The Bright Side of Discretion in Public Procurement*

Dimas Fazio†

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Abstract

This paper investigates the consequences of giving government agencies freedom of contract in public procurement. Exploiting a rule in Brazil that waives competitive bidding for small-value purchases, I find that agencies strategically design procurements so they can choose their suppliers directly. Products purchased under discretion are 22 percent more expensive than under auctions. However, half of this overpricing is explained by discretion allowing agencies to purchase higher-quality products. Finally, I document that discretion may improve the quality of public services provision. Public hospitals that purchase more essential medicines under discretion experience decreased in-patient mortality.

Keywords: product quality, corruption, auctions, bid waivers, bunching
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†National University of Singapore, Mochtar Riady Building, Singapore 119245, dimasfazio@nus.edu.sg

1 Introduction

Governments procure a significant amount of goods and services from private companies.[1] Due to the relative importance of public procurements in the economy, there is a considerable concern that the procurement process can be prone to inefficiencies and waste of public resources (OECD, 2016).[2] To mitigate these risks, regulators and policy-makers usually minimize the discretion of government agencies by, for instance, incentivizing competitive biddings and higher transparency in public procurements (Transparency International, 2015). Under this view, the less control public officials have on the procurement procedures, the lower the cost and the higher the quality of goods and services purchased. An alternative view, however, states that discretion allows agencies to purchase higher-quality products. Not only may officials have the power to reject low-quality offers under discretion, but the focus of auctions on the smallest price might lead to lower quality offers being awarded public contracts.[3] In light of these opposing views, the question of whether there is an efficiency-quality trade-off in public procurement naturally arises.[4]

This paper revisits the negative view of discretion and asks whether it could increase the quality of goods and services purchased in the public sector. Disentangling the efficiency and quality channels is, however, challenging for two reasons. First, it requires detailed data on the ex-ante quality of goods and services purchased in public procurements. This is particularly problematic when analyzing infrastructure projects with varying degrees of complexity, for instance. The second challenge is that most of the procurement outcomes we observe are consistent with inefficiency and higher-quality goods and services purchases. For example, public hospitals paying higher prices to purchase insulin can be explained by overpricing - possibly corruption - or acquiring better and more effective brands. Also, while awarding procurements to more opaque or connected firms might indicate favoritism and corruption, government agencies might prefer to deal with previously known firms since they might provide superior products and services than others.

In this paper, I address these empirical challenges by using information on product *brands* as a proxy for quality in 2.4 million procurement contracts between 2013 and 2020 in Brazil. I then compare procurement outcomes such as prices paid in auctions (low discretion) and

[1] According to Bosio et al. (2020), government procurements add up to 15% of total GDP.

[2] More than half of the cases prosecuted by the OECD Anti-Bribery Commission were bribes to obtain public procurement contracts.

[3] In auctions, the procurement agency needs to accept the outcome of the bid regardless of the quality level. Under discretion, agencies might exclude low-quality bidders (Bosio et al., 2020)

[4] While there is extensive evidence and attention towards the negative and pervasive effects of corruption, recent papers have started to show some positive outcomes of discretion on contract quality for services and infrastructure projects (see, for instance, Coviello et al., 2018; Decarolis et al., 2020).

bid waivers (high discretion) and assess how much product quality affects these outcomes. The contributions of this paper are threefold. First, I provide evidence supporting the efficiency-quality trade-off in public procurements: while discretion is on average less efficient than auctions, it also purchases relatively more higher-quality products. Second, there are heterogeneous effects across government agencies: the apparent overpricing of high discretion in public hospitals is fully explained by higher product quality, but price differences remain significant for education and public security agencies, even after adjusting for quality. Third, there are significant real effects of the bright side of discretion: public hospitals that purchase essential products under discretion experience a lower mortality rate.

I initially investigate differences in outcomes between auctions and bid waivers in Brazil. To the extent that auctions are less likely to be manipulated by both government agencies and firms, outcomes under this procurement type provide a possible counterfactual for studying manipulation under bid waivers. I find that products purchased under bid waivers are awarded with 8.9 percent higher prices than the same product purchased under auctions. At first glance, this overpricing suggests that bid waivers are significantly less efficient than auctions at procuring products. When we compare products of the same brand, however, the price paid is, on average, 3.3 percent higher under bid waivers than auctions. This drop in magnitude suggests that bid waivers purchase a higher quantity of products from more expensive brands, and thus plausibly higher-quality brands. Thus, product quality explains more than 60 percent of the price difference between these two procurement types.

However, can we really say that more expensive brands translate into better-quality purchases? Brand prices can also be explained by market power, consumer demand, among several other factors. Particularly in public procurements, the observed brand prices might also be subject to manipulation and strategic behavior by firms and government agencies. To answer this question, I take data on technical quality reviews on a variety of products and services by a major consumer association in Latin America. Each brand is given a score based on whether they comply with regulatory standards on quality. I show that a one standard deviation increase in the quality score of a particular brand is associated with a 14 percent higher price paid for this brand across procurements in Brazil. This result confirms that brand prices and quality are strongly positively associated.

Having found that discretion is associated with both higher inefficiency and higher product quality, two questions arise. First, do government agencies prefer high discretion vis-a-vis low discretion, given these differences in procurement outcomes? Second, how can one ensure that the results above are not explained by intrinsic differences between auctions and bid waivers, such as their size, scope, and overall procedure? To answer these questions, I exploit a set of Brazilian regulations that allow agencies to procure with a higher discretion for small-

value purchases (SVP).[5] Regulators waive the need for competitive bids for procurements whose value is below a specified threshold, while those above the threshold need to be procured via auctions following proper procedures regulated by law.[6]

By analyzing the number of procurements around the discontinuity, I find evidence of government agencies strategically designing the procurements to fall below the discretion threshold. There is a sizable discrete jump in the number of procurements at the threshold for discretion: there are seven times more procurements below the threshold than above it. Moreover, this behavior seems to be concentrated in procurements that are close enough to the threshold, which suggests bunching.

Consistent with the bunching behavior, products supplied in bid waivers (below the threshold) have a 22.9 percent higher price than products supplied under auctions (above the threshold). However, when I compare outcomes of the same product and brand purchased on each side of the threshold, I see that the effects are much smaller in magnitude: prices increase by 11.8 percent when moving from above to below the threshold. This coefficient is about 50 percent smaller than the price increase observed when I do not control for quality. As also shown before, it seems that government agencies purchase better-quality brands under discretion vis-a-vis auctions. Still, evidence of inefficiencies cannot be fully discarded since there is still overpricing under discretion even after controlling for quality.

There are also several ways that discretion might harm public coffers that do not necessarily involve overpricing acquisitions. First, I find that bid waivers are more likely to award procurements to firms that belong to industries that do not usually sell the purchased product. Similarly, winning firms are more likely to be politically connected, located in the same municipality as the government agency, smaller in size, and owned by an individual entrepreneur in high vs. low-discretion procurements. Overall, it seems that bid waivers award more procurements to opaque and politically connected firms, potentially reducing procurement efficiency. Nevertheless, when I compare products of the same brand, these effects are about 15 to 50 percent weaker in magnitude. Also, the only differences that remain statistically significant are that winning firms are smaller and more likely to be in the same municipality of the government agency. These results suggest that even though government agencies strategically choose their suppliers under bid waivers, this is in most part explained

[5]Other papers have exploited the small-value purchase threshold to understand how discretion affects procurement outcomes in other countries, such as the Czech Republic (Palguta and Pertold, 2017), Italy (Butler et al., 2020), Hungary (Szucs, 2020), and the US (Calvo et al., 2019). According to Bosio et al. (2020), allowing products and services to be purchased with discretion for small-value purchases is a common feature in public procurements worldwide.

[6]There are a few exceptions to this rule. For instance, in case of emergencies or the absence of a competing firm that supplies the product, government agencies can use discretion for procurement values above the threshold.

by them being able to supply better quality products.

The paper's final section discusses the possible implications of this paper's findings. While bid waivers allow for the procurement of better quality products, is this really desirable from a social standpoint? Government agencies might exploit discretion in purchasing luxury and other unnecessary goods, such as buying premium coffee for public servants or purchasing expensive cars. Thus, purchasing higher-quality products may be another way government servants can use public funds for personal gains.

This paper provides evidence supporting of both needless and needful purchases of higher-quality products. First, among government agencies, public hospitals are the ones that exploit the most the purchases of higher-quality products under discretion. Second, better-quality essential emergency room medicines are more likely to be purchased under discretion. At the same time, however, other agencies, such as public administration offices, also exploit discretion to purchase premium brands, among which stationery goods, such as pens, pencils, and printer cartridges.

Finally, I show that acquiring better-quality products may have positive real effects. The hospital mortality rate decreases by 3 to 6 percent of its standard deviation with a 10 percentage point increase in the fraction of essential drugs purchased in bid waiver procurements. This result is robust to controlling for the hospital expenses with in-patients as well as comparing hospitals in the same state. It is also concentrated in hospital deaths due to non-terminal diseases. Overall, acquiring higher-quality products under discretion can potentially benefit society via, for instance, better hospital services, but it can also be used to purchase premium brands of less-needed products.

Throughout the paper, I provide a series of additional tests to address alternative stories that might explain these differences in outcomes around the threshold. First, a concern when comparing auctions and bid waivers is that they are different in several other dimensions. For instance, auctions are supposedly more competitive than bid waivers, and this might explain why prices might be higher under the latter. I address this concern by comparing outcomes in procurements below the threshold only, i.e., within high discretion procurements. I still find evidence supporting strategic behavior just below the threshold. The closer procurements are to the threshold, the higher the price they charge. However, a large part of these results is explained by differences in quality. Once I control for products brand, the price increase as a function of the proximity to the threshold is less pronounced.

Second, I address other unobservable factors that lead procurement agencies to choose discretion over auctions exploiting a change in the discretion threshold. In July 2018, the maximum value of procurements awarded under small-value purchases increased from BRL

8 thousand to BRL 17.6 thousand. I then compare government agencies that relatively purchase a higher vs. lower value of products in procurements just above the new threshold before the reform. Government agencies that were procuring goods just above the new threshold might have more incentives to bunch below the new threshold after the reform. I indeed find that this is the case. After the change in the threshold, agencies with a 10 percentage points higher fraction in the value procured just above the new threshold are 4.5 percent more likely to procure products under discretion after the reform and pay 4 percent higher prices for these goods. After I control for quality, there still is a higher likelihood that government agencies purchase more products under discretion, but the price increase is not statistically significant anymore, suggesting that the bunching happens mostly due to product quality considerations.

Third, it is possible that when I control for product brand, I might be increasing the precision of a product definition and not necessarily measuring product quality. If the product classification is not detailed enough, controlling for the brand might add information on the product itself and not on product quality. Increased precision would explain why the differences in product outcome decrease after controlling for product brand. To alleviate this concern, I show that differences in outcomes across high- and low-discretion procurements remain even with a more detailed product classification of more than 200 thousand distinct products. I also show that these differences do not depend on product description length, making it very unlikely that low precision does not explain this paper's results.

This paper talks with the literature on the capture of government agencies by the private sector more broadly. Papers show evidence of revolving doors (Agarwal et al., 2014; Lucca et al., 2014; Tenekedjieva, 2020; Asai et al., 2021), political connections (Faccio et al., 2006; Schoenherr, 2019),[7] lobbying (Blanes i Vidal et al., 2012; Bertrand et al., 2014), ownership networks (Asai and Charoenwong, 2020), corruption more broadly (Colonnelli et al., 2022), among other reasons. The paper closest to mine is Bandiera et al. (2009) that argues that most of the inefficiency in public procurements is not due to corruption but can be attributed to other reasons such as lack of skills by public officials or that they are not interested in minimizing costs.[8] My paper argues that a large part of the perceived inefficiency under discretion, a procurement type highly susceptible to corruption, can actually be attributed to the purchase of better-quality products and to the waste of public resources. Therefore, by not considering these differences in the quality of the goods and services purchased, one

[7]There is also extensive literature that talks about advantages that firms get from being politically connected, such as Fisman (2001), Faccio (2006), among others.

[8]Similarly, Best et al. (2019) find that while most of the variation of prices in public procurements in Russia is explained by individuals and organizations, but this difference does not seem to be explained by corruption.

may overestimate the role of inefficiency and corruption in public procurement.

This paper is also related to the literature that talks about the effects of discretion on procurement outcomes (Rasul and Rogger, 2016; Palguta and Pertold, 2017; Coviello et al., 2018; Calvo et al., 2019; Decarolis et al., 2020; Szucs, 2020; Bandiera et al., 2020; Butler et al., 2020; Gallego et al., 2020; Baltrunaite et al., 2021). Among these papers, Decarolis et al. (2020) show pervasive behavior of discretion for public infrastructure procurements in Italy. They also discuss a possible benefit of discretion in reducing *ex-post* delays of these projects, thus, increasing contract quality. Differently from the current literature, I observe *product* quality, allowing me to uncover that a large part of the inefficiency of discretion can, in fact, be attributed to the purchase of higher-quality products. I also provide evidence of the corruption and quality trade-off in the purchase of goods, whose contracts are much easier to monitor than more complex services and infrastructure projects. Finally, I also present evidence of the real effects of discretion in public procurements by showing a decrease in the mortality rate in hospitals that purchase essential products via discretion.

2 Institutional Background

Brazil's federal public procurement market in 2017 comprised in the purchase of goods, services, and works of around BRL 350 billion, corresponding to about 5% of the GDP. Procurements are regulated by Federal Law No. 8,666/1993, which subsequently also experienced several amendments and changes over the years.

Procurements in Brazil are divided into different types. The most common type is the *bid waiver*, which, as the name says, waives government agencies from conducting proper bids to purchase goods and services. Bids can be waived in the case of (a) small-value purchases, (b) federal emergencies, (c) when there is only one supplier of the desired product or service. In terms of small-value purchases, exploited in section 4.2 of this paper, Federal Law 9,648/1998 waives bidding for procurements whose values are below BRL 8 thousand. This threshold was then changed to BRL 17,600 in the Presidential Decree 9,412/2018.

The second most common procurement procedure is competitive bidding, i.e., auctions. Since 2005, these auctions of standardized products and services have been mandated to be done electronically, which greatly decreased procurement participation and organization costs.[9] Its electronic format also allows for much more publicity than other modalities since the procurement notice is freely available on the internet. This electronic procurement is a first-price open-bid auction where bids are made in the electronic platform during the

[9]Procurements of more complex products and services, such as road constructions, are done via one-time closed-bid auctions supervised by a committee of public servants.

specified auction period. The lowest bid wins. Importantly, while participants can see others' bids, they are not aware of the identity of their competitors. Once the winner is determined, the procurement agency would still have a chance to assess the technical and legal capabilities of the supplier, as well as whether the procured goods respect the requirements as per the public notice.

Procurements in Brazil are regulated by the *Tribunal de Contas da Uniao* (TCU). TCU's mission is to oversee and control the expenditures in government contracts, including those resulting from a procurement. TCU attempts to identify frauds and inefficiencies that might lead to losses to the public coffers. For instance, regarding bid waivers, TCU explicitly says that government agencies must not strategically design their procurements so that the purchases would fall below the small-value purchase threshold. In other words, purchases of similar goods and services must be made in one procurement procedure only throughout the years and not divided into several procedures to exploit the SVP threshold. Despite this regulation, the TCU itself recognizes that it is hard to properly enforce them in practice since government agencies can always say that multiple purchases happen because of extraordinary and previously unexpected reasons.[10] For auctions, the TCU acts at curbing the

3 Data

The main dataset comes from the ComprasNET portal. It contains information on the universe of federal public procurements in Brazil since 1996. While federal agencies are mandated to use the ComprasNET portal in their procurements, local governments such as states and municipalities can choose to use this platform as well. It is also an electronic platform for government institutions to conduct procurements. I take information from Jan/2013 to Dec/2020, totaling 4.27 million contracts. Since I observe the brand of products purchased, I decide to keep procurements that involve purchasing products and drop the ones related to services/construction in the main empirical analysis of the paper.[11] I define products as the interaction of the good sold, e.g., coffee, and the size of the package, e.g., 1 kg. To address outliers, I only keep observations where product prices are at most 10 times away from the median price of the product.[12] I also drop observations with missing information for the product's brand. I am left with 2,485,546 distinct procurements, purchasing 63,174

[10] See *"Manual de Compras Diretas TCU"* available at https://portal.tcu.gov.br/lumis/portal/file/fileDownload.jsp?fileId=8A8182A24D6E86A4014D71A8CEA96335.

[11] In Table A7, I provide a robustness test that highlights that the main results of this paper apply to services as well.

[12] This corresponds roughly to the 5th and 95th percentile of the price difference with respect to their product's median.

products from 81,865 firms for 4,097 federal and local government agencies from Jan/2013 to Dec/2020. Table A1 in the Internet Appendix provides a list with selected products and their most common brands.

Figure 1 plots the geographical distribution of the procurement agencies (Panel A) and government suppliers (Panel B). The maps show that government agencies and awarding firms are distributed across Brazil. Out of the 5,500 municipalities, government agencies are located in 669 distinct municipalities and firms in 2,679. The municipalities with the most government agencies are Rio de Janeiro (411), followed by the capital Brasilia (367) and Sao Paulo (171). Despite Sao Paulo being the largest municipality in terms of population, it is expected that Rio de Janeiro, Brazil's former capital until the mid-XX century, and Brasilia, Brazil's current capital, would have a higher number of government agencies. The municipalities with a higher number of winning firms are Sao Paulo (5366), Rio de Janeiro (4535), and Brasilia (3744).

This paper also uses a couple of secondary datasets to enrich the analysis. First, I gather firms' registry data from the *Receita Federal*.[13] This dataset contains information on firms' location, industry, legal structure, among others, for the universe of Brazilian firms. The firm registry data is then used to understand what are the characteristics of firms winning the public procurements. Second, I take data on politicians who served a mandate either at local or federal governments from *Tribunal Superior Eleitoral*, the Superior Electoral Court in Brazil, for the elections of 1998-2018. This information, merged with the firm ownership data from *Receita Federal*, will be relevant to measure whether a winning firm is directly connected to the government. Finally, I take data on hospital deaths in Brazil from DataSUS, a publicly available dataset on healthcare performance of hospitals that serve patients through the Brazilian Unified Health System (*Sistema Unificado de Saúde - SUS*). I use this information in hospital deaths in section 5.1.2 when I talk about the real effects of discretion in public procurements.

Table 1 presents the summary statistics of the main outcome variables used in the paper.

4 Empirical Analysis

4.1 Comparing Auctions and Bid Waivers

This section examines whether there are differences in outcomes between bid waivers and auctions, high- and low-discretion procurements, respectively. Since bid waivers allow a certain discretion by the procurement agency, one concern is that they might be more likely to

[13] *Receita Federal* is the Brazilian equivalent of the US Internal Revenue Service (IRS).

be subject to higher inefficiency and possibly higher corruption than auctions. Competitive bids, on the other hand, are awarded based on the lowest bid price, which is more likely to lead to efficient purchases of products. To understand if bid waivers are indeed leading to higher inefficiency in the spending of public resources, I propose to evaluate whether and how the characteristics of the goods purchased differ across these different procurement types.

For this comparison to be meaningful, I would need to compare the same product procured via bid waivers or auctions. In addition, this comparison should also consider the procurement period to control for inflation and other aggregate factors that might explain the differences in price across these procurement types. In sum, I estimate the following equation

$$y_{ipt} = \alpha_{pt} + \text{Bid Waiver}_{it} + e_{ipt} \tag{1}$$

where i refers to the procurement, p to product, and t to the date. y is an outcome variable, such as the price of the goods procured. The main independent variable is Bid Waiver, which equals one when the goods are procured through bid waivers and equal to zero for procurements made via auctions.

Table 2 provides the results of this specification for several outcome variables. Column I of Panel A shows that bid waivers lead to an 8.9% higher price than bid waivers for the *same* product procured at the *same* quarter. This suggests that auctions are more efficient than bid waivers since they contract the same product at a much lower price. Column II of Panel A shows that bid waivers also lead to a much lower quantity procured. Auctions are associated with 3 times higher quantity for the *same* product procured in the *same* quarter.[14] This result sounds surprising at first, but it can be explained by the fact that most bid waivers are allowed for small-value purchases only, as explained in Section 2. Thus, there is indeed going to be a large difference in quantities procured between bid waivers and auctions. The next section will exploit this fact and compare auctions and bid waivers around the small-value purchases threshold.

There are also several ways in which discretion might still harm the public coffers that do not necessarily involve the overpricing of products purchased. For instance, procurements might be awarded to connected firms (Faccio et al., 2006; Schoenherr, 2019), which might direct public funds to possibly inefficient firms. To test this hypothesis, I investigate whether the characteristics of the awarded firms are different across different procurement types. The remaining columns of Table 2 Panel A present these results. In columns III and IV, I

[14]For large variations in the log of a variable, the real change in the outcome variable should be calculated by: $exp(0.9264) \approx 2.5$.

calculate whether the firm belongs to an industry that usually supplies that product to the government. For every product awarded in the sample, I rank the industries of the winning firms that provide that product. A firm with rank 1 is from the industry that is most likely to provide that particular product to governments. The higher the ranking, the lower the match between the winning firm's industry and its product purchased in the procurement. I calculate this rank based on the total value sold (rank $ in column III) and the number of contracts awarded (rank # column IV). Columns III and IV show that bid waivers are more likely to award procurements to firms from industries that are less likely to sell these goods in the first place.

In addition, firms that win bid waivers are 0.04% more likely to be politically connected (column V). This change represents about 20% of its unconditional mean. I define political connection by whether the firm is owned by elected officials from the political parties that are allied to the federal government at the time of the procurement. Note that this definition only captures directly connected firms, and thus it might underestimate the true degree of connection. Furthermore, reinforcing suspicions that winning firms are also indirectly connected to agencies, I find that firms are 27% more likely to be geographically closer to the procurement agency under bid waivers (column VI). The probability that firms are owned by individual entrepreneurs or are smaller in size is 0.9% (column VI) and 3.3% (column VII) higher under bid waivers, respectively. Overall, bid waivers are associated with overpriced products and more opaque and potentially connected firms.

Despite the evidence so far pointing out the pervasive effect of freedom to contract, one of the main arguments in favor of discretion is that it allows for the purchases of higher-quality goods. In fact, by focusing on the lowest price, auctions might lead to the procurement of lower-quality goods. Differences in product quality might explain part of the results in Panel A of Table 2. Regarding differences in prices, it is easy to see why. Assume a simple example of two procurements (A and B) purchasing 10 units of a product under discretion and under auction each, respectively. The average price purchased in procurement A is $2, and the average price in procurement B is $1. The difference in average price is $1, suggesting that procurement B is more efficient. However, assume procurement A only buys products from a premium brand that costs $2. Procurement B buys 2 units of the premium brand at $2 and 8 units of the popular brand at $0.75. Once one compares how much A and B paid for the *same* brand, the difference is $0 since both of them paid the same price for the premium brand. Thus, what initially was attributed to the higher efficiency of procurement B is actually explained by the differences in product quality purchased by A and B. Similarly, procurement agencies might decide to procure from likely connected firms not because of corruption, but because they know these firms might offer better quality products.

As a result, one needs to compare product outcomes of products of similar quality, in this case, of the *same* brand. Panel B of Table 2 provides similar specifications as in Panel A, but now adding the interaction of brand, product, and quarter fixed effects. This would allow me to compare procurement outcomes for the same product and brand.

Comparing Panels A and B of Table 2, products purchased in bid waivers move from an 8.9% price increase (Panel B) to a 3.3% price increase when I control for the product brand (Panel B) relative to bid waivers. Thus, about 63% of the average price difference between bid waivers and auctions can be explained by differences in product quality. In addition, there is also evidence that the differences in characteristics of winning firms across procurement types are smaller when you control for product quality. In column III, winning firms under discretion still belong to industries that are less likely to supply the product based on a rank of the value awarded, but the magnitude decreased from 1.65 to 0.62. When industries are ranked based on the number of contracts (column IV), differences in outcomes are not statistically significant once I account for product quality. At the same time, winning firms seem to be similarly politically connected (column V) and equally likely to be owned by individual entrepreneurs (column VI). The only other difference that remains is that bid waivers are still likely to be from the same municipality of the government agency, even though the magnitude reduced by one-fifth (column VI), and firms are also smaller in size (column VIII).

Overall, results on this session show the procurement outcomes of auctions and bid waivers can differ significantly. Auctions are indeed more efficient, but a great part of this effect can be explained by auctions procuring goods of lower quality. The implicit assumption here is that quality and brand price are positively correlated. Section 4.3.1 explicitly confirms this assumption using data on product reviews by a consumer defense association. Also, section 5.1.2 provides additional support to this hypothesis by documenting positive real effects of purchasing essential ER drugs on hospital mortality rate.

4.2 Exploiting the Small-Value Purchases' (SVP) Threshold

The previous section provides initial evidence that auctions and bid waivers lead to different outcomes. This section studies whether government agencies are more likely to choose one over the other procurement type given these differences in outcomes. Comparing auctions and bid waivers unconditionally, however, might be misleading because most of the bid waiver procurements are those with small total value procured, as column II of Table 2 shows. This is explained by a set of regulations that allow agencies discretion for small-value purchases (SVP). In Brazil, bid waivers are allowed in procurements under BRL 8,000 (USD

2,000) until July 2018, when the threshold was increased to BRL 17,600 (USD 4,400).[15]

To answer whether government agencies exhibit a strategic behavior towards discretion, I first assess how procurements are distributed around the SVP threshold. If there is no strong preference for one procurement type, one should expect to see a smooth and continuous transition in the number of procurements across the threshold. Figure 2 shows evidence to the contrary: there is a significant discontinuity in the log of the number of procurements around the small-value purchase threshold. There are about 7 to 12 times more procurements below the SVP threshold than above it. This "bunching" below the threshold appears to start within 2,000 BRL from the threshold. In the absence of bunching behavior, the curve would probably continue decreasing until there would be a small and probably not significant jump across the threshold. Overall, there are indications that government agencies prefer to bunch below the threshold to enjoy higher discretion.

The next question that emerges from this behavior is why do government agencies bunch below the threshold? What explains their preference for discretion over auctions? One reason is the lower costs associated with bid waivers relative to auctions. It is much easier and less bureaucratic to procure under discretion than to set up an action to purchase goods and services. These costs might be relatively high for small-value purchases. If that is the case, I should expect no difference in the prices of products procured around the SVP threshold. Two other explanations would actually predict bid waivers procuring goods at a higher price. First, government employees engage in opportunistic behavior for private benefit by awarding procurement to connected firms in exchange for bribes or other financial benefits. Second, government agencies want to acquire higher-quality goods, and they are not sure this would be achieved in the competitive bidding process, given that the winning firm is the one that supplies the product at the smallest price. Thus this firm might have an incentive to supply a sub-premium brand.

To better understand the mechanism explaining this bunching behavior, I assess the different characteristics of the products sold around the threshold. Figure 3 plots the average price of procurements around the SVP threshold. In Panel A, I adjust these curves by taking the residuals after controlling for product-quarter fixed effects. Figure 3 shows that not only on average prices on the left-hand side are higher than those on the right-hand side, but also at the threshold, there seems to be a discontinuous jump of 15% in the procured prices. In

[15] Auctions can be performed even for small-value purchases. Similarly, bid waivers are also allowed under emergencies, such as the Covid pandemic, and situations where there are no other competitions suitable to provide the product. Nevertheless, most of the procurements below the threshold are bid waivers, and most of the procurements above it are auctions. Figure A1 in the Internet Appendix plots the frequency of auctions on each side of the threshold. Around the discontinuity, the probability of a procurement being done through competitive bidding jumps from 10% below to at least 80% above the threshold.

Panel B, I adjust the observations by their product-brand-quarter averages, thus additionally controlling for product quality in relation to Panel A. The evidence of Panel B shows that the behavior around the threshold is much less significant: prices now jump by around 5% at the threshold.

These results can also be seen in regression format to assess whether these differences around the SVP threshold are statistically and economically significant. I fit a polynomial curve around the threshold similar to a regression discontinuity design (RDD) as follows:

$$y_{ipt} = \alpha_{pt} + \beta \cdot \text{Below Threshold}_{it} + f(\text{Below Threshold}_{it}, \text{Distance}_{it}) + e_{ipt} \tag{2}$$

where similarly as in equation (1), i refers to the procurement, p to product and t to the date (year-quarter). Below Threshold is a dummy equal to one if the procurement i where product p was purchased is below the SVP threshold and zero, otherwise. All of my specifications compare the same products around the threshold. This is guaranteed by adding product-time FEs (α_{pt}) so that my effects net out the product-year averages of my outcome variables in the sample. These fixed effects also control for any difference in the overall demand for each product in that quarter.

Panel A of Table 3 presents the results. Column I shows that procurements below the SVP threshold charge 22.9% higher prices for the products procured. This coefficient is much higher in magnitude than in the specification that compares all procurement discussed in the last section and presented in Table 2. This difference might be explained by the bunching behavior below the threshold, where agencies strategically choose higher discretion procurements. In addition, there are no differences in the quantity purchased on the same good around the threshold.

Next, I investigate whether the characteristics of the awarded firms are different around the threshold. Columns III and IV show that firms below the threshold are more likely to procure products from firms whose industries better match that product. This result is, however, only statistically significant when I rank the industries based on the number of procurements awarded (column IV). In addition, firms below the threshold are more likely to be awarded to politically connected firms (column V), to belong to the same municipality as the procurement agency (column VI), to be owned by individual entrepreneurs (column VII), and to be smaller in size (column VIII).

On the one hand, the results above are consistent with a waste of public resources. On the other hand, they are also consistent with differences in product quality. To tease out these effects, I then compare products from the same brand on both sides of the threshold. Panel B presents these results. Column I of Panel B show that prices are 11.8% higher for

procurements below the threshold. While the magnitude of this coefficient is large, it is about 50% of the price increase when I do not control for quality in Panel A. This suggests that at least half of the drop in prices can be explained by discretion acquiring higher-quality goods, while other factors, among which corruption, explain the other half.

In Panel B column II, I find that the quantity purchased of the same good actually increase below the threshold. Together with the insignificant coefficient in Panel A, this suggests that there is a shift in the composition of brands purchased below and above the threshold. Similarly, the differences between winning firms are mostly smaller in magnitude, and some are not statistically significant once I compare products of the same brand. For instance, the differences in *rank #* and *p(connected)* are not any more significant in columns IV and V, respectively. The only remaining differences are that procurements below the threshold are more likely to be awarded to firms in the same municipality of the government agency (column VI) and to smaller firms (column VIII).

4.3 Additional Tests

This section provides additional tests.

4.3.1 Product Quality

The evidence in sections 4.1 and 4.2 suggests that procurements under discretion allow for the purchase of better-quality products. This conclusion is based on indirect evidence based on prices and implicitly assumes that average brand price and quality are positively correlated. This section explicitly tests this assumption.

To achieve that goal, I first collect data from PROTESTE, a major consumer defense association in Latin America that provides technical quality reviews on a variety of products and services. Specialists test brands of 37 different products, such as home appliances, food, beverages. Each brand is then given a score from 0 to 100, based on whether they comply with regulatory standards on quality. Second, I calculate the average price of each product-brand-quarter using the data on procurement. Finally, I assess whether within the same product and quarter, higher-quality brands have a higher average price.

Table 4 confirms the hypothesis that higher-quality brands are, on average, more expensive. In column I, a 10 percentage points increase in the quality score is associated with a 14% higher average price paid for that brand. To alleviate concerns that this result is being driven by the average price paid under discretion, column II shows the results when the average brand price is calculated using information on procurements above the threshold only. Results are statistically and economically similar. If anything the magnitude of the

coefficient increased in column II, suggesting an even stronger association. Overall, more expensive brands are indeed higher-quality.

Given the previous result, I also show that there is a discontinuous drop in the average brand price around the threshold. I rerun the analysis in equations (1) and (2), but using the average price of each product-brand pair as the dependent variable. Panel A Figure 4 shows there is a clear discontinuity at the threshold, suggesting that products purchased below the threshold are from more expensive brands. In Panel B, results are similar when I plot the probability that the brand price is higher than the product median.[16] Overall, there is direct evidence that government agencies purchase more expensive brands under discretion.

4.3.2 Behavior Below the Threshold

Some of the previous results might be explained by intrinsic characteristics of auctions and bid waivers, leading to differences in the price and/or quality of products purchased. For instance, by its very nature, auctions are supposed to be a more competitive procurement type, with a higher number of participants. These differences in competition might explain the prices and quality effects documented before. To address this possible concern, I now only compare procurements below the threshold, i.e., those under higher discretion. Suppose intrinsic differences between auctions and bid waivers explain these results. In that case, I should not see any differences in procurement outcomes as a function of the proximity to the small-value purchases threshold.

Figures 2 and 3 show that this alternative explanation is very unlikely. These figures point out that procurement outcomes below the threshold significantly change as they get closer to the threshold. Not only does the number of procurement increase close to the threshold, but prices particularly increase. Controlling for product quality seems to significantly decrease the relevance of this strategic behavior below the threshold.

I propose to better understand the behavior of procurements as a function of the distance to the threshold as follows:

$$y_{ipt} = \alpha_{pt} + \beta_1 \cdot \text{Close}_{it} + \beta_2 \cdot \text{Proximity}_{it} + \beta_3 \cdot \text{Proximity}_{it} \cdot \text{Close}_{it} + e_{ipt} \quad (3)$$

where Close is a dummy equal to one for procurements at most BRL 2,000 below the threshold. Proximity represents the proximity (in BRL thousand) of the procurement to the threshold, and it varies from - 6 to 0, where 0 represents the threshold. I employ this regression only on procurements below the threshold. The coefficient of interest to show whether

[16] Table A3 in the Internet Appendix presents the coefficient estimates of regressions comparing bid waivers and auctions (columns I and III), and procurements below and above the threshold (columns II and IV).

procurements are manipulated below the threshold is β_1. This coefficient measures how much outcomes differ at the threshold (Proximity = 0) relative to a counterfactual of no changes in the behavior of procurements outcomes when close to the threshold.

Column I in Panel A of Table 5 confirms this different behavior as procurements are close enough to the threshold. The price paid at the threshold is 13% higher than in a scenario where there is no change in behavior around the threshold. In the same column of Panel B, when I compare the purchase of the same product *and* brand, the price paid at the threshold is 6.3% higher only. Regarding quantities procured, I find that at the threshold, they drop by 13% when I compare the same product in Panel A or 5.1% when I compare the same product and brand in Panel B. In this last case, the coefficient is not statistically significant anymore. Similar decreases in the magnitude of coefficients apply to the probability of the winning firm being politically connected (column V) and belonging to the same municipality of the agency (column VI). Overall, controlling for quality significantly decreases the price differences even when I only look at high-discretion procurements.

4.3.3 Change in the Threshold in July 2018

In 2018, the government updated the small-value purchases threshold from BRL 8,000 to BRL 17,600. I will exploit this change to first assess if procurement agencies are incentivized to bunch below the new threshold, and second to understand to what extent product quality or corruption explains this behavior. To do that, I need to identify which procurements are more likely to bunch under the new threshold. I hypothesize this change would particularly affect government agencies that, before the regulatory change, acquired products in procurements whose value is just above the new threshold.

I then classify my treatment at the government agency level as the fraction purchased in procurements with a value between BRL 17,600 and 21,600, i.e. just above the new threshold imposed by the reform. I calculate this variable (Treat_a) in the two years before the reform. I then employ a standard difference-in-differences specification, which compares outcomes around the regulatory change for agencies with different potentials of treatment:

$$y_{iapt} = \alpha_a + \alpha_{pt} + \beta \cdot Treat_a \cdot Post_t + e_{iapt}. \tag{4}$$

If government agencies prefer discretion over auctions, I expect the agency-product pair to be more likely to bunch below the new threshold of BRL 17,600. Also, one should expect that prices will increase and quantities will decrease for these procurements.

Table 6 provides the results. Column I shows that those procurements that are more likely to be affected by the change in the threshold indeed experience a price increase. Agencies

with a 10pp higher Treat_a purchase the same products at a 4% higher price after the change in the threshold. In column II, quantities procured do not seem to change significantly around the reform. Column III shows that agencies with a higher fraction of products purchased close enough to the new threshold are more likely to purchase products under bid waivers after the reform, i.e., below the new threshold. Columns IV to VI takes into account product quality. As one can see, an increase of 10 pp in Treat_a increase prices in 2%, but this effect is not statistically significant. Nevertheless, column VI shows that even after controlling for quality, procurements by treated agencies are more likely to be conducted via bid waivers after the reform. Thus, as with the previous results, I cannot reject that product quality considerations explain a large part of the bunching behavior.

4.3.4 Robustness Tests

Averages around the threshold In my main tests in Section 4.2, I fit a polynomial below and above the threshold and compare the jumps around the discontinuity. In this section, I propose additional tests comparing averages of my outcome variables in much closer proximity to the threshold, as follows:

$$y_{ipt} = \alpha_{pt} + \beta \cdot \text{Below Threshold}_{it} + e_{ipt} \tag{5}$$

where $\text{Below Threshold}_{it}$ is a dummy equal to one for procurements up until BRL 2,000 below the threshold and zero in procurements up to BRL 2,000 above the threshold.

I present the results of this specification in Table 7. Results are virtually unchanged. In Internet Appendix Table A4, I also present evidence that this paper's main results do not appear to depend on the bandwidth chosen to compare procurements around the threshold. I get similar results when I compare procurements on each side of the threshold and are at most BRL 1000 (columns III and IV) and BRL 500 (columns V and VI) from the threshold.

Comparing auctions across the threshold In Section 4.2, I exploit discontinuity around the SVP threshold. Procurements below this threshold are allowed to be done via bid waivers. Nevertheless, around 10% of the small-value purchases are still done via auctions. In my previous analysis, I did not differentiate between auctions and bid waivers below the threshold. However, if the analysis of this paper is correct, then I should not observe any changes in prices, quantities, or other variables around the threshold.

Table A5 provides the simple average tests of outcome variables of auctions around the threshold. The table shows no statistically significant differences in outcomes of procurements awarded via auctions above and below the threshold, except for the probability of

firms and government agencies belonging to the same municipality. Auctions below the threshold are 1.98% less likely to be awarded to firms in the same municipality, in contrast to the main results. Overall, my results appear to be driven by the differences between bid waivers below the threshold and auctions above the threshold.

Product definition One potential concern with the previous analysis is that I might be classifying products using a not very precise definition. For instance, what I am calling "A4 Paper Sheet" might have different variations, such as color, whether the material comes from recycled paper, among other factors. If different procurement types are more likely to purchase one sub-type of paper over the other, one would actually compare different products across the threshold. In this scenario, when I compare the same products with the same brand around the threshold, I would be mainly improving the precision of how I measure products, not necessarily the quality of these products. Note that this would only be a concern if bid waivers systematically buy different versions of products that are usually more expensive than those purchased via auctions. In addition, these differences would have to be unrelated to product quality and would only occur around the SVP threshold.

Despite being an improbable driver of this paper's results, I still further alleviate this concern by employing an even finer classification of products. While this paper's benchmark specifications work with about 63 thousand products, the finer classification gives us a much more detailed classification with approximately 207 thousand distinct products. I rerun the main specifications with this new classification and present the results in Panel A of Internet Appendix Table A6. Again, the coefficients are consistent with the previous findings both in terms of magnitude and statistical significance.

Nevertheless, it might still be the case that poorly defined products are driving the results. If I only focus on the highly detailed products, the inclusion of brand in the analysis will not change procurement outcomes. I then propose a new test that exploits the length of the textual description of each of the 207 thousand products in the finer classification. I normalize this length by the length of the 63 thousand products that they belong to. Products with a long description length are likely measured with higher precision than those with a short description. If increased precision explains why differences between procurement decrease after I control for product brand, I should find that controlling for product brand leads to a higher drop in the coefficient magnitude for short description length products relative to high description length products. Results in Panel B of Internet Appendix Table A6 show that this is not the case: differences between procurements above and below the threshold are strikingly similar between products with above- vs. below-median description length regardless of whether I control for product quality or not. This result suggests that precision

does not explain why the differences between procurement types decrease after controlling for product quality.

5 Discussion

5.1 When are higher-quality purchases more desirable?

This paper documents an inefficiency-product quality trade-off in public procurements. While bid waivers might be more inefficient than auctions, a significant fraction of the differences in prices can be explained by bid waivers purchasing better-quality products relative to auctions. Nevertheless, is this bright side of discretion always desirable from a social point of view? While procuring higher-quality products may benefit society, these products are both be more expensive and more likely to be purchased inefficiently via bid waivers. This section discusses if and when the government should purchase better-quality goods.

Governments are usually evaluated on the quality of their bureaucracy (Rauch, 1995) and the provision of public services, such as education, health, and infrastructure (La Porta et al., 1999). To achieve these goals, these governments rely on labor (public servants) and "intermediate" inputs, such as goods and services. Better-quality inputs might be useful in improving the provision of public services by, for instance, increasing the effectiveness of healthcare treatment or boosting university research. On the other hand, they may also be unnecessary when a cheaper version of the product would also provide a similar benefit. In this case, purchasing more expensive brands might still be seen as a waste of public resources when a cheaper alternative is available.

In the context of this paper, there are two important testable hypotheses. First, purchasing better-quality products should occur if it potentially contributes to a better provision of public services. For instance, purchasing premium coffee to be served in public administration offices would probably lead to lower social benefits than procuring premium medicine for federal hospitals and materials for public schools. The second implication is that this potential of improving public services should also translate into a real improvement. For example, agencies might procure higher-quality products with the intention of improving education or healthcare, but do they really employ these purchases in a way that achieves real improvement?

5.1.1 Heterogeneous Effects Across Agencies and Products

I first assess the heterogeneous effects of discretion on pricing and product quality across government agencies and products in Tables 8 and 9, respectively. The benefit of purchasing

better quality products might depend on which agency is buying and what the product is.

In Table 8, I divide government agencies into the following types: Education, Hospitals, Armed Forces, and Others. This last group comprises mostly of public administration, utilities, and agriculture agencies. I then rerun the specification (2) by comparing outcomes around the SVP threshold, but now interacting *Below Threshold* with dummy variables of government agency types.

I find significant variation in both overpricing and quality of products purchased via discretion across different agencies. Column I of Table 8 shows that the average prices of products purchased are all higher below relative to above the SVP threshold. The differences range from 15.5% (Others) to 32% (Hospitals). Once I adjust for the product brand, however, the magnitudes of these coefficients decrease significantly across all agency types. In fact, column II shows that prices are not statistically higher under discretion for Hospitals and Armed Forces agencies anymore. Thus, on average, there is no inefficiency-quality trade-off for these agencies, since higher product quality explains all of the apparent overpricing of bid waiver procurements. On the other hand, significant differences in prices remain for Education and Other agencies even after controlling for quality, supporting the existence of a trade-off under discretion.

Table 9 presents the heterogeneous effects according to different selected products: petrol, pencil, diesel, coffee, ballpoint pen, mineral water, printer cartridge, essential ER drugs. I classify all the products not listed explicitly in a group denominated "other products". Essential ER drugs are defined as the drugs used to treat serious health issues, according to the list in World Health Organization (2013).

There is also evidence that the existence of an inefficiency-quality trade-off depends on the product purchased. Column I shows significant overpricing under discretion for most products, except for petrol, diesel, and mineral water purchases. The statistically significant coefficients range from 19.5 % (Essential ER Drugs) to 79% (Ballpoint Pens), suggesting that procurements below the threshold charge a higher price for the same product purchased. Once I control for product quality, overpricing is only still significant for Ballpoint Pens (18% overpricing), Printer Cartridges (44.7%), and Other Products (10%). In the particular case of essential ER drugs, the overpricing of bid waivers is not statistically significant after adjusting for quality, in line with the findings of Table 8 for hospitals.

5.1.2 Real Effects - Hospital Deaths

The evidence above points out that hospital agencies use discretion to acquire better-quality products. In fact, after controlling for quality, I do not see a statistical price difference for

the average procurement by public hospitals around the SVP threshold. However, does this translate into better health outcomes?

To answer to this question, this paper takes data on hospital deaths from DataSUS, a publicly available dataset on healthcare performance, with information on deaths and hospitalization for public hospitals in Brazil. I match this information with the public procurements of these hospitals from 2013 to 2019.[17] The final dataset has 63 public hospitals in 25 different states. Finally, I list essential drugs used to treat serious health issues based on (World Health Organization, 2013). Intuitively, not all products purchased by hospitals are going to contribute to the decrease in the number of mortality.

To understand whether the purchase of higher-quality products in bid waivers is associated with a decrease in hospital deaths, I run the following specification

$$\text{mortality rate}_{ht+1} = \alpha_h + \alpha_t + \beta \cdot \text{Bid Waivers - Essential}_{h,t-3:t} + \sum_i \delta_i X^i_{h,t-3:t} + e_{ht} \quad (6)$$

where *Bid Waivers - Essential*$_{h,t-3:t}$ is the fraction of bid waiver procurements for essential drugs for hospital h from quarter $t-3$ to t. The dependent variable is the ratio of hospital deaths per hospitalization, i.e., the mortality rate, in hospital h and quarter $t+1$. I also add several hospital controls that might also be correlated with the decrease in hospital deaths. I include the fraction of bid waiver procurements for products other than essential drugs, the fraction of essential drug procurements (bid waivers and auctions) as a fraction of total procurements, the log of total procurement value, and the log of hospital hospitalizations. All of these controls are taken from the previous four quarters.

Column I of Table 10 shows that an increase of 10 pp in the fraction of bid waivers procurements to acquire essential drugs is associated with a 0.08 pp decrease in the mortality rate in hospitals. This represents approximately 3% of the standard deviation of the mortality rate in the sample. When I include hospital-level controls in column II, the coefficient increases in magnitude to a drop of 0.14 pp. Finally, column III also adds state-quarter fixed effects, comparing hospitals in the same state, and the magnitude of the coefficient increases to 0.15 pp (about 6% of the standard deviation). All in all, purchasing better quality essential drugs seems to be associated with a lower subsequent mortality rate.

To further sharpen the interpretation of these results, columns IV-VI and VII-IX of Table 11 present the same results for cancer and non-cancer-related deaths, respectively. To the extent that purchasing better quality drugs should reduce mortality, the result should be particularly strong in preventable deaths. This is, in fact, what these columns show. While

[17] I purposely do not consider data for 2020 to do not consider the COVID crisis, where discretion was allowed for all health expenses to fight COVID.

purchasing essential drugs via bid waiver procurements does not decrease cancer-related mortality rate, it decreases non-cancer-related deaths. The coefficients in columns VII to IX range from -0.09 to -0.18 pp drop for a 10 pp higher fraction of bid waiver procurements to acquire essential drugs.

Regarding the controls, it seems that bid waivers to acquire non-essential drugs are not similarly important in reducing hospital mortality, keeping all else constant. In fact, the coefficients for this variable are insignificant in all specifications. Similarly, acquiring essential drugs by itself does not necessarily reduce the mortality rate of hospitals, only when they are purchased via bid waivers. Furthermore, the total value procured by a hospital is also not statistically associated with lower deaths suggesting that increasing the expenses and investments might not reduce hospital deaths. Finally, higher hospitalizations is associated with a lower mortality rate.

5.2 External Validity

My results are informative about goods procured in Brazilian public agencies. Nevertheless, there is no reason to believe why one cannot apply these results to other countries and procurements of services and infrastructure.

In a cross-country study, Bosio et al. (2020) argue that discretion is less efficient in countries with below-median human capital index (HDI) and leads to lower quality products and services purchased. While Brazil fits the criteria of having below-median HDI,[18] my paper still finds that while discretion is less efficient, it also allows for better-quality products.[19] Assuming that Bosio et al. (2020)'s relationship largely holds across different countries, one should expect that the bright side of discretion is even stronger in more developed countries.

In addition, the set-up of public procurements in countries like the Czech Republic (Palguta and Pertold, 2017), Italy (Butler et al., 2020), Hungary (Szucs, 2020), and the US (Calvo et al., 2019) are similar to the Brazilian case. Countries usually allow discretion for small value purchases and have competitive bidding for most non-small value purchases (Bosio et al., 2020). This suggests that my results should not depend on the way procurement systems are set up in Brazil.

Finally, this paper's results could also be expanded to services. These procurements also have an SVP threshold, but are slightly higher than the one for products, i.e. BRL 15 thousand until July 2018 and BRL 33 thousand after that. However, it is harder to classify

[18] According to WDI data, Brazil's HDI as of 2017 ranks 81st out of 153 countries.

[19] Bosio et al. (2020) calculate the discretion measure for different countries focusing on procurement rules for a hypothetical $2.5 million road maintenance project.

services in terms of precise categories and their overall ex-ante quality. Regarding quality, the best this paper can do is to compare the same service category being done by the same firm under bid waivers and auctions. I present these results in Table A7. When I do not control for quality, services below the threshold are 15.3% more expensive. When comparing services by the same firm, trying to control for quality, I observe that the price difference drops to 7.4%, but it is not statistically significant. Overall, this paper's results also appear to apply to services.

6 Conclusion

This paper finds evidence of strategic behavior in the selection of procurement types. Using data on more than 2.4 million product purchases in Brazilian, I find that government agencies are more likely to choose to procure products under discretion via bid waivers than under more tightly regulated competitive bidding. Exploiting a small-value purchases threshold that allows bid waivers, there is evidence of bunching just below the SVP threshold. Compared to procurements just above the SVP threshold, these procurements are also associated with a higher price, and a higher opaqueness and political connectedness of the winning firms. However, when I compare products of similar quality around the threshold, these effects are much weaker, suggesting that bid waivers allow for the purchase of higher-quality products.

The evidence on this paper is consistent with a product quality channel: government agencies can purchase better-quality products under discretion. I find no evidence of overpricing of discretion when I quality-adjust prices for hospitals, public administration offices, and armed forces agencies. Nevertheless, inefficiency or corruption cannot be ruled out for some government agencies, such as education and public administration agencies. These results suggest a corruption-product quality trade-off in public procurements. They also highlight the need to adjust procurement outcomes by quality before inferring the existence of corruption.

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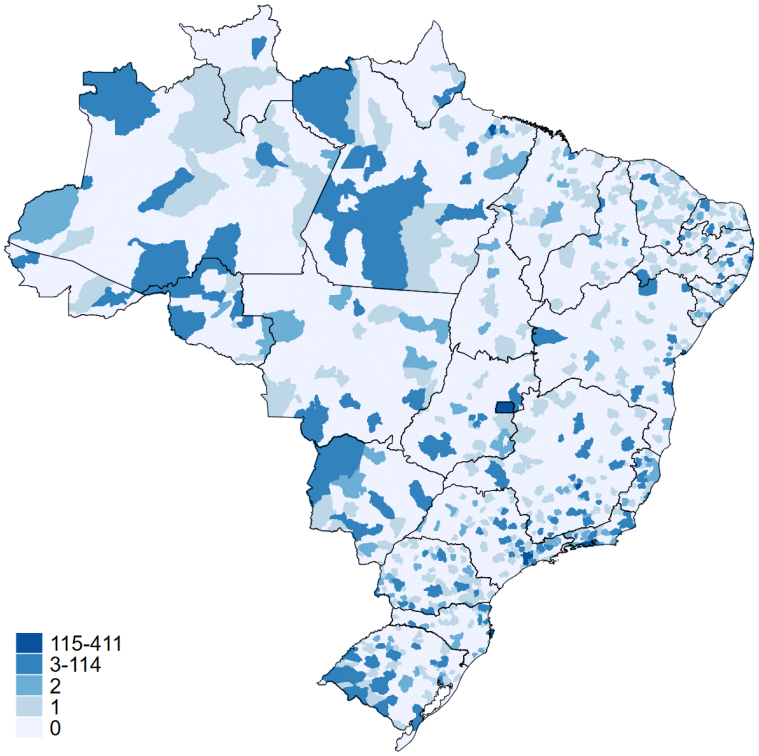
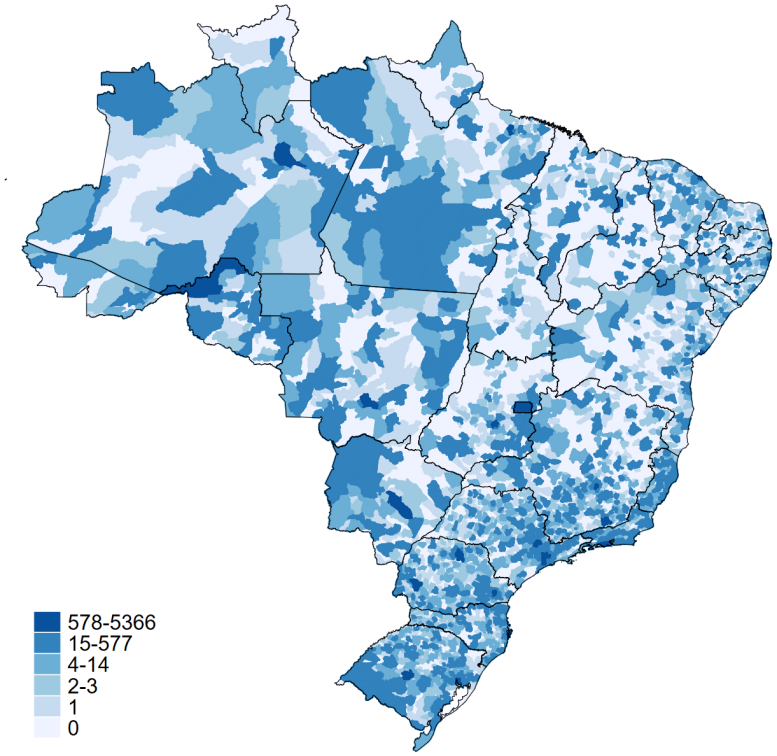
Figure 1: Distribution of Government Agencies and Government Suppliers



Panel A: Number of Government Agencies



Panel B: Number of Government Suppliers

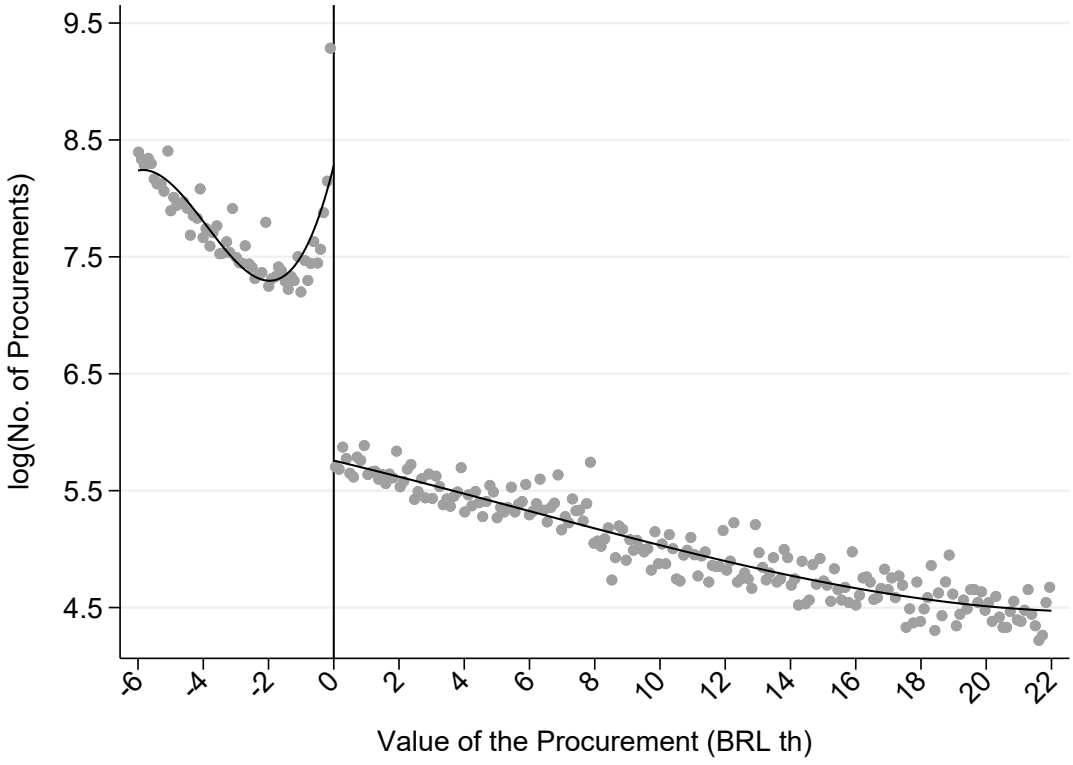
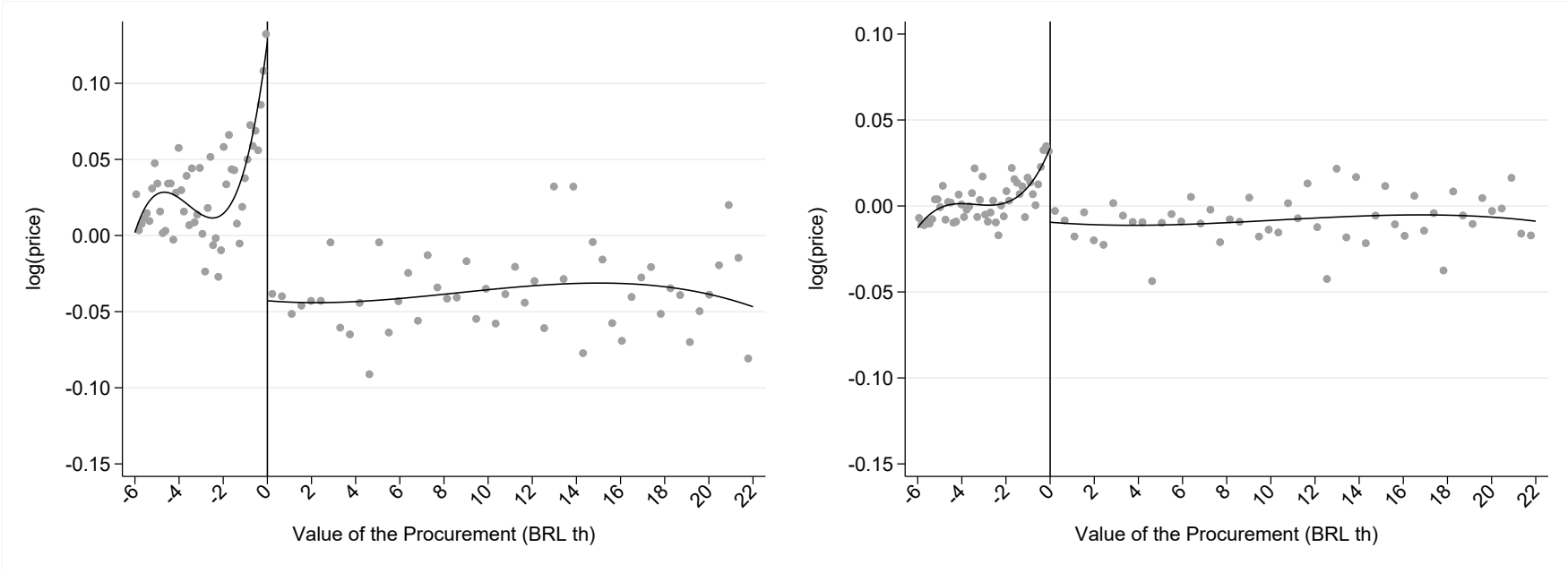
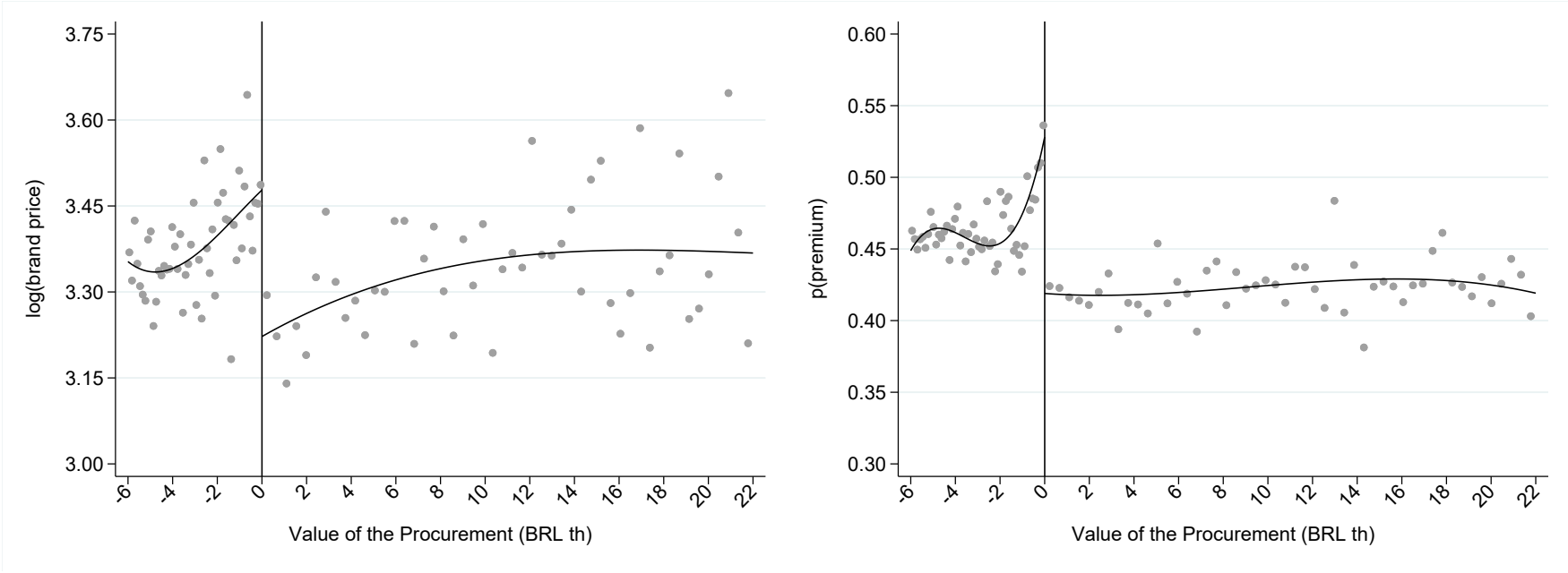


Figure 2: *This figure plots the number of procurements around the small-value purchases threshold. Below the threshold, regulators allow products to be procured by bid waivers. Above the threshold, bid waivers are only allowed in special cases, such as emergency situations.*



Panel A *Panel B*

Figure 3: *This figure plots the average price of products purchased around the small-value purchase threshold. Below the threshold, regulators allow products to be procured by bid waivers. Above the threshold, auctions are the norm. In Panel A, I plot the residuals of the log of prices after including product-time fixed effects. In Panel B, I plot the residuals of the log prices after including brand-product-time fixed effects.*



Panel A *Panel B*

Figure 4: *This figure plots, around the small-value purchase threshold, the average brand price (Panel A) and the probability of purchasing premium products (Panel B), defined as products from above brands with above-median price for the same product. Below the threshold, regulators allow products to be procured by bid waivers. Above the threshold, auctions are the norm.*

Table 1: *Summary Statistics*

		n	mean	std dev	min	max
		I	II	III	IV	V
Dependent Variables						
ln(price)	Log of the price of products purchased at each procurement	2,956,011	3.35	2.24	-2.21	12.26
ln(quant)	Log of quantity or products purchased at each procurement	2,956,011	2.49	2.19	0.00	9.44
rank $	The rank of the winning firm's industry based on the value sold in procurements of that product. A rank equal to 1 means that the industry is the most likely seller of the product.	2,956,011	9.19	15.75	1	108
rank #	The rank of the winning firm's industry based on the number of contracts awarded of that product. A rank equal to 1 means that the industry is the most likely seller of the product.	2,956,011	7.75	14.44	1	100
p(same muni)	The probability that the government agency and the winning firm belong to the same municipality	2,916,139	0.41	0.49	0	1
p(connected)	The probability that the winning firm is owned or managed by an elected politician who belong to an allied party	2,956,011	0.00	0.04	0	1
p(indiv entr)	The probability that the winning firm is owned by an individual entrepreneur	2,956,011	0.15	0.35	0	1
p(small)	The probability that the winning firm is small in size according to *Receita Federal*	2,956,011	0.40	0.49	0	1
ln(brand price)	The log of the average brand price of each product sold in a procurement and quarter	2,485,546	3.47	2.20	-1.77	9.06
p(premium)	The probability of having an above-median average brand price	2,485,546	0.45	0.50	0	1
p(bid-waiver)	The probability of that the procurement is conducted via a bid waiver	2,956,011	0.59	0.49	0	1
Independent Variables						
bid waiver	A dummy equal to one if the procurement is conducted via a bid waiver	2,956,011	0.59	0.49	0	1
below threshold	A dummy equal to one if the procurement is conducted via below the small-value purchases threshold (BRL 8 thousand before July 2018 and BRL 17.6 thousand after)	2,956,011	0.58	0.49	0	1
education	A dummy equal to one if the government agency is a university, school, or a research institution	2,956,011	0.54	0.50	0	1
hospitals	A dummy equal to one if the government agency is a hospital	2,956,011	0.04	0.21	0	1
armed forces	A dummy equal to one if the government agency is an army, a navy, or an air force agency	2,956,011	0.20	0.40	0	1
other	A dummy equal to one for all the other agencies, including public administration, public security, agriculture, and utilities	2,956,011	0.22	0.41	0	1

Table 2: *Comparing Auctions and Bid Waivers*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	rank $\$_{ipt}$	rank $\#_{ipt}$	$\text{p(connected)}_{ipt}$	$\text{p(same muni)}_{ipt}$	$\text{p(indiv firm)}_{ipt}$	$\text{p(small firm)}_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
Panel A: Comparing Same Products								
Bid Waiver_{it}	0.0891***	-0.9264***	1.6574***	0.5316***	0.0004***	0.2687***	0.0092***	0.0332***
	(0.0068)	(0.0140)	(0.1105)	(0.1042)	(0.0001)	(0.0049)	(0.0029)	(0.0047)
Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	2,344,223	2,344,223	2,344,223	2,344,223	2,344,223	2,310,338	2,344,223	2,344,223
R^2	0.876	0.678	0.220	0.194	0.293	0.338	0.218	0.254
Panel B: Comparing Same Products & Brand								
Bid Waiver_{it}	0.0331***	-0.8329***	0.6257***	-0.0550	0.0004	0.2191***	0.0059	0.0181**
	(0.0103)	(0.0207)	(0.1356)	(0.1304)	(0.0003)	(0.0080)	(0.0037)	(0.0078)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	2,344,223	2,344,223	2,344,223	2,344,223	2,344,223	2,310,338	2,344,223	2,344,223
R^2	0.966	0.906	0.819	0.824	0.829	0.847	0.822	0.826

This table compares procurement outcomes between auctions and bid waivers as in equation (1). In column I, the dependent variable is the log of the price of product p procured at procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (column II), the rank of the awarding firm's industry as a supplier of product p ordered by the total value procured and the number of procurements (columns III and IV, respectively), the probability that the awarded firm politically connected (column V), the probability that the awarded firm is in the same municipality as the government agency (column VI), the probability that the firm is owned by an individual entrepreneur (column VII), and the probability that the firm is small in size (column VIII). Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 3: *Comparing Procurements Around the Small-Value Purchase Threshold - 3rd order polynomial*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	rank $\$_{ipt}$	rank $\#_{ipt}$	$\text{p(connected)}_{ipt}$	$\text{p(same muni)}_{ipt}$	$\text{p(indiv firm)}_{ipt}$	$\text{p(small firm)}_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
Panel A: Comparing Same Products								
Below Threshold_{it}	0.2287***	0.0032	0.2221	0.4636*	0.0038***	0.3048***	0.0065	0.0722***
	(0.0196)	(0.0179)	(0.3051)	(0.2520)	(0.0007)	(0.0096)	(0.0077)	(0.0082)
Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	877,075	877,075	877,075	877,075	877,075	862,688	877,075	877,075
R^2	0.878	0.711	0.268	0.248	0.244	0.370	0.279	0.305
Panel B: Comparing Same Products & Brand								
Below Threshold_{it}	0.1184***	0.1158***	0.1783	0.2323	0.0014	0.2416***	-0.0018	0.0825***
	(0.0216)	(0.0237)	(0.4458)	(0.3936)	(0.0009)	(0.0122)	(0.0115)	(0.0115)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	877,075	877,075	877,075	877,075	877,075	862,688	877,075	877,075
R^2	0.969	0.926	0.856	0.860	0.832	0.878	0.862	0.862

This table compares procurement outcomes above and below the small-value purchase threshold. On each side of the threshold, I also fit a 3rd order polynomial of the distance to the threshold. In column I, the dependent variable is the log of the price of product p procured at procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (column II), the rank of the awarding firm's industry as a supplier of product p ordered by the total value procured and the number of procurements (columns III and IV, respectively), the probability that the awarded firm politically connected (column V), the probability that the awarded firm is in the same municipality as the government agency (column VI), the probability that the firm is owned by an individual entrepreneur (column VII), and the probability that the firm is small in size (column VIII). Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 4: *Brand Price and Product Quality*

Dep. Var.	$\ln(\text{brand price})_{pbt}$	
	I	II
Quality Score$_{pb}$	0.0146***	0.0185***
	(0.0036)	(0.0057)
Product*Quarter FE	yes	yes
Obs	2,369	926
R^2	0.9809	0.9827

This table shows the relationship between brand prices and product quality. The dependent variable is the log of the average price of product p, brand b and time t. The main independent variable is a quality score index of product p and brand b. This score is taken from PROTESTE, a major consumer defence association in Latin America, and it varies from 0 to 100. I include Product and Quarter fixed effects in all specifications. Standard errors clustered at the product-brand level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 5: *Comparing Procurements Below the Threshold*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	rank $\$_{ipt}$	rank $\#_{ipt}$	$\text{p(connected)}_{ipt}$	$\text{p(same muni)}_{ipt}$	$\text{p(indiv firm)}_{ipt}$	$\text{p(small firm)}_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
Panel A: Comparing Same Products								
Close_{it}	0.1307***	-0.1305***	0.1663	0.287	0.0016*	0.1337***	-0.0027	0.0167*
	(0.0149)	(0.0214)	(0.2808)	(0.2685)	(0.0008)	(0.0111)	(0.0082)	(0.0090)
Proximity_{it}	-0.0006	0.0902***	-0.0484	0.0214	0.0005***	-0.0052***	0.0018	0.0035**
	(0.0038)	(0.0048)	(0.0532)	(0.0484)	(0.0001)	(0.0015)	(0.0015)	(0.0015)
$\text{Close}_{it} \cdot \text{Proximity}_{it}$	0.0734***	-0.0288**	0.0341	0.1721	0.0014***	0.4481***	0.0024	0.0263***
	(0.0083)	(0.0124)	(0.1420)	(0.1206)	(0.0005)	(0.0069)	(0.0033)	(0.0052)
Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	535,388	535,388	535,388	535,388	535,388	535,388	535,388	535,388
R^2	0.882	0.725	0.296	0.278	0.265	0.362	0.315	0.346
Panel B: Comparing Same Products & Brand								
Close_{it}	0.0635***	-0.0511	0.1552	0.2429	-0.0014	0.0928***	0.0127	0.0359**
	(0.0148)	(0.0341)	(0.4795)	(0.4209)	(0.0017)	(0.0142)	(0.0089)	(0.0157)
Proximity_{it}	0.0073*	0.0887***	0.0565	0.0859	0.0006**	-0.0005	-0.0042*	0.0046
	(0.0038)	(0.0076)	(0.0883)	(0.0688)	(0.0003)	(0.0024)	(0.0022)	(0.0032)
$\text{Close}_{it} \cdot \text{Proximity}_{it}$	0.0347***	0.0127	0.1659	0.0874	0.0000	0.0611***	0.0032	0.0444***
	(0.0097)	(0.0179)	(0.2172)	(0.1626)	(0.0008)	(0.0092)	(0.0048)	(0.0074)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	535,388	535,388	535,388	535,388	535,388	535,388	535,388	535,388
R^2	0.972	0.972	0.879	0.881	0.857	0.896	0.886	0.889

This table examines procurement outcomes on the left of the SVP threshold. There aree three main independent variables. Proximity_{it} is a variable that measures how close the value in BRL thousands of procurement i at time t is from the SVP threshold. Close_{it} is a dummy equal to one if the Proximity is at least BRL 2000 from the Threshold and zero otherwise. The multiplication of Proximity_{it} and Close_{it} is also included. Each column presents the results for a different dependent variable. In column I, the dependent variable is the log of the price of product p procured at procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (column II), the rank of the awarding firm's industry as a supplier of product p ordered by the total value procured and the number of procurements (columns III and IV, respectively), the probability that the awarded firm politically connected (column V), the probability that the awarded firm is in the same municipality as the government agency (column VI), the probability that the firm is owned by an individual entrepreneur (column VII), and the probability that the firm is small in size (column VIII). Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 6: *Exploiting the Changes in the Threshold*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\text{p(bid-waiver)}_{ipt}$	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\text{p(bid-waiver)}_{ipt}$
	I	II	III	IV	V	VI
$\text{Treat}_a \cdot \text{Post}_t$	0.4461***	0.1102	0.4501***	0.2131	-0.2514	0.5918***
	(0.1305)	(0.3739)	(0.1482)	(0.1556)	(0.3687)	(0.1545)
Agency FE	yes	yes	yes	yes	yes	yes
Product*Quarter FE	yes	yes	yes			
Brand*Product*Quarter FE				yes	yes	yes
Obs	1,183,648	1,183,648	1,183,648	1,183,648	1,183,648	1,183,648
R^2	0.881	0.729	0.783	0.945	0.875	0.920

Treat is defined as proportion of goods purchased in procurements with a value between BRL 17,600 and 21,600, i.e. just above the new threshold imposed by the reform. Post is a dummy equal to 1 in the two years after July 2018 and zero in the two years before. Columns I to III include Product and Quarter fixed effects, while columns IV to VI employ Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 7: *Comparing Procurements Around the Small-Value Purchase Threshold - Averages*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	rank $\$_{ipt}$	rank $\#_{ipt}$	$\text{p(connected)}_{ipt}$	$\text{p(same muni)}_{ipt}$	$\text{p(indiv firm)}_{ipt}$	$\text{p(small firm)}_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
Panel A: Comparing Same Products								
Below Threshold_{it}	0.1517***	-0.0611***	0.6087**	0.5819***	0.0031***	0.2398***	0.0113	0.0458***
	(0.0230)	(0.0172)	(0.2522)	(0.2079)	(0.0008)	(0.0093)	(0.0082)	(0.0082)
Product*Quarter FE	yes	yes	yes	yes yes	yes	yes	yes	
Obs	206,905	206,905	206,905	206,905	206,905	202,861	206,905	206,905
R^2	0.895	0.762	0.399	0.405	0.393	0.512	0.436	0.463
Panel B: Comparing Same Products & Brand								
Below Threshold_{it}	0.0882***	-0.0323	-0.1382	-0.2107	0.0003	0.1849***	0.0052	0.0199
	(0.0201)	(0.0298)	(0.4589)	(0.3845)	(0.0010)	(0.0163)	(0.0119)	(0.0126)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes
Obs	206,905	206,905	206,905	206,905	206,905	202,861	206,905	206,905
R^2	0.975	0.950	0.912	0.915	0.928	0.934	0.924	0.926

This table compares procurement outcomes above and below the small-value purchase threshold. I only keep procurements that are at least BRL 2 thousand in value from the threshold. In column I, the dependent variable is the log of the price of product p procured at procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (column II), the rank of the awarding firm's industry as a supplier of product p ordered by the total value procured and the number of procurements (columns III and IV, respectively), the probability that the awarded firm politically connected (column V), the probability that the awarded firm is in the same municipality as the government agency (column VI), the probability that the firm is owned by an individual entrepreneur (column VII), and the probability that the firm is small in size (column VIII). Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 8: *Comparing Procurements Around the Small-Value Purchase Threshold - Heterogeneous Effects Across Government Agencies*

Dep. Var.	$\ln(\text{price})_{ipt}$			$\ln(\text{brand price})_{ipt}$	p(premium)_{ipt}
			Difference		
	I	II	III	IV	V
Below Threshold$_{it}$ · Education$_a$	0.2422***	0.1308***	-0.111***	0.2004***	0.1431***
	(0.0240)	(0.0262)		(0.0182)	(0.0124)
Below Threshold$_{it}$ · Hospitals$_a$	0.3237***	0.0419	-0.282***	0.2718***	0.1641***
	(0.0780)	(0.1009)		(0.0709)	(0.0444)
Below Threshold$_{it}$ · Armed Forces$_a$	0.1929***	0.0391	-0.154**	0.2012***	0.0818**
	(0.0585)	(0.0514)		(0.0588)	(0.0355)
Below Threshold$_{it}$ · Other$_a$	0.1554***	0.0808***	-0.075***	0.1200***	0.0981***
	(0.0290)	(0.0300)		(0.0236)	(0.0163)
Product*Quarter FE	yes			yes	yes
Brand*Product*Quarter FE		yes			
Obs	877,075	877,075		877,075	877,075
R^2	0.878	0.969		0.9123	0.2205

This table compares how procurement outcomes above and below the small-value purchase threshold vary according to different government agency types. On each side of the threshold, I also fit a 3rd order polynomial of the distance to the threshold. The dependent variables are the log of the price of product p procured at procurement i at time t (columns I and II), the log of the average brand price of the purchased product (column IV), and a dummy equal to one if the average brand price is above the median (column V). Column III presents the difference in coefficients between column I and II as well as a statistical test on its significance. I include Product and Quarter fixed effects in columns I, IV and V and Product Brand, Product and Quarter fixed effects in column II. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 9: *Comparing Procurements Around the Small-Value Purchase Threshold - Heterogeneous Effects Across Products*

Dep. Var.	$\ln(\text{price})_{ipt}$		
			Difference
	I	II	III
Below Threshold$_{it}$ · Petrol$_p$	0.0138	0.0270	0.013
	(0.0263)	(0.0302)	
Below Threshold$_{it}$ · Pencil$_p$	0.4388***	-0.0289	-0.468**
	(0.1668)	(0.2294)	
Below Threshold$_{it}$ · Diesel$_p$	-0.1125	0.0019	0.114
	(0.1381)	(0.0568)	
Below Threshold$_{it}$ · Coffee$_p$	0.1997**	-0.0275	-0.227**
	(0.0936)	(0.1038)	
Below Threshold$_{it}$ · Ballpoint Pen$_p$	0.3804***	0.1857***	-0.195***
	(0.0744)	(0.0718)	
Below Threshold$_{it}$ · Mineral Water$_p$	0.0806	-0.0978	-0.178**
	(0.0734)	(0.0855)	
Below Threshold$_{it}$ · Printer Cartridge$_p$	0.7952***	0.4458***	-0.349***
	(0.1015)	(0.0900)	
Below Threshold$_{it}$ · Essential ER Drugs$_p$	0.1955***	-0.0353	-0.231***
	(0.0605)	(0.0649)	
Below Threshold$_{it}$ · Other Products$_p$	0.2095***	0.1003***	-0.109***
	(0.0138)	(0.0164)	
Product*Quarter FE	yes		
Brand*Product*Quarter FE		yes	
Obs	877,075	877,075	
R^2	0.878	0.939	

This table compares how procurement outcomes above and below the small-value purchase threshold vary according to different products. On each side of the threshold, I also fit a 3rd order polynomial of the distance to the threshold. The dependent variable is the log of the price of product p procured at procurement i at time t. Column III presents the difference in coefficients between column I and II as well as a statistical test on its significance. I include Product and Quarter fixed effects in column I and Product Brand, Product and Quarter fixed effects in column II. Standard errors clustered at the product-agency level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table 10: *Real Effects of Discretion: Essential Drugs and Hospital Deaths*

Dep. Var.	mortality rate$_{ht+1}$								
	ln(all causes)			cancer-related causes			non-cancer-related causes		
	I	II	III	IV	V	VI	VII	VIII	IX
Bid Waivers - Essential Drugs$_{h,t-3:t}$ (as % of Procurement)	-0.0088* (0.0046)	-0.0141** (0.0055)	-0.0150* (0.0084)	-0.0127 (0.0228)	0.0041 (0.0273)	0.0160 (0.0405)	-0.0092** (0.0043)	-0.0168*** (0.0046)	-0.0182** (0.0070)
ln(Total Procurement)$_{h,t-3:t}$		-0.0064 (0.0595)	-0.0022 (0.0753)		-0.0485 (0.1920)	-0.2177 (0.2860)		-0.0107 (0.0606)	0.0040 (0.0796)
Essential Drugs$_{h,t-3:t}$ (as % of Procurement)		0.0065 (0.0047)	-0.0014 (0.0053)		-0.0174 (0.0168)	-0.0468** (0.0205)		0.0091** (0.0037)	0.0021 (0.0051)
Log Hospitalizations$_{h,t-3:t}$		-0.7078* (0.4138)	-0.6381 (0.4537)		-0.4861 (0.4818)	-3.2521** (1.2586)		-0.9874*** (0.3409)	-0.7713** (0.3820)
Bid Waivers - Except Essential Drugs$_{h,t-3:t}$ (as % of Procurement)		0.0024 (0.0035)	0.0060** (0.0030)		0.0001 (0.0099)	0.0194 (0.0124)		0.0029 (0.0036)	0.0068** (0.0030)
Hospital FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter FE	yes	yes		yes	yes		yes	yes	
State-Quarter FE			yes			yes			yes
Obs	1,173	1,173	828	1,120	1,115	778	1,173	1,173	828
R^2	0.885	0.887	0.926	0.576	0.576	0.745	0.838	0.844	0.897

This table provides the relationship between hospital mortality rate and the acquisition of essential drugs via bid waivers. The dependent variable is the mortality rate in hospital h and quarter $t+1$ for all causes (columns I to III), cancer-related causes (columns IV to VI) and non-cancer-related causes (columns VII to IX). The mortality rate is defined as the ratio between hospital deaths per hospitalization. The main independent variable is the fraction of bid waiver procurements for essential drugs for hospital h from quarter $t-3$ to t Columns I, II, IV, V, VII, and VIII include hospital and quarter fixed effects. Columns III, VI, and IX include hospital and state-quarter fixed effects. Standard errors clustered at the hospital level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

A Internet Appendix

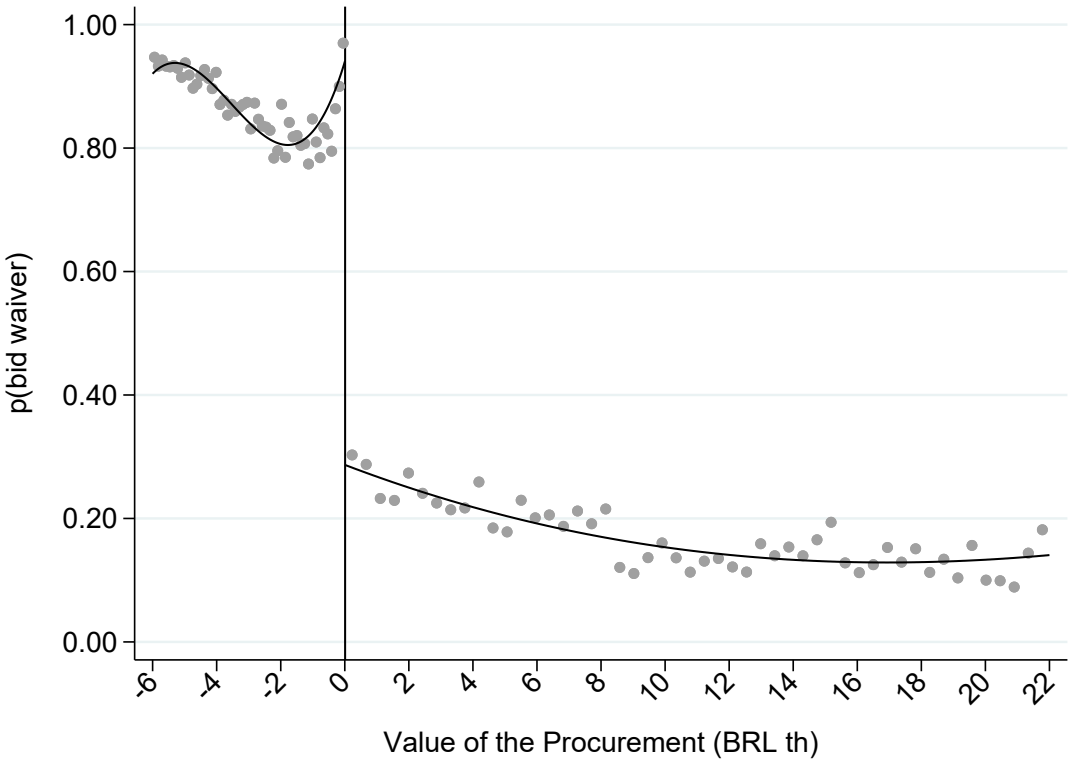


Figure A1: *This figure plots the incidence of auctions around the small-value purchase threshold. Below the threshold, regulators allow products to be procured by bid waivers. Above the threshold, bid waivers are only allowed in special cases, such as emergency situations.*

Table A1: *Examples of Products and Brands*

Product		Brand
Description	Unit	
Ballpoint Pen	1 unit	Bic
Flexible Eletric Cable	1 meter	Corfio
Gloves for Non-Surgical Procedure	100 units	Descarpack
Battery	1 unit	Elgin
Ethyl Alcohol	1 liter	Itaja
TV	1 unit	LG
Coffee	500 grams	Odebrecht
Coffee	1 kilogram	Pilao
External HD	1 unit	Seagate
Sugar	1 kilogram	Uniao
Mineral Water	20 liters	Villa
Detergent	500 mililiters	Ype
HP Printer Toner Cartridge	1 unit	HP
White Board Pen	1 unit	Pilot
Insulin	3 mililiters	Lantus
Microscope	1 unit	Physis
Gas	1 liter	Petrobras

Table A2: *Government Agencies*

Name of Government Agency	Classification
Universidade Federal do Rio Grande do Sul	Education
Universidade Federal do Pará	Education
Universidade Federal de Pernambuco	Education
Hospital Universitario UFSC	Hospitals
Hospital Universitario Antonio Pedro (UFF/RJ)	Hospitals
Hospital Universitario Gaffree e Guinele (UNIRIO)	Hospitals
Grupamento de Apoio de São José dos Campos	Armed Forces
Grupamento de Apoio de Brasilia	Armed Forces
14 Grupo de Artilharia de Campanha	Armed Forces
Comissao Nacional de Energia Nuclear	Other
Governo do Estado do Ceara	Other
Departamento de Logistica em Saude	Other

Table A3: *Brand Prices Across The Threshold*

Dep. Var.	ln(brand price)$_{pt}$		p(premium)$_{pt}$	
	All	Threshold	All	Threshold
	I	II	III	IV
Bid Waiver$_{it}$	0.0670***		0.0600***	
	(0.0059)		(0.0036)	
Below Threshold$_{it}$		0.1909***		0.1345***
		(0.0144)		(0.0087)
Product*Quarter FE	yes	yes	yes	yes
Obs	2,344,223	877,075	2,344,223	877,075
R^2	0.907	0.912	0.129	0.219

This table studies whether different procurement types purchase goods with different brand prices. The dependent variables are the log of the average brand price of the purchased product in columns I and II , and a dummy equal to one if the average brand price is above the median in columns III and IV. In columns I and III, I run a similar specification as in Table 2 by comparing auctions and bid-waivers. In columns II and IV, I fit a 3rd order polynomial of the distance to the threshold as in Table 3. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table A4: *Comparing Procurements Around the Small-Value Purchase Threshold - Different Bandwidths*

	$\|Distance\| \leq$ BRL 2 th		$\|Distance\| \leq$ BRL 1 th		$\|Distance\| \leq$ BRL 0.5 th	
Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$
	I	II	III	IV	V	VI
Panel A: Comparing Same Product						
Below Threshold$_{it}$	0.1517***	-0.0611***	0.1811***	-0.0062	0.2038***	0.0031
	(0.0230)	(0.0172)	(0.0243)	(0.0278)	(0.0312)	(0.0478)
Product*Quarter FE	yes	yes	yes	yes	yes	yes
Obs	206,905	206,905	120,420	120,420	78,137	78,137
R^2	0.895	0.762	0.902	0.783	0.904	0.797
Panel A: Comparing Same Product & Brand						
Below Threshold$_{it}$	0.0882***	-0.0323	0.1014***	0.0422	0.1694***	0.0167
	(0.0201)	(0.0298)	(0.0330)	(0.0524)	(0.0569)	(0.0709)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes	yes
Obs	206,905	206,905	120,420	120,420	78,137	78,137
R^2	0.975	0.950	0.975	0.953	0.975	0.954

This table compares procurement outcomes above and below the small-value purchase threshold. I only keep procurements that are at least BRL 2 thousand (columns I and II), BRL 1 thousand (columns III and IV), and BRL 0.5 thousand (columns V and VI) in value from the threshold. The dependent variable in odd columns if the log of the price of product p procured product p procured at procurement i at time t. In even columns, the dependent variable is the log of the quantity procured. Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table A5: *Comparing Auctions Around the Threshold: Falsification Test*

Dep. Var.	ln(price)$_{ipt}$	ln(quant)$_{ipt}$	rank \$$_{ipt}$	rank #$_{ipt}$	p(connected)$_{ipt}$	p(same muni)$_{ipt}$	p(indiv firm)$_{ipt}$	p(small firm)$_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
Below Threshold$_{it}$	0.0055	0.0208	0.4653	0.3753	-0.0043***	-0.0198*	-0.0190	-0.0114
	(0.0283)	(0.0344)	(0.4212)	(0.3522)	(0.0015)	(0.0105)	(0.0137)	(0.0179)
Product*Quarter FE	yes	yes	yes	yes	yes	yes	yes	
Obs	342,267	342,267	342,267	342,267	342,267	336,506	342,267	342,267
R^2	0.881	0.732	0.359	0.348	0.269	0.441	0.373	0.373

This table presents a falsification test by comparing procurement outcomes of auctions that situated above and below the small-value purchase threshold. On each side of the threshold, I also fit a 3rd order polynomial of the distance to the threshold. In column I, the dependent variable is the log of the price of product p procured at procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (column II), the rank of the awarding firm's industry as a supplier of product p ordered by the total value procured and the number of procurements (columns III and IV, respectively), the probability that the awarded firm politically connected (column V), the probability that the awarded firm is in the same municipality as the government agency (column VI), the probability that the firm is owned by an individual entrepreneur (column VII), and the probability that the firm is small in size (column VIII). Panel A of this Table includes Product and Quarter fixed effects. Panel B includes Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table A6: *Comparing Auctions Around the Threshold: Finer Product Classification*

	Same Product		Same Product & Brand	
Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$
	III	IV	V	VI
Panel A: Average Effect				
Below Threshold$_{it}$	0.2095***	0.0021	0.1035***	0.0675**
	(0.0181)	(0.0206)	(0.0236)	(0.0288)
Product*Quarter FE	yes	yes		
Brand*Product*Quarter FE			yes	yes
Obs	707,209	707,209	707,209	707,209
R^2	0.885	0.745	0.978	0.954
Panel B: Heterogeneous Effect - Description Length				
Below Threshold$_{it}$ · Low Description Length$_p$	0.1992***	0.0309	0.0970***	0.1009***
	(0.0183)	(0.0262)	(0.0305)	(0.0356)
Below Threshold$_{it}$ · High Description Length$_p$	0.2163***	-0.0171	0.1073***	0.0481*
	(0.0219)	(0.0210)	(0.0225)	(0.0292)
Product*Quarter FE	yes	yes		
Brand*Product*Quarter FE			yes	yes
Obs	707,209	707,209	707,209	707,209
R^2	0.885	0.745	0.937	0.870

This table compares procurement outcomes above and below the small-value purchase threshold, using a finer classification of products than in the rest of the paper. The dependent variable in odd columns if the log of the price of product p procured at procurement i at time t. In even columns, the dependent variable is the log of the quantity procured. Columns I and II include Product and Quarter fixed effects. Columns III and IV include Product Brand, Product and Quarter fixed effects and thus compares outcomes of products of the same brand. I fit a 3rd order polynomial of the distance to the threshold on each side of the threshold. High Description Length$_p$ and Low Description Length$_p$ are defined as products with above and below median of their product description length, respectively. is a dumm Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.

Table A7: *Comparing Service Procurements Around the SVP Threshold*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$
	I	II	III	IV
Below Threshold$_{it}$	0.1534*	-0.1828***	0.0746	0.2326*
	(0.0870)	(0.0662)	(0.0974)	(0.1254)
Product*Quarter FE	yes	yes		
Firm*Product*Quarter FE			yes	yes
Obs	38,875	38,875	38,875	38,875
R^2	0.915	0.952	0.835	0.904

This table compares procurement outcomes above and below the small-value purchase threshold for the contracting of services and other works. On each side of the threshold, I also fit a 3rd order polynomial of the distance to the threshold. The dependent variable in odd columns if the log of the price of product p procured product p procured at procurement i at time t. In even columns, the dependent variable is the log of the quantity procured. Standard errors clustered at the product level are presented in parentheses. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.