Same Product, Different Price

Experimental Evidence on the Transaction Cost Expenditures of Selling to Governments and Firms

Potoski, Matthew; Petersen, Ole Helby; Brown, Trevor L.

Published in:
Public Administration Review

DOI:
10.1111/puar.13551

Publication date:
2022

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Potoski, M., Petersen, O. H., & Brown, T. L. (2022). Same Product, Different Price: Experimental Evidence on the Transaction Cost Expenditures of Selling to Governments and Firms. *Public Administration Review*, *online first*. https://doi.org/10.1111/puar.13551

Received: 19 July 2021 | Revised: 20 July 2022 | Accepted: 19 August 2022

DOI: 10.1111/puar.13551

RESEARCH ARTICLE

PAR PUBLIC ADMINISTRATION REVIEW ASPA

Same product, different price: Experimental evidence on the transaction cost expenditures of selling to governments and firms

Matthew Potoski[1] | **Ole Helby Petersen**[2] | **Trevor L. Brown**[3]

[1]Bren School of Environmental Science and Management, University of California, Santa Barbara, Santa Barbara, California, USA

[2]Department of Social Sciences and Business, Centre for Research on Public-Private Collaboration, Roskilde University, Roskilde, Denmark

[3]John Glenn College of Public Affairs, The Ohio State University, Columbus, Ohio, USA

Correspondence
Matthew Potoski, Bren School of Environmental Science and Management, University of California, Santa Barbara, 2400 Bren Hall, Santa Barbara, CA 93106-5131, USA.
Email: mpotoski@bren.ucsb.edu

Abstract

Whether governments pay more than firms when contracting has been an important and stubbornly vexing question in public management. One challenge has been finding ways to credibly compare the costs of engaging in market transactions with governments versus firms. In this paper, we systematically compare the costs of contracting when governments and firms buy the same product under the same circumstances. Using data from a randomized experiment of Danish firms, we examine selling firms' transaction cost expenditures when selling the same product to governments and other firms. We find that firms estimate spending about 34 percent more on transaction cost expenditures when selling to governments than when selling the same product to firms. Experience in selling to governments is associated with lower transaction cost expenditures, suggesting that learning can reduce firms' costs of selling to governments and firms.

Evidence for Practice

- Sellers' estimate their transaction cost expenditures to be 8 to 10 percent of the contract value.
- Sellers' estimated transaction cost expenditures are significantly higher when selling to governments than to other firms, likely due to sellers' higher costs of complying with contract monitoring and enforcement requirements.
- Sellers' experience with public sector contracting lowers their transaction costs expenditures when selling to governments and other firms.

INTRODUCTION

Improving public sector contracting is an important public management challenge, in large part due to the amounts governments around the world spend on purchased products[1]: government purchasing represents from 5 to 20 percent of national GDP and from 20 to 45 percent of public sector expenditures among the OECD countries (OECD, 2019, pp. 172–173). As governments become increasingly reliant on complex supply chains to fulfill their missions and deliver value to stakeholders (Abonyi & Van Slyke, 2010), some suggest that governments often pay above-market prices for commonly available products (Marion, 2007; Ohashi, 2009). For example, news reports in Denmark claimed that local governments were paying 40 percent more for goods routinely available in grocery stores (Rasmussen, 2010). Stories from the United States showed the federal government apparently paying $10,000 for a toilet seat cover and $435 for a common hammer (Freedberg, 1998).

As it turned out, these media stories were deceptive. Claims that governments purchase inefficiently and pay inordinately higher prices often fail to account for the effects of government purchasing regulations and the unique features of products that governments buy. The

This research was supported by the Independent Research Fund Denmark [Grant no.: 9061-00020B].

seemingly exorbitant prices paid for groceries by Danish local governments included daily delivery to the doorsteps of thousands of public schools, nurseries and retirement homes (Rasmussen, 2010). The U.S. Air Force's toilet seat cost $10,000 because the seller needed to design and build it from scratch to fit a few aging tanker planes (Gregg, 2018). No firms bought these parts because only the Air Force owned such tankers. The U.S. Department of Defense did list a $435 price tag for a construction hammer, but the hammer was part of a bulk spare parts purchase where the price covered $15 for the hammer and $420 in research and development costs for other goods in the bulk purchase, including jet engines (Mothershed, 2012).

Inefficient government contracting could have many unfortunate consequences: wasted public sector budgets, higher taxation, and calls for internalization of formerly contracted products (Clifton et al., 2019; Warner & Aldag, 2021; Warner & Hebdon, 2001). The efficiency of public sector contracting also informs the long-standing research inquiry into how and when different organizational forms perform more or less effectively, one of the most important topics in the social sciences (Koning & Heinrich, 2013; Ostrom, 2007; Perry & Rainey, 1988; Shleifer, 1998; Williamson, 1996). Contracting and purchasing provides a window into the relative performance of different institutional arrangements because it is a function common to all organizations, both public and private (Brown, 2013; Rainey & Bozeman, 2000; Tadelis, 2012).

Identifying whether firms offer products to governments at higher prices than they charge other firms for the same products is an important step in examining and explaining the relative performance of alternative organizational forms. Firms may charge higher prices to governments because of insufficient incentives for governments to simplify the purchasing process, the costs of public sector purchasing regulations intended to promote social values, or the inexperience of some firms who have not yet adapted their business practices for selling to governments. Academic research has struggled to systematically compare purchasing between governments and firms because they often buy different products and use different accounting practices (Bel et al., 2010; Bel & Rosell, 2016; Savas, 1987). The strategy we pursue in this study measures the costs firms bear when selling to governments compared to when they sell the same products to other firms.

Analyses of the costs of executing an exchange between two parties have used several related theoretical approaches, including transaction costs, coordination costs, and management costs (Bowen & Jones, 1986; Geyskens et al., 2006; Mohr, 2017b; Romzek & Johnston, 2002; Sclar, 2000; Williamson, 1979, 1991). Our approach builds on analyses that examine the cost drivers in public sector contracting (e.g., Petersen et al., 2019, 2021). We use the term "transaction cost expenditures" to capture the actual financial costs buyers and sellers experience to execute market exchanges (De Schepper et al., 2015; Petersen et al., 2019). Private firms may charge higher prices to governments because sellers incur higher transaction cost expenditures when selling the same products to governments than when selling to other firms (Purchase et al., 2009). If private firms are selling the same products to a government as they are to another firm, the sellers' production costs should be identical regardless of the buyer's organizational form. The costs of organizing and governing the exchange is therefore where cost differences to the buyer are likely to emerge, and therefore also where our analytical focus lies.

In this paper, we develop an approach to systematically compare a firm's transaction cost expenditures when selling the same product to governments and other firms. In doing so, we keep the product characteristics and the seller's organizational form constant and only vary whether the buyer is a government or another firm. We draw on data from a randomized experiment of contract managers in 177 Danish firms in three major industries that commonly sell to both governments and other firms: the construction, information, and communication technology, and consulting and advisory industry. We provided contract managers with a vignette describing a product that their firm typically sells to both governments and other firms. Respondents were randomly assigned to a scenario where the buyer was a government or a firm, with all other circumstances of the exchange being identical. The vignette included a description of the product along with the total price of the contract and asked respondents to provide precise estimates of the costs their firm would spend to complete the exchange. Respondents were provided with detailed guidelines on how to calculate their firm's estimated transaction cost expenditures and on how to assign that spending into different ex ante (before contract signature) and ex post (after contract signature) exchange activities.

Our analysis provides evidence that selling firms estimate transaction cost expenditures that are 10.36 percent of the contract value when selling to governments and 7.74 percent when selling the same product to other firms, an additional cost of selling to governments of 34 percent. To further explore the sources of the additional transaction cost expenditures, we break down selling firms' exchange activities into subsets of ex ante and ex post categories and find that selling firms' transaction cost expenditures are particularly higher for monitoring and enforcement activities when selling to governments. Our findings provide evidence to help answer the question of whether firms offer products to governments at higher prices than the same product than firms. To the best of our knowledge, these are the first empirical estimates of private firms' transaction cost expenditures when selling identical products to governments and to other firms, under the same circumstances, and in similar market conditions.

The credibility of our findings is bolstered by the experimental features of our research design. Moreover, because Denmark's public sector is known for its regularity and low corruption in purchasing, the effects we report are likely to be smaller than what would occur

elsewhere. Our experimental findings also have important implications for contract management and purchasing practice, notably taking steps to root out inefficiencies in purchasing policies and regulations that do not contribute to social goals and making the process as clear and transparent as possible to accelerate the learning process for prospective sellers.

This paper is divided into five sections in addition to this introduction. In the first section, we draw on organizational theories of public and private organizations to ground the inquiry of differences in exchange costs between governments and firms. In the second section, we describe the methods and data we use to examine differences in estimated transaction cost expenditures when firms sell the same products to governments or to other firms. In the third section, we present the empirical results. In the fourth section, we discuss the findings, identify implications for contracting practice, and propose directions for future research. The fifth section concludes the paper by summarizing the findings and underlining the importance of careful analysis when comparing the performance of different organizational forms.

ORGANIZATIONAL FORM AND EXCHANGES: GOVERNMENTS, FIRMS AND TRANSACTION COST EXPENDITURES

Firms and governments engage in quite similar exchange activities when buying products (Tadelis, 2012). They both find sellers and request bids, select a supplier and negotiate terms, receive the product, and evaluate its quality and performance. If the quality is sufficient, they provide compensation, and reject acceptance if it is not. Buyers engage in these exchange activities to increase the value they anticipate receiving from their purchase. Sellers likewise engage in exchange activities to ensure that they too benefit by receiving compensation greater than their costs (De Schepper et al., 2015; Petersen et al., 2021; Williamson, 1996). Exchange activities can be expensive for both buyers and sellers. The activities require staff, such as purchasing personnel with knowledge of users' needs and market conditions, lawyers with expertise in contract law and negotiation, and technical specialists who can test and evaluate a product's qualities and performance. The end result should be a classic win-win, an exchange that makes both parties better off (Brown et al., 2016; Lindholst et al., 2018).

Win-win exchanges are more difficult to achieve in the presence of factors that increase the risk that one or both parties fail to receive full value, such as when the product's value is difficult to measure and specify in a contract (Romzek & Johnston, 2002), or when there are additional steps directly related to the production and delivery of the product (e.g., requiring the seller to rely on disadvantaged subcontractors; Marion, 2007). These factors are sometimes referred to as the sources of transaction costs in that their presence increases the likelihood the contract will deliver less value or fail all together (Petersen et al., 2019). When such transaction cost factors are stronger, buyers and sellers need to spend more on exchange activities to prepare, negotiate, execute, and manage the exchange, lest they end up with lost value or a failed exchange (Anguelov, 2020; Bowen & Jones, 1986; Clemons et al., 1993; Geyskens et al., 2006). Transaction cost expenditures are the actual financial outlays to cover the costs of these exchange activities (De Schepper et al., 2015; Petersen et al., 2019).

Much of the literature on transaction cost factors examines attributes of the product, such as specialized investments that lose value when put to use outside the exchange (e.g., Brown & Potoski, 2003; Levin & Tadelis, 2010; Mohr, 2017a; Stein, 1990), or aspects of the exchange context, such as the degree of competition in the market (e.g., Brunjes, 2020, 2022; Girth et al., 2012; Warner & Bel, 2008). A less examined—although potentially equally important—factor is the organizational form of the exchange partners. The efficacy of firms and government agencies for different tasks in different circumstances has been an important subject of scholarly scrutiny (e.g., Bel & Warner, 2015; Brown, 2008; Marvel & Marvel, 2008; Sclar, 2000; Witesman & Fernandez, 2013). Organizational theories of governments and public sector organizations provide reasons why sellers' transaction cost expenditures may be higher when selling the same product to governments than firms (Bowen & Jones, 1986; Geyskens et al., 2006). A government may be a monopolist provider to its constituents, while firms face more competition from capital markets (e.g., Boyne, 1998; Niskanen, 1971). Shareholders may exert more pressure for efficiencies because they are in better position to monitor managers' performance and receive direct financial returns from lower purchasing costs. Shareholders can reward efficient purchasing managers with higher wages. Government agencies' political supervisors may face higher information challenges to evaluate managers' performance and do not receive direct financial returns from lower purchasing costs. Civil service laws may prevent government purchasing managers from receiving performance pay, though they may still experience personal career costs should a contract fail (Warner & Hebdon, 2001, p. 332). Independently and collectively, these pressures could undermine the incentives for governments to reduce both their own and selling firms' transaction costs expenditures.

Another potential source of difference in the cost of selling to governments and firms is that governments seek a broader range of social values than firms when purchasing products, such as transparency, open competition, and equal treatment (Tadelis, 2012). To achieve these values, government purchasing regulations require additional contract management procedures (Lindholst & Bogetoft, 2011; Purchase et al., 2009). A firm may purchase a hammer seeking only the ability to pound nails into wood. A government purchasing the same hammer for nail pounding

is also likely to be seeking additional important social values, such as equal treatment or equitable participation among socially disadvantaged groups. To achieve these values, government purchasing policy oftentimes requires additional contracting procedures (Rainey & Bozeman, 2000). For example, government purchasing policy may require setting aside a portion of contract awards for certain sellers, such as minority or female owned businesses, or requiring selling firms to subcontract with these types of vendors (e.g., Smith & Fernandez, 2010). Other government purchasing policies may push purchasing towards firms that produce more social value through their Corporate Social Responsibility (CSR) practices (Flammer, 2018), such as by requiring goods and services to achieve environmental certifications.

Because of government purchasing regulations, when governments and firms buy the same product, they often follow different purchasing regulations that can affect how much sellers need to spend on their own activities to execute the exchange (Purchase et al., 2009; Tadelis, 2012). In pursuit of greater transparency and legitimacy, for example, government regulations may require sellers to produce more detailed information to justify bids and report more extensive performance information during the contract (Johansson et al., 2016; Rosenbloom & Piotrowski, 2005). Complying with government regulations may raise sellers' transaction cost expenditures when selling to governments. Firms' purchasing criteria are generally less onerous (Lavery, 1999). Governments' contracting regulations are likely to raise sellers' transaction cost expenditures when selling to governments compared to exchanging the same product between two private firms (Tadelis, 2012). These plausible explanations of why selling to governments may be more costly than selling the same product to another firm leads to our first hypothesis.

> **Hypothesis 1.** *Firms incur higher transaction cost expenditures when selling to governments than when selling to private firms.*

Higher transaction cost expenditures may occur at different phases of the transaction (Dyer & Chu, 2003; Petersen et al., 2019). *Search costs* are resources expended to identify and screen potential partners. *Negotiation costs* are the resources expended to agree to exchange terms, such as price and quality, and to transfer the resources between the parties (Barthélemy & Quélin, 2006). *Monitoring costs* are the resources expended to verify whether the product meets the agreement's terms (Anguelov, 2020; Romzek & Johnston, 2002). *Enforcement costs* are the resources expended to rectify any deficiencies in the contract relationship (Melese et al., 2007; Wynstra et al., 2018). Figure 1 lists examples of search, negotiation, monitoring, and enforcement costs that sellers may incur in contracts with governments and other firms.

Government regulations may raise transaction cost expenditures across any of these categories, conceivably with tradeoffs among them (Dyer & Chu, 2003). Transparency and open bidding requirements may raise search costs. Government requirements for additional product qualities and social values may raise negotiation costs because they make the purchase more complex, and they may raise monitoring and enforcement costs because they require additional effort to ensure the product qualities and values have been achieved.

Organizational theory also suggests circumstances that can mitigate the difference in sellers' transaction cost expenditures between businesses and governments (Mayer & Argyres, 2004). Government purchasing often occurs under complex regulations and purchasing policies that may raise sellers' transaction cost expenditures (Melese et al., 2007; Tadelis, 2012). As sellers gain experience in selling to governments, they gain specialized knowledge and expertise for meeting regulatory requirements and adhering to public procurement procedures. Sellers may draw on their previous bids to meet transparency requirements or have standardized procedures for reporting their performance. Likewise, selling firms may use experience gained through previous exchange with other firms to learn the requirements and expectations of buyers and reduce their transaction cost expenditures as they gain more experience. This suggests that learning from repeated contracting can lower sellers' transaction cost expenditures when selling to governments and firms (Brown et al., 2016). Based on this theoretical reasoning, our second hypothesis is:

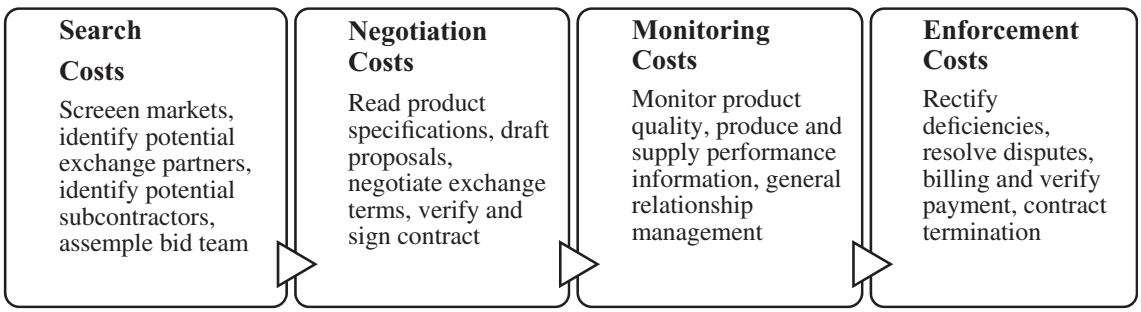

FIGURE 1 Selling firms' transaction cost expenditures across phases of the contract exchange

Hypothesis 2. *Selling firms' experience in selling to governments and other firms reduces their transaction cost expenditures.*

Because a firm's production costs are likely to be the same when selling the same product to a purchasing government or a purchasing firm, effectively comparing government and business purchasing requires accurately measuring the magnitude of transaction cost expenditures during the exchange. Despite transaction costs' theoretical importance in organization studies and public management (Dyer & Chu, 2003; Hefetz & Warner, 2012; Johansson, 2015; Johansson & Siverbo, 2011; Petersen et al., 2019), there are no previous studies measuring how much private firms spend to manage the costs of selling the same product to governments and to other firms. In the next section of this paper, we present our approach to measure selling firms' transaction cost expenditures when contracting for identical products with governments and with other firms.

METHODS AND DATA

Generating causal estimates of differences in private firms' transaction cost expenditures when executing sales of identical products to governments and to other firms requires situations where governments and firms buy the same product, in essentially the same form, and in markets with enough buyers and sellers to ensure sufficient competition (Brunjes, 2022; Kang & Miller, 2022). Denmark serves as an informative setting for our study because many private firms sell similar products to governments and to other firms in competitive markets (Danish Competition and Consumer Authority, 2019, p. 28). We selected three products that both governments and private firms frequently purchase in similar forms and in competitive markets–construction services; information and communication technology services; and consulting and advisory services. In such circumstances, differences between transaction cost expenditures provide a reasonable account of the monetary costs when selling the same products to governments and to other firms.

We use a vignette experiment to randomly assign selling firms to the conditions of selling to governments or selling to other firms, which enables us to estimate the causal impact on selling firms' transaction cost expenditures. We collaborated with three major industry associations in Denmark (The Confederation of Danish Industries, The Danish Chamber and Commerce, and The Danish Construction Association) to build a sample of 3021 firms in these three industries. The three industries represent 1,355 construction firms, 932 consulting and advisory firms, and 783 information technology firms. We obtained contact information for contract managers in each firm and surveyed them about their contracts with governments and other firms. We pilot-tested the survey questionnaire at a conference for contract managers in about 60 firms that frequently sell to governments and/or to other firms and revised our question formulations in response to face-to-face feedback and written comments from the contract managers.

We distributed the survey as an online questionnaire from September through October 2018. Because our pilot-test indicated that some firms specialize in selling only to governments or other firms, we included an initial screening question asking the respondent whether their firm sell to both governments and firms, only to governments, or only to firms. In total, 62.1 percent of respondents indicated that their firm sold the same product to governments and other firms in essentially the same form. We randomly assigned these respondents to either of two conditions: one where their firm was selling its product to a government agency, and another where their firm was selling the same product to another firm. Respondents who answered that their firm sold only to governments (12.3 percent of firms in our sample) or other firms (25.6 percent of firms in our sample) were assigned to that corresponding category. These responses were not included in the analysis because respondents were not randomly assigned to the two treatment conditions.

After the initial screening question, each respondent read a short vignette describing either a construction, consulting, or information technology contract, depending on the respondents' industry affiliation, which we obtained from the three industry associations prior to distributing the survey. The vignette varied only in the random assignment to conditions of selling to governments or selling to other firms. To increase field realism and make transactions as identical as possible across the conditions of selling to governments and firms, we used data about average contract values in the three industries (Hansen et al., 2017) and fixed the value of the contract at DKK 3 million (approx. $466,000) for construction services and information communication technology services, and DDK 1.5 million (approx. $233,000) for consulting and advisory services. The survey vignette is in Online Appendix 1.

The vignette described a contract with either a government or another firm, and respondents were asked to estimate the monetary value of their transaction cost expenditures across four categories of activities: (i) scanning for contract opportunities, (ii) writing and presenting bids and negotiating contracts, (iii) providing information about contract performance, and (iv) billing and contract termination. Respondents received definitions and examples of activities for each category (see Online Appendix 1) and were instructed to estimate precise expenditures for each of these categories based on costs for staff, equipment, and other categories of internal expenditure and external expenditure, such as legal advice, insurance, and materials. This measurement approach provides comprehensive coverage of firms'

anticipated transaction cost expenditures under the scenario of selling identical products to governments or to other firms.[2]

After two online reminders and one round of telephone reminders, we obtained responses from 225 contract managers indicating that their firm sells to both governments and other firms. Of these, 177 respondents returned complete answers to our questionnaire. The low response rate is likely due to several factors: the initial screening question showed that not all firms sell both to governments and to other firms; the amount of work required to calculate their firm's precise transaction cost expenditures; and the challenge of dividing these expenditures into specific bidding and contract management activities. However, we believe that the response rate's disadvantages are offset by the experimental features of our research design and by the fact that respondents' efforts produced unique and detailed data on firms' estimated transaction cost spending, which are not available from any other sources, such as register data or companies' annual reports.[3]

We test for non-response bias (Clottey & Grawe, 2014) by comparing background characteristics (industry belonging and firm size) of the responding and non-responding firms. The analysis shows that consulting and advisory firms, information and communication technology firms, and large firms are overrepresented, which means that our sample of responding firms is not entirely representative of the full sample of firms. We control for these differences in an additional analysis by including dummy variables for industries and firm size as well as other relevant firm-related variables. In addition, we perform a balance check to examine whether the 177 firms in our final sample are equally distributed across the two experimental conditions of selling to governments and selling to other firms. Table A1 in the online appendix shows that the two groups are balanced on all observable characteristics.

Data and variable operationalization

We draw data from three primary sources: the contract manager survey, company data obtained from the three business associations, and administrative data from the Danish Central Business Register. Our *dependent variable* measures firms' transaction cost expenditures as a percent of the contract value that was prefixed in the survey vignette. We asked firm respondents to provide precise accounting information about both internal and external expenditures for each of these activities. Internal expenditures measure internal staff spending operationalized as the number of contributed hours multiplied by hourly wages for all relevant categories of employees and managers. External expenditures measure firms' spending on external advisors, insurance, equipment, and other costs for making the exchange. We divided firms' transaction cost expenditure by the prefixed contract value and multiplied by 100 to convert it to a percentage scale. Another and perhaps more intuitive way to conceive our dependent variable is private firms' transaction cost expenditures per dollar of sales. Then, we asked respondents to allocate their firm's total transaction costs expenditures for the different exchange activities: (i) scanning for contract opportunities, (ii) writing and presenting bids and negotiating contracts, (iii) providing information about contract performance, (iv) billing and contract termination, and (v) other activities.

One major advantage of our vignette experiment is that the causal impact of selling to governments or to other firms can be estimated because of the random assignment to the two treatment conditions. The primary independent variable measures whether the respondent received the experimental vignette about selling to governments or selling to another firm. The variable *Selling to Governments* is coded 1 if the respondent answered a vignette about selling to a government agency, else 0.

We note two potential limitations of this measurement approach. First, respondents may have negatively biased evaluations of government organizations, as do many citizens (Hvidman & Andersen, 2016; Marvel, 2015a, 2015b), which could lead them to overestimate their transaction cost estimates when selling to governments. Our measurement approach addresses this to an extent by asking managers to provide exact accounting estimates of their expenditures for different activities of the exchange, which could potentially limit the influence of a public negativity bias. Second, respondents may perceive product quality differences when selling to governments and firms, for example, governments may require information technology products with greater privacy security. It is likely that government agencies make different demands on, for example, social values than private firms, which we return to in the discussion section.

In addition to the *Selling to Governments* treatment variable, we include a number of firm- and industry-level independent and control variables. These variables are not experimentally manipulated because characteristics such as firm size, contract experience, and firm industry are not feasible to randomly manipulate in a vignette experiment. The analyses with these co-variates should therefore not be interpreted causally. We include them to shed light on further possible explanations for differences in selling firms' transaction cost expenditures when selling to governments and other firms.

First, we include dummy variables for the three industries: *Construction services*, *Information and communication technology services*, and *Consulting and advisory services*. These variables control for differences in product attributes, markets, and industry-specific regulations. We draw the data for the industry dummies from the three business associations we collaborated with. Second, two independent variables measure selling firm's experience of contracting with governments and with other firms. The

variable *Public sector contracts* measure the number of contracts the firms had with governments in the past 3 years, while the variable *Private sector contracts* measure the number of contracts the firm had with other firms in the past 3 years. These data were collected in the firm survey. Third, two variables control for possible differences relating to firm size. The variable *Employees* measure the number of full-time employees in the firm, and the variable *Firm revenue* (*ln*) measures the natural logarithm of firms' annual gross revenue in millions of US Dollars (i.e., before taxes, depreciation, salaries, and other expenses). We manually collected these data from the Danish Central Business Register and link it with each firm's survey responses via a unique company "CVR number," which all firms in Denmark must have. Fourth, to control for the possibility that older and newer firms may operate in different segments of the industries, we use data from The Central Business Register to include a control variable for *Founding Year*, which measures the year each firm was founded.

Estimation methods

We estimate the models using fractional logit regression to account for the fact that our dependent variable (firms' estimated transaction cost expenditures as a percentage of the contract value) is a fraction and therefore bounded between 0 and 1, which violates the assumptions of standard OLS regression (Papke & Wooldridge, 1996; Villadsen & Wulff, 2019). We perform all analyses in Stata version 17.

EMPIRICAL FINDINGS

We first report summary statistics of firms' estimated transaction cost expenditures when selling to governments and other firms, both in aggregate and across the four activity categories. We then report the statistical analyses in two steps: first a model only with the experimentally manipulated "selling to government" treatment variable, and then a second model which, in addition to the treatment variable, includes the non-experimental co-variates. Figure 2 reports the average estimated transaction cost expenditures as a percentage of the total contract value calculated both as total expenditures and divided into the theoretically relevant search, negotiation, monitoring, enforcement, and other activities. The lighter bars represent the average expenditures when firms sell these products to governments, and the darker bars when they sell the same products to other firms.

Figure 2 results show that firms' total estimated transaction cost expenditures when selling to governments is 10.36 percent of the contract value and 7.74 percent when selling to other firms, that is, a difference of 2.62 percentage points. Firms in our sample on average incur 33.84 percent ([10.36–7.74]/7.74*100%) *higher* transaction

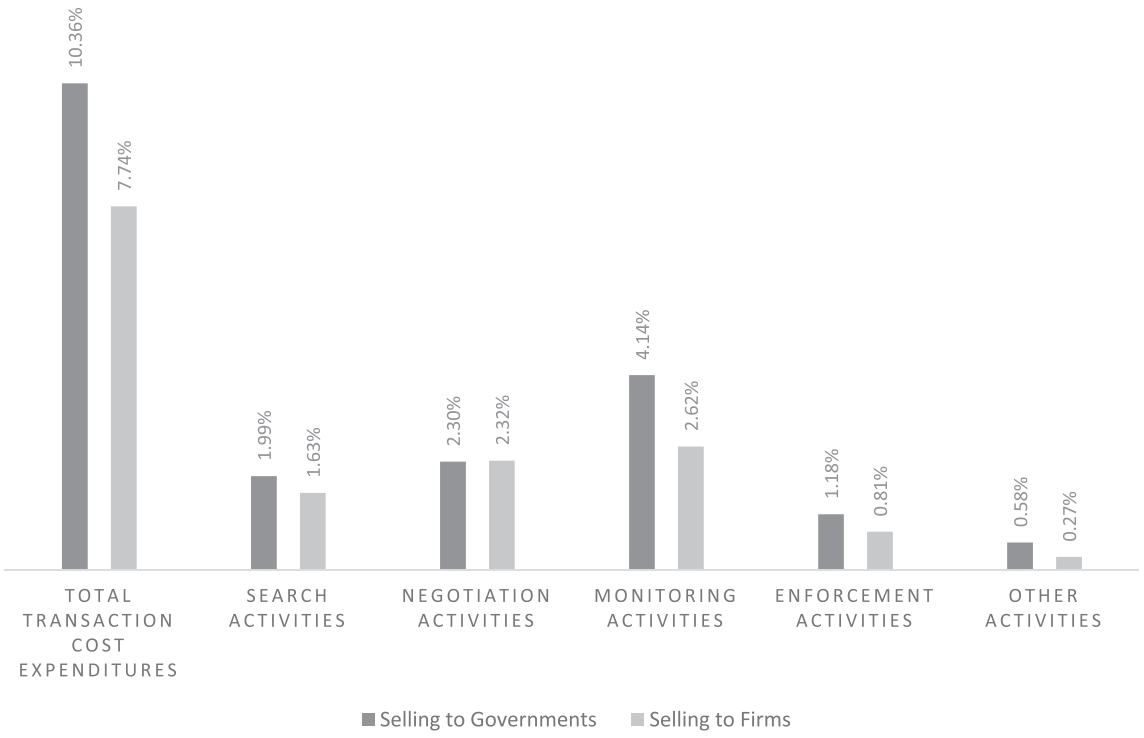

FIGURE 2 Descriptive results for selling firms' transaction cost expenditures spending when contracting with governments and firms. Experiment of 177 Danish firms selling the same products to governments and other firms.

cost expenditures when selling to governments than when selling the same product to other firms. Figure 2 results also suggest that private firms' estimated transaction cost expenditures are in particular higher for monitoring activities when selling to governments than when selling to other firms.

In Table 1, we use fractional logit regression to formally test differences in private firms' transaction cost expenditures across the conditions of selling to governments and other firms. Model 1 shows the results for firms' estimated transaction cost expenditures when selling to governments compared to selling to firms, without any covariates. Because the treatment variable is based on random assignment, the estimate in model 1 can be interpreted as the causal impact of selling to governments compared to selling to other firms. The difference in transaction cost expenditures is significant at a $p < .05$ level, suggesting that firms anticipate significantly higher transaction cost expenditures when selling to governments compared to selling the same product to other firms, consistent with our Hypothesis 1. The average marginal effects are similar to Figure 2 results: selling firms on average spend 2.62 percentage points *more* on when selling the same product to governments than to other firms–a difference in estimated transaction cost expenditures of 33.84 percent. These findings suggest that firms anticipate substantially higher transaction cost expenditures when contracting with governments than contracting for the same product with other firms.

The model 2 results in Table 1 show the regression estimates for firms' estimated transaction cost expenditures. As mentioned in the methods section, the covariates were not experimentally manipulated and therefore should not be subjected to the causal interpretation of an experiment. The coefficient for *Selling to Governments* is statistically significant at the same level as in model 1 and has a marginal effect of 2.21 percentage points. The industry dummies in model 2 are statistically significant for information technology services ($p < .05$) and for consulting and advisory services ($p < .001$). To examine whether firms' transaction cost expenditures are different across industries, we rotate the reference category to information technology services. The test is significant at the $p < .05$ level. These findings suggest that firms anticipate higher transaction cost expenditures when providing more complex products compared to more simple products. This is in line with expectations based on transaction cost economics and theories of the boundary of the firm (Coase, 1937; Williamson, 1979, 1991).

The coefficient for *Public Contract Experience* is statistically significant in model 2, suggesting that experience with government contracts is associated with lower transaction cost expenditures ($p < .05$). In contrast, the coefficient for *Private Contract Experience* is not statistically

TABLE 1 Fractional regression of private firms' transaction cost expenditures when selling to governments and other firms

	Model 1		Model 2	
	Coeff.	**AMEs**	**Coeff.**	**AMEs**
Selling to governments	0.320* (0.126)	2.62	0.276* (0.123)	2.20
Industries: (ref. category: Construction Services)				
Information technology services			0.655* (0.303)	3.86
Consulting and advisory services			1.156*** (0.271)	8.60
Public contract experience			−0.003* (0.001)	−0.02
Private contract experience			−0.000 (0.001)	−0.000
Firm revenue (ln)			0.059 (0.082)	0.47
Employees: (ref. 1–9 employees)				
10–19 employees			0.356 (0.353)	2.97
20–49 employees			0.088 (0.229)	0.66
50–99 employees			0.124 (0.305)	0.94
100+ employees			0.249 (0.305)	1.99
Company founding year			0.004 (0.009)	0.03
Constant	−2.478*** (0.219)		−10.682 (16.438)	
N	177	177	177	177
χ^2	6.450	6.450	137.205	137.205
p for model	.011	.011	.000	.000
N clusters	31	31	31	31

Note: Robust standard errors in parentheses clustered at firms' main product codes. Average marginal effects are the percentage-point changes. *t*-test of contracting with governments versus firms is significant at $p < .05$ (one-sided test) and $p < .10$ (two-sided test).

$^{+}p < .10$.

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 2 Fractional regression of private firms' transaction cost expenditures when selling to governments and firms across four phases of the exchange

	Model 1 search activities		**Model 2 negotiation activities**		**Model 3 monitoring activities**		**Model 4 enforcement activities**		**Model 5 other activities**	
Selling to governments	0.203 (0.160) *0.36*	0.151 (0.163) *0.27*	−0.009 (0.424) −0.02	−0.104 (0.377) *−0.23*	0.473* (0.225) *1.52*	0.459^{+} (0.243) *1.47*	0.383^{+} (0.227) *0.37*	0.380^{+} (0.215) *0.37*	0.765 (0.540) *0.31*	0.471 (0.330) *0.19*
Industries: (ref. category: Construction Services)										
Information technology services		0.943** (0.304) *1.37*		1.693*** (0.255) *1.79*		0.190 (0.330) *0.48*		−0.138 (0.406) *−0.08*		1.007 (0.622) *0.32*
Consulting and advisory services		0.990*** (0.229) *1.47*		2.343*** (0.244) *3.73*		0.650* (0.279) *2.07*		0.953*** (0.272) *0.93*		1.145* (0.535) *0.39*
Public contract experience		0.001 (0.001) *0.00*		−0.001 (0.002) *−0.00*		−0.007*** (0.002) *−0.02*		−0.009*** (0.003) *−0.01*		−0.001 (0.004) *−0.00*
Private contract experience		0.000 (0.000) *0.00*		−0.001 (0.001) *−0.00*		−0.000 (0.001) *−0.00*		0.000 (0.002) *0.00*		0.005* (0.002) *0.00*
		Controls		Controls		Controls		Controls		Controls
Constant	−4.098 (0.177)	−7.831 (14.824)	−3.740 (0.452)	−26.536 (16.307)	−3.614 (0.133)	−5.871 (19.696)	−4.813 (0.165)	−5.367 (16.662)	−5.913 (0.231)	−78.497 (51.433)
N	177	177	177	177	177	177	177	177	177	177
χ^2	1.60	178.46	0.00	1582.837	4.42	37.24	2.84	171.37	2.01	17.30
p for model	.207	.000	.983	.000	.036	.000	.091	.000	.156	.099
N clusters	31	31	31	31	31	31	31	31	31	31

Note: Fractional logit coefficients, then robust standard errors in parentheses (clustered at firms' main product codes), and finally Average Marginal Effects in *italics*. "Controls" indicate that models include controls for Firm Revenue (ln), Employees, and Company Founding Year.

$^{+}p < .10$.

*$p < .05$. **$p < .01$. ***$p < .001$.

significant (*p*-value: .959). Together, the results for the two contract experience variables are partly consistent with our Hypothesis 2. Selling firms' public contract experience is associated with lower anticipated transaction cost expenditures; private contract experience is not.[4] Finally, in Table 1 model 2, the controls for firm revenue, employees, and founding year are not statistically significant.

To examine whether the transaction cost expenditures of selling to governments are higher in specific phases of the exchange, in Table 2 we examine selling firms' estimated transaction cost expenditures across the theoretically relevant contract activities we outlined in the theory section. Models 1–5 provide estimates of selling firms' estimated transaction cost expenditures for search, negotiation, monitoring, enforcement, and other activities. Each model is displayed with the experimentally manipulated treatment variable only and including the non-experimental firm- and industry-level co-variates. The model 1 and 2 results show that the coefficient for *Selling to Governments* is not statistically significant for searching for contract opportunities and writing and negotiating contract proposals. The model 3 and 4 results suggest that firms expend higher transaction cost expenditures on contract monitoring and enforcement activities when selling to governments than when selling the same product to other firms ($p < .10$ and $p < .05$). The average marginal effects in models 3 and 4 show that the additional cost of selling to governments is greatest for monitoring activities. In contrast, the model 5 coefficient for other activities is not statistically significant. Of interest in relation to Hypothesis 2 is that public contract experience is associated with lower anticipated transaction costs expenditures for monitoring and enforcement activities in models 3 and 4, whereas private contract experience is associated with lower expenditures for other activities.

Visualizations and predicted effects

Coefficients in our fractional regression analysis are on the logit scale and therefore not easily interpretable. In this section, we use the margins command to transform coefficients into predicted margins measured in the same scale of our dependent variable, that is, firms' estimated transaction cost expenditures as a percentage of the contract value. Figure 3 results show the predicted margins and confidence intervals for firms' total transaction cost expenditures when selling to governments and other firms. In addition, in Figure 4, we present the predicted margins of public contract experience on selling firms' transaction cost expenditures. Consistent with the results in Table 1, Figure 4 shows that public contracting experience reduces firms' estimated transaction cost expenditures, and the effect is greatest at lower values of public contracting experience.

In the next section, we discuss these findings, identify implications for practice and theory, and propose theoretical explanations to help guide future research into further analysis of these cost differences in selling to governments and firms.

DISCUSSION

Our examination of Danish firms' transaction cost spending for three common products provides evidence that

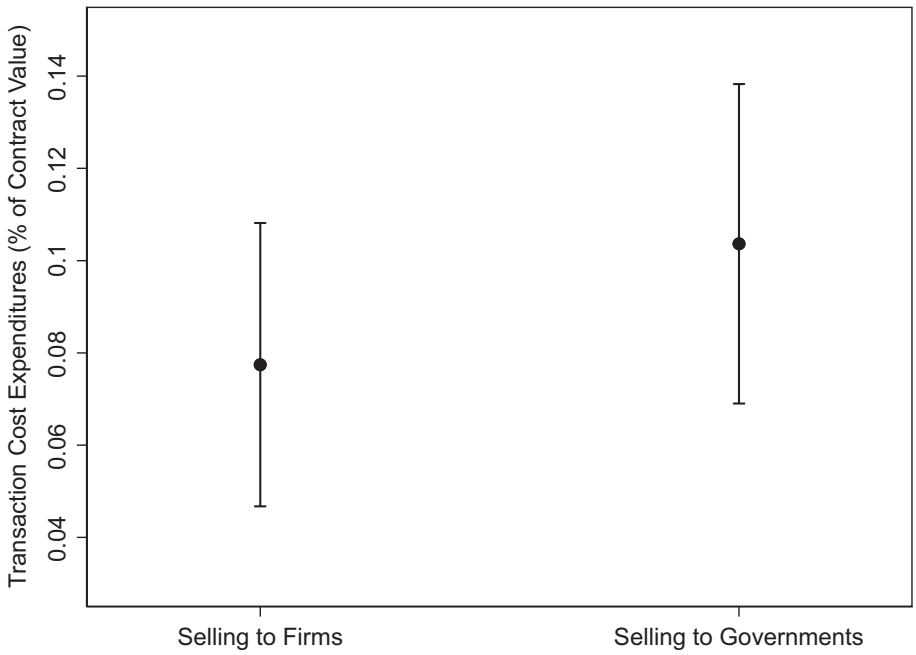

FIGURE 3 Predicted margins of firms' transaction cost expenditures when selling to governments and firms. Experiment of Danish firms selling to governments and other firms. Based on model 1 in Table 1 without covariates ($N = 177$ responses).

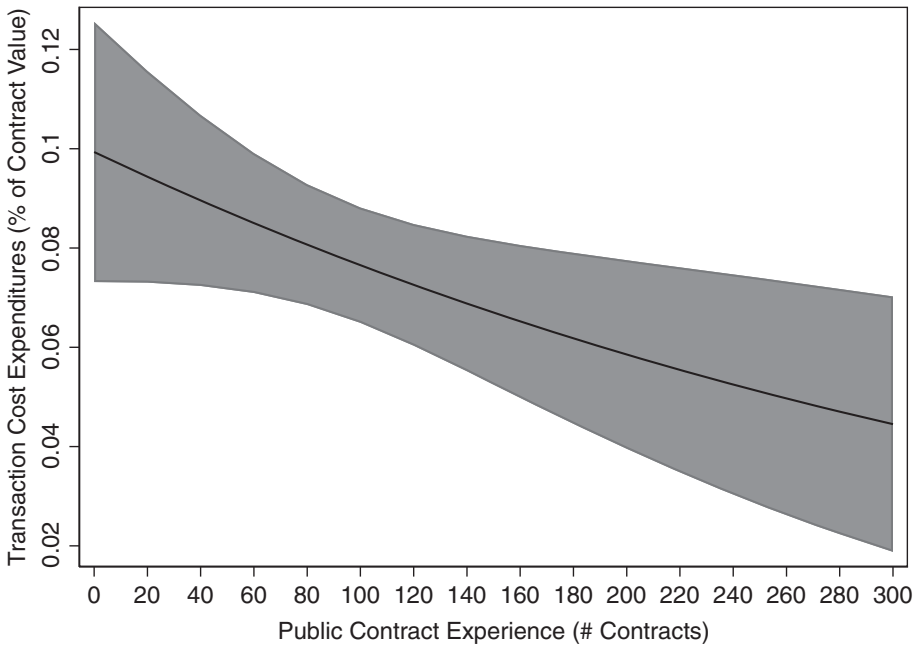

FIGURE 4 Predicted margins of firms' transaction cost expenditures across levels of public contract experience with 95% CIs. Experiment of Danish firms selling to governments and other firms. Based on model 2 in Table 1 with covariates ($N = 177$ responses).

firms estimate incurring higher transaction cost expenditures when selling the same product, under the same conditions, to governments compared to other firms. Interpreting the magnitude of additional transaction cost spending of 2.62 percentage points (or 2.62 cent per dollar of sales) when selling to governments compared to selling the same product to other firms is of course a subjective exercise. This difference may seem relatively small, particularly in light of government purchasing regulations and requirements to sustain the integrity, legitimacy and transparency of public sector contracting (Johansson et al., 2016; Lindholst & Bogetoft, 2011; Romzek & Johnston, 2002). While this may seem like a nominally small difference, firms' estimated transaction cost spending is 33.84 percent *higher* when selling the same product to governments than to other firms. Furthermore, official statistics show that average profit margins of Danish firms in the three industries in our data are between 4.6 and 8.4 percent (Statistics Denmark, 2020). Additional estimated transaction cost expenditures of 2.62 percent per 100 Kroner (or Dollars) of sale to the government represent around one-third to half of private firms' annual profit margins in the three industries in our study.

However these magnitudes are interpreted, our findings have implications for longstanding theoretical inquiry into both the efficiency of public sector contracting and the efficacy of public and private organizational forms. Our empirical analysis provides evidence that the organizational form of the exchange partner significantly influences private firms' estimated transaction cost expenditures. This helps explain why Danish governments may sometimes face higher prices for the products that are commonly available to firms at lower prices. Our analysis also suggests the types of exchange activities that lead to high transaction cost expenditures, notably complying with monitoring and enforcement requirements.

In the theoretical discussion above, we offered a trio of explanations for why firms may anticipate higher transaction costs when selling products to governments than to other firms: the absence of competitive pressures for public organizations, particularly monopsony purchasers, to simplify their purchasing processes; the pursuit of a multiplicity of social values by public organizations that require additional steps to complete an exchange; and a lack of experience by many firms with public sector purchasing processes. By contrasting government and private firms in our study, we also introduce the possibility of an anti-public sector bias in our sample of respondents (Hvidman & Andersen, 2016; Marvel, 2015a, 2015b). All of these are plausible explanations for why firms may anticipate higher transaction costs expenditures, and there may be others.

The finding that more experience with public sector contracting lowers selling firms' anticipated transaction cost expenditure might suggest that the primary driver of higher transaction costs is unfamiliarity with exchange processes and a lack of mutual understanding (Brown et al., 2018; Weber & Mayer, 2014, 2015). The complementary finding that monitoring and enforcement activities are relatively more burdensome when selling to governments suggests that the principal source of sellers' anticipated spending in public sector purchasing processes is collecting and reporting information about performance. Taken together, these findings suggest that, as firms

undertake more exchanges with public organizations, they learn to develop more efficient processes for reporting the quality of their products to their purchasers, thereby reducing the costs of monitoring and compliance. This might also reduce the bias that private firm contract staff have about doing business with public sector organizations; familiarity may breed appreciation and respect, rather than contempt.

This plausible interpretation of the findings does not eliminate the possibility that the other two explanations could also be in play. It may still be that public sector organizations face few pressures to make their purchasing processes more efficient and accessible for a larger pool of firms, and that the pursuit of social values, such as fairness, transparency, and equity, results in additional costs that selling firms do not have to attend to in exchanges with other firms. These two factors may cause additional monitoring and compliance requirements that private firms are unfamiliar with or do not need to address in exchanges for similar products with other firms.

Our results provide important evidence that firms anticipate higher transaction cost expenditures when doing business with government purchasers relative to other firms. This suggests that there are performance differences between organizational forms, at least for contracting and procurement. It also helps point to directions for future research. A first pathway to explore is the impact of competitive incentives on purchasing processes in the public sector. For some products (e.g., military-grade weapons, policing), government organizations are the only purchasers or the dominant purchasers in the market. In instances of monopsony, firms that offer these types of products have little choice but to build their production processes and their contracting practices to suit the needs of the government purchaser. For products where public organizations compete with other purchasers to secure sellers (e.g., landscaping, building maintenance), they may face incentives to make their purchasing practices more efficient and hence lower transaction cost expenditures for firms. For such incentives to be powerful enough to change procurement practice, the purchasing government would need sufficient autonomy to alter its procurement requirements. The magnitude of any cost differences generated from alternative regulatory requirements may likewise vary across circumstances, such as the level of market competition (Brunjes, 2020; Girth et al., 2012; Warner & Bel, 2008), complexity of the product (Brown & Potoski, 2003; Hefetz & Warner, 2012) or need for asset specific investments (Levin & Tadelis, 2010; Stein, 1990; Williamson, 1975, 1985).

A second pathway for future research is to investigate both the financial costs of government purchasing regulations as well as the social values they offer in return. Different regulations may have different consequences for search, negotiation, monitoring, and enforcement costs, as our research suggests. There are tradeoffs that depend on complex interactions among factors, such as the organization's purpose, the regulatory requirements, and the market and social contexts (Mahoney et al., 2009; Perry & Rainey, 1988). A government buyer's more bureaucratic purchasing rules and procedures (Tadelis, 2012) may provide non-financial value to its diverse stakeholders–service recipients, citizens, and tax payers. A firm's more flexible purchasing processes may maximize financial value for its customers and shareholders. Research can identify how the returns from these regulations may vary considerably across circumstances and with different regulations and social values, helping policy makers craft more precise regulations for business-to-government and business-to-business exchanges.

Future research should also explore how buying firms' own pursuit of social values may increase sellers' transaction cost expenditures. Firms themselves are under increasing pressure from stakeholders to increase their production of social values beyond the requirements of government regulations, commonly referred to as CSR. Firms with strong CSR programs are increasingly requiring their suppliers to meet higher standards of CSR performance, particularly in the areas of labor and the environment where stakeholder demand is high (De Marchi et al., 2013; Koberg & Longoni, 2019). Because firms' CSR claims are notoriously difficult to observe and verify, purchasing firms are likely to require that suppliers submit extensive documentation and reporting, or achieve certification of some sort, to ensure that their CSR performance is genuine (Jiang, 2009). A testable conjecture is that firms with stronger supply chain CSR requirements impose higher transaction cost spending on their suppliers.

Finally, and more broadly, future research examining buying and selling between governments and firms can shed light on how well different organizational forms perform the same tasks. The efficiency and efficacy of organizational forms for the production and delivery of goods and services have long been a central question throughout the social sciences (Bel et al., 2010; Coase, 1937; Koning & Heinrich, 2013; Williamson, 1996). From this tradition, it is clear that no single organizational form is superior across all dimensions or in all circumstances—"there are no panaceas" (Ostrom, 2007)—although social science research has struggled to find precise comparisons of governments and firms undertaking the same activities under similar circumstances (Rainey & Bozeman, 2000). The experimental results in this study suggest that there may be quite substantial differences in how governments and firms solve the same task, and that these differences may have important implications for both costs and for broader societal value outcomes. Further research should expand our paper by comparing governments and companies across more domains, services, and countries. Such an endeavor has the potential to both contribute to theory development about public and private organizations and facilitate cross-sectoral learning between governments and firms.

Our results also have implications for contract management and purchasing practice. The finding that it

costs more to sell to governments than to private firms suggests that government contract management and purchasing personnel should assess whether such cost differentials exist in their own purchasing portfolios. Former Indianapolis mayor Steven Goldsmith was famous for saying that if you can find a product in the yellow pages of a phone book, it was a candidate for outsourcing (Mackinac Center for Public Policy, 1998). Similarly, governments would benefit from comparing what they pay for a product that is readily available on the commercial market including the transaction cost expenditures on both the buyer's and seller's side of the exchange (Melese et al., 2007; Petersen et al., 2019).

Even if higher costs are the result of requirements that promote important social values, such as set asides that promote equality and equity for disenfranchised groups, there may be room for more efficiency. The State of Ohio in the United States, for example, used business process evaluation tools such as Six Sigma to root out unnecessary bureaucratic steps in its minority-owned business set aside program; the result was a far less cumbersome process for minority-owned businesses, and a much higher rate of agency compliance with state-level set-aside goals (Blount et al., 2018).

CONCLUSION

The efficiency of purchasing common products is often used as a lens for evaluating the performance of different organizational forms, as so often seen in sensational media stories on government purchasing "scandals." In this study, we employ an experimental approach to analyze firms' estimated transaction cost expenditures when selling the same products to governments and other firms. The three products we include in our analyses—construction services, information technology services, and consulting and advisory services—are sold in competitive markets with many public and private buyers. Our results show that firms anticipate higher transaction cost expenditures when selling to governments than when selling the same product to other firms. Our findings also suggest that selling firms' estimated transaction cost expenditures decline with their experience selling to governments. Interestingly, we do not find evidence that experience selling to private firms has this impact on transaction cost expenditures. This may be because firms have a better understanding of their counterparty's behavior, signals, and intentions when the buyer is a firm–after all, they themselves are a firm.

Our research helps address the question of whether governments pay more than firms pay when performing the same activities, an important but hard to examine theme in public administration research and the social sciences. More broadly, our research speaks to public management and organization literatures that look to understand how and when different organizational forms perform more or less effectively in different circumstances. Much of this inquiry focuses on how transaction costs influence the relative efficiency and effectiveness of differing organizational forms (Berg & Johansson, 2020; Choi, 2020; Coase, 1937; Williamson, 1996), often by analyzing value tradeoffs among firms, governments or non-profit organizations. Our study shows that rigorous and careful analyses can provide precise monetary estimates of these costs and provide better guidance for evaluating comparative organizational performance than the sensational media accounts that sometimes dominate headlines.

ENDNOTES

[1] We use the generic term "product" to refer to goods and services.

[2] This approach also addresses the problems that cost accounting encounters in the presence of transaction costs factors like difficult-to-measure products and asset specificity (Mohr, 2017a, 2017b).

[3] In comparison, De Schepper et al. (2015) obtained 40 usable responses on selling firms' transaction costs in infrastructure public-private partnership projects, and Petersen et al. (2021) obtained responses from 125 firms. Li et al. (2013), on the other hand, collected 243 responses in the construction industry and thus obtained a slightly larger sample than our study.

[4] Table 1 results for *Selling to Governments* and the two measures of contract experience suggest a direction for additional inquiry: the effects of public and private contract experience may depend on whether firms are selling to governments or other firms. To examine such effects, Table A2 in online appendix reports additional analyses using the same fractional logit regression model and covariates presented in Table 1 and including additional variables interacting *Selling to Governments* and *Public Contract Experience* (model 1) and *Selling to Governments* and *Private Contract Experience* (model 2). Model 3 includes both the *Selling to Governments x Public Contract Experience* interaction term and the *Selling to Governments x Private Contract Experience* interaction term. Across all three models, the coefficients for *Selling to Governments* are statistically significant and negative and the coefficient for *Private Contract Experience* is not statistically significant, consistent with the results reported in Table 1. Meanwhile, none of the interaction terms in Table A2 are statistically significant. Taken together, these results suggest that experience selling to governments significantly lowers sellers' transaction cost spending. The results do not provide evidence that experiencing selling to private firms reduces sellers' transaction cost spending. Finally, the interaction terms results fail to provide evidence that the effects of experience selling to government and private firms vary depending on whether the firm is selling to private firms or governments. While the potentially varying effects of contracting experience are worthy of examination, we note that the Table A2 analyses may lack statistical power to detect these effects, given the sample size in the experiment and the high correlations commonly found among interaction term variables.

REFERENCES

Abonyi, George, and David M. Van Slyke. 2010. "Governing on the Edges: Globalization of Production and the Challenge to Public Administration in the Twenty-First Century." *Public Administration Review* 70: s33–45.

Anguelov, Lachezar G. 2020. "Monitoring Arrangements for Outsourced Public Services: The Importance of Service Characteristics for the Distribution of Oversight Responsibilities." *International Public Management Journal* 23(2): 252–75.

Barthélemy, Jérôme., and Bertrand V. Quélin. 2006. "Complexity of Outsourcing Contracts and Ex Post Transaction Costs: An Empirical Investigation." *Journal of Management Studies* 43(8): 1775–97.

Bel, Germà, Xavier Fageda, and Mildred E. Warner. 2010. "Is Private Production of Public Services Cheaper than Public Production? A Meta-Regression Analysis of Solid Waste and Water Services." *Journal of Policy Analysis and Management* 29(3): 553–77.

Bel, Germá, and Mildred E. Warner. 2015. "Inter-Municipal Cooperation and Costs: Expectations and Evidence." *Public Administration* 93(1): 52–67.

Bel, Germà, and Jordi Rosell. 2016. "Public and Private Production in a Mixed Delivery System: Regulation, Competition and Costs." *Journal of Policy Analysis and Management* 35(3): 533–58.

Berg, Monika, and Tobias Johansson. 2020. "Building Institutional Trust Through Service Experiences—Private Versus Public Provision Matter." *Journal of Public Administration Research and Theory* 30(2): 290–306.

Blount, Ian Y., Jay Seetharaman, and Trevor L. Brown. 2018. "The Impact of Strategy on Public Sector Set-Aside Programs: The Case of the State of Ohio." *Journal of Public Procurement* 18(1): 31–49.

Bowen, David E., and Gareth R. Jones. 1986. "Transaction Cost Analysis of Service Organization-Customer Exchange." *Academy of Management Review* 11(2): 428–41.

Brown, Trevor L., and Matthew Potoski. 2003. "Transaction Costs and Institutional Explanations for Government Service Production Decisions." *Journal of Public Administration Research and Theory* 13(4): 441–68.

Boyne, George A. 1998. "Bureaucratic Theory Meets Reality: Public Choice and Service Contracting in US Local Government." *Public Administration Review* 58: 474–84.

Brown, Trevor. 2008. "The Dynamics of Government-to-Government Contracts." *Public Performance Management Review* 31(3): 364–86.

Brown, Trevor L. 2013. *A Guide for Agency Leaders on Federal Acquisition: Major Challenges Facing Government*. Washington DC: IBM Center for the Business of Government.

Brown, Trevor L., Matthew Potoski, and David Van Slyke. 2016. "Managing Complex Contracts: A Theoretical Approach." *Journal of Public Administration Research and Theory* 26(2): 294–308.

Brown, Trevor L., Matthew Potoski, and David M. Van Slyke. 2018. "Complex Contracting: Management Challenges and Solutions." *Public Administration Review* 78(5): 739–47.

Brunjes, Benjamin M. 2020. "Competition and Federal Contractor Performance." *Journal of Public Administration Research and Theory* 30(2): 202–19.

Brunjes, Benjamin M. 2022. "Your Competitive Side Is Calling: An Analysis of Florida Contract Performance." *Public Administration Review* 82(1): 83–101.

Choi, Iseul. 2020. "Does Contracting Achieve Better Performance for Democratic-Constitutional, Procedural Tasks? Evidence From the EEO Discrimination Complaint Process." *The American Review of Public Administration* 50(8): 825–37.

Clemons, Eric K., Sashidhar P. Reddi, and Michael C. Row. 1993. "The Impact of Information Technology on the Organization of Economic Activity: The "Move to the Middle" Hypothesis." *Journal of Management Information Systems* 10(2): 9–31.

Clifton, Judith, Mildred E. Warner, Raymond Gradus, and Germà Bel. 2019. "Re-Municipalization of Public Services: Trend or Hype?" *Journal of Economic Policy Reform* 24(3): 293–304.

Clottey, Toyin A., and Scott J. Grawe. 2014. "Non-response Bias Assessment in Logistics Survey Research: Use Fewer Tests?" *International Journal of Physical Distribution & Logistics Management* 44(5): 412–26.

Coase, Ronald H. 1937. *The Nature of the Firm. Origins, Evolution, and Development*. New York: Oxford.

Danish Competition and Consumer Authority. 2019. "Status for offentlig konkurrence 2019". https://www.kfst.dk/media/a14bkdqc/status-for-offentlig-konkurrence-2019.pdf.

De Marchi, Valentina, Eleonora Di Maria, and Stefano Micelli. 2013. "Environmental Strategies, Upgrading and Competitive Advantage in Global Value Chains." *Business Strategy and the Environment* 22(1): 62–72.

De Schepper, Steven, Elvira Haezendonck, and Michaël Dooms. 2015. "Understanding Pre-Contractual Transaction Costs for Public–Private Partnership Infrastructure Projects." *International Journal of Project Management* 33(4): 932–46.

Dyer, Jeffrey H., and Wujin Chu. 2003. "The Role of Trustworthiness in Reducing Transaction Costs and Improving Performance: Empirical Evidence from the United States, Japan, and Korea." *Organization Science* 14(1): 57–68.

Flammer, Caroline. 2018. "Competing for Government Procurement Contracts: The Role of Corporate Social Responsibility." *Strategic Management Journal* 39(5): 1299–324.

Freedberg, Sydney J. 1998. "The Myth of the $600 Hammer." Government Executive, June 25, 2020. https://www.govexec.com/federal-news/1998/12/the-myth-of-the-600-hammer/5271/.

Geyskens, Inge, Jan-Benedict E. M. Steenkamp, and Nirmalya Kumar. 2006. "Make, Buy, or Ally: A Transaction Cost Theory Meta-Analysis." *Academy of Management Journal* 49(3): 519–43.

Girth, Amanda M., Amir Hefetz, Judith M. Johnston, and Mildred E. Warner. 2012. "Outsourcing Public Service Delivery: Management Responses in Noncompetitive Markets." *Public Administration Review* 72(6): 887–900.

Gregg, Aaron. 2018. "The Air Force's $10,000 toilet cover." Washington Post. https://www.washingtonpost.com/business/capitalbusiness/the-air-forces-10000-toilet-cover/2018/07/14/c33d325a-85df-11e8-8f6c-46cb43e3f306_story.html [accessed March 15, 2019].

Hansen, Jesper Rosenberg, Ole Helby Petersen, Anders Ryom Villadsen, and Kurt Houlberg. 2017. *Private virksomheders transaktionsomkostninger ved offentlige udbud: en survey-undersøgelse på tværs af brancher*. Roskilde: Roskilde University, Center for forskning i offentlig-privat samspil (COPS).

Hefetz, Amir, and Mildred E. Warner. 2012. "Contracting or Public Delivery? The Importance of Service, Market, and Management Characteristics." *Journal of Public Administration Research and Theory* 22(2): 289–317.

Hvidman, Ulrik, and Simon Calmar Andersen. 2016. "Perceptions of Public and Private Performance: Evidence from a Survey Experiment." *Public Administration Review* 76(1): 111–20.

Jiang, Bin. 2009. "Implementing Supplier Codes of Conduct in Global Supply Chains: Process Explanations from Theoretic and Empirical Perspectives." *Journal of Business Ethics* 85(1): 77–92.

Johansson, Tobias. 2015. "A Critical Appraisal of the Current Use of Transaction Cost Explanations for Government Make-or-Buy Choices: Towards a Contingent Theory and Forms of Tests." *Public Management Review* 17(5): 661–78.

Johansson, Tobias, and Sven Siverbo. 2011. "Governing Cooperation Hazards of Outsourced Municipal Low Contractibility Transactions: An Exploratory Configuration Approach." *Management Accounting Research* 22(4): 292–312.

Johansson, Tobias, Sven Siverbo, and Carolina Camén. 2016. "Managing Cooperation, Coordination, and Legitimacy: Control of Contracted Public Services." *Accounting, Auditing & Accountability Journal* 29(6): 1012–37.

Kang, Karam, and Miller, Robert A. 2022. "Winning by Default: Why is There So Little Competition in Government Procurement?" Unpublished Manuscript. http://www.comlabgames.com/ramiller/working_papers/kang_miller_procurement.pdf.

Koberg, Esteban, and Annachiara Longoni. 2019. "A Systematic Review of Sustainable Supply Chain Management in Global Supply Chains." *Journal of Cleaner Production* 207(2019): 1084–98.

Koning, Pierre, and Carolyn J. Heinrich. 2013. "Cream-Skimming, Parking and Other Intended and Unintended Effects of High-Powered, Performance-Based Contracts." *Journal of Policy Analysis and Management* 32(3): 461–83.

Lavery, Kevin. 1999. *Smart Contracting for Local Government Services: Processes and Experience*. Westport, CT: Praeger.

Levin, Jonathan, and Steven Tadelis. 2010. "Contracting for Government Services: Theory and Evidence from US Cities." *The Journal of Industrial Economics* 58(3): 507–41.

Li, Huimin, David Arditi, and Zhuofu Wang. 2013. "Factors that Affect Transaction Costs in Construction Projects." *Journal of Construction Engineering and Management* 139(1): 60–8.

Lindholst, Andrej Christian, and Peter Bogetoft. 2011. "Managerial Challenges in Public Service Contracting: Lessons in Green-Space Management." *Public Administration* 89(3): 1036–62.

Lindholst, Andrej Christian, Morten Balle Hansen, Thomas Barfoed Randrup, Bengt Persson, and Anders Kristoffersson. 2018. "The Many Outcomes from Contracting out: The Voice of Public Managers." *Environment and Planning C: Politics and Space* 36(6): 1046–67.

Mackinac Center for Public Policy. 1998. "Defining Privatization." www.mackinac.org/632 [accessed July 9, 2021].

Mahoney, Joseph T., Anita M. McGahan, and Christos N. Pitelis. 2009. "Perspective—The Interdependence of Private and Public Interests." *Organization Science* 20(6): 1034–52.

Marion, Justin. 2007. "Are Bid Preferences Benign? The Effect of Small Business Subsidies in Highway Procurement Auctions." *Journal of Public Economics* 91(7–8): 1591–624.

Marvel, John D. 2015a. "Public Opinion and Public Sector Performance: Are individuals' Beliefs about Performance Evidence-Based or the Product of Anti-Public Sector Bias?" *International Public Management Journal* 18(2): 209–27.

Marvel, John D. 2015b. "Unconscious Bias in citizens' Evaluations of Public Sector Performance." *Journal of Public Administration Research and Theory* 26(1): 143–58.

Marvel, Mary K., and Howard P. Marvel. 2008. "Government-to-Government Contracting: Stewardship, Agency, and Substitution." *International Public Management Journal* 11(2): 171–92.

Mayer, Kyle J., and Nicholas S. Argyres. 2004. "Learning to Contract: Evidence from the Personal Computer Industry." *Organization Science* 15(4): 394–410.

Melese, Francois, Raymond Franck, Diana Angelis, and John Dillard. 2007. "Applying Insights from Transaction Cost Economics to Improve Cost Estimates for Public Sector Purchases: The Case of U.S. Military Acquisition." *International Public Management Journal* 10(4): 357–85.

Mohr, Zachary. 2017a. "Cost Accounting at the Service Level: An Analysis of Transaction Cost Influences on Indirect Cost Measurement in the Cost Accounting Plans of Large US Cities." *Public Administration Quarterly* 41(1): 91–129.

Mohr, Zachary. 2017b. *Cost Accounting in Government: Theory and Applications*. New York: Routledge.

Mothershed, Airon A. 2012. "The $435 Hammer and $600 Toilet Seat Scandals: Does Media Coverage of Procurement Scandals Lead to Procurement Reform?" *Public Contract Law Journal* 41(4): 855–80.

Niskanen, William A. 1971. *Bureaucracy and Representative Government*. Chicago: Aldine.

OECD. 2019. *Government at a Glance 2017*. Paris: OECD Publishing.

Ohashi, Hiroshi. 2009. "Effects of Transparency in Procurement Practices on Government Expenditure: A Case Study of Municipal Public Works." *Review of Industrial Organization* 34(3): 267–85.

Ostrom, Elinor. 2007. "A Diagnostic Approach for Going beyond Panaceas." *Proceedings of the National Academy of Sciences* 104(39): 15181–7.

Papke, Leslie E., and Jeffrey M. Wooldridge. 1996. "Econometric Methods for Fractional Response Variables with an Application to 401(k) Plan Participation Rates." *Journal of Applied Econometrics* 11(6): 619–32.

Perry, James L., and Hal G. Rainey. 1988. "The Public-Private Distinction in Organization Theory: A Critique and Research Strategy." *Academy of Management Review* 13(2): 182–201.

Petersen, Ole Helby, Erik Baekkeskov, Matthew Potoski, and Trevor L. Brown. 2019. "Measuring and Managing ex Ante Transaction Costs in Public Sector Contracting." *Public Administration Review* 79(5): 641–50.

Petersen, Helby, Matthew Potoski Ole, and Trevor L. Brown. 2021. "Businesses' Transaction Costs when Contracting with Governments: The Impact of Product Complexity and Public Contract Management Experience." *International Public Management Journal* 1–27. https://doi.org/10.1080/10967494.2021.1898500

Purchase, Sharon, Tony Goh, and Ken Dooley. 2009. "Supplier Perceived Value: Differences between Business-to-Business and Business-to-Government Relationships." *Journal of Purchasing and Supply Management* 15(1): 3–11.

Rainey, Hal G., and Barry Bozeman. 2000. "Comparing Public and Private Organizations: Empirical Research and the Power of the a Priori." *Journal of Public Administration Research and Theory* 10(2): 447–70.

Rasmussen, Rikke J. 2010. "Kommunale vanvidspriser: 94 kroner for en vandmelon!" In Ekstra Bladet (28 September 2010). https://ekstrabladet.dk/kup/forbrug/article4254778.ece

Romzek, Barbara S., and Jocelyn M. Johnston. 2002. "Effective Contract Implementation and Management: A Preliminary Model." *Journal of Public Administration and Theory* 12(3): 423–53.

Rosenbloom, David H., and Suzanne J. Piotrowski. 2005. "Outsourcing the Constitution and Administrative Law Norms." *The American Review of Public Administration* 35(2): 103–21.

Savas, Emanuel S. 1987. *Privatization: The Key to Better Government*. Chatham, NJ: Chatham House Pub.

Sclar, Elliott D. 2000. *You Don't Always Get What you Pay for: The Economics of Privatization*. Ithaca, NY: Cornell University Press.

Shleifer, Andrei. 1998. "State Versus Private Ownership." *Journal of Economic Perspectives* 12: 133–50.

Smith, Craig R., and Sergio. Fernandez. 2010. "Equity in Federal Contracting: Examining the Link between Minority Representation and Federal Procurement Decisions." *Public Administration Review* 70(1): 87–96.

Statistics Denmark. 2020. *Nøgletal i procent for regnskabsstatistik for private byerhverv efter regnskabsposter, tid og branche*. Copenhagen: Statistics Denmark, Statistikbanken.

Stein, Robert M. 1990. *Urban Alternatives: Public and Private Markets in the Provision of Local Services*. Pittsburg, PA: University of Pittsburgh Press.

Tadelis, Steven. 2012. "Public Procurement Design: Lessons from the Private Sector." *International Journal of Industrial Organization* 30(3): 297–302.

Villadsen, Anders Ryom, and Jesper Wulff. 2019. "Fractional Regression Models in Strategic Management Research." *Academy of Management Proceedings* 2018(1): 11217.

Warner, Mildred E., and Austin M. Aldag. 2021. "Re-Municipalization in the US: A Pragmatic Response to Contracting." *Journal of Economic Policy Reform* 24(3): 319–32.

Warner, Mildred E., and Germá Bel. 2008. "Competition or Monopoly? Comparing Privatization of Local Public Services in the US and Spain." *Public Administration* 86(3): 723–35.

Warner, Mildred, and Robert Hebdon. 2001. "Local Government Restructuring: Privatization and its Alternatives." *Journal of Policy Analysis and Management* 20(2): 315–36.

Weber, Libby, and Kyle Mayer. 2014. "Transaction Cost Economics and the Cognitive Perspective: Investigating the Sources and Governance of Interpretative Uncertainty." *Academy of Management Review* 39: 344–63.

Weber, Libby, and Kyle Mayer. 2015. ""Transaction Cost Economics and the Cognitive Perspective: Investigating the Sources and Governance of Interpretative Uncertainty"—A Response to Zardkoohi and Bierman." *Academy of Management Review* 40: 470–3.

Williamson, Oliver E. 1975. "Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization." University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship. Available at SSRN https://ssrn.com/abstract=1496220.

Williamson, Oliver E. 1979. "Transaction-Cost Economics: The Governance of Contractual Relations." *Journal of Law and Economics* 22(2): 233–61.

Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism*. New York: Free Press.

Williamson, Oliver E. 1991. "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." *Administrative Science Quarterly* 36: 269–96.

Williamson, Oliver E. 1996. *The Mechanisms of Governance*. Oxford: Oxford University Press.

Witesman, Eva M., and Sergio Fernandez. 2013. "Government Contracts With Private Organizations: Are There Differences Between Nonprofits and For-Profits?" *Nonprofit and Voluntary Sector Quarterly* 42 (4): 689–715.

Wynstra, Finn, Gerrit Rooks, and Chris Snijders. 2018. "How Is Service Procurement Different from Goods Procurement? Exploring ex Ante Costs and ex Post Problems in IT Procurement." *Journal of Purchasing and Supply Management* 24(2): 83–94.

AUTHOR BIOGRAPHIES

Matthew Potoski is Professor at the Bren School of Environmental Science and Management, University of California, Santa Barbara. He is coauthor of The Voluntary Environmentalists (Cambridge, 2006) and Complex Contracting (Cambridge 2014) and has written on a variety of topics including businesses environmental strategies, environmental policy, and public and nonprofit management.
Email: mpotoski@bren.ucsb.edu

Ole Helby Petersen is Professor in Public Administration at the Department of Social Sciences and Business and Director of the Center for Research on Public-Private Collaboration both at Roskilde University, Denmark. His research focuses on public procurement, contracting, privatization, and public-private partnerships.
Email: olehp@ruc.dk

Trevor L. Brown is Dean of the John Glenn College of Public Affairs, The Ohio State University. He conducts research and teaches on public management and leadership, governance, government contracting, public-private partnerships, and democracy and democratic transitions.
Email: brown.2296@osu.ed

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Potoski, Matthew, Ole Helby Petersen, and Trevor L. Brown. 2022. "Same Product, Different Price: Experimental Evidence on the Transaction Cost Expenditures of Selling to Governments and Firms." *Public Administration Review* 1–16. https://doi.org/10.1111/puar.13551