Discretion and Public Procurement Outcomes: Law, Practice and Government Effectiveness

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2023

May 4 - 6,
Cairo Egypt

ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية
ERF 29th Annual Conference

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11 December 2022

Abstract

Detailed data on public procurement contract awards in 33 countries reported in the EU Tenders Electronic Daily (TED) dataset are used to assess the relationship between government procurement regulation and procurement practice regarding the exercise of discretion by authorities. We find that the PP law pertaining to discretion is not associated with average procurement costs but that more restrictive practice towards exercise of discretion is associated with higher contract prices. This suggests more restrictive PP practices may prevent public authorities from using discretion to eliminate low-quality bidders. The association between PP practice score and higher contract prices is stronger in countries with above average government effectiveness. More restrictive PP practice is also associated with higher probabilities that foreign or small and medium enterprises will win a PP contract. Our empirical results suggest that MENA countries with low government effectiveness and PP practices that permit more discretion are likely to benefit more from restricting the potential for procuring entities to exercise discretion in the allocation of procurement contracts.

JEL codes: H57; O31; O32

Keywords: Public procurement; Contract prices; Regulation; Discretion; Government effectiveness

* Draft paper prepared for the 2023 ERF Annual Forum.

1. Introduction

The value of global public procurement (PP) contracts through which government entities purchase goods, services and construction works amounts to some $11 trillion annually (Bosio and Djankov, 2020), some 12% of global GDP. In most countries the funds thar disbursed through PP mechanisms are allocated through procedures that are intended to identify and select suppliers that can satisfy the terms of a contract at lowest cost to the government. In most jurisdictions a core feature of PP law and regulation is to assure 'value for money' objectives are realized, which is done in part by requiring competitive bidding for contracts and in part by using processes that minimize the potential for rent-seeking behavior, collusion, corruption, and fraud.[1]

A feature of PP law and regulation is that the associated procedures limit the discretion of authorities in awarding PP contracts. Economic theory suggests such regulation is not necessarily consistent with attaining value for money insofar as procuring authorities may be able to lower procurement costs or increase quality by exercising discretion and engaging in negotiations with firms (Coviello et al., 2018; Baltrunaite et al., 2020; Carril, 2022). Decarolis et al. (2020) argue there is a tradeoff in the design of PP regulation between allowing for more discretion that may permit attainments of greater efficiency and the associated potential of the exercise of discretion to create more opportunities for fraud and theft.

Bosio et al. (2022) construct indicators for 187 countries of the degree to which the exercise of discretion by public entities is constrained by procurement legislation and the extent to which actual procurement practice differs from what is mandated by formal procurement regulations. 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 better outcomes in those that with higher per capita incomes and stronger public sector capacity. They also show that PP laws tend to be stricter than applied practice in lower capacity countries, but less strict than practice in higher capacity jurisdictions. Their main conclusion is that PP regulation and government effectiveness are not necessarily complementary (because of a presumption that effective governance is a necessary condition for correct implementation of prevailing PP legislation). When it comes to PP, government effectiveness and PP law may be substitutes . In countries with high government effectiveness, discretion is less likely to result in fraud or corruption—and conversely, exercise of discretion may result in better PP outcomes. More specifically, they conclude that regulation of discretion is effective in countries with low public

[1] 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). In addition to wasting more than 1% of GDP each year, corruption in public procurement has significant indirect costs such as hindering access of foreign and small firms to the public procurement markets and limiting competition (OECD, 2016).

sector capacity in enhancing quality and integrity but that this is not the case in countries with high capacity because restrictive PP regulation constrains the ability of procuring entities to exercise discretion to exclude low quality bidders.

Bosio et al. (2022) base their empirical analysis on a survey of expert practitioners regarding a hypothetical road maintenance project. They did not have access to granular data on actual procurement contract awards for the large cross-section of countries covered in their policy dataset. The lack of such data led them to investigate the relationship between PP law and the exercise of discretion by focusing on measures of (i) procurement quality (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 (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).

This paper contributes to the literature on the relationship between discretion and PP cost-effectiveness by empirically investigating the relationship between the regulation of discretion in procurement laws and practices and PP outcomes using the EU Tenders Electronic Daily (TED) dataset. European Union (EU) countries spend the equivalent of 14% of their GDP on PP. Over 250,000 public authorities in the EU acquire services, works and supplies worth €1.9 trillion annually. TED contains information on PP contracts awarded in 33 countries: the 27 EU member states, the UK, European Economic Area (Iceland, Liechtenstein and Norway), Switzerland, and the Former Yugoslav Republic of Macedonia. The cross-country panel structure of the TED dataset provides an good platform to estimate the association between differences in PP laws and practices and PP outcomes. We use these PP award data to assess the theoretical predictions developed by Bosio et al. (2022), using their PP law and practice measures for the countries covered by the TED database.

We analyze 208,346 PP contracts awarded in 33 EU and EU affiliated countries. We find that the restrictiveness of PP laws is not associated with PP costs, but that there is a significant and positive relationship between practice scores and contract prices. Our results support the predictions of Bosio et al. (2022), providing some evidence that limiting discretion of public officials may increase PP costs, especially in countries with high government effectiveness. The association between the practice score and PP outcome is larger in countries with higher government effectiveness, suggesting stricter PP practices may impede the scope for public officials to use discretion to eliminate low-quality bidders. Contract prices are significantly higher in countries with above average government effectiveness scores. Additionally, we find that in countries with higher practice scores there is a greater probability that foreign firms or small and medium enterprises (SME) win contracts.

The remainder of the paper is organized as follows. Section 2 describes our data. In Section 3 we examine the relationship between PP law and practice scores and outcomes, measured as average PP contract prices. Section 4 presents a counterfactual analysis focusing on the potential implications of our findings for Arab countries. Section 5 concludes.

2. Data

Data in TED cover three categories of PP: purchases of (contracts for) services, supplies (goods) and works (construction and infrastructure-related projects). TED reports data 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 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 European Economic Area countries, accounting for about three-fifths of total PP by value (Kutlina-Dimitrova and Lakatos. 2016).

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. Many contracts that fall below these thresholds are also reported in TED, as authorities often use TED to publicize tenders independent of contract values.

The TED data are available online in CSV format starting in 2006.[2] 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.[3] For each contract, the TED database includes fields for the estimated contract value (determined by the procuring entity), the actual contract (award) price, the sectoral Common Procurement Vocabulary (CPV) code that applies to the subject of

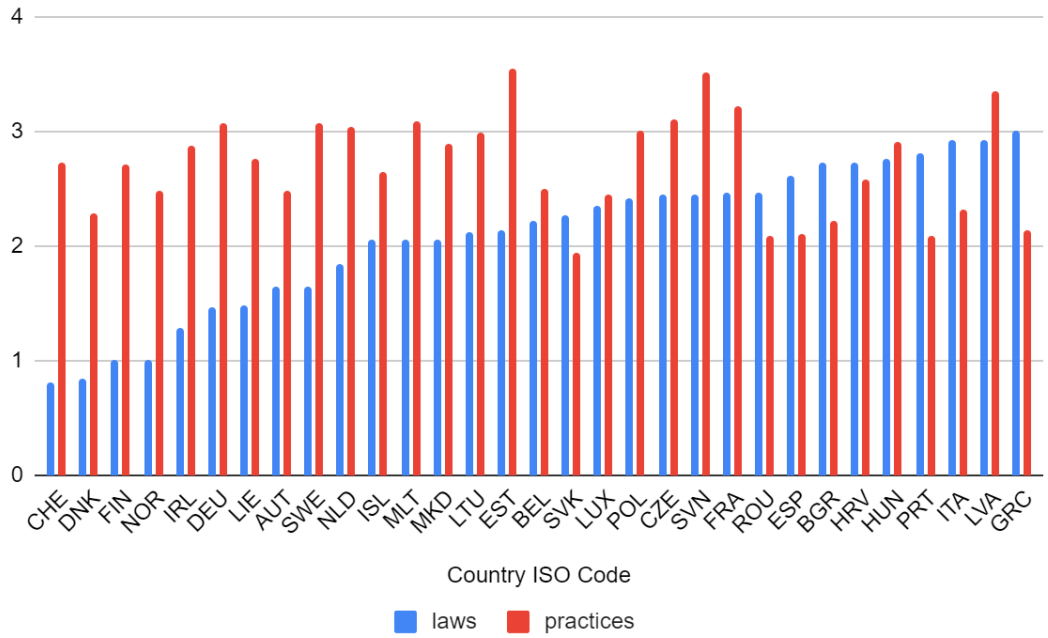
[2] We use the contact award notices csv files available at: https://data.europa.eu/euodp/data/dataset/ted-csv.
[3] The standard forms are available at http://simap.ted.europa.eu/web/simap/standard-forms-for-public-procurement.

procurement,[4] the procurement method used, type(s) of contracting authority, and the names and locations of both the procuring agencies and the winning firms.

Law and Practice Scores are sourced from Bosio et al. (2022). These provide indicators of procurement laws and procurement practice in 187 countries, including all of the countries covered by TED. The indicators are based on expert 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. The survey instrument included 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. Bosio et al. also construct measures of procurement outcomes, including assessments of process integrity and quality.

Figure 1 below plots the law and practice scores for all TED countries, sorting countries with respect to their law scores, where the lower scores reflect greater latitude for the exercise of discretion by procuring entities when deciding on contract awards.

Figure 1: Law and practice scores of EU countries

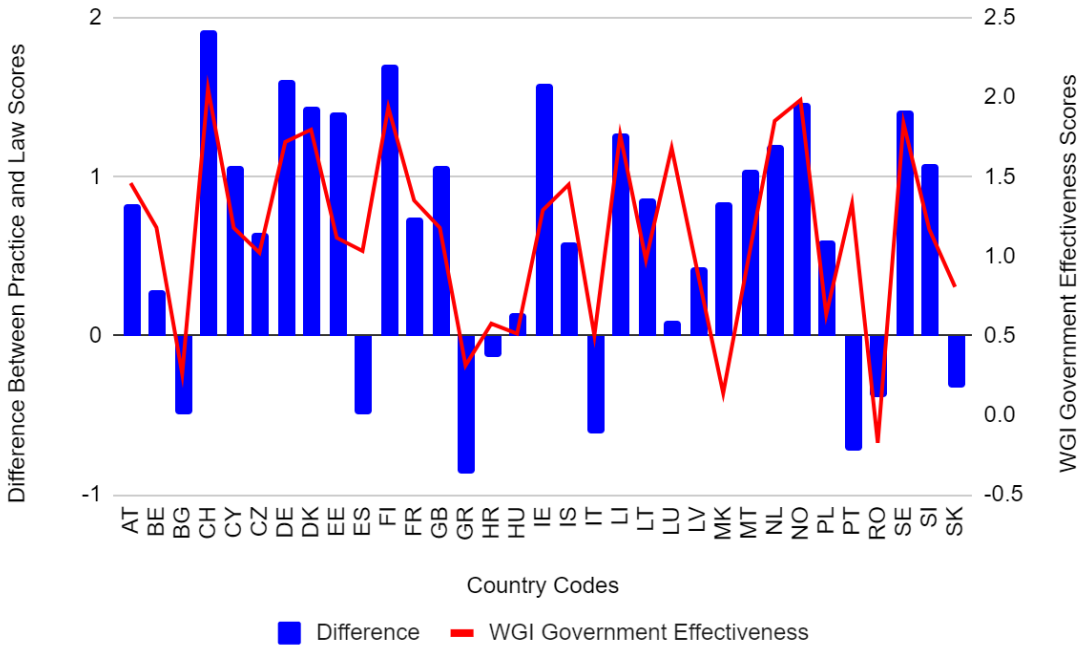


Note: Lower law scores reflect greater scope for exercise of discretion.
Source: Bosio et al. (2022).

[4] 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.

The indices can range between 0 and 4. Higher values indicate more regulation or less discretion. Switzerland (0.82), Denmark (0.84), Finland (1.01) and Norway (1.01) have the least restrictive laws. The countries with highest law scores are Portugal (2.81), Italy (2.92), Latvia (2.92) and Greece (3.01). Figure 1 makes clear that law and practice differ substantially in many countries and that this difference tends to be greater in countries where the legal framework permits more discretion. The mean of law score across countries is 2.09, with a standard deviation of 0.63. The mean and standard deviation of the practice score are 2.73 and 0.55, respectively. Table 2 below displays the difference between practice and law scores and government effectiveness (sourced from the World Bank Worldwide Governance Indicators dataset) for countries in our sample.[5] The correlation between the difference and government effectiveness is 0.69. Figure 2 shows that EU countries with high governance effectiveness scores have high practice and low law scores. In other words, public officials in high government effectiveness countries refrain from exercising discretion (PP practice is more restrictive than the applicable legal framework).

Figure 2: Difference between PP practice and law scores and government effectiveness



[5] https://databank.worldbank.org/source/worldwide-governance-indicators

3. Law, Practice and Public Procurement Outcomes

In this section, we examine the relationship between PP law and practice scores and outcomes, measured by average PP contract prices, focusing on the sample as a whole as well as estimating the association between PP law and practice and the likelihood that foreign or SMEs win public contracts. In each case we consider the role of government effectiveness as a factor influencing the relationship.

3.1. Contract Prices

We estimate the following regression equation using OLS, where contract price is the dependent variable and β_1 is the coefficient associated with law and practice scores. We control for whether competitive open procedures (first-price auction) are used, type of public authority and sector. We identify sectors using the first two digits of CPV codes that are reported for contract awards. We limit the empirical analysis to PP contracts awarded in 2019 since the survey data reported in Bosio et al. (2022) is for 2019. We only examine contracts that have estimated costs below EU thresholds as above threshold contracts are subject to EU PP law. In principle all EU member states must apply the same PP law requirements to above threshold contracts, but the applicable EU PP directives do not apply to contracts with values that fall below threshold contracts. For such contracts national processes and requirements apply, which are heterogenous across countries.[6]

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

Table 1 below reports the estimated coefficients of regression equation (1) using OLS. The results show that the law scores are not significant in any regression specifications. Practice scores are significant with positive coefficients. Higher restrictions in PP practice are weakly associated with higher contract prices, with the coefficient estimate statistically significant at the 5% level. The relationship is more pronounced when we focus on countries with above average government effectiveness. In line with the theoretical arguments of Bosio et al. (2022), limiting discretion of public officials is associated with higher contract prices, with the relationship being stronger in countries with high government

[6] Because common PP law criteria do not apply to below threshold value contracts, procuring entities may have incentives to structure projects to fall below applicable thresholds, in itself an exercise in discretion. Insofar as this is the case there may be 'bunching' of contracts just below threshold values. See e.g., Palguta and Pertold (2017); Szucs (2017) and Carril (2022).

effectiveness. As expected, use of competitive bidding is associated with lower contract prices, in both the case where law scores are considered and in estimations using the practice scores. Interestingly, this relationship is driven by countries with above average government effectiveness and is not observed for low-capacity countries.

Table 1: PP Law, Practice and Contract Prices

	All Countries	Countries with Low GE	Countries with High GE
Law Score	24.03	18.90	32.18
	(30.48)	(38.66)	(18.48)
Open Procedure	-62.53	-16.36	-136.59
	(21.49)**	(23.27)	(45.91)**
Practice Score	29.49	11.84	63.91
	(14.82)*	(5.15)*	(16.13)**
Open Procedure	-60.15	-16.31	-129.22
	(21.91)**	(22.91)	(45.39)**
Number of Observations	208,346	153,187	55,159
Sector Dummy	YES	YES	YES
Authority Dummy	YES	YES	YES

Notes. GE: government effectiveness (from WGI dataset). Robust standard errors below coefficient estimates.
* p<0.05; ** p<0.01. Constant not reported for brevity.

3.2. Probability of Foreign Firms Winning a Contract

We estimate the following logistic regression equation to analyze the relationship between law and practice scores and the likelihoods that foreign firms win a contract.

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

Table 2 reports the estimated coefficients of regression equation (2). Across all countries there is a statistically significant association with the practice score, while the law score has no explanatory power. The results indicate that the law score is positively associated with the likelihood that a foreign firm will win a contract in low government effectiveness countries, and negatively in nations with high government effectiveness. The practice score similarly has a positive and significant association with the probability that a foreign firm will win a contract in nations with low government effectiveness.

Table 2: Law, Practice and the Probability of Foreign Firms Winning a Contract

	All Countries	Countries with Low GE	Countries with High GE
Law Score	-0.1	1.8	-1.07
	(0.1)	(0.14)**	(0.1)**
Practice Score	0.29	0.39	0.08
	(0.05)**	(0.06)**	(0.09)
Number of Observations	207,744	150,495	54,775
Sector Dummy	YES	YES	YES
Authority Dummy	YES	YES	YES

Notes: GE: government effectiveness (from WGI dataset). Robust standard errors below coefficient estimates. * p<0.05; ** p<0.01. Constant not reported for brevity.

3.3. Probability of SMEs Winning Contracts

The PP literature finds that the adverse consequences of bureaucratic corruption are significantly higher for SMEs. (UNODC, 2007), and more generally that SMEs often find it more difficult to participate in government contracting opportunities than larger firms.[7] This suggests we should observe a stronger association between PP law and practice and outcomes involving SMEs. We estimate the following logistic regression equation to analyze the relationship between law and practice scores and the likelihoods that foreign firms or SMEs win a contract.

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

Table 3 reports the estimated coefficients of regression equation (3). There is a strong positive association between practice scores and the probability that an SME will win a contract. This relationship holds independent of government effectiveness, although the magnitude of the coefficient estimate is larger in countries with below average government effectiveness. Practice matters more than PP law. The relationship between PP law scores and outcomes for SMEs is negative in countries with high government effectiveness.

[7] See e.g., Hoekman and Taş, (2022).

Table 3: Law, Practice and the Probability SMEs Win a Contract

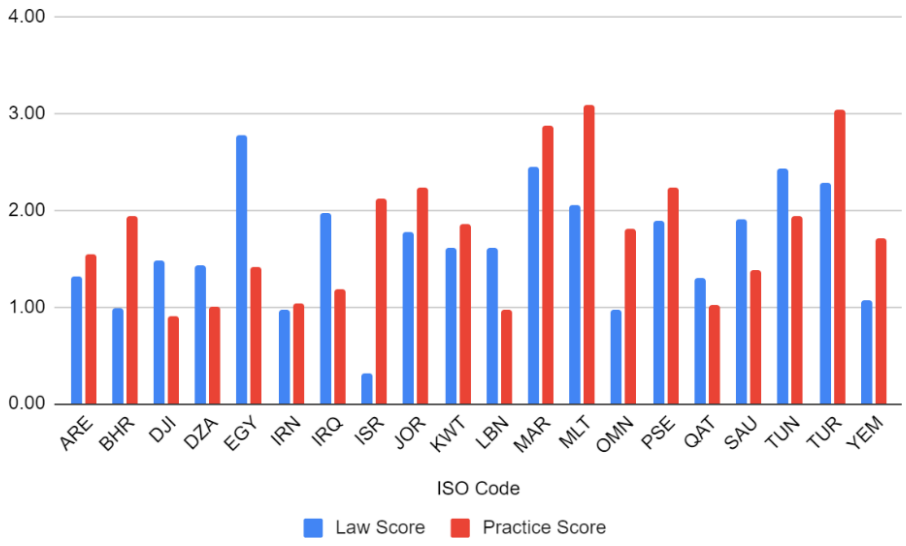
	All Countries	Countries with Low GE	Countries with High GE
Law Score	-0.02	0.25	-0.17
	(0.02)	(0.04)**	(0.02)**
Practice Score	1.86	2.74	0.6
	(0.01)**	(0.02)**	(0.02)**
Number of Observations	207,507	152,394	55,112
Sector Dummy	YES	YES	YES
Authority Dummy	YES	YES	YES

Notes. GE: government effectiveness (from WGI dataset). Robust standard errors below coefficient estimates. * p<0.05; ** p<0.01. Constant not reported for brevity.

4. Implications for countries in the MENA region

There are no cross-country panel datasets such as TED that span the Middle East and North African countries, precluding an analysis of the type undertaken above. In this section we briefly discuss the potential implications of our findings for MENA countries[8] and Turkey based on their PP law and practice scores and Turkey, drawn from Bosio et al. (2022).[9] Figure 3 plots the PP law and practice scores. In slightly more than half (11/20) of the countries considered, practice is more restrictive than applicable PP law or regulation. Egypt, Lebanon, and Iraq are examples of countries where there is much greater discretion than implied by prevailing PP legislation. WGI Government Effectiveness scores differ substantially across the countries in the sample, but there is a pattern that countries where PP law is more restrictive than practice are often those with lower government effective scores (Figure 4).

Figure 3: Law and Practice Scores of MENA Countries and Turkey



Source: Bosio et al. (2022).

[8] MENA countries are those defined by the World Bank at https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

[9] The scores of individual countries are reported in Appendix Table A.1.

Figure 4: World Bank WGI Government Effectiveness

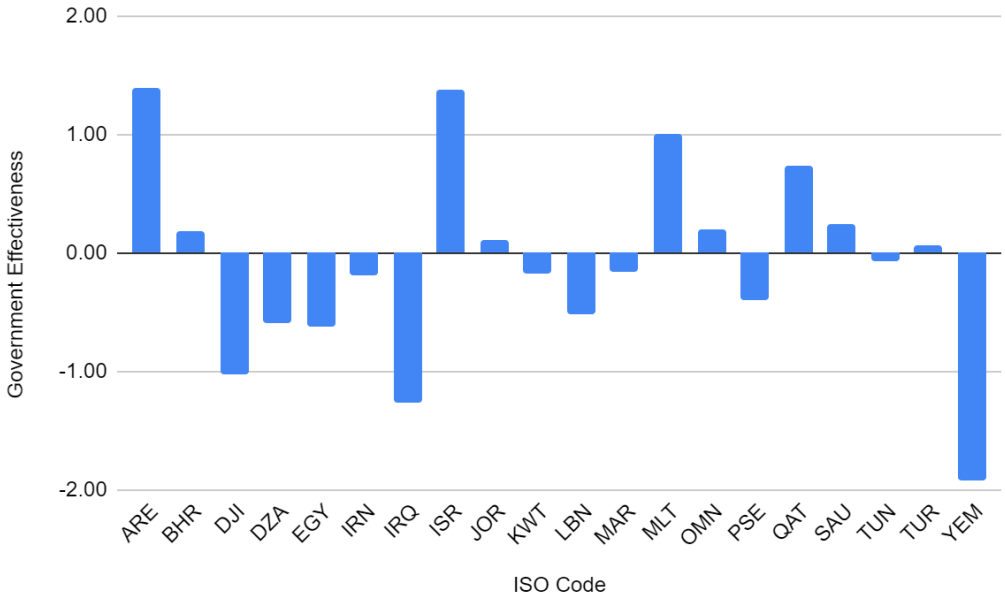


Table 4 reports correlations between PP law and practice, and government effectiveness scores. This reveals a negative relationship between PP law and government effectiveness. Governments with higher effectiveness have less restrictive laws. In comparison, the PP practice scores of countries with more effective governments are higher. Effective governments appear to apply more restrictive public procurement practices.

Table 4: Correlation between PP Law, Practice and Government Effectiveness Scores

	Law	Practice	Government Effectiveness
Law	1		
Practice	0.3	1	
Government Effectiveness	-0.22	0.34	1

The empirical results presented in Section 3 suggest that countries with low government effectiveness can benefit more from higher PP practice scores, as this is associated with a higher likelihood that SMEs win contracts in countries with low government effectiveness. As shown in Figure 4, many MENA countries have very low or negative WGI government effectiveness scores, suggesting that these countries can benefit from putting in place government procurement practices that do more to restrict the potential for procuring entities to exercise discretion.

5. Conclusion

In this paper, we examine the effect of discretion on public procurement outcomes. We distinguish between PP laws and practices. We find that the restrictiveness of PP laws is not associated with PP costs, but that there is a significant and positive relationship between practice scores and contract prices. Our empirical results suggest that limiting discretion of public officials may increase PP costs, especially in countries with high government effectiveness. The association between the practice score and PP outcome is larger in countries with higher government effectiveness, suggesting stricter PP practices may impede the scope for public officials to use discretion to eliminate low-quality bidders. Contract prices are significantly higher in countries with above average government effectiveness scores. Additionally, we find that in countries with higher practice scores there is a greater probability that a foreign firm and a small and medium enterprise (SME) win contracts.

Our empirical results have potential policy implications for those MENA countries with low government effectiveness and PP practices that permit more discretion. These countries are likely to benefit more from restricting the potential for procuring entities to exercise discretion in the allocation of procurement contracts.

References

Baltrunaite, A., C. Giorgiantonio, S. Mocetti and T. Orlando (2021), Discretion and Supplier Selection in Public Procurement, *Journal of Law, Economics and Organization*, 37(1): 134–166.

Bosio, E. and S. Djankov, (2020) How large is public procurement? World Bank Blogs. At https://blogs.worldbank.org/developmenttalk/how-large-public-procurement.

Bosio, Erica, Simeon Djankov, Edward L. Glaeser, and Andrei Shleifer (2022), Public Procurement in Law and Practice. *American Economic Review* 112(4). At https://www.aeaweb.org/articles?id=10.1257/aer.20200738

Carril, Rodrigo (2022), Rules Versus Discretion in Public Procurement. Barcelona School of Economics Working Paper 1232.

Coviello, Decio, Andrea Guglielmo, and Giancarlo Spagnolo, (2018) The effect of discretion on procurement performance, *Management Science*, 64(2): 715-738.

Decarolis, Francesco, Raymond Fisman, Paolo Pinotti and Silvia Vannutelli, (2020), Rules, Discretion, and Corruption in Procurement: Evidence from Italian Government Contracting, NBER Working Paper 28209.

European Commission (2014), EU Anti-Corruption Report. At http://ec.europa.eu/dgs/home-affairs/e-library/documents/policies/organized-crime-and-humantrafficking/corruption/docs/acr_2014_en.pdf.

Hoekman, B. and B. Taş (2022), Procurement Policy and SME Participation in Public Purchasing, *Small Business Economics*, 58: 383-402.

OECD (2016), Preventing Corruption in Public Procurement. At http://www.oecd.org/gov/ethics/Corruption-Public-Procurement-Brochure.pdf.

Palguta, Ján and Filip Pertold (2017), Manipulation of Procurement Contracts: Evidence from the Introduction of Discretionary Thresholds, *American Economic Journal: Economic Policy*, 9(2): 293-315.

Szucs, Ferenc (2017). Discretion and Corruption in Public Procurement. At https://papers.sioe.org/paper/2498.html

Appendix Table A.1

Public Procurement Law & Practice and World Bank Government Effectiveness Scores for MENA Countries and Turkey

Country Name	ISO Code	PP Law Score	PP Practice Score	WGI Government Effectiveness
United Arab Emirates	ARE	1.32	1.55	1.40
Bahrain	BHR	0.99	1.94	0.19
Djibouti	DJI	1.49	0.90	-1.03
Algeria	DZA	1.43	1.01	-0.60
Egypt	EGY	2.78	1.41	-0.62
Iran	IRN	0.98	1.04	-0.19
Iraq	IRQ	1.97	1.18	-1.27
Israel	ISR	0.31	2.12	1.39
Jordan	JOR	1.77	2.23	0.12
Kuwait	KWT	1.60	1.85	-0.17
Lebanon	LBN	1.60	0.98	-0.51
Morocco	MAR	2.45	2.87	-0.16
Malta	MLT	2.05	3.10	1.00
Oman	OMN	0.98	1.81	0.21
Palestinian Territory	PSE	1.89	2.23	-0.40
Qatar	QAT	1.30	1.02	0.74
Saudi Arabia	SAU	1.91	1.38	0.25
Tunisia	TUN	2.44	1.94	-0.07
Turkey	TUR	2.28	3.05	0.07
Yemen	YEM	1.07	1.71	-1.92

Source: Bosio et al. (2022) and World Bank.