimated project costs below EU thresholds. We focus on PP contracts awarded in 2019 since the survey data generating the law and practice scores reported in Bosio et al. (2022) is for 2019, but also undertake an analysis using data for the 2016-19 period as a robustness exercise.

To evaluate the relationship between discretion permitted by law and that applied in practice and the likelihood that a SME wins a procurement contract, we estimate a logistic regression equation, where all variables are the same as those in equation (1), as follows:

$$Prob(SME\ winner = 1)_c = \beta_0 + \beta_1 law(practice)_c + \sum_{a=2}^9 \beta_{a+3} authority_a + \sum_{s=2}^{45} \beta_{s+12} sector_s + \varepsilon_c \quad (2)$$

## 4. Results

### 4.1 Contract Prices

Results of estimating equation (1) reveal that PP law scores are not significant in any regression specifications (Table 1). Conversely, more restrictive practices towards discretion are associated with higher contract prices, with a coefficient estimate that is statistically significant at the 1% level. This positive relationship increases in magnitude for the subsample of countries with above median government effectiveness but is also observed for countries with below median government effectiveness.

**Table 1: PP Law, Practice and Contract Prices**

	All countries	Low GE	High GE
Discretion: Law	-6.13 (4.55)	-.42 (8.98)	-8.68 (5.31)
Discretion: Practice	6.66 (1.89)**	6.20 (2.06)*	9.31 (3.90)*
N	167,993	130,019	37,974
Sector dummy	YES	YES	YES
Procurement type dummy	YES	YES	YES

<sup>21</sup> There are a total of 44 sectors.

Authority dummy	YES	YES	YES
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Notes: GE: government effectiveness (from WGI dataset); Low/high reflects below/above median GE. Standard errors clustered at country level reported in parentheses. Outliers with extreme values of the ratio of contract price to estimated price are removed. The BACON outlier detection mechanism detects contracts with ratio above 3 and below 0.5 as outliers. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

#### 4.2 Probability of an SME Winning a Contract

The results of estimating regression equation (2) for SMEs are reported in Table 2. There is a strong positive association between discretion practice scores and the probability that an SME will win a contract. This result is driven by states with below median government effectiveness. The scope for discretion defined in procurement law is not associated with the likelihood that a SME wins a contract. The results indicate that exercise of discretion would be accompanied by fewer SMEs winning bids, consistent with the presumption that restricting the ability to use discretion may reduce the quality of winning bids.

**Table 2: Probability of a SME Winning a Contract**

	All countries	Low GE	High GE
Discretion: Law	0 (0.37)	0.25 (1.52)	-0.21 (0.2)
Discretion: Practice	1.89 (0.61)**	2.74 (0.67)**	0.62 (0.38)
N	196,378	152,394	43,983

Notes: GE: government effectiveness (from WGI dataset). Low/high reflects below/above median GE. All regressions include procurement procedure, sector and procuring authority dummies. Standard errors clustered at country level reported in parentheses. \*  $p < 0.05$ ; \*\*  $p < 0.01$ . Constant not reported.

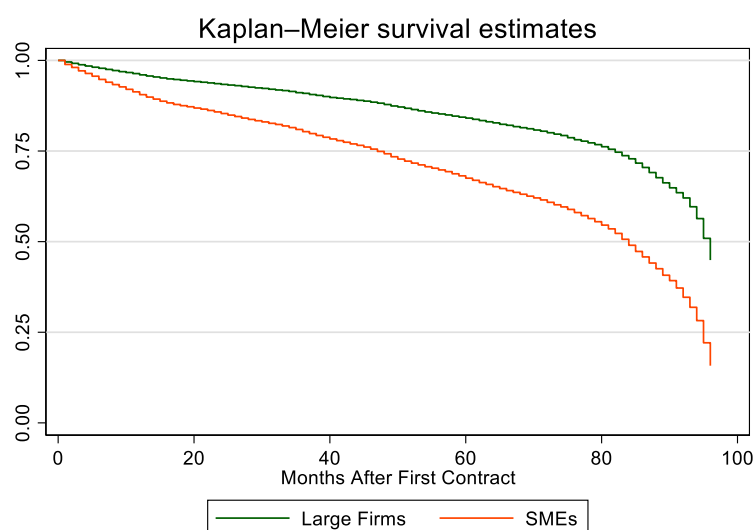
#### 4.3 Survival of SMEs in the Public Procurement Market

Discretion may not only influence the probability of SMEs winning contracts, but it may also be associated with survival rates, i.e., continued participation in procurement – winning additional contracts. We find that 175,278 SMEs (72.58%) could not survive in the PP market and win another contract following their first contract observed in the sample period. Following De Silva et al. (2009), we employ survival regression methods to compare the duration of participation of SMEs and large firms in the PP market – defined as the total number of months between the first and last win of a contract. The Kaplan-Meier survival

probabilities of SMEs and large firms in the PP market are plotted in Figure 3. This reveals large firms are substantially more likely to survive in the PP market than SMEs.

The results of a survival regression analysis motivated by the difference in survival probabilities using a SME dummy variable as an explanatory variable are reported in Table 3. We use both the Weibull distribution function to model hazard rates (the workhorse to model hazard rates that decrease with time – Upadhyay and Gupta, 2010) and the Cox proportional hazards model, which does not require specifying the distribution function. The coefficient of the SME dummy variable measures the probability of the event of winning a new contract will end. The results obtained using the two models are virtually identical. The probability of exiting the procurement market is higher for SMEs. Large firms survive longer and keep winning new contracts.

**Figure 3. Survival probabilities of SMEs and large firms**



**Table 3: Survival probabilities for SMEs in the EU procurement market**

	Weibull Distribution	Cox Model
SME	0.79 (0.09)**	0.8 (0.09)**
N	130,555	130,555

Notes: Constant not reported. Standard errors clustered at country level reported in parentheses. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

Of relevance to our research question is whether discretion in law and in practice plays a role in the survival of SMEs in the EU procurement markets. We explore this by using the law and practice scores as explanatory variables in the survival regression specification, focusing on SMEs. Results, reported in Table 4, are consistent with previous findings that the law scores do not influence the survival probability of SMEs.

**Table 4: Discretion and probability of SMEs leaving the procurement market**

<i>Weibull Distribution</i>			
	All countries	Low GE	High GE
Discretion: Law	0.10 (0.11)	0.41 (0.57)	0.06 (0.20)
Discretion: Practice	-0.80 (0.21)**	-1.06 (0.32)**	-0.52 (0.09)**
<i>Cox Model</i>			
	All countries	Low GE	High GE
Discretion: Law	0.07 (0.12)	0.49 (0.58)	0.06 (0.19)
Discretion: Practice	-0.81 (0.20)**	-1.06 (0.31)**	-0.50 (0.09)**
N	64,035	37,643	26,392

Notes: GE: government effectiveness (from WGI dataset). Low/high reflects below/above median GE. Standard errors clustered at country level. \*  $p < 0.05$ ; \*\*  $p < 0.01$ . Constant not reported.

The coefficient estimates for the practice score variable is negative and statistically significant across all regression specifications: the probability that a SME will exit procurement (does not survive) decreases as the practice score increases. The coefficient estimate is larger (double) for countries with below median government effectiveness. Thus, practices that restrict discretion beyond what is stipulated in PP regulations both increase the probability that a SME will win a bid and reduce the subsequent exit probability.

#### **4.4 Bunching Below Thresholds**

Procuring entities may seek to set estimated costs just below value thresholds that determine when EU procurement regulations apply to be able to exercise discretion. Empirical studies for the Czech Republic and Hungary have found that some public authorities engage in such manipulation in the call for tender (Palguta and Pertold, 2017;

Szucs, 2023). Taş (2023) concludes that up to 13% of examined EU authorities manipulate estimated costs to be able to use discretion. We draw on the approach used by Taş (2023) and employ the regression discontinuity manipulation test suggested by Cattaneo et al. (2020) to calculate bunching manipulation test statistics for individual public authorities, focusing on those that awarded more than thirty contracts during 2016-2019. The resulting sample spans 1,928 entities and 496,850 contract awards.<sup>22</sup>

Figure 4 plots the distribution of the normalized estimated costs included in calls for tender for all contracts using counterfactual densities of 496,850 contracts (Chetty et al. 2011). We normalize contract prices with respect to EU legal value thresholds to be able to visualize the difference between estimated procurement contract costs and the thresholds. The solid line reflects the counterfactual density. Although the number of contracts declines monotonically as the normalized estimated contract cost increases, there is a significant increase in the number of contracts just below the threshold (represented by the vertical line at 0), as can be seen from the (red) diamond in Figure 4, suggesting there is bunching behavior.

To analyze potential bunching manipulation, we calculate the p-values for manipulation tests for this sample of public authorities. For 314 of the 1,928 entities p-values are below 5%, i.e., in 16% of the sample authorities potentially manipulated estimated costs to stay below thresholds (Figure 5).

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<sup>22</sup> Appendix Table 3 provides descriptive statistics on the number of contracts and procuring authorities covered by country.

Figure 4: Distribution of contracts with respect to normalized estimated cost, 2016-19

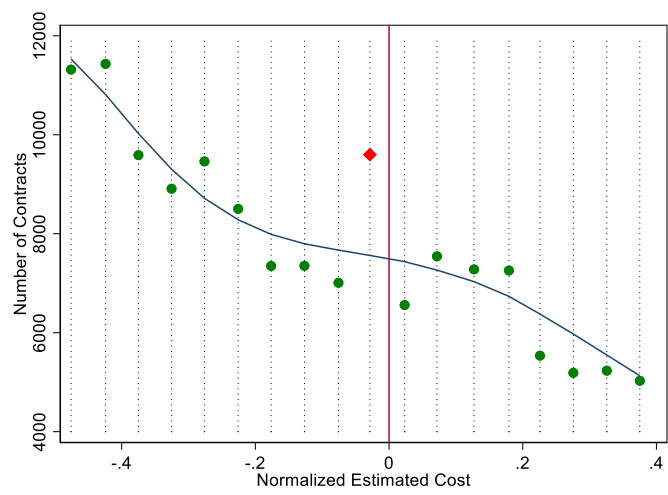
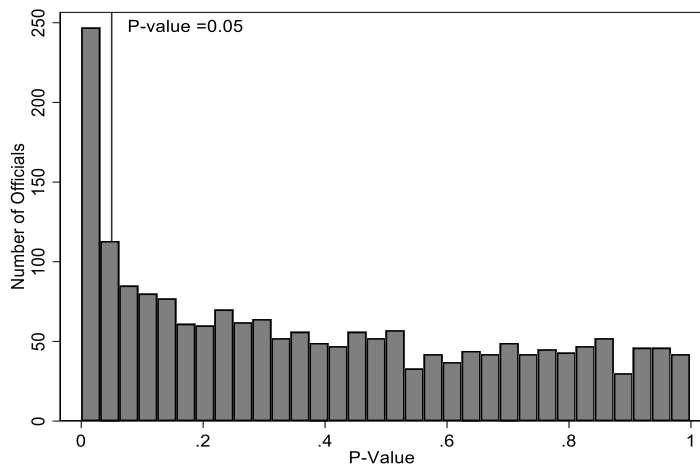


Figure 5: Histogram of manipulation test P-values



We then use logistic regression with the law and practice scores as explanatory variables to examine whether more restrictive law and practices regarding exercise of discretion affect the probability of bunching manipulation, using instances where an entity has a p-value of 0.05 or lower to identify potential manipulation. High law and practice scores – i.e., countries where there is less scope to use discretion – reduce the probability of bunching associated with action to ensure contract values are below thresholds (Table 5). This result applies independent of government effectiveness.

Table 5: Probability of manipulation of estimated contract values

	All countries	Low GE	High GE
Discretion: Law	-0.68	-0.75	-0.38
	(0.07)**	(0.12)**	(0.03)**



Discretion: Practice	-0.61 (0.06)**	-0.77 (0.05)**	-0.3 (0.04)**
N	1,928	986	942

Notes: GE: government effectiveness (from WGI dataset). Low/high reflects below/above median GE. Standard errors clustered at country level. \* p<0.05; \*\* p<0.01. Constant not reported for brevity.

## 5. Robustness checks

To assess the robustness of our results, we re-run the analysis limiting the sample of procurement awards to road maintenance projects. We do so because the survey that generated the law and practice scores was organized around “a hypothetical \$2.5 million road maintenance project” (Bosio et al., 2022, p. 1092). We therefore focus on the contracts for the CPV codes related to “Highway maintenance work”, “Road-maintenance work” and “Road-repair works”.<sup>23</sup> There are 4,925 contracts under the respective CPV codes with information on prices. Of these, 638 were won by SMEs. Results are similar to those obtained for the full sample (Table 6). More restrictive practice towards discretion increases average procurement costs. The coefficient estimate is substantially larger than for the full sample, with statistical significance exceeding the 1% percent level. As in the full sample, there is no relationship between the law score and prices.<sup>24</sup>

**Table 6. Contract prices: Road maintenance awards, 2019**

	Contract price	SME Win	SME Survival
Discretion: Law	-72.79 (220.56)	0.34 (0.63)	-0.3 (0.69)
Discretion: Practice	292.06 (73.97)**	0.61 (0.73)	-1.67 (0.55)**
N	638	638	212
Authority dummy	YES	YES	YES

Notes. Standard errors clustered at country level. \* p<0.05; \*\* p<0.01. Constant not reported. Weibull distribution results are presented for SME Survival regressions.

As a second robustness exercise we re-run the analysis for data spanning the 2016-19 period. We limit the period because the EU implemented measures to promote SME participation in new procurement legislation in 2014, with implementation to be completed by the end of 2015.<sup>25</sup> Although the indicators of restrictiveness of procurement law and

<sup>23</sup> The corresponding CPV codes are 45233139-3, 45233140-2, 45233141-9, and 45233142-6.

<sup>24</sup> Law and practice scores do not influence the probability that an SME will win a road-maintenance contract.

<sup>25</sup> The 2014 legislative changes fully entered into force in early 2016.

practice are only available for 2019, we expect there to be little change in years just prior to 2019.

Table 7 reports the results of the analysis of contract prices and probability of SMEs winning a contract using data for 2016-2019, again distinguishing between low and high government effectiveness countries. These confirm the robustness of the results presented in Section 4. Contract prices are higher in countries with high PP practice scores and high government effectiveness. The sign and significance of coefficient estimates for law and practice scores for countries with low government effectiveness remain the same. Table 7 also reports results for the probability that SMEs win contracts. Practice scores are again strongly associated with the likelihood of SMEs winning contracts in high government effectiveness countries.

**Table 7: Contract prices and probability of SME win (2016-2019)**

	Contract prices	Prob. SME win
	Below median government effectiveness	
Discretion: Law	0.32 (7.05)	0.06 (1.16)
Discretion: Practice	3.67 (1.47)*	2.22 (0.72)**
N	458,021	345,101
	Above median government effectiveness	
Discretion: Law	-9.29 (5.07)	-0.05 (0.20)
Discretion: Practice	8.58 (2.82)**	0.57 (0.34)
N	111,805	115,670

Notes. Standard errors clustered at country level. \*  $p < 0.05$ ; \*\*  $p < 0.01$ . Constant not reported.

## 6. Conclusion

In this paper we examine the effect of the ability of procuring authorities in European countries to exercise discretion in the process of awarding public procurement contracts on outcomes, including contract prices and win rates for SMEs. We distinguish between the scope to exercise discretion as defined in procurement laws and as reflected in applied

practices, in both cases as assessed by national procurement experts using indicators compiled by Bosio et al. (2022). There is evidence that procuring entities engage in behavior that is consistent with a desire to exercise discretion, reflected in bunching of estimated contract values in calls for tender just below the value thresholds established by procurement law. More restrictive law and practice towards exercise of discretion appears to be associated with less bunching manipulation of estimated contract values in calls for tender, suggesting that law and applied practice influence the ability of procuring entities to exercise discretion.

We find a positive and statistically significant relationship between more restrictive practice towards the exercise of discretion and contract award prices. Differences in the extent to which PP laws restrict discretion are not associated with contract prices. The results suggest that restrictions on exercise of discretion by public authorities may increase PP costs. The association between practice scores and contract prices is larger in countries with higher government effectiveness, suggesting more restrictive practices towards exercise of discretion may impede the scope for public entities to use discretion to eliminate low-quality bidders.

Additionally, we find that in countries with more restrictive practices towards discretion there is a greater probability that SMEs win contracts, and that this is associated with higher survival probabilities for SMEs in the PP market. These findings suggest that more restrictive practice towards the exercise of discretion may act to attenuate incentives to allocate contracts to larger (non-SME) firms. An implication of these findings is that tradeoffs between discretion and value for money go beyond the cost margins that are the focus of much of the literature. There are also tradeoffs in terms of the extent to which European countries realize the noneconomic objective of facilitating participation in procurement by SMEs.

An important caveat applies as regards the generality of our results. The findings are specific to a set of countries where public procurement is subject to a common legislative framework that applies to above threshold contracts and pertain to states that, while diverse with respect to government effectiveness, are more similar in governance indicators than

would be the case for a global cross-section of procurement. Thus, our results are unlikely to hold in settings where levels of corruption are significantly higher and government effectiveness indicators are far below the average that characterizes our European sample.

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## Appendix

**Appendix Table 1: Summary Statistics, 2019**

Authority Country Code	Total Number of Contracts	Number of Below Threshold Contracts	WGI Government Effectiveness Score	WGI Category	Law Score	Practice Score	SME Winner Below Threshold
AT	4438	235	1.46	High	1.65	2.48	157
BE	8538	483	1.18	High	2.22	2.50	159
BG	15605	6761	0.26	Low	2.72	2.22	5041
CH	4059	3	2.06	High	0.82	2.74	2
CY	793	86	1.18	High	1.86	2.93	45
CZ	27961	7812	1.02	Low	2.45	3.10	6517
DE	67429	6468	1.72	High	1.46	3.07	3851
DK	7221	554	1.80	High	0.84	2.29	191
EE	6087	1	1.12	Low	2.14	3.55	0
ES	36774	12320	1.03	Low	2.61	2.11	6312
FI	8571	172	1.94	High	1.01	2.71	116
FR	109154	9578	1.35	High	2.47	3.21	4838
GB	38796	11073	1.18	High	1.86	2.93	5134
GR	7690	3797	0.31	Low	3.00	2.14	1811
HR	9532	6619	0.58	Low	2.72	2.59	2991
HU	8211	2822	0.51	Low	2.76	2.90	1804
IE	2931	153	1.29	High	1.30	2.88	104
IS	398	7	1.45	High	2.05	2.64	7
IT	24146	6799	0.50	Low	2.92	2.31	2465
LI	41	2	1.76	High	1.49	2.76	2
LT	11385	611	0.98	Low	2.13	2.99	461
LU	1485	59	1.68	High	2.35	2.45	41
LV	10645	4197	0.90	Low	2.92	3.36	3924
MK	1649	383	0.14	Low	2.06	2.90	184
MT	839	21	1.00	Low	2.05	3.10	15
NL	8115	824	1.85	High	1.85	3.05	551
NO	4320	184	1.98	High	1.01	2.48	116
PL	123360	73101	0.63	Low	2.41	3.01	44886
PT	7156	2908	1.33	High	2.80	2.09	909
RO	52094	40383	-0.17	Low	2.47	2.09	2019
SE	17414	1579	1.84	High	1.65	3.07	1039
SI	38566	9070	1.17	High	2.45	3.52	7179
SK	3003	785	0.81	Low	2.27	1.95	612
Total	668406	209850					103483

Source: TED, World Bank Governance Indicators and Bosio et al. (2022) for public procurement law and practice scores.

**Appendix Table 2: Average Prices of Below Threshold Contracts (Euros, 2019)**

	All	Goods	Services	Works (construction)
SMEs	111,875	41,989	76,878	750,189
Non-SMEs	61,512	21,276	37,884	809,514

Source: TED.

**Appendix Table 3: Bunching Below Thresholds Manipulation**

Authority Country code	Number of Contracts examined	Number of Authorities responsible
AT	333	4
BE	1407	10
BG	9996	61
CY	603	3
CZ	30399	117
DE	3767	46
DK	717	9
EE	3745	21
ES	41061	259
FI	160	3
FR	21039	179
GR	5957	26
HR	22678	51
HU	10214	55
IE	660	7
IT	21807	148
LT	386	4
LU	92	2
LV	10412	32
MK	487	3
MT	72	1
NL	1517	18
NO	1042	13
PL	202134	418
PT	3755	19
RO	66540	225
SE	6727	53
SI	12654	57
SK	3261	15
UK	13271	70
Total	496850	1928

Source: TED