Open data in public procurement research

Open data

The term "Open Data" is ubiquitous in discussions over public administration and governance. The European Union even has an Open Data Maturity Assessment, which ranks Member States on dimensions like the accessibility, quality and impact of Open Data (European Commission, 2024). Open Data is information collected, produced or paid for by public bodies and made freely available for re-use for any purpose (European Commission, 2015). This corresponds to a common understanding that data is open if "anyone is free to access, use, modify and share it – subject, at most, to measures that preserve provenance and openness" (Opendefinition.org, 2025; see also Csáki *et al.*, 2019). Open Data is distinct from Big Data in that it refers exclusively to the re-use of public data. Big Data, by contrast, refers to the re-use of both public and private data. There is no single type of Open Data, as it can come in numeric or text form and be raw or processed. Open Data is typically made available in open file formats like .csv, although .pdf and other non-editable formats are sometimes used.

Open Data has direct and indirect economic and social benefits (European Commission, 2015), which is why governments, industry and civic society actors are interested in promoting its availability and uptake. The direct benefits include new revenue streams and job creation from the commercial exploitation of Open Data. This includes firms who develop web-based applications that facilitate end-user access to Open Data, also known as "data aggregators", and firms who convert Open Data into an analytics product or service, also known as "data enrichers". The indirect benefits of Open Data encompass the economic, political and social realms. Open Data enables evidence-led decision-making, which helps to drive efficiencies in public service provision, ultimately saving the State money. It fosters transparency and accountability in public administration and combats corruption and malpractice. This is in addition to intangible benefits like increased civic participation and improving citizens' access to information. The European Commission (2015) estimated that the direct benefits of Open Data would amount to €325bn and the indirect benefits amounted to €1229bn for Europe between 2016 and 2020.

Open data and public procurement

The direct and indirect benefits of Open Data are readily apparent in public procurement. Perhaps this is not surprising given that business information, of which public procurement is a part, is classed as high-value Open Data (European Commission, 2015). Platforms and web applications have been created to enable access to Open Data like contract notices in public procurement. Some of these platforms and applications are government-managed e.g. System for Award Management (SAM) in the USA, and some are private sector initiatives e.g. Contract Finder Pro. Market intelligence firms like Tussell (www.tussell.com) have emerged in response to buyers' and suppliers' interest in contract data analytics, which is another way Open Data is monetised. The public sector is starting to re-use its own data to identify where improvements can be made in areas like joint procurement and supply competition; critical given that the underutilisation of data for business planning is known to inhibit strategic public procurement (European Commission, 2017). Civic society groups are also interested in the implications of Open Data for public procurement, particularly in

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respect of enhancing transparency and delivering value-for-money for taxpayers (Open Spending EU Coalition, 2023).

As well as offering commercial incentives to the private sector and practice improvements to the public sector, Open Data is presenting academics with research opportunities. This, in conjunction with advances in data mining and analysis tools, is behind the emergence of new data-driven studies on procurement policies and practices. Access to data has traditionally been a stumbling block for public procurement research, but Open Data is shifting the dial in terms of what is possible. Open Data on public procurement can be analysed on its own or in combination with other secondary data sets, and examples of both can be found in the literature. The remainder of the article will review some of the main lines of inquiry within this research stream. It covers studies that use contract data produced by public authorities as well as procurement data produced by corporations under statutory requirements like the UK and Australia's payment times reporting scheme. While by no means exhaustive, it nonetheless offers valuable insights into how researchers are using Open Data in a public procurement context.

Profiling public procurement using open data

Much of the Open Data-led research on public procurement focuses on profiling spend patterns and examining supplier selection procedures. The advent of national and federal e-procurement portals that house information on live and awarded contracts makes this type of research possible. The Tenders Electronic Daily (TED) portal, for instance, allows users to search and download numeric data on above-threshold contract awards made by public authorities across the European Union. The European Commission has been to the fore in mining the TED repository to profile public procurement, producing statistics on measures of efficiency like decision speed and measures of competition like single bidders (European Commission, undated). Academic studies are also mining contract data to profile public procurement nationally. García Rodríguez *et al.* (2019) used data on awarded contracts over a seven-year period to show what Spanish authorities were buying and how much they were spending, while Grandia and Kruyen (2020) ran an automated analysis of Belgian public contracts to gauge the extent to which buyers were asking suppliers to demonstrate sustainable and innovative practices.

Analysis of contract data housed on TED or equivalent portals can also provide a window into many other aspects of the procurement process, as studies show. Lofaro *et al.* (2023) used it to explore the phenomenon of year-end spending spikes (YESS) and their association with non-competitive procurement procedures like single bidding. Somewhat differently, Casady *et al.* (2023) used it to identify cases of contract cancellations and the organisational and environmental factors that make them more likely to happen. Hoekman and Taş (2024), meanwhile, examined the relationship between public buyers' procedural discretion over awarding contracts and the final price paid for goods and services, finding that lower discretion leads to higher purchase costs. Other scholars have used contract data to investigate how the political and financial conditions in local government authorities influence awarding decisions to third-sector suppliers and suppliers operating in close proximity to the buying organisation (Eckersley *et al.*, 2023a, 2023b). Each of the aforementioned studies tackle questions of academic and policy importance in public procurement by taking advantage of Open Data.

As well as shedding light on the procurement process, researchers have used contract data to shed light on bidders, especially SME bidders. Their results confirm certain *a priori* expectations about how SMEs perform in public contract competitions while confounding others. Consistent with expectations, SMEs' likelihood of success is found to be inversely

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related to contract size (Albano *et al.*, 2015; Glas and Eßig, 2018; European Commission, 2019; Hoekman and Taş, 2022) and open competitions are conducive to SME involvement (Glas and Eßig, 2018; Nemec *et al.*, 2021). Contrary to expectations, however, the same set of studies do not find that SMEs are disadvantaged by price-only competition and dividing contracts into lots. The latter is central to SME-friendly policy but does not necessarily improve SMEs' win rates. It is also apparent that SME bid activity and success rates are higher in procurement categories like construction and agriculture than medical supplies or commodities (European Commission, 2019). As well as its contribution to academic knowledge, evidence of this kind is important in critically evaluating "SME-friendly" procurement policies and finding room for improvement.

Testing the performance effects of public contracting using open data

Another discernible line of inquiry in Open Data-led research on public procurement is performance effects. It focuses on the extent to which success in public procurement affects firm-level measures of operational and financial performance. The contract data used in these studies is typically extracted from national e-procurement portals and subsequently matched with performance data from other publicly available sources. The results to date suggest that SMEs experience improvements across measures like employment growth, productivity and sales after winning a public contract. However, the extent to which performance improvements persist is debateable. Most studies find that they are a short-term phenomenon and merely induce a "subsidy effect" (Lewis, 2017; Fadic, 2020; Ravenda *et al.*, 2022; Srhoj and Dragojević, 2024), although some studies point to medium-term effects (Ferraz *et al.*, 2015; Lee, 2021). Testing the relationship between public contracting and performance is crucial not only for firms, but also for policymakers who want to better understand how their spending decisions impact suppliers and the wider economy. It is largely thanks to Open Data on public contracts that these questions are starting to be answered.

Increasing transparency in public procurement using open data

Among the social benefits of Open Data is that it injects transparency into public administration. Transparency, in turn, is said to engender compliant behaviour by public officials and a reduced likelihood of rule breaking and even corruption. This premise is motivating research into the role that Open Data plays in efficient and compliant public procurement practices. Duguay *et al.* (2023), for example, set out to examine if Open Data was leading to greater use of open competition (as opposed to restricted competition) to decide contracts awards, finding in the affirmative. This benefit was not without its downside, however, as open competition constrained buyers' ability to use tacit knowledge to select the most appropriate supplier. Elsewhere, Fazekas and colleagues have used Open Data to develop and validate a corruption index in public procurement, comprising indicators like single bids in competitive markets, too-short advertisement periods and vague evaluation criteria (Fazekas *et al.*, 2016; Fazekas and Kocsis, 2020). Their work is an example of how Open Data allows researchers to study malpractice in public procurement, and to come up with tools and methodologies for its detection and remediation.

Promoting responsible procurement in the private sector using open data

While very important, public contracts are not the only source of Open Data in our field. There is also procurement data submitted by corporations under government reporting regulations. A good example is legislation enacted in the UK and Australia that mandates large firms to submit summary data on the time taken to pay their suppliers; information that can be downloaded as a .csv file from dedicated government sites. Even though the data

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primarily relates to corporations, some work as government contractors and so their payment times are indirectly relevant to public procurement. In fact, both countries stipulate that bidders for high-value government contracts must meet minimum payment time performance standards, either as part of qualification criteria or contractual requirements (Australian Government, 2023; UK Cabinet Office, 2023). Several academic studies have already exploited this data to examine trends in payment times and test how organisation and industry characteristics lead to better or worse treatment of suppliers (Flynn and Li, 2023; Grewal *et al.*, 2024; Chuk *et al.*, 2025). Open Data on supplier payment times is welcome, as corporations would be unlikely to volunteer this information to researchers.

Benefits of open data for public procurement research

The main benefit of Open Data for our field is that it facilitates research into procurement processes and outcomes in ways that were simply not possible before, with the output leading to scientific breakthroughs and practice improvements. To illustrate, separate analyses carried out by the European Commission (2019) and academics (Glas and Eßig, 2018; Hoekman and Taş, 2022) have yielded lessons about the effectiveness of "SME-friendly" policy in public procurement. Open Data does not only provide answers to questions, it provides better answers. First, Open Data can be used to track changes in buyer practices or supplier behaviours longitudinally, which strengthens the validity of results. Studies into supplier payment times are a case in point (e.g. Flynn and Li, 2023). Second, Open Data like TED contains observations on contract notices and awards from different countries and sectors, the analysis of which improves the generalisability of results. By contrast, public procurement studies based on primary survey data tend to be cross-sectional and specific to a country, locality or sector. Third, there is even the prospect of research replication given the volume and availability of Open Data in public procurement.

Limitations of open data for public procurement research

Despite its many benefits, Open Data like public contract notices and awards comes with caveats that researchers need to know about (Csáki *et al.*, 2019). These include missing data on award value and contract implementation, particularly in the case of low-value procurement (Open Spending EU Coalition, 2023), erroneous data, duplication of data entries and the insertion of multiple values in a singe field e.g. the names of two or more suppliers in the awardee field. While such challenges are neither insurmountable nor unique to Open Data, researchers should expect to spend time cleaning their data before it is fit for purpose. Open Data may be publicly available, but this does not mean that it is "ready-to-go". Before commencing data processing, researchers must also be confident that they know what the data fields represent. Fortunately, datasets like TED are accompanied by codebooks that guide researchers through the minutiae of contract notices and awards. A final caveat to bear in mind is that Open Data is generally not audited, therefore its reliability and accuracy cannot be guaranteed.

Looking forward

The use of Open Data in public procurement research is at a nascent state of development, with most studies only published in the last five–ten years. Yet, even in this short time period, progress has been made in answering research questions linked to procurement practices and supplier outcomes. The academic field of public procurement has become more rigorous and relevant because of Open Data. The number of Open Data studies in public procurement is still small, however, and existing lines of inquiry must be expanded if progress is to continue. As such, we need more studies that draw on data from repositories like TED or SAM to

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investigate spend patterns, award criteria, contract requirements tied to sustainability and innovation and competition dynamics. Equally, we need more studies that combine contract data with financial and other secondary data sets to learn about the performance effects of public contracting, for example, or the relationship between political factors and supplier selection decisions in local government. Finally, the move towards Open Data implies enhanced data management and analysis skills, which it would be wise to reflect on individually and as an academic community of interest.

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