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Improving Public Procurement Outcomes

A Review of Tools and the State of Evidence

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Abstract

Considering that about 15% of global GDP flows through public procurement systems, there is a strong need for evidence on what works in this field. This paper systematically reviews the state of the evidence in academic and policy literature on public procurement reforms and their impact on value for money and open access to public tenders. The quality of evidence on the impact of public procurement interventions is moderate, with reliable evidence established in multiple countries using diverse analytical methods only for selective, typically narrow tools, such as preferential treatment of bidders or centralized procurement. Although there is a range of tools with global policy interest and extensive implementation record such as transparency portals, civil society supervision, or audits, these have received little evaluation. Comparing intervention types according to their effects on savings (the most comparable and widely used outcome), centralized procurement and framework agreements stand out with the largest effects, over 50%. Most other intervention types were documented to achieve ~5-10% price savings which are sizable given the large sums spent on public procurement. This systematic review calls for more research on e-procurement tools, transparency portals, civil society supervision, and public management reforms.

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Introduction

This review takes stock of the evidence on major public procurement reforms and policy interventions undertaken globally in the last decade across both developed and developing economies. It evaluates the costs, benefits, and unintended consequences of these interventions while highlighting evidence gaps for future research. As the first systematic review of its kind, it aggregates insights from diverse sources—academic literature and policy reports—and serves as a foundation for ongoing discourse among experts.

The need for such a review stems from the significant volume of public funds channeled through procurement systems and the frequent mismanagement of these resources. Public procurement accounts for approximately 29% of government expenditure and 15% of GDP in OECD countries, with higher proportions in many developing nations, reaching up to 25% of GDP (OECD, 2015; Bosio et al., 2022). These expenditures span critical sectors such as infrastructure, health, and education, as well as recurrent costs like utilities and office supplies. Effective procurement can save costs, reduce delays, and advance broader societal objectives, such as SME development and sustainability. Even modest efficiency improvements yield significant financial benefits, with saved funds remaining in state coffers.

International organizations like the World Bank have traditionally supported governments through institutional reforms and capacity-building, including drafting procurement regulations, creating centralized procurement bodies, and deploying e-procurement systems. These efforts aim to enhance public procurement while addressing challenges such as inefficiency or favoritism.

For the purposes of this review, public procurement is broadly defined as all purchases of goods and services by governments and government run organization which include traditional tenders and auctions, but also direct contracting, while also including long-term complex contracts such as framework contracts and public-private partnerships. Public procurement reforms and policy interventions (interventions in short) are narrowly understood. They refer to all those changes to public procurement regulations and implementing institutions which modify a limited set of features within the public procurement framework, rather than comprehensive overhauls, due to the methodological complexities of evaluating large-scale reforms. Instead, mid-range theories and interventions are more feasible to test and evaluate, leading to more reliable policy advice (Merton, 1967). Interventions which modify regulations and institutions outside the public procurement system but having strong links to procurement outcomes (e.g. civil service meritocracy, political party funding) are only briefly discussed to provide an external yardstick to the specific reforms reviewed.

While the goals of the reviewed interventions are diverse, this review centers on two overarching objectives widely pursued in procurement reforms and analyzed as key outcome variables in most impact evaluations:

- **Improving value for money**, defined here as cost-efficiency in achieving pre-determined outcomes.
- **Promoting fair and open access**, ensuring impartial treatment in contract allocation to prevent favoritism and corruption.

Value for money is assessed through indicators such as tendering costs and prices paid, while fair access is evaluated using proxies for rule-bending behaviors (e.g., unjustified sole sourcing or tailored specifications) (Charron et al., 2017; Fazekas et al., 2016).

The review emphasizes rigorous evidence, prioritizing quantitative studies using causal methods such as randomized controlled trials and natural experiments, while also considering qualitative research to trace causal pathways.

The interventions reviewed here take place in an increasingly digitized environment, enabling the use of Big Data and Artificial Intelligence-based tools, potentially revolutionizing public procurement operations and policies. However, far too often basic data infrastructures are inadequate, producing incomplete and incorrect data; while also making it hard to link it to other datasets such as company data needed for greater efficiency and integrity (Fazekas & Saussier, 2018).

Public procurement outcomes, and reform results are strongly influenced by broader governance factors and the context's political economy because public procurement is typically not only a way to purchase goods and services but also integral to the distribution of power and maintenance of peace in society. Procurement is often a vehicle for rent-seeking and political patronage, particularly in low-competition settings. In contexts where procuring agencies are not sufficiently insulated from political influence, it may allow for extracting a large amount of rents by a small elite (e.g. ruling family winning many large contracts), while it can also be very effectively used to distribute rents among supporters (each supporting local 'strong men' getting a few contracts as a reward for loyalty) (David-Barrett & Fazekas, 2020). Politicians are better able to influence the implementation of procurement where they have greater control over the bureaucrats charged with implementation, e.g., where the power to hire and fire bureaucrats is in their gift (Charron et al. 2017). Moreover, political connections and campaign financing have been linked to inflated contract values and inefficient spending, as seen in Brazil, the US, and Russia (Boas et al., 2014; Bromberg, 2014; Mironov & Zhuravskaya, 2016). A recent study using 2.1 million US federal contracts (2004–2015) found that large donations ($1,000 to $5 million) raised favoritism risks by 1/3 (Fazekas et al.,2023). The degree of electoral competition, citizens' tolerance for corruption, and civil society's capacity to demand accountability further shape procurement integrity (Mungiu-Pippidi, 2015).

The rest of the review is structured as follows: first, the review methodology is briefly discussed. Second, interventions relating to a particular phase of the procurement process are reviewed. Third, interventions with a broader impact are discussed. Fourth, conclusions are drawn by highlighting the need for further research.

Methodology

To assess the evidence on major public procurement reforms and their impacts on value for money and open access, we employed a structured search and assessment methodology combining standard online searches with expert input. Initially, we defined key intervention areas, targeting both specific procurement phases and the entire process. These intervention groups shaped the search strategy and review structure, and we validated their selection extensively.

Next, we identified potentially relevant academic publications and policy reports for each intervention area. Using the authors' expertise as a starting point, we conducted keyword searches (e.g., "e-procurement," "impact," "value for money") and followed up on widely cited authors and citation networks to expand the evidence base.

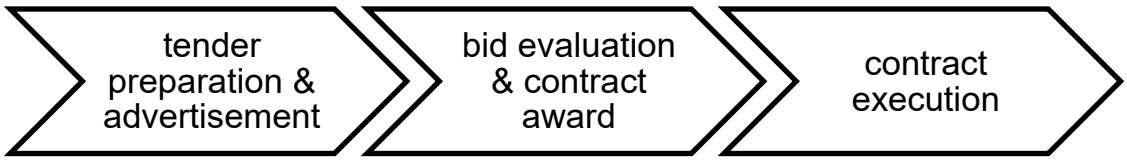
Identified studies were then screened and selected. Due to the limited number of high-quality studies, we applied inclusive criteria, excluding only studies unrelated to the intervention groups, of particularly low methodological quality, or overly narrow in scope (e.g., case studies with questionable representativeness). The selected studies were assessed in-depth and prioritized, favoring those with robust empirical methods and sound theoretical frameworks. Priority was given to experiments, quasi-experiments (e.g. randomized controlled trials in real life settings), and large-N studies analyzing tens or hundreds of thousands of observations. While observational studies were included, qualitative studies and case studies were rarely considered due to their limited comparability and representativeness. We sought geographic balance, incorporating studies from both developed and developing economies. Finally, the selected evidence was synthesized conceptually and empirically. Given the limited availability of comparable studies, we did not conduct a meta-analysis, though future research may enable such an approach.

Interventions targeting specific procurement phases

This section discusses interventions targeting specific phases of the procurement process (Figure 1), which often have more identifiable impact mechanisms than broader interventions. However, focusing on one phase can generate spillover effects on others. For example, competition intensity during the advertisement phase influences renegotiations and delivery during contract execution (Decarolis, 2014).

The tender preparation and advertisement phase begins with the decision to procure a defined product and ends with bidders submitting their bids or the submission deadline passing. It includes preparing tender documents, advertising the tender, and managing company inquiries. The bid evaluation and contract award phase starts with bid submission or the submission deadline and ends with contract signing. The contract execution phase covers contract performance, monitoring, and potential renegotiation, from signing to completion.

Figure 1. Phases of the procurement process



While many interventions are discussed in the literature, this review focuses on those receiving significant policy and research interest. These are grouped into seven main categories, three of which fall under the umbrella term "electronic procurement" (e-procurement). E-procurement is

divided into subtypes because its functionalities target different phases of the procurement process and have distinct expected impacts.

E-procurement: Tender preparation and advertisement phase

Theory

E-procurement refers to the use of electronic communication and transaction processing in any phase of public procurement, including public works, goods, and services. Four functionalities influencing the tender preparation and advertisement phase are prominent: e-notification, the electronic publication of procurement announcements on public websites; e-access, the online availability of tender documentation for download; e-attestations, the electronic submission and storage of qualification documents like company registration proofs; and e-submission, enabling bidders to submit tenders electronically and facilitating the electronic opening of bids. E-notification and e-access are the most widely implemented tools in OECD and EU countries, often treated as synonymous with e-procurement (OECD, 2016), while e-submission, e-auction, e-invoices, or online catalogues are less common.

First, the promise of such e-procurement tools is significant reductions in transaction costs for procuring bodies, bidders, and third parties. Under paper-based systems, costs arose from information transfer, repeated data entry, restricted reuse of documents, and errors disrupting processes. E-procurement minimizes these costs by enabling instant information transfer, allowing document reuse, automating form completion, and preventing certain errors. These efficiencies improve value for money and broaden access to government contracts by reducing barriers for unconnected, yet productive, bidders (Croom & Brandon-Jones, 2005).

Second, expected benefits specific to the online availability of notifications and tendering relate to the expectation that they diminish information asymmetries between (often corrupt) insiders and potential market entrants, once again broadening access. Third, e-procurement can also enable internal as well as external oversight not only by lowering transaction costs but also by giving rise to more systematic analysis of procurement activities.

However, these potential benefits depend not only on the mere existence of e-procurement platforms, but also on their quality and completeness. Evidence suggests that improving e-procurement platform data completeness – therefore transparency – particularly during the advertisement and bidding stages, is crucial for realizing price savings (Bauhr et al, 2020).

These tools may also introduce new costs, such as system design rigidity, IT breakdowns, and substantial transition costs, particularly in developing countries (Thai, 2009). Realizing cost savings depends on actors' computer literacy and system-specific knowledge. If these are lacking, savings may not materialize, and inefficiencies could persist. SMEs and low-capacity organizations often face higher adoption costs, potentially reducing bidder participation where competition is already weak (Croom & Brandon-Jones, 2007).

Evidence

E-procurement during the tender preparation and advertisement phases was evaluated in a variety of contexts using diverse methods. The highest quality studies exploit natural experiments to establish the effect of e-procurement on increasing access to government contracts by

increasing the participation of bidders, many of which are less likely to have particularistic connections to the government, at least to start with.

A high-quality regression discontinuity design looking at e-advertisement in Italy compares tender announcements in local newspapers to advertisement on the national procurement portal. It finds a positive effect of online advertisement on the number of bidders, prevalence of non-local winners, and price discounts (Coviello & Mariniello, 2014).[1] The price effect for example amounted to a 17% increase average winning rebates. In a quasi-experimental impact evaluation of infrastructure e-procurement, predominantly e-advertisement and e-access, in India and Indonesia, Lewis-Faupel et al. (2014) find that e-procurement increases the prevalence of non-local winners, and contract implementation quality, but finds no evidence of lower prices. By contrast, a fixed-effects difference-in-differences regression study on Bangladesh's transition from a paper-based procurement system to a fully electronic process found that e-procurement, combined e-advertisement, e-access and e-submission, increased bidder numbers by 1.6%–2.2% per tender and reduced the probability of single bidding by 7.8%–13.5%, while also accounting for significant cost savings, as discounts offered by firms increased by 7.4–8.0% (Blum et al., 2023).

Two non-experimental and largely descriptive reports on e-procurement in the EU find that e-procurement decreases administrative costs both for public and private organizations due to two key factors (Buyse et al., 2015; Strand et al., 2011).[2] First, it automatizes and simplifies a range of administrative procedures (e.g. it is enough to enter the supplier's address only once in the system which then is automatically copied to all relevant documents). Second, it can safeguard against several typical errors leading to failed tenders (e.g. automatically disallowing certain procedure types if contract value and product type conditions are met). While the methods in these studies are ill-suited to reliably establish causality, the straightforward theoretical frame and rich qualitative evidence lend some support to the findings.

While the above studies come to somewhat different quantitative impact estimates, together they reinforce the claim that e-notification, e-access, and e-submission improve fair and open access through transparency and lower transaction costs hence improving value for money. However, evidence from Paraguay raises a fundamental barrier to such a positive outcome, namely there must be companies who can potentially enter the market once access is widened; if there are none to very few such companies short to mid-term positive effects are null (Straub, 2014).

The slow adoption of various e-procurement tools across OECD as well as EU member states (Buyse et al., 2015; OECD, 2011b) suggest that the cost of implementing new tools might be perceived as high or political economy constraints may be strong, potentially stalling reform. Nevertheless, a recent study by Bosio et al., (2023) analyzing low-income and lower-middle-income countries found that implementing e-procurement systems can reduce procurement prices by an average of 6.75%. This can result in significant savings across a wide range of

[1] In addition, the amount and nature of information publication associated by the e-procurement system could have further effects on bidding outcomes and company performance. In the US (Oklahoma), the release of detailed cost estimates ahead of public procurement auctions for highway contracts decreased bid prices and increased long-term success of entrants (De Silva et al., 2008, 2009).

[2] In addition, the annual report of the Albanian Public Procurement Agency states that the administrative costs associated with administering tenders through the e-procurement amounted to 15% in 2009, 12% in 2010 and 20.1% in 2011 of the comparable manual tendering administrative costs (Luijken & Martini, 2014). Due to lack of information on the reliability of the data, this information should be used only carefully.

countries, with a benefit-cost ratio ranging from 8 to 58 for low-income countries and 142 to 473 for lower-middle-income countries, suggesting that paying for implementation is worth it.

Nevertheless, the outcome of implementing e-procurement systems also being highly dependent on pre-existing institutional quality and socio-economic factors further highlights the need for thorough analysis (Mélon & Spruk, 2020). Given the lack of systematic analysis of implementation barriers, we are left with guessing a crucial aspect of e-procurement reforms. It is certain, however, that introducing e-procurement systems in any public administration requires far more than a simple purchase of a software, it almost always requires changing administrative procedures, shifting duties and controls within public organizations; all of which suggests implementation being a high risk and potentially derailing process on its own (Schapper, 2007).

Evidence gaps remain for effective policy guidance. First, more experimental evidence is needed across a broader range of countries—both developed and developing—covering multiple markets, particularly services and goods. Second, distinct functionalities of e-procurement systems should be evaluated individually and in combination, as their impact mechanisms may vary, and synergies might exist. Third, the administrative cost implications of e-procurement tools must be systematically assessed. Finally, understanding the barriers and enablers of e-procurement reform is essential for translating evidence into actionable reforms.

Framework agreements

Theory

Framework agreements are a two-stage procurement procedure. In the first stage, a competitive tender selects one or more suppliers who commit to providing products under predefined conditions for a specified period. In the second stage, government agencies can purchase from the selected suppliers using simplified procedures. Additional competition among first-stage winners may occur for individual contracts (Albano & Sparro, 2010). While often associated with centralized and collaborative procurement, framework agreements are distinct and reviewed separately.

Framework agreements can reduce procurement costs through two mechanisms. First, they consolidate negotiations and auctions into the initial stage, significantly lowering transaction costs. Second, they offer flexibility for public buyers to make purchases on demand rather than adhering to rigid timelines. However, suppliers face risks due to uncertainty about quantities required, potentially driving up prices. Additionally, the fixed specifications over a period may reduce flexibility, limiting value for end-users with diverse needs. When coupled with demand aggregation by centralized purchasing bodies, framework agreements introduce further advantages and challenges, discussed in the section on centralized and collaborative procurement.

Evidence

Evidence on framework agreements is limited, with two quasi-experimental studies touching on their effects in Italy (Bandiera et al., 2009) and Mexico (Mendoza Lopez, 2025); one econometric analysis examining cost savings through framework agreements in Brazil and Colombia (Lal et al., 2021); a few simulation studies exploring different design options (Gur et al., 2015), and a few government reports reviewing achieved savings (National Audit Office, 2010, 2013).

A high-quality quasi-experimental study on Italian standardized goods examined the impact of central framework agreements versus individual contracts (Bandiera et al., 2009). It found significant price variation: procuring bodies at the 90th percentile of the price distribution paid 55% more for identical goods than those at the 10th percentile. Central government and municipalities paid 34%-78% higher prices compared to central framework agreements. A recent study in Mexico offers further insights into the efficacy of framework agreements (Mendoza López, 2025). Focusing on the country's transition from individually procured end-of-year payroll services to a single, mandatory framework agreement in 2010, the analysis shows that average commissions dropped from roughly 2.25% to near zero. This decrease was largely driven by stronger competition—thanks to standardized bidding requirements and a wider pool of suppliers—as well as the increased adoption of electronic (rather than paper) payroll services. The Mexican case thus echoes earlier findings from Italy, suggesting that well-designed mandatory framework agreements can practically eliminate overpricing for standardized services. Similarly, the UK National Audit Office reported savings of £426 million in FY2011-2012 from national framework agreements, though these were limited by incomplete implementation, insufficient product standardization, overlapping agreements, and poor communication of end-user needs to framework managers (National Audit Office, 2013). These studies highlight the potential of framework agreements to reduce prices in both high- and low-integrity environments when enabling conditions, such as harmonized user needs, are met.

However, significant research gaps remain. First, studies have largely focused on framework agreements within centralized or collaborative procurement, leaving the effects of such agreements compared to standard contracts with similar volumes unexplored. Second, experimental studies are needed to assess design variants and impact mechanisms, such as managing purchase uncertainties or lot sizes affecting SME participation. Third, understanding which products, based on their homogenization, balance diverse user needs and economies of scale is critical. Finally, implementing framework agreements has faced challenges in Italy and the UK, underscoring the need to investigate reform barriers, particularly in developing countries.

E-procurement: bid evaluation and contract award phase

Theory

Two e-procurement functionalities related to bid evaluation and contract award phases are e-auction and e-evaluation. E-auction[3] refers to a structured electronic platform for iterative price submissions, typically revised downwards (reverse auction), and automated ranking of bids. E-evaluation involves the partial or full automation of tender assessments and tracking decisions throughout the evaluation process. These tools have distinct impact mechanisms and are discussed in separate literatures.

E-auctions are expected to enhance transparency and competition, improving value for money and access. Transparent publication of bidding information (e.g., prices at each stage) limits buyer manipulation and builds bidder trust. Competition intensifies as more bidders participate due to transparency, and bidders can adjust prices during the auction to remain competitive (Soudry,

[3] Please note that the discussion of e-auctions partially overlaps with the review of award mechanisms. Here the focus is predominantly on the electronic means of auctioning, in the later section the emphasis is more on the design features of the auction electronic or traditional paper-based.

2004). However, these benefits may not always materialize. Low computer literacy or limited access to online tools, especially for SMEs, can hinder participation. High-intensity competition might reduce prices but risks the "winner's curse," where bidders renegotiate contracts post-award (Soudry, 2004). Corrupt networks may also exploit e-auctions to appear transparent while diluting contractual terms during execution. Additionally, corrupt officials might prefer e-auctions for their facade of integrity and plausible deniability (Yakovlev et al., 2014).

The literature on e-evaluation's impact on its own on value for money and access is sparse, but some claims can be made. E-evaluation increases transparency within public administration and for the public (e.g., open scrutiny of evaluation records). Whether this improves accountability depends on whether transparency strengthens control in corrupt networks or promotes horizontal accountability to citizens. E-evaluation also reduces administrative burdens, automating tasks like certificate checks and score calculations. However, its success depends on bureaucrats' computer literacy, like other e-procurement tools.

Evidence

The empirical evidence on e-auctions is limited, with only two correlational studies focusing on narrow geographical and market contexts. No empirical test of e-evaluation on its own was identified. Additionally, the literature on e-auctions often conflates e-procurement and centralized framework agreements, making the quoted evidence tentative at best.

A small-N study on public works and IT purchases in Slovakia (2007–2009) suggests that electronic reverse auctions reduce prices, as measured by discounts (final price/original estimated price), by increasing the number of bidders (Pavel & Sičáková-Beblavá, 2013). However, conditional on bidder numbers, no further price effects were observed. The overall price effect compared to standard open auctions was a 2.4% reduction relative to the estimated value. A larger study on Russian sugar purchases found a significantly higher effect: e-auctions correlated with 28.0%-28.7% more discounts, corresponding to a 5.8%-6.7% lower price per kilogram compared to regional averages (Yakovlev et al., 2014). The authors attribute these savings to bidder numbers and contract characteristics such as size and duration.

Given the limited evidence, there is a need for more research using advanced analytical methods, more countries, and diverse product markets.

Preferential treatment of bidder and product classes

Theory

Public procurement is increasingly treated as a strategic function, pursuing socio-economic and environmental objectives through special rules and procedures. These objectives often target specific bidder classes (e.g., SMEs, minorities, women-owned businesses) or products (e.g., sustainable goods, innovative technologies, or support for disadvantaged regions). Public procurement advances these goals by adjusting scoring rules, reserving contracts, or facilitating tender access. Such policies are widespread, with 60% of OECD countries supporting SMEs and green procurement and 40% fostering innovative goods and services (OECD, 2015).

The US Small Business Act illustrates this, reserving contracts for SMEs (23% of direct contracts and 40% of subcontracts) and supporting them through training, simplified procedures, and

guidance. Chile's Women Supplier Certification scheme recognizes women-led businesses and promotes gender-specific tender criteria.

These preferential policies aim to increase bidder participation and success rates but may impact value for money if positively discriminated bidders are less productive or offer lower-value products. Conversely, wider access and stronger competition could enhance value for money (Marion, 2007). However, policies risk distorting firm investment decisions (e.g., limiting growth to retain eligibility) and may enable abuse or corruption. Evaluating these costs against policy goals, such as increased access, is essential but rarely done systematically (OECD, 2012).

Evidence

High-quality evidence exists for developed countries on the effects of SME preferences, but scant evidence addresses developing countries or other policy goals like gender, green, and innovative procurement.

Studies using US and Japanese data model SME preferences' effects on bidding behavior, win probabilities, and company profitability with advanced analytical techniques (Krasnokutskaya & Seim, 2011; Marion, 2007; Nakabayashi, 2013). These studies consistently find that SME preferences increase competition, reducing prices, even as production costs rise. For example, in Japan's construction sector (2005–2009), SME preferences decreased overall procurement costs by 0.10%-0.23% (Nakabayashi, 2013). Outcomes depend on productivity differences between SMEs and large firms, bidding behavior, capacity constraints, and efficiency losses in non-preference auctions. Even suboptimal policies impose low costs; for instance, in California road construction, a 5% bid preference for SMEs led to a 3.6% loss due to less productive bidders winning (Marion, 2007).

In sum, while SME preference evidence in developed economies is robust, more research is needed for developing countries with differing institutional contexts. Furthermore, the long-term effects on firm investment and market dynamics remain unexplored, and evidence on preferences for sustainable and innovative products is notably lacking, leaving policy impacts unclear.

Award mechanism and auction design

Theory

Policy interventions under "award mechanism and auction design" address decision rules (e.g., lowest bid) and evaluation criteria (e.g., price, past performance). They also include detailed mechanisms such as whether prices or technical specifications are assessed first (Blancas et al., 2011). Procurement systems vary widely, with shifts like Italy's move from average bid auctions (selecting the bid closest to the average) to lowest bid auctions in the 2000s.

Award mechanisms are extensively studied, with two designs frequently discussed: average bid auctions and first-price sealed bid auctions (bidders submit bids without knowing others, and the lowest bid wins) (Lengwiler & Wolfstetter, 2006). Average bid auctions soften price competition, selecting bidders who most accurately estimate production costs, reducing cost overruns and delays. Lowest price auctions, by encouraging competition, maximize value for money after eliminating unreasonably low bids.

Considering company and bid characteristics profoundly affects outcomes. Efficiency improves when all relevant factors for delivery are considered, including less easily observable ones. Price-only criteria minimize discretion and corruption risks but may not ensure value for money and can lead to the "winner's curse" (Soudry, 2004). Fraudulently low bids may occur if cost overruns are common and weakly sanctioned. Past performance criteria also vary: the EU discourages their use to promote access and competition, while the US favors them, arguing they ensure reliability but potentially limit new market entrants (Spagnolo, 2012).

Evidence

High-quality evidence exists for many award mechanisms, particularly average versus first-price auctions, using natural experiments, laboratory studies, and regression techniques (e.g., Albano et al., 2006; Decarolis, 2014).

Research largely supports first-price auctions over average bid auctions under most conditions, as they reduce bidding stage prices, even if some advantages are offset by ex-post renegotiations (Albano et al., 2006; Chang et al., 2014). For instance, in Italy, switching from average bid to first-price auctions increased average discounts by 8%-13% but also raised cost overruns by 6% of the reserve price and delays by 28% of contractual terms. Despite these drawbacks, increased screening of unreasonably low bids mitigated two-thirds of the negative effects, resulting in a net positive outcome (Decarolis, 2014).

While using past performance for bidder evaluation can discourage market entry, it is beneficial for large, uncertain contracts where product characteristics are not easily contractible (Spagnolo, 2012). However, systematic evidence comparing price-only versus price-plus-quality criteria remains scarce. Correlational evidence from EU countries (2009–2014) shows that corrupt states often exploit non-price criteria to restrict competition (Fazekas & Kocsis, 2020).

In summary, while robust evidence supports first-price auctions, more research is needed to evaluate other tools, including the corruption risks of various scoring criteria. The lack of studies in developing countries highlights the need for geographically broader research.

E-procurement: contract execution phase

Among the reviewed e-procurement tools, those related to the contract execution, such as e-invoicing, e-payments, and e-contract monitoring are the least widely used as well as studied (Buyse et al., 2015). However, they are integral to comprehensive e-procurement systems, and recent reforms like the World Bank's STEP system include their implementation. E-invoicing automates issuing and processing invoices electronically, e-payments handle financial transactions electronically, and e-contract monitoring tracks contract execution progress and documentation.

In the absence of substantial research, tentative theoretical arguments suggest these tools reduce administrative costs, improving value for money, like other e-procurement tools. Transparency during contract implementation is crucial, as strategic bargaining at this stage can significantly impact public budgets (Bajari et al., 2014; Decarolis & Palumbo, 2015). Effective tools in earlier phases may displace mismanagement to the implementation stage, though evidence is mixed

(David-Barrett & Fazekas, 2020; Lewis-Faupel et al., 2014). Further empirical research is essential to validate these mechanisms and guide policy.

Civil society supervision of contract execution

Theory

Civil society or community supervision of procurement execution involves local communities or civil society groups monitoring contract performance alongside traditional accountability mechanisms like audits. While interest in such participation has grown, robust evaluations remain rare (Mansuri & Rao, 2013). Building on theories of social accountability, civil society supervision is expected to detect and deter low-quality delivery, whether due to corruption or neglect. Beneficiary communities have incentives to monitor projects like road construction or school meal delivery, potentially countering corrupt practices by officials managing contract execution (Olken, 2007).

However, positive outcomes depend on the community's incentive structure and collective capacity (Kenny, 2010). Free-rider problems and elite capture can undermine efforts (Bardhan & Mookherjee, 2006). Additionally, the complexity of certain projects limits community oversight; for example, non-experts may fail to detect substandard materials in road construction (Olken, 2007).

Evidence

Evidence for civil society monitoring in contract execution consists of several high-quality field experiments. In Indonesia (2003–2004), increased community oversight of village road projects, through public review meetings and anonymous feedback forms, showed small effects on road quality but highlighted key dynamics: local labor force participation reduced missing labor expenditure, while bypassing local officials in distributing forms reduced corruption tied to elite capture (Olken, 2007).

A Peruvian study (Lagunes, 2017) evaluated district governments implementing infrastructure projects, half receiving an intervention where a civil society organization partnered with the anti-corruption agency. While execution rates were similar, costs were 51% lower in the treatment group, saving $75,000 per project. This highlights the cost-efficiency of combining citizen and centralized oversight.

Lagunes (2021) also conducted field experiments in Mexico, investigating the impact of transparency measures on reducing corruption in public service delivery, and in the US, examining the role of oversight and penalties in deterring corruption within municipal services. The results indicate that active community involvement can enhance accountability and reduce corrupt practices in public works, but also underline that consistent enforcement actions supporting transparency initiatives are essential to deter corrupt behavior effectively.

Further studies should explore other regions as well as the optimal engagement of communities, the role of contract characteristics, and the impact of elite capture. As mismanagement during contract execution can harm development outcomes more than earlier phases, greater focus on this intervention is essential (Kenny, 2010).

Interventions targeting the whole procurement process

This section discusses those interventions which influence the whole procurement process having a broad impact throughout. By implication, their impact mechanism might be more complicated and more difficult to precisely pin down. On the bright side, targeting the whole procurement process avoids the usual pitfalls of displacing mismanagement from one stage to another. Despite the promise of a more holistic approach, many impact evaluations reviewed here use indicators bound to only one procurement phase, decreasing the value of evidence for guiding policy.

Indicators which received considerable policy and research interest are grouped into 6 categories and are discussed in detail. Some of these interventions more closely intervene in the procurement process itself such as discretionary decision making, while others concern directly linked policies such as watchdog portals.

Centralized and collaborative procurement

Theory

Centralized and collaborative procurement are related practices often discussed in separate literatures. Both are increasingly popular among policymakers, with numerous institutional arrangements established globally (OECD, 2015). Collaborative procurement involves horizontal collaboration between two or more procuring bodies to jointly manage some or all procurement steps (Walker et al., 2013), with successful examples in the UK (National Audit Office, 2010). Centralized procurement, by contrast, relies on a central purchasing unit that makes bulk purchases from suppliers. End-users then purchase from the central unit under conditions set by a framework agreement (OECD, 2011), with Italy's central purchasing body, CONSIP[4], being a widely studied example. These approaches differ in their hypothesized impact mechanisms.

Collaborative procurement improves value for money and widens access through three main channels, partially overlapping with centralized procurement mechanisms (Walker et al., 2013). First, it fosters learning among entities, enhancing administrative efficiency and purchasing decisions. Second, it allows entities to pool skills and resources, lowering costs. Third, demand aggregation achieves economies of scale. However, these benefits may be reduced by misaligned purchasing activities due to differing organizational needs or cultures.

Centralized procurement generates synergies (OECD, 2000, 2011a): (i) economies of scale, reducing prices via volume bundling and market power; (ii) economies of process, cutting redundant efforts; and (iii) economies of information, offering better supplier data and fostering specialized skills. Additionally, (iv) introducing a neutral intermediary reduces favoritism by limiting collusion between agencies and suppliers.

Centralizing purchasing may not always improve value for money or open access. Central bodies can become bottlenecks if poorly staffed, adding red tape and fostering compliance-focused rather than performance-oriented attitudes. The involvement of a central unit may also undermine line agencies' ownership of procurement processes, diluting responsibility and weakening contract enforcement by end-user agencies, as noted by Albano and Zampino (2013).

[4] http://www.consip.it/en/about_us/

Standardization, while beneficial in some cases, may fail to meet diverse end-user needs, with rigid tender documents causing complications for specific contracts. Demand aggregation and larger contracts can also raise corruption risks by increasing the potential rents from agency capture. Additionally, large contracts may deter SME participation, potentially driving up prices if few large firms are willing to bid.

Evidence

Evidence on collaborative procurement is very limited with a handful of qualitative or small-N quantitative studies except for a UK government report (National Audit Office, 2010), while centralized procurement, especially on the national level, received somewhat more thorough scholarly interest. Unfortunately, neither stream of literature allow for drawing solid conclusions for policy makers.

Qualitative and quantitative studies looking at collaborative procurement practices in the UK and Australia have found that different organizational forms of collaborative procurement perform strikingly differently in distinctive contexts for different types of procuring bodies (Barbosa & Fiuza, 2012; Ey et al., 2014; Walker et al., 2013). For example, the level of standardization of the products purchased and user needs define the scope for savings achievable with collaborative procurement: e.g. office stationery versus defense procurement (National Audit Office, 2010).

A high-quality quasi-experimental study on Italian standardized goods explored the effects of central framework agreements. It found that centralized purchasing of standard goods, such as office stationery, achieved 34%-78% price reductions, driven by demand aggregation, transaction cost savings, and increased buyer power (Bandiera et al., 2009). However, a separate study highlighted implementation challenges: 30.75% of public bodies received products that substantially breached contractual terms, and only 2.49% issued penalties to suppliers (Albano & Zampino, 2013). These findings illustrate the potential savings through centralized procurement but also expose significant risks when tendering and contract management are separated, potentially undermining overall efficiency.

Examining the case of CONSIP in Italy, Decarolis (2018), using procurement data on all public contracts awarded between 2015 and 2017, finds that administrations expecting to lose their ability to contract independently game the centralization requirements in three ways. In the short run, they anticipate their purchases to avoid delegating to a central body. In the longer run, they both manipulate contract values, breaking down purchases into smaller lots of amounts below the thresholds driving centralization requirements, and, when given the option, aggregate into the smallest types of centralized purchasing bodies. These three distortions partially offset the potential benefits of the centralization reforms (Decarolis, 2018).

Another study using a unique dataset on tender prices of selected drugs for hospital usage provided by a sample of 52 Italian local health service providers between 2009 and 2012 tests which procurement system (centralized, decentralized or hybrid) performs better. Controlling for several covariates, including measures of institutional quality and corruption, it finds that centralized and hybrid procurers pay lower prices than decentralized units. Moreover, the results show that in areas in which institutional quality is lower or corruption is higher, the effect of centralization in terms of negotiating lower prices is much stronger, with savings of up to 60% of the price paid by local health service providers that procure independently (Baldi & Vannoni,

2015).
In addition to direct savings from procurement centralization, Lotti et al. (2024) provide evidence of indirect savings among public administrations that continue to procure autonomously. They find that prices fell by 22% for non-centralized purchases, primarily due to informational externalities, where public buyers benchmark their reserve prices against centrally procured prices. This effect is particularly strong for technologically complex goods and less competent public buyers, who benefit from exposure to centralized procurement practices. These findings suggest that centralization not only lowers costs through economies of scale but also improves market-wide efficiency and transparency by reducing price inflation and corruption risks.

Systematic studies are needed to better understand how organizational and product characteristics influence savings potential and user satisfaction. Additionally, further research is essential to explore the interaction between central purchasing bodies, public organizations, and supplier opportunism, particularly in balancing savings during bidding with challenges in contract implementation.

Transparency and watchdog portals

Theory

E-procurement generates vast amounts of structured data that can inform bidding decisions, civil society oversight, and government management. Transparency portals, which report procurement data per national legislation, are the primary medium for releasing this information. These portals typically provide limited search functions, making aggregate statistics or full dataset downloads unavailable (Cingolani et al., 2015). Examples include the EU's Tenders Electronic Daily[5] and Bangladesh's procurement portal[6].

Watchdog portals, often run by NGOs like Transparency International, extend functionality by using the same data to assess corruption risks and spending efficiency. These portals offer novel indicators, enabling calculations of summary statistics to make procurement data more interpretable. Examples include the Slovakian public procurement portal[7] or its Georgian twin,[8] both run by Transparency International local chapters; examples from developing countries can be found in Nigeria,[9] Indonesia,[10] or Mexico[11] to name a few.

Transparency and watchdog portals are expected to improve value for money and access by influencing bidder behavior and supporting accountability mechanisms within government and society. While bidding behavior is extensively discussed in section D.1, these portals primarily enhance vertical accountability by providing civil society with information on bidding processes and actor behavior. However, transparency alone is insufficient; it must be paired with civil society's motivation and capacity to act on the data (Kenny, 2010). The effectiveness of

[5] http://ted.europa.eu/
[6] http://www.eprocure.gov.bd/
[7] http://tender.sme.sk/en/reports?cut=contract_date:2013,12
[8] http://tendermonitor.ge/en
[9] http://tendermonitor.ge/en
[10] http://opentender.net/content/database
[11] http://mexico.procurement-analytics.org/

transparency in complex fields like government procurement also depends on data usability and accessibility, such as enabling users to locate relevant information quickly (e.g., within two to three clicks). Beyond direct impacts, procurement data can influence public discourse, raise awareness about public spending (e.g., tax knowledge), and support the dissemination of best practices in the public sector through the combination of procurement and performance indicators.[12]

Nonetheless, several challenges persist. First, government and watchdog portals often provide aggregated or incomplete data, lacking details like input prices or project execution progress, limiting their utility for monitoring (Cingolani et al., 2015). Second, transparency alone is insufficient for monitoring complex services like education or training, where mismanagement is harder to observe directly (Banerjee et al., 2010). Finally, creating and maintaining such portals can incur substantial costs, with monitoring expenses potentially outweighing the benefits.

Evidence

Evidence on the effects of transparency and watchdog portals is somewhat limited, with only one quasi-experimental study looking at EU countries (Duguay et al, 2023), and empirically less sophisticated studies providing suggestive evidence (Šípoš et al., 2015; Center for Global Development, 2014).

Duguay et al (2023) examining the impact of launching the opentender.eu analytics portal in 2018 found that the share of contracts awarded through open procedures increased by 7%, while contract modifications rose by 8%, which is partially due to open procedures being inherently more rigid. The authors find strong evidence that data use by media, NGOs and oversight bodies drive the greater use of open procedures in public procurement. On a smaller scale, Šípoš et al. (2015) found that a Slovakian watchdog portal increased the reach of public procurement information across the Slovakian population from practically null to 11% of the total population claiming to have checked at least one contract online since 2011.

Given the high and quickly growing number of transparency and watchdog portals around the globe – Czech Republic, Hungary, Indonesia, Nigeria, Philippines, the Slovak Republic, Ukraine, and Vietnam, to name a few – further rigorous evaluations are indispensable. In particular, understanding the conditions under which such portals can have a positive effect on access to public contracts is a key concern. Moreover, the reform impetus and support for sustained portal operations need greater attention (e.g. (Adam et al., 2024).

Rule-bound or discretionary decision making

Theory

The dichotomy of rule-bound and discretionary decision-making in public procurement is often simplified to the choice between open auctioning and negotiated procedures (Bajari et al., 2009). However, its implications extend to contract execution (Rasul & Rogger, 2015) and bureaucratic behavior more broadly. Discretionary decision-making grants bureaucrats flexibility throughout

[12] One watchdog site with explicit purpose of spreading best practices in the Czech Republic: http://zindex.cz/

the procurement cycle, guided by principles like codes of conduct and organizational culture (Kelman, 1990). Rule-bound decision-making, in contrast, limits bureaucrats' autonomy, enforcing adherence to standardized procedures (Rasul & Rogger, 2015).

Rules requiring open, fair, and competitive contracting (e.g., open auctions) are expected to reduce corruption, enhance competitiveness, lower prices, and improve quality by preventing corruption or habitual reliance on the same suppliers. Highly regulated procedures also project fairness and objectivity, which can mitigate politicized bureaucracies, albeit at potential value-for-money costs (Coviello et al., 2018). Conversely, discretion allows bureaucrats to tailor procurement to specific circumstances, potentially lowering transaction costs, fostering relationships with reputable suppliers, and improving contract enforcement (Chever et al., 2017).

The choice between rules and discretion is shaped by contract complexity and completeness (Bajari et al., 2009). However, neither approach is uniformly effective. The impact depends on aligning the right rules with the right tenders (Parrado et al., 2018) in the right bureaucratic contexts. Discretion's outcomes are influenced by management practices, bureaucratic politicization, and informal power structures.

Evidence

A substantial body of high-quality research compares auctions and negotiated procedures as proxies for rule-bound versus discretionary decision-making in public procurement. Some studies exploit natural experiments, while others model procedure selection to better identify causal links. However, only a few studies explicitly examine bureaucratic decision-making and management to directly address the rule-versus-discretion debate.

The literature on auctions versus negotiations is divided. For complex products, negotiations often yield better outcomes. In Italy, exploiting a discontinuity in procedure rules, negotiated procedures increased the likelihood of the same firm winning repeatedly, while projects were delivered faster and larger firms won more often—though the latter effects were smaller near the discontinuity (Coviello et al., 2018). Despite fewer bidders, discounts did not decrease. Research on social housing construction in Paris similarly found fewer bidders in negotiated procedures but also lower prices (Chever & Moore, 2012). Additional evidence from France on small, simple purchases aligns with these findings, suggesting negotiated procedures can outperform auctions even for less complex contracts (Chever et al., 2017). Contrary to these findings, the analysis of German passenger rail line auctions concludes that auctions led to 16% more trains for 25% lower prices compared to lines awarded in negotiated procedures (Lalive & Schmutzler, 2011). What drives these differences is unclear unfortunately. Regarding corruption risks, the analysis of an Asian trading firm's internal records of bribery and data on procurement auction participation suggests that the mandatory implementation of auctions in the public sector led to a significant decrease in bribery, albeit at the cost of allocative efficiency (i.e. less productive firms winning) (Tran, 2008).

Rasul & Rogger (2015) explore managerial practices within public agencies, delivering highly policy relevant results worth further exploring in other contexts. Using a survey of Nigerian civil servants, bureaucratic autonomy and the use of incentives/monitoring within agencies has been established and linked to project performance in the social sector. Surprisingly, 1 standard deviation increase in bureaucrats' self-reported discretion led to 18% higher project completion

rate, whereas one standard deviation increase in the use of incentives/monitoring resulted in 14% lower project completion rate. Project complexity, ambiguous project design, and organizational IT facilities mediated these observed relationships. While the findings cannot be interpreted as causal, they do point at the significant and non-trivial impact of public sector management practices on value for money and corruption.

On the contrary, a regression discontinuity study (Szucs, 2024) analyzing the effects of a 2011 procurement reform in Hungary that introduced high-discretion procedures for contracts below $90,000, found that contracts below this threshold had 6% higher prices, nearly 1 fewer bidder per tender, and were 28% more likely to be awarded to less productive firms. Additionally, politically connected firms were 11% more likely to win contracts in high-discretion procedures, indicating that discretion facilitates favoritism and inefficiencies. Evidence from Italy (Decarolis et al., 2020) also suggests that discretionary auction procedures, particularly those with fewer invited bidders than required by law, are associated with a 12% higher likelihood of contracts being awarded to firms investigated for corruption. However, the study also finds a 14% reduction in contract execution delays linked to discretionary procedures.

Overall, the evidence on the role discretion and rule-bound decision-making play in producing public procurement outcomes has been expanding in recent years. Nevertheless, the impact of different procedure types clearly varies with contract as well as organizational characteristics (Best et al. 2023) which need to be more directly addressed if seemingly contradictory findings are to be reconciled. Second, the black box of bureaucracies must be opened wider if we are to understand procurement outcomes, for example analyzing the impact of diverse management practices, politicization of the bureaucracy, and organizational control mechanisms could lead to policy advice with high impact.

Audits and supervision

Theory

Our discussion of audits and supervision is restricted to those specifically designed for public procurement rather than broader processes such as financial audits concerning entire public organizations. Audits and supervision can be carried out by any organ of the state which is to some degree independent of the contracting body, that is we focus on horizontal accountability mechanisms.

Audits and monitoring by higher-level or independent state organs are expected to increase the risk of detecting misconduct, corruption in particular, and the threat of punishment as a result. Increased risk of punishment, in turn, contributes to higher levels of compliance with rules and lower corruption. This basic model resting on elementary microeconomic theory assumes that the monitoring body is non-corrupt (Becker & Stigler, 1974). If this is not the case, monitoring can result in simply reallocating rents from one organ of the state to another (Olken, 2007). If audits and monitoring are uncertain and even rule-abiding bureaucrats can be found guilty, they can generate a culture of fear which stifles innovation and creativity (Kelman, 1990).

Evidence

There is a small number of high-quality research papers investigating the impact of audits and supervision in public procurement (Fazekas & Tóth, 2017; Lagunes, 2017; Olken, 2007) with some further correlational studies (Albano & Zampino, 2013); however, overall, the issue has received only modest interest in the research and policy community.

A randomized controlled field experiment looking at village road construction projects in Indonesia in 2003-2004 found that the increase of audit probability from 4% to 100% led to the reduction of missing infrastructure spending of 8% points (i.e. lower corruption) (Olken, 2007). This is a substantial reduction from a baseline of 24% missing spending (materials and labor combined). Interestingly, the main channel of influence was not criminal proceedings which was quite rare, rather publicly reading the audit results on open village meetings. The author further found that parallel to reduced missing expenditure the project jobs given to family members also increased suggesting substitution between different forms of corruption and patronage.

A comparable study looked at the prices of homogenous hospital inputs such as ethyl alcohol as a proxy for corruption in Argentina in 1996-1997 (Di Tella & Schargrodsky, 2003). It exploited the exogenous variation in monitoring activities, that is the introduction of full monitoring of some input prices and a public campaign against corruption led by the city hall. The increased monitoring regime led to a 14.6% decrease in input prices while a loosening of this regime lowered the positive impact to 11%. In a rather different setting, the EU's single public procurement market in 2009-2014, a study looked at the impact of the European Court of Justice's decisions striking down anticompetitive practices on the basis of the EU Public Procurement Directives (Fazekas & Tóth, 2017). Comparing procuring body behavior (e.g. use of exceptional procedures) as well as bidding outcomes (i.e. number of bidders) from before to after the decisions entered into force suggest that monitoring by EU courts – arguably not captured by local elites – decrease the incidence of corruption-related anticompetitive practices by 5%-30% depending on the country-group studied. Similar to the long-term results identified in Argentina, the evidence from the EU confirms that once monitoring efforts decrease positive effects fade away.

Using a natural experiment in a large public sector organization in Russia, Tkachenko, Yakovlev, and Rodionova (2017) examined the impact of enhanced procurement monitoring in two types of units: income-earning units (IEU) operating under hard budget constraints and non-commercial units (NCU) relying on government support. Between 2008 and 2013, the organization expanded monitoring from the supplier selection stage to all stages of the procurement process.

Under standard monitoring, IEUs demonstrated higher procurement effectiveness than NCUs, measured by the number of bidders and shorter delays in contract execution for comparable services like printing and data collection. However, after the intensified monitoring covering the entire procurement cycle, the differences between IEUs and NCUs disappeared. Effectiveness slightly improved for NCUs but decreased for IEUs. These findings suggest that stricter monitoring benefits organizations with soft budget constraints (NCUs), whereas flexible regulations are preferable for hard-budget entities (IEUs).

Recent evidence from Chile suggests that audits may unintentionally distort procurement processes, discouraging the use of more transparent and competitive procedures (Gerardino et al., 2024). A regression discontinuity analysis showed that entities undergoing an audit were

significantly less likely to use competitive auctions and more likely to award contracts to small, local, and incumbent firms, limiting market competition. The study attributes this to the fact that public auctions undergo more than twice as many checks as direct contracts, leading to a higher probability of detected infractions and follow-up investigations.

While these results confirm the potential benefits of audits and supervision, they also highlight the need for a balanced approach, while several questions remain. First, how do impact channels differ across contexts, such as socio-political accountability in Indonesia versus bureaucratic channels in the EU? Second, what are the long-term effects when public attention wanes? Third, how can institutions ensure independence between monitoring bodies and the entities being monitored? Further research is needed across diverse contexts to build a robust evidence base for effective policy design.

Performance pay and incentives

Performance pay and other incentives provided to public bureaucrats on the individual or group levels have been one of the great fads of the new public management literature while receiving considerable attention in economic studies too (Hood, 1991; Hood & Dixon, 2015; Shah, 2007). However, very few of the central tenets have been applied and evaluated in public procurement. A recent impact evaluation in Pakistan combines performance incentives with increased discretion in the frontline procuring bodies. It finds that autonomy alone reduces prices by 9% without reducing quality, while performance pay shows a much smaller effect. But the study also draws a connection to administrative efficiency, finding that performance incentives lead to a 6% price reduction when monitors are efficient, i. e. approve purchases quickly, but have no discernible effect when monitors work inefficiently, suggesting that while performance pay has the potential to improve procurement outcomes, it's highly dependent on administrative context and quality. (Bandiera et al., 2020)

In the absence of any other sufficiently broad theoretical and empirical research on the impacts of performance pay and other incentives, only tentative theoretical arguments are presented here. Linking procurement administrators' pay to procurement outcomes such as discounts achieved, number of bidders, or project completion on time and budget can potentially increase their effort hence contribute to better value for money and counter corruption. This impact pathway nevertheless crucially depends on a number of conditions: first, bureaucrats' effort should be able to meaningfully and measurably influence outcomes which may not be the case if for example inter-bidder collusion puts competition off. Moreover, if bureaucratic action is over-regulated to the degree that even the best effort and skill cannot push a tender beyond the required minimum process, again the link between bureaucrats' effort and outcomes is broken. Second, public bureaucracies are often governed by informal rules and power relations, especially in developing countries which implies that it is very hard to incentivize those who are really in charge. For example, incentivizing a front-line procurement administrator to widen access to tenders while his boss is corruptly linked to a particular bidder is likely to create frustration rather than better outcomes. Third, material rewards have proven to crowd out intrinsic motivation in a number of contexts including the public sector and procurement project management (Rasul & Rogger, 2015).

Empirical work should be carried out regarding each of the identified mechanisms for adequately underpinning policy advice.

Meritocracy, professionalization and capacity development

A shortage of staff and lack of capability are major barriers to effective procurement reform (Telgen et al., 2016). Consequently, installing a meritocratic civil service system, professionalizing and enhancing the capacity of public procurement personnel have become key reforms globally (OECD, 2012). While civil service meritocracy is a broader reform, there are more narrow interventions in the form of training programs to improve skills and knowledge, offering specialist advice, and fostering leadership and knowledge sharing among procurement bodies (Telgen et al., 2016).

Theory

Theoretical insights into meritocratic reforms' impact on public procurement performance specifically, as well as the impact of professionalization programs remain limited, with only a few systematic assessments providing guidance (Telgen et al., 2016; Romero, 2025). Capacity development is essential for ensuring compliance with complex and evolving procurement regulations and IT systems (OECD, 2009). Training also aims to shift staff focus from compliance to performance, incorporating advanced supply chain management techniques and promoting integrity through ethics codes and workshops (Telgen et al., 2016).

Capacity development can improve value for money and access to contracts but faces limitations. In corrupt organizations or agencies under excessive political control, it risks fostering more sophisticated corruption. Similarly, if it has an insufficient mandate or when motivations, whether intrinsic or extrinsic, are low, more information and knowledge will achieve little.

Evidence

While numerous studies show that the meritocratic recruitment of civil servants rather than recruitment based on nepotism or patronage reduces corruption in government in general (Patterson, 2024), the procurement-specific evidence is scarce. Charron et al. (2017) show that meritocratic appointment and promotion of civil servants at the regional level across the EU decrease corruption risks and prices in 2009-2013. A 3 standard deviation increase in bureaucrats' self-reported meritocracy leads to a 0.6-1.3% price savings or 14-31 billion EUR per year. A study focusing on federal procurement of services and works in the US (Decarolis et al. 2020) further explored the impact a more competent bureaucracy can have on public procurement outcomes. It finds that a 1 standard deviation increase in bureaucratic competence leads to a 23% reduction in delays, 29% reduction in cost overruns, and 50% reduction in contract renegotiations.

Regarding the impact of training programs for procurement staff, Telgen et al.'s (2016) meta-study, based on 48 studies from developing regions, identifies a lack of capacity and knowledge as a key issue harming procurement outcomes. Training programs consistently delivered positive results in 20 studies, highlighting the importance of well-trained staff for successful reform. For instance, bureaucratic quality accounts for about 20% of price variation for standardized goods in Russia (Best et al., 2023). However, reform challenges remain, including insufficient mandates,

conflicts of interest, and inefficiencies due to unclear procedures. Three conditions support sustainable reform: appropriate rewards and career paths to attract and retain skilled staff, codes of conduct to guide decision-making, and training for both government staff and private sector actors to ensure understanding of new processes (Telgen et al., 2016).

Romero (2025)'s high-quality study underpins the argument that that capacity development on its own may risk supporting more sophisticated corruption. It looked at municipal contracts in Guatemala in 2013-2019, finding that more capable bureaucracies increase the likelihood of well-connected firms winning contracts through less competitive processes. The author argues that in politically controlled bureaucracies, stronger technical capacity facilitates corruption rather than hindering it.

Overall, much further empirical work should be carried out regarding each of the identified mechanisms for adequately underpinning policy advice.

7. Conflict of interest rules

Theory

A substantial body of evidence highlights how political connections of bidders and suppliers—often manifested through campaign financing, or direct personal ties—can distort market competition and lead to inefficient contracting (Boas et al., 2014; Bromberg, 2014; Goldman, Rocholl & So, 2013; Mironov & Zhuravskaya, 2016). Theoretically, these connections create principal–agent dilemmas in which the "principal" (e.g., an elected official) aims to reward politically loyal or financially supportive "agents" (e.g., firms that donate to campaigns) rather than to ensure the best value for money. This can undermine fair and open access to contracts, as favoring one firm diminishes trust in the bidding process and discourages legitimate, unconnected firms from participating (Charron et al., 2017).

Political campaign finance—particularly through corporate donations—represents a key mechanism through which firms seek preferential treatment (Bromberg, 2014). The institutional set-up of public procurement is central to understanding why and how bidders' political ties become advantageous for bidders (David-Barrett & Fazekas, 2020). When politicians receiving campaign donations wield control over public procurement officials and the bureaucracy more widely, they can offer favorable treatment to donating firms once they win elections.

However, not all contracting authorities are equally vulnerable to this form of political pressures. Public bureaucracies and agencies' independence from politics—in terms of legal autonomy, insulated budgets, and professional staffing—is effective in combating such political interference (Charron et al., 2017). Mechanisms aimed at enhancing independence include: tenure protections for agency staff, guaranteed non-partisan funding, professionalized recruitment processes, and formal restrictions on ex ante contacts between political officials and agency staff (Charron et al., 2017). Such arrangements curb the most overt forms of political pressure by limiting channels through which elected officials can threaten or reward agency personnel. More subtly, these mechanisms also reduce the likelihood that agency staff will anticipate politicians' preferences and self-censor in procurement decisions. A further institutional "shield" for procurement

processes is the presence of multiple veto points in government, thus making it more difficult for any single group of politicians or high-level officials to impose preferred outcomes unilaterally (Piattoni, 2001)

Evidence

Evidence on the effectiveness of measures designed to curb political interference in public procurement is relatively scarce, yet a few rigorous studies indicate that reducing firms' capacity to influence political officeholders—either through campaign contributions or direct partisan appointments—can yield tangible benefits. For instance, Baltrunaite (2020) demonstrates that banning corporate donations in Lithuania produced an estimated 1% of GDP savings in annual public procurement expenditure. These findings suggest that outright prohibitions on corporate contributions can indeed reduce opportunities for favoritism in contracting, at least where implementation and enforcement are robust. By contrast, loosening campaign finance restrictions can lead to the opposite effect: Gulzar et al. (2022) document that Colombia's relaxation of donation limits was followed by increased signs of favoritism in procurement, implying that previously tighter regulations had played a constraining role on corruption or undue influence.

Not all studies, however, observe these gains. Fazekas & Cingolani (2017) find that adding further political finance restrictions a sample of EU member states did not measurably reduce corruption risk in public contracting. This inconclusive result may reflect contextual variations in baseline enforcement capacity or alternative channels of influence that are not addressed by merely raising legal barriers to political donations. Thus, while direct restrictions on campaign contributions can sometimes meaningfully limit political favoritism, such measures appear insufficient in themselves in more complex or weakly governed environments.

Another strand of research centers on agency-level reforms aimed at strengthening procurement authorities' independence from political actors. Multiple studies of the United States federal bureaucracy show that agencies with deeper political appointee penetration are more susceptible to political donation pressures; conversely, agencies designed to limit political representation in procurement decisions show fewer signs of favoritism (Dahlström et al., 2021). Fazekas et al., (2023) similarly observe that when agencies have less autonomy, campaign contributions have a larger influence on who wins contracts, particularly under discretionary procedures. Although such politicized agencies can explicitly channel contracts to partisan-aligned firms (Gordon, 2011), there is comparatively little research attesting to which specific structural safeguards are most effective at preventing this. Nonetheless, Dahlström et al. (2021) suggest that procurement oversight that limits direct appointee involvement can reduce favoritism, even under politicized executive departments.

Finally, measures such as tenure protections, selective appointment rules, and professionalized recruitment emerge as promising tools to raise agency insulation from party-political pressures (Schuster, 2020; Selin, 2015). While these studies are rarely procurement-specific, there is an indication that job stability reforms and restrictions on political removal of agency leaders do, in general, constrain opportunistic interference (Selin, 2015).

While the available literature shows that restricting campaign donations and strengthening agency autonomy help mitigate political favoritism in public procurement, the evidence base is restricted to high-income countries, mainly the US federal bureaucracy, calling the generalizability of

findings into question. Further research into impact mechanisms and the conditions under which different measures work is required.

Summary of evidence on interventions

This section reviews knowledge gaps and substantive conclusions from analyzing public procurement interventions' impact on value for money and access to contracts.

The quality of evidence on public procurement interventions is generally mediocre, with some tools supported by reliable evidence from multiple countries using diverse analytical methods (summary tables in the Annex). However, many globally significant policy tools with extensive implementation records have received little to no scientific evaluation. A disconnect exists between research priorities and policy needs, largely due to challenges in accessing reliable data and conducting high-quality studies. For governments and international organizations to base procurement policies on robust evidence, they must facilitate data access and support research targeting their priorities. Considering that public procurement accounts for approximately 15% of global GDP, the lack of systematic evidence is alarming. While emerging research communities and analytical frameworks are promising, far more needs to be done.

Future research should prioritize:

- E-procurement, focusing on contract execution monitoring and addressing the global lack of data on final contract performance.
- Centralized framework agreements, balancing price, quality, and user satisfaction given their high savings potential.
- Transparency and accountability portals, whose effectiveness remains underexplored.
- Balancing administrative rules and discretion, to understand how discretion can foster public good without enabling corruption.
- Public administration practices, as these significantly shape procurement outcomes.
- Training and capacity development programs, which are essential for implementation.

Public procurement research lacks sufficient comparable data to draw definitive conclusions, but tentative synthesis suggests notable effects on prices by intervention area. For instance, centralized framework agreements stand out with the largest price savings, as they fundamentally reconfigure procurement systems. Other interventions, when well-implemented, achieve roughly 5%-10% savings—substantial given the vast sums involved. With global public procurement spending estimated at $11 trillion annually, even a 1% savings represents $110 billion. Incremental reforms can thus deliver significant impacts.

However, price savings alone do not guarantee success. Even effective reforms can succumb to corruption, as bad actors adapt to new regulations. Regular monitoring and adjustments are essential to sustain performance. Interestingly, technical fixes such as adjusting bidder scoring mechanisms or auction thresholds can achieve effects comparable to broader systemic changes like introducing e-notifications. Broader governance reforms, such as improving civil service meritocracy or electoral competition, also yield significant procurement benefits, often rivaling

narrower interventions. These broader reforms offer additional advantages beyond procurement but require substantial effort and investment.

Finally, weighing the costs and potential impacts of reforms is increasingly feasible with available evidence. With further research, standardized evaluations of reform cost-effectiveness could become a critical tool for policymakers.

Table 1: Summary of largest identified effect size by intervention group

INTERVENTION TYPE	COUNTRIES	MARKETS	LARGEST EFFECT SIZE (savings)	EVIDENCE BASE
TARGETING SPECIFIC PROCUREMENT PHASES				
e-notification, e-access, e-attestations & e-submission	EU, Italy, India, Indonesia, Denmark, Netherlands, Portugal, LMICs	Infrastructure, general procurement	6.75%	high-quality systematic evidence
framework agreements	Italy, UK, Brazil, Colombia	general procurement, homogenous goods	34-78%	limited systematic evidence
e-auction & e-evaluation	Russian Federation, Slovak Republic, Bangladesh	public works, IT, sugar, general procurement	7.4-8%	limited systematic evidence
preferential treatment of bidder and product classes	Italy, Japan, USA	public works, general procurement	0.10-0.23%	high-quality systematic evidence
award mechanism and auction design	Brazil, EU, Italy	general procurement, construction, social spending	7-8%	high-quality systematic evidence

e-invoicing, e-payment & e-contract monitoring	-	-	-	no systematic evidence
civil society supervision of contract execution	Indonesia, Peru, Mexico, USA	small-scale infrastructure projects	51%	limited systematic evidence
TARGETING THE WHOLE PROCUREMENT PROCESS				
centralization of procurement functions and collaborative procurement	Australia, EU, Italy, UK	pharmaceuticals, general procurement	60%	high-quality systematic evidence
transparency and watchdog portals	Georgia, Slovak Republic, EU, LMICs	general procurement	11% (increase in open bidding)	limited systematic evidence
rule-bound or discretionary decision making	China, France, Germany, Italy, Nigeria, USA, Hungary	general procurement	25%	high-quality systematic evidence
meritocracy, professionalization and capacity development	Guatemala, EU, LMICs	general procurement	0.6-1.3%	limited systematic evidence
audits and supervisions	Argentine, EU, Indonesia, Chile	homogenous hospital inputs	11%	limited systematic evidence

performance pay and incentives	Pakistan	general procurement	3%	limited systematic evidence
conflict of interest rules	Lithuania, Colombia, Romania, Hungary, US, Brazil, Czech Republic	general procurement	24%	limited systematic evidence

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Annex 1: Summary table of evidence and the assessment of its quality by intervention group

nr.	intervention name	procurement phase	evidence				
			key references	countries	markets	periods	quality
1	*e-procurement*: e-notification, e-access, e-attestations & e-submission	tender preparation & advertisement	Lewis-Faupel et al (2014) Buyse et al (2015) Strand et al (2011) Coviello & Mariniello (2014) Mélon, L., & Spruk, R. (2020) Bosio, E., Hayman, G., & Dubosse, N. (2023)	EU, Italy, India, Indonesia, Denmark, Netherlands, Portugal, Low- and middle income countries	general procurement, infrastructure	2000-2021	high-quality systematic evidence
2	framework agreements	tender preparation & advertisement	Bandiera et al (2009) Mendoza Lopez (2025) NAO (2010, 2013) Gur et al (2015) Albano-Sparro (2010) Lal et al. (2021)	Italy, Mexico, UK, Brazil, Colombia	general procurement, standard goods	2000-2005 2007-2016 2010-2013 2015-2020	limited systematic evidence
3	*e-procurement*: e-auction & e-evaluation	bid evaluation & contract award	Pavel-Sicakova-Beblava (2013) Yakovlev et al (2014) Soudry (2004) Blum et al. (2023)	Russian Federation, Slovak Republic, Bangladesh	public works, IT, sugar	2007-2009 and 2011-2016	limited systematic evidence

4	preferential treatment of bidder and product classes	bid evaluation & contract award	Marion (2007) Nakabayashi (2013) Krasnokutskaya-Seim (2011)	Italy, Japan, USA	general procurement, roads, construction	1996-2009	high quality systematic evidence
5	award mechanism and auction design	bid evaluation & contract award	Blancas et al, 2011 Albano et al (2006) Chang et al (2014) Decarolis (2014) Butler et al (2013) Spagnolo (2012) Fazekas-Kocsis (2020)	Brazil, EU, Italy	general procurement, construction, social spending	2000-2014	high quality systematic evidence
6	*e-procurement*: e-invoicing & e-payment & e-contract monitoring	contract execution	-	-	-	-	no systematic evidence
7	civil society supervision of contract execution	contract execution	Olken (2007) Mansuri-Rao (2013) Lagunes (2017) Lagunes (2021)	Indonesia, Peru, Mexico, USA	road construction, urban development, property taxation	2003-2004 and 2015-2016	limited systematic evidence
8	centralization of procurement functions and collaborative procurement	all	Bandiera et al (2009) Barbosa-Fiuza (2012) NAO (2010 2013) Walker et al (2013) Ey et al (2014) Albano-Sparro (2010) Albano-Zampino (2013)	Australia, EU, Italy, UK	general procurement, homogenous goods	2000-2005 2008-2009 2013-2014	high quality systematic evidence

			OECD-SIGMA (2000 2011) Decarolis (2018) Baldi & Vannoni (2015) Lotti et al. (2024)				
9	transparency and watchdog portals	all	Sipos et al (2015) Kenny (2010) Center for Global Dev. (2014) Adam, David-Barrett, Fazekas (2024) Duguay, Rauter, & Samuels (2023)	Georgia, Slovak Republic, EU, LMICs	general procurement	2003-2019	limited systematic evidence
10	rule-bound or discretionary decision making	all	Tran (2008) Bajari et al (2009) Rasul-Rogger (2015) Chever & Moore (2012) Lalive-Schmutzler (2011) Kelman (1990) Parrado, Dahlström & Lapuente (2018) Szucs (2024)	China, France, Germany, Italy, Nigeria, USA, Hungary	general procurement, construction, social spending	1995-2015	high quality systematic evidence
11	audits and supervisions	all	Olken (2007) Fazekas-Tóth (2017) Di Tella-Schargrodsky (2003)	Argentine, EU, Indonesia, Chile	general procurement, hospital supplies, roads	1996-1997 2003-2004 2009-2014	limited systematic evidence

			Gerardino, Litschig & Pomeranz (2024)				
12	performance pay and incentives	all	Bandiera et al. (2020)	Pakistan	general procurement	2014-2016	limited systematic evidence
13	meritocracy, professionalization and capacity development	all	Telgen et al (2016) Charron et al (2017) Romero (2025)	Guatemala, EU Low- and middle income countries	General procurement	2005-2019	limited systematic evidence
14	conflict of interest rules	all	Baltrunaite (2020) Gulzar et al. (2022) Goldman, Rocholl, & So (2013) Boas et al. (2014)	Lithuania, Colombia, Romania, Hungary, US, Brazil, Czech Republic	general procurement	2008-2013 2008-2013 1990-1998 2004-2010 2006-2018	limited systematic evidence

Annex 2: Summary table of effect sizes by intervention group

nr	intervention name	effect size (% savings from baseline)	country	market	period	source	intervention
1	e-procurement: e-notification, e-access, e-attestations & e-submission	6.75%	LMICs	public works	2015-2021	Bosio, Hayman, & Dubosse (2023)	general e-procurement implementation
2	framework agreements	34-78%**	Italy	homogenous goods	2000-2005	Bandiera et al (2009)	central framework agreement vs local procurement contract
3	e-procurement: e-auction & e-evaluation	7.4-8%*	Bangladesh	general procurement	2011, 2011–2016	Blum et al. (2023)	e-auction vs paper-based
4	preferential treatment of bidder and product classes	0.10-0.23%	Japan	public works	2005-2009	Nakabayashi (2013)	60% of budget set aside for SMEs vs no set-asides
5	award mechanism and auction design	7-8%*	Italy	road construction and repair	2000-2006	Decarolis (2014)	first price auction vs average bid auctions
6	e-procurement: e-invoicing & e-payment & e-contract monitoring	n.a.	-	-	-	-	-

7	civil society supervision of contract execution	51%	Peru	small-scale infrastructure projects	2015-2016	Lagunes (2017)	civil society audit (supported by the audit general) vs no audit
8	centralized and collaborative procurement	60%	Italy	pharmaceuticals	2000-2005	Baldi & Vannoni (2015)	central purchasing vs local procurement contract
9	transparency and watchdog portals	(7-11% more open bidding)	EU	general procurement	2009-2017	Duguay, Rauter & Samuels (2023)	transparency portal vs no transparency portal
10	rule-bound or discretionary decision making	25%	Germany	train services licences	1994-2004	Lalive-Schmutzler (2011)	auctions vs negotiation procedure
11	meritocracy, professionalization and capacity development	0.6-1.3%*	EU-27	general procurement	2009-2013	Charron et al (2017)	3 standard deviation increase in public sector meritocracy vs no increase
12	audits and supervisions	11%	Argentine	homogenous hospital inputs	1996-1997	Di Tella-Schargrodsky (2003)	100% monitoring vs no monitoring
13	performance pay and incentives	3%	Pakistan	general procurement	2014-2016	Bandiera et al. (2020)	performance pay vs no performance pay
14	conflict of interest rules	24% reduced bid prices	Lithuania	general procurement	2008-2013	Baltrunaite (2020)	ban on corporate donations vs no ban

Notes: * using discounts compared to the original price estimate; ** centralized procurement & framework agreements jointly estimated