The Two Sides of Discretion: Assessing Efficiency and Quality in Government Purchases *

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February 12, 2025

Abstract

Using a rule in Brazil exempting small-value public purchases from competitive bidding, this paper reveals an efficiency-quality trade-off in public procurement. Discretionary purchases are 17% costlier than auctions, but two-fifths of this premium reflects more expensive and higher-quality brands, such as medicines with fewer batch suspensions and consumer goods with better quality scores. While discretion introduces inefficiencies, it improves public service delivery by enabling the acquisition of more reliable products. For instance, hospitals using discretion to purchase higher-quality medicines achieve lower mortality rates. These findings emphasize the need for regulations that balance efficiency and quality concerns when limiting discretion.

Keywords: public procurement, product quality, overpricing, auctions, bid waivers
JEL Codes: L15, H57, D73

*I would like to thank Sumit Agarwal, Kentaro Asai (discussant), Matilde Cappelletti (discussant), Ben Charoenwong, Eric Hsu (discussant), Poorya Kabir, Xuelin Li (discussant), Karsten Müeller, David Schoenherr, Janis Skrastins, Silvia Vannutelli (discussant), Alminas Zaldokas, and participants of the NEUDC 2022, the EEA Annual Meeting (2022), CICF (2022), ADE-Lahore School of Economics (2022), Lubrafin (2022), RSFE (2022), SIOE (2022), the Asia Meeting of the Econometric Society (2022), the North American Meeting of the Econometric Society (2022), the CEPR/Misum/Site Development Economics Conference (2022), the ZEW Public Finance Conference (2022), the Asia-Pacific Corporate Finance Online Workshop, the 34th Australasian Finance & Banking Conference, and the 43rd Meeting of the Brazilian Econometric Society, as well as internal seminars in the economics and finance departments of the National University of Singapore for their helpful comments and suggestions. I gratefully acknowledge financial support from the Singapore Ministry of Education AcRF Tier 1 Research Grant (no. A-8001709-00-00). Special thanks to Rodrigo Gonçalves, Ong Xin Hui, and Lai Qinying for outstanding research assistance. All remaining errors are my own. A previous version of this paper was titled "Rethinking Discretion in Public Procurement".

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1 Introduction

Governments invest around 12% of their GDP in procuring goods and services, which are essential for delivering key services to their citizens (OECD, 2015; European Commission, 2017). Given this economic relevance, there are significant concerns regarding inefficiencies and misuse of public resources in government purchases (OECD, 2016). Awarding contracts based on favors and bribes rather than merit not only diverts public funds to preferred firms but also carries significant opportunity costs, potentially leading to higher prices and lower quality of public services (Shleifer and Vishny, 1993; Rose-Ackerman and Palifka, 2016). To improve procurement performance, regulations often require government agencies to use competitive bidding and maintain transparency in public purchases (Transparency International, 2014, 2015).

An alternative view argues that providing government agencies with flexibility in supplier selection may better serve their procurement needs (Kelman, 1990, 2005). This perspective highlights the challenges of ensuring high-quality purchases through competitive auctions, as they often prioritize the lowest bid. These auctions can trigger a "race to the bottom", where bidders reduce costs by compromising on quality, such as using lower-tier brands or inferior materials.[1] This emphasis on short-term costs might result in higher long-term expenses due to increased maintenance, more frequent replacements, and inferior performance of the acquired goods and services, potentially undermining the quality of public service delivery. Greater discretion, however, can enable procurement officers to prioritize quality in ways that rigid competitive processes may not.

In light of these opposing views, this paper addresses two main questions: (i) how does discretion affect both efficiency and quality in public procurement? and (ii) how does directly choosing government suppliers impact public service provision, such as healthcare? By exploring these questions, this paper seeks to understand the influence of discretion on public procurement performance and public service delivery, emphasizing the importance of considering both cost and quality factors in government purchases.

Empirically separating efficiency and quality is, however, challenging. For example, higher prices in government procurement may result from inefficiencies, the purchase of higher-quality products and services, or a mix of both. Similarly, when contracts are preferentially awarded to favored firms, it may indicate corrupt practices or reflect a preference for firms perceived to deliver better-quality products and services (i.e., based on their track record Spagnolo, 2012; Decarolis et al., 2016; Butler et al., 2020). Moreover, evaluating how procurement decisions affect real outcomes requires a dataset that links detailed product information with reliable performance metrics.

To address these challenges, I analyze information on 2.5 million procurement contracts for

[1] This race to the bottom effect is also observed in local competition for businesses (Black and Hoyt, 1989; Mast, 2020) and the reduction of environmental standards (Prakash and Potoski, 2006).

more than 57 thousand different products in Brazil between 2013 and 2020. In particular, the dataset includes information on product brands, which helps differentiate potentially higher-quality goods from those that are merely higher-priced. Furthermore, I link this procurement data with hospital-level information on patient mortality rates to assess the impact of procurement decisions on public service provision.

The main findings of this paper support an efficiency-quality trade-off in public procurement. I exploit a regulatory threshold that divides purchases into two categories: small-value purchases (SVP), where officials have more flexibility in choosing suppliers, and larger purchases that require competitive auctions.[2] By comparing outcomes for purchases made just above and below this threshold, I find that products procured with higher discretion are purchased at 16.6% higher prices than those for the same products purchased above the threshold where competitive auctions are standard. However, when I compare the same product *and* brand, I find that purchases below the threshold have 10.1% higher prices, on average. The drop in magnitude of two-fifths of the initial effect suggests that greater discretion allows purchasing products from more expensive and potentially higher-quality brands. In fact, products procured below the threshold are from brands that are 13.4% more expensive, on average. While discretion is less efficient than auctions, it is also associated with the purchase of higher-cost brands.

Next, I examine the relationship between brand prices and product quality, focusing on two markets with reliable quality indicators. For consumer products, I use technical quality scores from consumer protection agencies, covering attributes like toxic elements in durable surface coatings and energy efficiency for household appliances. These measures show that higher-quality brands command higher prices: top-ranked brands are 10.5% more expensive, and below-threshold purchases are 9.5% more likely to select these top-ranked brands. In the pharmaceutical market, I leverage health authorities' batch suspension orders triggered by manufacturing issues such as chemical composition problems, contamination, and other quality failures — deficiencies that can lead to insufficient medication levels, treatment failure, or adverse patient reactions. I find that laboratories receiving these interventions charge, on average, 22% lower prices for the same medicine. In addition, institutions purchasing these medicines below the threshold select laboratories 9.2% less likely to face manufacturing issues in subsequent years. In both markets, the key takeaways are that (i) higher-priced brands are more reliable, better-quality products, and (ii) procurement officials select these higher-quality options given more flexibility.

A concern about the validity of the results is that procurements may be manipulated around the regulatory SVP threshold. Public agencies may strategically design procurements to fall below the threshold to exercise greater discretion in choosing their suppliers (see more in Palguta and

[2]Small-value purchases are common in other countries, such as the Czech Republic (Palguta and Pertold, 2017), Italy (Butler et al., 2020), Hungary (Szucs, 2023), and the United States (Calvo et al., 2019).

Pertold, 2017; Szucs, 2023). This paper does uncover significant manipulation, with 17 times as many procurements falling below the SVP threshold as those just above it.[3] However, two robustness tests show that the results are not explained by manipulation of the threshold.

First, a two-stage least squares (2SLS) approach leverages a 2018 regulatory change that raised the SVP threshold from BRL 8,000 to BRL 17,600. This reform provides a unique setting to study discretion: agency-product pairs that were more likely to procure within the old and new thresholds before the reform (i.e., between BRL 8,000 and BRL 17,600) continued to do so afterward, now benefiting from increased discretion due to the higher threshold. The key assumption is that the reform itself, rather than strategic behavior, drives the increase in discretion for these procurements. Using the proportion of pre-reform purchases within the old and new thresholds as an instrument, I find that prices below the threshold are 19% higher than above it (11% when controlling for product and brand), with coefficient magnitudes strikingly similar to the main findings. Second, excluding procurements near the threshold suspected of manipulation yields no significant changes in inefficiency and quality estimates, reinforcing that discretion, not manipulation, drives the results (Barreca et al., 2011). Together, these tests suggest genuine differences in efficiency and quality between high- and low-discretion procurement processes.

Given that discretion is associated with overpricing but also higher-quality purchases, a key question is whether these quality improvements translate into meaningful public service benefits. While discretion enables the purchase of better-quality products, this is not necessarily desirable from a social standpoint — agencies might exploit higher discretion to acquire unnecessarily premium products with limited social benefit, such as high-end office supplies. However, in sectors where product quality directly affects service delivery, like healthcare, these quality differences could have substantial impacts.

To explore this, I focus on the healthcare sector, assessing the impact of discretionary purchases of essential medicines on patient outcomes. Earlier results show that discretionary purchasing leads to the selection of pharmaceutical manufacturers with fewer batch suspensions, reducing quality issues that endanger patient safety and increase mortality risk in emergency conditions. Using a DID design, I find that hospitals purchasing essential medicines with higher discretion below the threshold experience a decrease in mortality rates by approximately 10% of their unconditional mean compared to purchasing similar medicines above the threshold during the same period for treating the same disease. The effects are concentrated in non-cancer related diseases, where medication quality more directly influences treatment outcomes (ISIS-2 Collaborative Group, 1988; The HOPE Investigators, 2000; Rivers et al., 2001). In contrast, for advanced cancers, where even

[3]This strategic behavior, concentrated in procurements close enough to the threshold, is achieved through the fragmentation of purchases of similar products into multiple procurements rather than bundling them into a single procedure.

the highest-quality medications typically extend survival by only a few months (Tannock et al., 2004; Hodi et al., 2010; Chapman et al., 2011), the mortality benefits are substantially smaller. Two pieces of evidence help rule out alternative explanations. First, parallel pre-trends in mortality rates show that pre-existing differences among hospitals do not drive the effect. Second, the results are robust to controlling for hospital-year fixed effects, suggesting that other simultaneous hospital-level changes do not explain the observed drop in mortality. Overall, these findings highlight the importance of flexibility in public procurement for improving health outcomes.

This paper contributes to the procurement literature in three ways. First, while previous work has established that discretionary procurement often leads to higher prices and potential inefficiencies (Palguta and Pertold, 2017; Baltrunaite et al., 2021; Gallego et al., 2022; Szucs, 2023), I provide systematic evidence that discretion affects not just prices, but also the types of products selected. Using detailed data on procurement contracts, I show that agencies consistently choose more expensive brands under discretion. In markets where objective quality measures are available, notably technical scores for consumer products and manufacturing compliance in pharmaceuticals, I validate that higher-priced brands correspond to higher-quality products. Second, while previous work documents how discretion affects contract execution metrics like delays and cost overruns (Rasul and Rogger, 2018; Coviello et al., 2018; Calvo et al., 2019; Bandiera et al., 2022; Decarolis et al., 2020; Carril, 2022), I examine the actual products being purchased, showing that price differences under discretion may reflect differences in product selections rather than just inefficiency. Third, by linking procurement choices to public service outcomes, I show that the flexibility to select higher-quality products under discretion leads to significant improvements in healthcare delivery. Specifically, hospitals purchasing medicines through discretionary procedures experience lower mortality rates, particularly for conditions where medication quality directly impacts treatment outcomes. These findings highlight the need for a careful balance between efficiency and quality in public procurement.

Higher prices under discretion are often attributed to various forms of agency problems in public procurement. An extensive literature has documented how government agencies can be influenced by revolving doors (Agarwal et al., 2014; Lucca et al., 2014; Tenekedjieva, 2020; Asai et al., 2021), political connections (Fisman, 2001; Faccio et al., 2006; Amore and Bennedsen, 2013; Schoenherr, 2019; Baltrunaite, 2020; Brown and Huang, 2020), lobbying (Blanes i Vidal et al., 2012; Bertrand et al., 2014), ownership networks (Asai and Charoenwong, 2020), and corruption more broadly (Olken, 2007; Ferraz and Finan, 2011; Avis et al., 2017; Colonnelli et al., 2022; Colonnelli and Prem, 2022). However, recent work on public procurement suggests that price differences might have other explanations. For instance, Bandiera et al. (2009) find that procurement inefficiencies often stem from factors such as public officials' skills or incentives rather than corruption. Similarly, Best et al. (2023) find that while individual procurement officers explain substantial price

variation, this variation does not appear driven by corruption. Building on these insights, I provide evidence that price premiums under discretion can reflect meaningful quality differences and not be solely attributable to inefficiencies or agency problems. While this finding does not rule out the possibility of corruption or mismanagement in some cases, it highlights that discretion can also enable procurement officers to select higher-quality products, which may benefit public service delivery.

2 Institutional Background

Brazil's federal public procurement system is a significant component of its economy.[4] Regulated by Federal Law No. 8,666/1993, procurements are divided into different types, with *bid waivers* being the most common. Bid waivers allow government agencies to purchase goods and services without competitive bidding in specific cases, such as when the procurement value falls below the small-value purchase (SVP) threshold. This threshold was set at BRL 8 thousand in 1998 (Federal Law No. 9,648/1998) and increased to BRL 17.6 thousand in 2018 (Presidential Decree No. 9,214/2018). While purchases below the threshold are allowed to be conducted without competitive bidding, those above this threshold must be completed via proper auctions.[5]

Auctions, the second most common mechanism, are competitive, transparent, and aim to achieve the best value for public funds. Since 2005, auctions of standardized products and services have been conducted electronically, increasing transparency and reducing participation costs.[6] The electronic auction is a first-price open-bid process in which bids are submitted via the electronic platform during a specified period. At the end of this period, the lowest bid is awarded the contract. Participants can view the bids of others but are not privy to the identity of their competitors. After the winner is announced, the procurement agency reviews the supplier's technical and legal capabilities and verifies that the procured goods meet the specifications outlined in the public notice. If these are valid, the auctioneer endorses the winner, the public contract is signed, and the procurement process is concluded.[7]

A single procurement can include the purchase of multiple related products, with each product being acquired through separate procedures. In the case of bid waivers, the government agency can choose different suppliers for each product, allowing for greater flexibility in the procurement

[4] In 2017, Brazil's federal public purchases were worth approximately BRL 350 billion, accounting for about 5% of the GDP. These purchases span a broad array of goods and services, ranging from office supplies to large-scale infrastructure projects.

[5] Auctions can be performed even for small-value purchases. Figure A.2 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 the threshold to at least 80% above the threshold.

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

[7] For more details on electronic auctions in public procurements in Brazil, see Ferraz et al. (2015).

process. Similarly, when auctions are used, each product is typically subject to its own independent auction. This means that different suppliers can win the contracts for different products within the same procurement, depending on the outcome of each individual auction or bid waiver process.

The Union Court of Auditors (TCU) oversees public procurements in Brazil, discouraging agencies from manipulating procurements to stay below the SVP threshold. However, enforcement challenges persist due to agencies citing 'exceptional' circumstances.[8]

3 Data

The main dataset comes from the ComprasNET portal, containing information on the universe of federal public procurements in Brazil since 1996. ComprasNET is also an electronic platform for government institutions to conduct procurements. 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. The data used in this paper span from January 2013 to December 2020, totaling 4.38 million contracts.

The dataset provides detailed information on each product purchased, including the brand. Given that the dataset provides details on the brand of products purchased, I have chosen to retain procurements that involve purchasing products and drop those related to services/construction. For the purpose of this study, products are defined as the interaction of the product description on the *Cadastro dos Materiais* (CADMAT) – the official government classification of materials sold – with the unit of measure. Table A.2 in the Internet Appendix provides a list of selected products and their most common brands. To address outliers, I only keep observations where product prices are at most 10 times away from the median price of the product.[9] I also drop observations with missing information for the product's brand. I am left with 2,506,809 distinct procurements, purchasing 57,168 products from 81,445 firms for 4,657 federal and local government agencies[10] from January 2013 to December 2020.[11]

Figure A.1 in the Internet Appendix plots the geographical distribution of the procurement agencies (Panel A) and government suppliers (Panel B). The maps show that government agencies and winning firms are distributed across Brazil. Out of the 5,500 municipalities, government agencies are located in 1,031 distinct municipalities and firms in 3,432. The municipalities with the most government agencies are Rio de Janeiro (435), followed by the capital Brasília (422) and São Paulo (188). Despite São Paulo being the largest municipality in terms of population, it is expected

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

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

[10] Table A.3 in the Internet Appendix provides a list of selected government agencies.

[11] Table A.4 in the Internet Appendix shows that missing brand information does not affect the results. When restricting to products with high brand coverage, the coefficients are similar to those of Table 2.

that Rio de Janeiro, Brazil's former capital until the mid-twentieth century, and Brasilia, Brazil's current capital, would have a higher number of government agencies. The municipalities with the highest number of winning firms are São Paulo (9,633), Rio de Janeiro (9,041), and Brasília (7,172).

This paper also takes data on hospital deaths in Brazil from DataSUS, a publicly available dataset on the healthcare performance of hospitals that serve patients through the Brazilian Unified Health System (*Sistema Unificado de Saúde - SUS*). I use this information on hospital deaths in Section 5.2 when I discuss the real effects of discretion in public procurements.

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

4 Empirical Analysis

4.1 Procurement Outcomes Around the Small-Value Purchase Threshold

This section evaluates the effects of discretion on prices and the quality of products purchased. Discretion can lead to inefficiencies for at least two reasons. First, the lack of competitive bidding would enable suppliers selected in bid waivers to charge price mark-ups. Second, government employees may engage in opportunistic behavior for private benefit by awarding contracts to connected firms in exchange for bribes or other financial benefits. Due to this favoritism, the winning firms are not likely to be the most efficient firms in supplying these products, leading to overpricing and other inefficiencies. Nevertheless, discretion might also lead to the purchase of higher-quality products. In the case of auctions, agencies cannot easily contract on quality, which may lead to the winning firm being the one that provides a lower cost but also a lower quality product.

To understand the effects of discretion on both the efficiency and quality of public purchases, I compare procurement outcomes around the small-value purchase threshold. Below this threshold, competitive bidding can be waived, enabling suppliers to be chosen freely. Conversely, above the threshold, strict rules of competitive bidding must be followed.

I start by looking at the average price paid, a standard way to assess inefficiencies in public procurement (Bandiera et al., 2009). Figure 1 plots the average price of procurements around the SVP threshold. In Panel A, I adjust these curves by taking the differences between observed prices and their product-quarter averages. This ensures that prices of the same product in the same quarter are being compared across the threshold. There are three important findings in this figure. First, prices below the threshold are, on average, higher than those conducted above it, suggesting that procurements with higher discretion are more inefficient than competitive biddings. Second, procurements that are close to the threshold from below purchase more expensive products. Third, there is a significant discontinuous jump in the procured prices around the threshold. For procurements of similar value, being below the threshold implies a much higher price charged by suppliers

to the government.

Despite this evidence pointing to the possible inefficiencies of discretion, differences in product quality might explain part of the overpricing observed in Panel A of Figure 1. To understand why, assume a simple example of two procurements (Z and Y), each purchasing two units of a product via high- and low-discretion procedures, respectively. The average price purchased in procurement Z is \$2, and the average price in procurement Y is \$1.50. The difference in average price is \$0.50, suggesting that procurement Y is more efficient. In a different scenario, assume procurement Z only buys products from a premium brand that costs \$2. Procurement Y buys one unit of the premium brand at \$2 and one unit of the popular brand at \$1. Once one compares how much Z and Y paid for the *same* brand, the difference is \$0 since both of them paid the same price for the premium brand. Thus, what was initially attributed to the higher efficiency of procurement Y is explained by the differences in product quality purchased by Z and Y.

As a result, to tease out how potential differences in product quality explain the higher prices of discretion, one needs to compare product outcomes for products of similar quality, in this case, of the *same* brand. In Panel B of Figure 1, I adjust the observations by subtracting their product-brand-quarter averages, thus controlling for product quality. The evidence here shows that (i) the average difference in prices between procurements above and below the threshold is much smaller in magnitude; and (ii) the discontinuity in prices around the threshold is much less pronounced: prices now jump by about half the magnitude of Panel A. Overall, it seems that a large part of the discontinuity is explained by products below the threshold being from more expensive brands.

As additional evidence that more expensive brands are being purchased, I plot the average brand price of the products purchased across the threshold in Panel C of Figure 1. This graph shows that there is a clear discontinuity around the threshold, suggesting that products purchased below the threshold are from more expensive brands. In addition, the closer one gets to the threshold from below, the more expensive the brands purchased by government agencies.

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

$$\begin{aligned} y_{ipt} &= \alpha_{pt} + \beta \cdot \text{below threshold}_{it} + \gamma_1 \cdot \text{distance}_{it} \\ &+ \gamma_2 \cdot \text{below threshold}_{it} \cdot \text{distance}_{it} + e_{ipt} \end{aligned} \tag{1}$$

where i refers to the procurement, p to the product and t to the date (year-quarter). Note that in cases where a procurement involves multiple products, each product is treated as a separate observation in the regression. *Below threshold* is a dummy equal to one if procurement i where product p was purchased is below the SVP threshold and zero otherwise. The specifications compare the

same products around the threshold by adding product-quarter FEs (α_{pt}) so that the estimation nets out the product-year averages of the outcome variables in the sample. These fixed effects also control for any difference in the overall demand for each product in that quarter. In the benchmark specifications, I run this regression for all procurements whose value is between BRL 7.5 thousand below the threshold, and BRL 7.5 thousand above the threshold.

Table 2 presents the results. Column I shows that procurements below the SVP threshold have 16.6% higher prices for the products procured. This result suggests significant inefficiency when public officials have the freedom to choose their own suppliers. However, once I compare the same product and brand in column IV, prices are 10.1% higher for procurements below the threshold. About two-fifths of the drop in prices between columns I and IV can be explained by discretion acquiring more expensive brands, while inefficiencies may explain the other three-fifths. This result is also confirmed when I find that the average brand price of products purchased in procurements below the threshold is 13.4% higher (column III).

A possible reason for the overpricing of discretion might be sale discounts. If there is an upward jump in the quantity procured for the same product in procurements above vis-a-vis below the threshold, then these products could be sold at a discount. This quantity discount might explain why prices above the threshold would be lower than those below the threshold. However, columns II and V disprove this hypothesis. If anything, procurements below the threshold purchase a higher quantity of the same product and brand than those exceeding the threshold. Column VI shows that instead of buying a lower quantity for the same product, procurements below the threshold purchase a lower number of distinct products.

4.1.1 Product Quality

The evidence in Section 4.1 suggests that high-discretion procurements are associated with the purchase of more expensive brands. This raises a critical question: do higher brand prices reflect better quality? This section examines this relationship in two ways. First, it explicitly tests whether more expensive brands are indeed of higher quality. Second, it provides evidence on whether higher-quality products are being purchased with higher discretion. The analysis focuses on two distinct market contexts: consumer products and pharmaceuticals. Obtaining reliable quality data is challenging in most markets, as quality is often unobserved or subjective. However, in consumer products, independent testing organizations provide standardized quality assessments, while in pharmaceuticals, regulatory oversight offers direct measures of manufacturing quality. These complementary settings allow for validating the relationship between price, quality, and discretionary procurement across different product categories.

Quality of Consumer Products To measure the quality of consumer products, I use independent testing data from two sources — PROTESTE, a major consumer defense association in Latin America, and INMETRO, Brazil's official product certification institution. Both organizations provide technical quality reviews for various brands across multiple categories, including home appliances, food, and beverages. The dataset includes brand-level quality scores for 347 product description-unit of measure pairs. Table A.6 in the Internet Appendix lists the products with quality information from both sources. Since the quality scores use different measurement techniques, direct comparisons may not be meaningful. To address this, I rank brands within each product category, with the highest-quality brand assigned a rank of 1.

First, I show that brand prices positively correlate with higher-quality products, confirming the assumption from the previous section. Using procurement data, I calculate the average price of each product-brand-quarter and assess whether higher-quality brands within the same product and quarter also have higher average prices. Table 3 supports this hypothesis. In column I, a one-unit improvement in quality rank corresponds to a 1.5% higher average price for that brand. Column II shows that products with the highest quality rank (rank = 1) have a 10.5% higher price.

Second, I examine whether better-quality products are more likely to be purchased below the SVP threshold than above it. To do so, I include the product quality rank as a dependent variable in equation (1). Table 4 presents the results. Column I shows that products purchased below the threshold are from brands with a 1.2 higher quality rank than those above the threshold. Column II further reveals that procurements below the threshold are 9.5% more likely to purchase the highest-ranked product. Together, this evidence confirms that higher discretion in procurement is associated with higher-quality purchases.

Quality of Pharmaceuticals To assess pharmaceutical quality, I use batch suspension notifications issued by the Brazilian Health Regulatory Agency (ANVISA, or *Agência Nacional de Vigilância Sanitária*) under Article 7 of Law 6,360/1976, which mandates recalls when post-market surveillance detects quality problems posing health risks (e.g., chemical discrepancies, contamination).[12] ANVISA's registry reveal that for active pharmaceutical ingredient (API), an average seven distinct laboratories produce medicines supply the market, with 5.5 being generic producers and 1.5 being branded manufacturers. For generic products, laboratories are identified as the product's brand in the dataset. This variation in manufacturers allows for an examination of whether differences in manufacturing quality across laboratories are reflected in brand prices.

The analysis of ANVISA notifications reveals systematic variations in manufacturing consistency across laboratories. Out of the 3.2 thousand distinct product-manufacturer pairs of essential

[12]Internet Appendix Table A.7 provides examples of medicines, laboratories, and quality issues that led to these notifications.

medicines purchased in Brazil's public procurement market, 14.5% received at least one quality-related batch suspension during the sample period, with some product-brands accumulating up to four suspensions. Column III of Table 3 shows that laboratories more likely to have batch suspensions tend to charge lower prices for their products. Brands receiving quality-related notifications are, on average, 22.6% less expensive than those without suspensions. This aligns with broader evidence from Bate et al. (2011), who show that higher prices are often associated with better manufacturing practices and more consistent product quality, particularly in emerging markets.

Institutions purchasing medicines below the SVP threshold — where they have more discretion — also tend to select products from laboratories that have a lower probability of receiving batch-level suspensions in the near future. Specifically, procurements below the threshold source medicines from laboratories 9.2% less likely to receive a notification in the three years after the purchase (Table 4, column III). This suggests that discretionary procurement enables buyers to prioritize quality, even if at a higher cost.

A potential question is whether the observed price and quality differences under discretion are driven by changes in the proportion of generic versus branded drug purchases. Given that generics typically have lower prices, systematic differences in generic purchases above and below the threshold could affect the interpretation of this paper's main results. However, I find no evidence supporting this assumption. The likelihood of purchasing generics is similar above and below the SVP threshold (Internet Appendix Table A.8, column I). Instead, the results stem primarily from buyers selecting higher-quality manufacturers within the generic drug category, where there is substantial variation in manufacturing quality across producers (Internet Appendix Table A.8, columns II and III). This aligns with evidence showing that properly manufactured generics are therapeutically equivalent to branded drugs (Kesselheim et al., 2008).

The implications of these quality differences are substantial. Manufacturing issues, such as incorrect API concentrations or dissolution failures, can lead to inconsistent drug efficacy and safety risks (Johnston and Holt, 2014; World Health Organization, 2017). For example, these medicines may fail to deliver the intended therapeutic effect, posing serious risks to patient health. Moreover, since batch suspensions only capture severe violations, the estimated relationship between price and quality is likely conservative: if manufacturers with severe violations are also prone to subtler quality issues, and measurement error attenuates estimates, the benefits of procurement discretion in securing higher-quality pharmaceuticals may be larger than documented. By selecting higher-priced products from more reliable manufacturers, discretionary procurement may thus contribute to better patient outcomes, as demonstrated in Section 5.2.

4.1.2 Decomposing the Efficiency-Quality Trade-Off

In light of the efficiency-quality trade-off of discretion in public procurement, a natural follow-up question is which features of discretion drive these findings. As discussed in Section 2, high- and low-discretion procurements can differ along several dimensions. Understanding these differences is key to uncovering the mechanisms behind the trade-off and providing valuable insights into how discretion shapes efficiency and quality in public procurement.

One key difference is the variation in competition. Procurements below the threshold, by design, typically lack competition, while those above the threshold often involve multiple bidders. To assess how competition affects the efficiency-quality trade-off, I compare procurements below the threshold with those above it that have fewer than five participants (the median number). Table 5 presents the findings. Columns I and VI show the baseline quality-adjusted inefficiency and quality results from Table 2. When restricting the sample to auctions with fewer than five participants (columns II and VII), the coefficient on log(price) drops from 10% to 7.3%, and the coefficient on log(brand price) falls from 13% to 10.5%. These results suggest that differences in competition account for roughly one-third of the observed trade-off, leaving two-thirds unexplained.

Another possibility is that differences between agencies purchasing goods around the threshold might explain the efficiency and quality results. To address this, columns III and VIII of Table 5 compare procurements around the threshold conducted by the same government institution, using agency fixed effects to control non-parametrically for agency-specific characteristics. While coefficients are slightly smaller in this specification, the efficiency-quality trade-off still persists. Discretion is associated with a 6.4% increase in quality-adjusted prices (column III) and an 8.1% increase in brand prices (column VIII). This suggests that differences in agency purchasing behaviors partially explain the results, with discretion leading to higher prices and higher quality.

Furthermore, firms awarded public contracts in high-discretion procurements may differ from those that emerge victorious in competitive auctions. To explore this, columns IV and IX of Table 5 compare outcomes for procurements that have the same winning firm, using firm fixed effects. These findings indicate that the selection of different firms under discretion accounts for about 60%-80% of the efficiency-quality trade-off. This highlights a key factor explaining the disparities between high- and low-discretion scenarios: the choice of suppliers.

Finally, I assess the combined effects of all previous specifications. Columns V and X include both firm and agency fixed effects and exclude procurements above the threshold with more than five participants. In this specification, prices are 2.5% higher for procurements below the threshold compared to those above, but this coefficient is no longer statistically significant. For brand prices, the increase drops to 3.3% below the threshold, a significant reduction from the benchmark in column VI, though it remains statistically significant. These results suggest that the efficiency-quality

trade-off is largely explained, in order of importance, by the selection of different winning firms, differences in agency purchasing behaviors, and lower competition in discretionary procurements. However, the residual effect on quality — captured by the remaining 3.3% increase in brand prices — indicates that these factors do not fully explain the trade-off.

4.2 Disentangling Manipulation from Discretion

The main findings in Section 4.1 implicitly assume that there is no manipulation of the small-value threshold. However, Figure A.3 shows evidence to the contrary: there is a significant discontinuity in the number of procurements around the small-value purchase threshold. There are about 17 times more procurements below the SVP threshold than above it, and about 5 times more procurements than a predicted counterfactual in the absence of bunching. This behavior below the threshold starts within BRL 1,000 below the threshold. In the absence of bunching behavior, the curve would continue decreasing smoothly without any jumps around the threshold. Overall, there are strong indications that government agencies bunch below the threshold to enjoy higher discretion, a finding consistent with Coviello et al. (2022), who document similar manipulation of contract values by Italian procuring administrations.[13]

While manipulation is a concern, it is essential to understand whether this leads to bias in the main results. To address this, I present two additional tests to examine the effect of selection and discretion on the inefficiency and quality of government purchases. First, I exploit a shift in the small-value threshold in 2018 as an exogenous shock to the propensity for purchases below the threshold, which is independent of manipulation. Second, I reestimate equation (1) excluding observations subject to manipulation near the threshold. Both tests show that the sign and magnitude of the effects of higher discretion on inefficiency and quality remain largely unchanged in the absence of manipulation. Overall, manipulation of the threshold does not appear to significantly explain the differences in inefficiency and quality around the threshold.

4.2.1 Instrumental Variable Approach: Exploring a Shift in the Threshold

To estimate the impact of discretion on public procurement outcomes, I exploit a plausibly exogenous change in the SVP threshold, which increased from BRL 8,000 to BRL 17,600 in June 2018 via an unexpected Presidential Decree. No. 9,412/2018. By employing an instrumental variable approach, I first use this regulatory change to isolate the exogenous variation in the likelihood of procurements falling below the SVP threshold. Then, I investigate how this exogenous variation

[13] How is this bunching achieved? Figure A.4 shows the average distinct number of products purchased around the threshold. Below the threshold, there is a downward jump in the average number of products purchased, suggesting that agencies fragment the purchases of similar products into different procurements instead of bundling them into a single procedure.

in discretion influences the efficiency and quality of public procurement.

In particular, I use the treatment effect of this 2018 regulatory change as an instrument for the probability of falling below the threshold in a DID setting. I define the treatment variable as the proportion of purchases made between the old and new thresholds for each agency-product pair before the reform (treat$_{ap}$).[14] The intuitive and testable assumption is that procurements that were more likely to fall within the old and new thresholds prior to the reform are likely to continue doing so after the reform, now with the added benefit of being allowed to exercise greater discretion in their purchases. It is important to note that this increase in discretion would be a consequence of the reform itself. Thus, it is independent of any potential manipulation of the SVP threshold.

I estimate the first stage by regressing the likelihood of procurement i, for procurement agency a, product p at year t being below the threshold against the treatment variable interacted with a post dummy, as shown below:

$$\text{below threshold}_{iapt} = \alpha_{ap} + \alpha_{pt} + \beta \cdot treat_{ap} \cdot post_t + u_{iapt}. \tag{2}$$

The variable treat$_{ap}$ is the proportion purchased between the old and new thresholds in the two years prior to the change, and post$_t$ is a dummy equal to one after June 2018, and zero otherwise. α_{ap} is an agency-product fixed effect, and α_{pt} is a product-year fixed effect.

Columns I and II of Table 6 show a strong treatment effect of the regulatory change on the likelihood of purchasing products below the threshold. A 10 percentage point increase in the treatment variable leads to a 2.3% increase in the probability that the agency would purchase products below the SVP threshold after the reform (column I). The t-statistic of this specification is around 10, confirming the strength of the first stage. When I compare the treatment effect for the same product and brand in column II, results are strikingly similar. A 10 percentage point increase in the treatment variable leads to a 2.5% increase in the probability that the agency would purchase products below the threshold, with a t-statistic of 7.

In the second stage, I examine the effects of greater discretion on procurement outcomes, instrumented by the treatment effect of the regulatory change. To do so, I regress the following equation below, which when combined with equation (2), forms the 2SLS system of equations:

$$\text{y}_{iapt} = \alpha_{ap} + \alpha_{pt} + \gamma \cdot \text{below threshold}_{iapt} + e_{iapt}. \tag{3}$$

where γ is the 2SLS estimator. y_{iapt} is either the log(price) or the log(brand price). The other variables are defined as above in equation (2). The main identifying assumption of this strategy is

[14] To avoid the risk of differential sorting, this variable is calculated relative to all purchases above the old threshold while ensuring that it is not sufficiently close to the new threshold from above, i.e., not within twice the value of the upper limit of the new threshold.

that the treatment effect of the change in the SVP threshold affects prices for purchases of treated agency-product pairs only through the change in the likelihood of falling below the threshold.

Columns III to V of Table 6 illustrate the impact of procuring products below the threshold on their prices, using the treatment effect of the regulatory change as an instrument. The results suggest a 19.1% increase in prices when comparing the same product (column III) and an 12.7% increase when considering the same product and brand (column IV), although the latter coefficient is not statistically significant at conventional levels. In column V, brand prices are found to be 15.1% higher for purchases below the threshold. Notably, the findings of this paper remain largely consistent. Additionally, the resemblance of these point estimates to the Ordinary Least Squares (OLS) estimates in Table 2 alleviates concerns that the manipulation of the SVP threshold could introduce bias and influence the conclusions of this paper.

As an additional validation of the empirical strategy, Figure 2 plots the dynamic effects of the first stage and the reduced form. These graphs confirm that the treatment effects on both the probability of falling below the threshold and on log(price) only kick in after the regulatory change, and that I cannot reject the hypothesis of parallel trends prior to the reform. This result not only confirms that these changes were unanticipated but also points out that these findings are not likely to be explained by inherent differences between treatment and control groups in the DID.

4.2.2 Excluding Observations in the Vicinity of the Threshold

To further alleviate concerns that manipulation influences the findings of this paper, I also remove the procurements close enough to either side of the threshold and reestimate equation (1) on the remaining sample. This approach, also called "donut RD", assesses whether results are sensitive to observations that are likely to be manipulated around the threshold (Barreca et al., 2011). By comparing the "donut RD" coefficients with those estimated in Section 4.1, I can decompose the effect of selection on the main result. Table 7 presents the results. Panel A and B drop observations whose procurement value is within BRL 1,000 and BRL 2,000 of the threshold, respectively. These observations that were dropped represent 15% and 25%, respectively, of the total number of observations in the main results.

In Panel A, I find that the coefficients when prices and brand prices are the dependent variables drop from 10.1% to 9.6% and from 13.4% to 10% in columns I and II, respectively. While the coefficients on quality-adjusted prices do not change significantly, there is a small change in the effects on brand prices, i.e., 3.4 percentage points (or one-quarter) of the differences in product quality in the benchmark result in Table 2. In Panel B, where observations within BRL 2,000 of the threshold are removed, the coefficients for log(price) and log(brand price) increase slightly to

10.7% and 10.5%, respectively, remaining consistent with the benchmark estimates.[15] Overall, this section's results alleviate concerns that the manipulation of the threshold observed in Section 4.2 significantly explains the differences in outcomes between high- and low-discretion procurements.

4.3 Robustness Tests

Product definition One potential concern with the previous analysis is that I might be classifying products using an imprecise definition. For instance, what is defined as an "A4 Paper Sheet" might have different variations, such as color and material composition. This could lead to the comparison of different products across the threshold. When I compare products of the same brand, I would mainly improve the precision of how I measure products, not necessarily the quality of these products. I alleviate this concern by employing an even finer classification of products, which yields 205 thousand distinct products. The results in columns I and II of Internet Appendix Table A.10 show estimates that are both economically and statistically similar to the benchmark findings, suggesting that the main results are robust to more precise product definitions.

To further test robustness, I conduct heterogeneous tests based on the length of products' official descriptions in columns III and IV. Products with longer descriptions are likely measured with greater precision, while those with shorter descriptions may be more prone to misclassification. The results show that the effects do not significantly depend on the description length, indicating that the findings are consistent across products with varying levels of measurement precision. This reinforces the conclusion that the main results are not driven by imprecise product definitions or measurement errors, enhancing the credibility of the analysis.

Functional form and bandwidth The primary specifications in this study employ a linear function on both sides of the small-value purchase (SVP) threshold, utilizing procurements within the range of BRL 7.5 thousand below and above the threshold. To ensure the robustness of the results and mitigate potential biases arising from functional form or bandwidth assumptions, I conducted a series of tests using 1st, 2nd, and 3rd order polynomial approximations near the threshold, with bandwidths varying from BRL 8 thousand below to BRL 12 thousand above the cutoff. These tests can be found in Figures A.5, A.6, and A.7.

The results reveal that quality-adjusted prices increased by a range of 5.2% to 14.8%, while average brand prices rose between 12.5% and 33%. The median values for log(price) and log(brand

[15] In Internet Appendix Table A.9, I further test the robustness of the results by removing observations within BRL 2,500 and BRL 3,000 of the threshold. If manipulation drives the results, the coefficients should decrease when these observations are omitted. However, the coefficients become slightly larger than in the benchmark specifications in Table 2, suggesting that manipulation is not the main driver. A caveat is that these estimates rely on far-away observations to estimate the local effect at the threshold.

price) stand at 10% and 22.75%, respectively. Additional analyses using the non-parametric optimal bandwidth procedure proposed by Calonico et al. (2014) yield consistent results in Table A.5. Notably, the benchmark results presented in Table 2 (10.1% for log(price) and 13.4% for log(brand price)) suggest that the log(price) estimate is close to its median value, whereas the log(brand price) estimate is nearer to its lower bound, indicating that this paper's benchmark result is a conservative estimation of the increased brand price.

5 Discussion

This paper documents a fundamental trade-off in public procurement: while competitive bidding helps control costs, allowing bureaucrats discretion in supplier selection often leads to the purchase of higher-quality products. However, the benefits of discretion to society may depend on whether these quality improvements meaningfully enhance public service delivery. Since governments are evaluated on the quality of their bureaucracy (Rauch, 1995) and public services (La Porta et al., 1999), choosing between cost-efficiency and quality represents a critical policy decision. While higher-quality inputs could improve public services, they may also represent unnecessary spending when cheaper alternatives provide similar benefits.

From this discussion, two testable hypotheses emerge. First, if higher-quality products contribute to improved public services, agencies should prioritize their procurement. Second, this potential must translate into tangible improvements in service delivery. For instance, agencies might procure higher-quality products with the goal of enhancing education or healthcare outcomes. However, it is essential to evaluate whether these purchases are effectively utilized to achieve measurable improvements.

5.1 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 Table 8. Panel A compares outcomes around the SVP threshold across education, hospitals, armed forces, and other agencies. Price differences between high- and low-discretion procurements become insignificant for hospitals and armed forces after adjusting for product brand, suggesting no efficiency-quality trade-off. However, significant price differences persist for education and other agencies, indicating a price-quality trade-off under discretion.

Panel B examines these effects across different products. After controlling for product quality, significant overpricing remains only for office supplies like ballpoint pens (11.2%) and printer cartridges (44%), while becoming insignificant for essential ER medications. The substantial price premiums for basic office supplies, even after accounting for brand quality, suggest pure inefficiency rather than necessary quality improvements — there is little reason to believe premium

ballpoint pens or printer cartridges meaningfully improve public service delivery. This pattern, combined with the hospital results in Panel A, suggests the efficiency-quality trade-off varies meaningfully across contexts, with some cases reflecting valuable quality improvements and others indicating unnecessary spending on premium products.

5.2 Real Effects: Hospital Mortality

Does the purchase of products below the threshold translate into better real outcomes? This section examines this question by uncovering the effect of purchasing essential emergency-room medications below the threshold on hospital mortality. The quality analysis in the pharmaceutical market showed that hospitals exercising discretion select medications from laboratories with fewer ANVISA quality notifications — specifically, notifications for critical manufacturing issues such as chemical composition problems, contamination, and dissolution failures. These manufacturing deficiencies directly impact patient care through several channels. First, inconsistent chemical composition or potency can lead to underdosing, causing treatment failure in critical conditions like sepsis or acute coronary syndrome, where precise drug levels are essential for survival. For example, studies show that each hour delay in achieving therapeutic antibiotic levels in septic patients increases mortality by 7.6% (Kumar et al., 2006). Second, poor dissolution properties can result in inadequate bioavailability — meaning less of the active drug reaches systemic circulation — which can lead to treatment failure even when the labeled dose is correct (Amidon et al., 1995).[16] Third, contamination during manufacturing can introduce toxic compounds or bacterial toxins, especially dangerous for critically ill patients with compromised immune systems (Kishimoto et al., 2008; Blossom et al., 2008).

I examine hospital-level mortality data from DataSUS, a publicly available dataset on healthcare performance, with information on deaths and hospitalization per disease category in public hospitals in Brazil. I match this information with the public procurements of these hospitals from 2013 to 2022. For each illness type, I take the essential medicines used to treat these diseases from the World Health Organization (2013) report and listed in Internet Appendix Table A.11.

To investigate whether procuring higher-quality products below the SVP threshold is associated with a reduction in hospital deaths, I first identify hospital-disease pairs where a high proportion of emergency room medication purchases are made below the SVP threshold. For each of these hospital-disease pairs, I select control hospital-disease pairs from the same quarter where purchases of emergency room medication are not primarily made below the threshold.[17] This leaves us with

[16] See U.S. Food and Drug Administration "Update on Bupropion Hydrochloride Extended-Release 300 mg Bioequivalence Studies" available at https://www.fda.gov/drugs/postmarket-drug-safety-information-patients-and-providers/update-bupropion-hydrochloride-extended-release-300-mg-bioequivalence-studies.

[17] I initially classify hospital-disease-quarter triads as 'treated' when at least 90% of their purchases are made below the threshold. This assumption is not crucial for the results. Table A.12 in the Internet Appendix shows that the results

5,918 unique hospital-disease-quarter triads that are categorized as having made emergency room medicine purchases below the threshold, while 6,932 unique triads made purchases above it. I then stack these events into cohorts and compare health outcomes around the quarter of purchase in a "stacked" DID method (e.g., Gormley and Matsa, 2011) approach[18] as follows:

$$y_{hdet} = \alpha_{hde} + \alpha_{det} + \beta \cdot \text{below threshold}_{hde} \cdot \text{post}_{et} + e_{hdet} \tag{4}$$

where y_{hdet} refers to the mortality rate in hospital h for disease d in event e at time t. Below threshold$_{hde}$ is a dummy equal to one if the purchase of essential ER medications in hospital h to manage disease d in event e is predominantly made below the threshold and zero, otherwise. α_{hde} are hospital-disease-event fixed effects, controlling for any baseline differences between hospitals and diseases. By adding disease-event-year fixed effects (α_{det}), the coefficient β estimates the differential effect on mortality for purchases of medicines for the same disease above versus below the threshold.

Table 9 illustrates the results. In column I, below the threshold purchases lead to a 0.59 percentage point lower mortality rate than purchases of medicines to treat the same disease above the threshold. The effect represents roughly 11.4% of the unconditional mean.[19] This finding suggests that the purchasing of better-quality essential medications below the threshold seems to be associated with a significantly lower subsequent mortality rate. This outcome, however, could be explained either by treated hospitals having a lower number of hospitalizations for that particular disease or by the fact that they are purchasing a higher value of ER medications to manage the disease. In columns II and III, I address these concerns by including the interaction of the pre-treatment logarithm of hospitalizations and the post dummy, as well as the interaction of the value of essential ER medications purchased per inpatient and the post dummy. The results indicate that purchasing essential ER medications below the threshold leads to an approximately 0.53 percentage point lower mortality rate, or 10.3% of its unconditional mean.

A key concern with the previous findings is that the mortality rates in treated hospital-disease pairs might have been declining relative to control pairs even before the actual purchase. This

remain consistent even when I employ alternative definitions, such as values higher than the bottom tercile, or upper tercile.

[18]The stacked DID approach, as used in recent studies (Deshpande and Li, 2019; Baker et al., 2022), addresses limitations of staggered DID by excluding from the control group any hospital-disease pairs that make purchases of essential emergency room medications below the threshold within the three-year event window. This ensures a more robust comparison between treated and control groups.

[19]The decrease in mortality rate observed in this study is comparable to the reductions found in the literature for other hospital interventions. For instance, Bates et al. (1998) report a significant reduction in serious medication errors following the implementation of computerized physician order entry systems, which contributed to decreased mortality. Similarly, Haynes et al. (2009) document a 47% reduction in surgical mortality, from 1.5% to 0.8%, after introducing a surgical safety checklist. Additionally, Nelly et al. (2010) find an 18% reduction in mortality after implementing a medical team training program in the Veterans Health Administration.

would violate the assumption of parallel trends and cast doubt on the validity of the findings. To address this concern, I present a parallel trends test in Figure 3. The figure shows that prior to the event, mortality rates in treated and control groups followed a similar trend. It is only after the event that mortality in the treated group declines relative to that of the control group. This supports the validity of the parallel trends assumption and rules out alternative explanations based on pre-existing differences between hospitals that purchase products below or above the threshold as the driving factor behind the observed outcomes.[20]

Another potential concern is that hospitals might purchase drugs below the threshold while simultaneously improving managerial quality (Bloom et al., 2015), hiring new doctors, or experiencing changes in hospital finances. These concurrent changes could imply that the estimated coefficients capture the combined effects of these improvements and below-threshold medicine purchases. To address this, I further saturate the specification by including hospital-event-time fixed effects in column IV of Table 9. This approach compares outcomes for essential medicine purchases within the same hospital but across different diseases, isolating the effect of below-threshold purchases from other hospital-level changes. The results show that mortality rates drop by 5.2 percentage points for purchases below the threshold than those above it. The persistence of mortality effects, even with these stringent controls, is consistent with findings in the medical literature, which highlight the importance of drug quality in patient outcomes.

Supporting the importance of medication quality for patient survival, columns V to X of Table 9 show that the mortality effects are strongest precisely where one would expect medication quality to matter most. For non-cancer related diseases, where medication quality directly influences treatment outcomes through mechanisms like achieving therapeutic antibiotic levels in sepsis or maintaining proper blood pressure in cardiovascular emergencies (ISIS-2 Collaborative Group, 1988; The HOPE Investigators, 2000; Rivers et al., 2001), mortality drops substantially by 0.66 to 0.81 percentage points or 13.4% to 16.5% of its unconditional mean (columns VIII to X). In contrast, for cancer-related deaths where even high-quality medications typically extend survival by only a few months (Tannock et al., 2004; Hodi et al., 2010; Chapman et al., 2011), the effects are much smaller and mostly statistically insignificant — only 0.12 to 0.44 percentage points or 1.4% to 5.2% of its unconditional mean (columns V to VII). This stark difference in effects between cancer and non-cancer conditions is revealing: while factors like hiring better doctors could also play a role, the significant mortality reductions in conditions where drug effectiveness is critical

[20]While I exclude hospital-disease pairs from the control group if they make significant purchases below the threshold within the three-year window, the same pair may still purchase products below the threshold multiple times. Consequently, the stacked DID estimates may incorporate not only the effects of the initial purchase time 0 but also any subsequent purchases in the post period. In Internet Appendix Table A.13, I further exclude pairs with significant below-threshold purchases in the following 3 years, reducing treated pairs by 80%. Despite this, the outcomes remain consistent, with coefficients decreasing by 3-33% (median 16%).

(e.g., sepsis or cardiovascular emergencies) and minimal effects where it is not, strongly suggest that medication quality drives outcomes for specific diseases.

5.3 External Validity

While this paper's results focus on goods procured by Brazilian public agencies, they are informative for understanding the trade-offs between efficiency and quality in discretionary procurement. There is no inherent reason why these findings cannot be extended to other settings, such as government purchases in other countries, different discretion exemptions, or procurements of services and smaller-scale infrastructure. Below, I discuss each of these points.

Generalizability Across Countries The results of this paper are not unique to Brazil's specific regulations for small-value purchases. Most countries usually allow discretion for small-value purchases while requiring competitive bidding for larger purchases. As Table A.14 in the Internet Appendix shows, *all* 38 OECD member countries, as well as China and India, have clearly defined rules permitting direct awards for small-value purchase with thresholds ranging USD 300 (India) to USD 360,000 (Iceland).

To the extent that officials prioritize non-price factors like brand reliability or manufacturing standards — constrained in auctions — discretion is likely to lead to higher-quality purchases, despite higher costs. That being said, institutional factors such as audit capacity or anti-corruption measures may influence the balance between inefficiency and quality (see Bosio et al., 2022). For example, in contexts with weak institutional quality, discretion could lead to greater inefficiencies rather than quality improvements. Even in Brazil, which ranks in the middle tier of corruption perception indices (Transparency International, 2023), our results show quality gains under discretion, suggesting these benefits may be present in countries with similar or stronger institutional frameworks.

Beyond Small-Value Purchases The trade-off also extends beyond small-value purchases. Table A.15 in the Internet Appendix shows that bid waivers for other reasons (e.g., natural disasters) exhibit a similar pattern: prices are 16.7% higher, but this drops to 9% when comparing products of the same brand. The magnitudes of these coefficients are strikingly similar to the ones presented in this paper's benchmark results in Table 2. Although results could vary depending on the context of the bid exception, the consistency of results across different discretionary procurements suggests that our results are not limited to small-value purchases. Moreover, the fact that these results hold for other bid waiver exemptions — where manipulation of the small-value threshold is not a concern — provides further evidence that manipulation is not driving the results.

Services Procurement This paper's results could also apply to services. Like products, services can be procured with higher discretion under the SVP threshold.[21] However, unlike products, services are harder to classify in precise categories, and their ex-ante quality is more difficult to assess. For instance, the dataset includes a service category, such as *IT Services – 1 Hour*, which can vary significantly in its delivery, and is often personalized to the customer.

To address this, I compare the same service category conducted by the *same firm* around the threshold, assuming that services performed by the same firm have similar quality levels. Results in columns III and IV of Table A.15 in the Internet Appendix show that, without controlling for quality, services below the threshold are 11.6% more expensive than those just above it. However, when comparing services conducted by the same firm, the price difference drops to zero and becomes statistically insignificant.

The caveat is that it is difficult to disentangle whether this drop in the coefficient reflects inefficiency (that is, the firm charges higher prices due to inefficiency) or higher service quality (that is, the firm provides better-quality services). Nevertheless, the consistency of results across different contexts strengthens the generalizability of the findings.

6 Conclusion

This paper explores how discretion, inefficiency, and product quality intersect in public procurement. By analyzing over 2.5 million product purchases in Brazil and leveraging a regulatory threshold allowing for higher-quality acquisitions below a specified limit, I uncover a trade-off between efficiency and quality associated with discretion. While discretion in procurement leads to increased inefficiencies, it also enables the acquisition of higher-quality products.

Moreover, I provide evidence on a particular context in which discretion may positively influence public services: improving healthcare outcomes. This paper shows that public hospitals using discretion to procure emergency room medications experience a significant reduction in inpatient mortality rates, likely due to the purchase of medicines from better quality manufacturers with fewer batch regulatory suspensions. This empirical evidence emphasizes the need for regulators to weigh the potential benefits of flexibility for agencies and product quality, potentially leading to improved purchases and, in turn, better public service provision.

It is crucial to clarify that this paper does not advocate for a blanket endorsement of discretion in public procurement. While this paper identifies situations where discretion can contribute positively to public service provision through better-quality purchases, it is important to acknowledge that discretion may still lead to inefficiencies, the procurement of products that are unnecessarily high in quality, or both. It is important to recognize that the impact of discretion is context-

[21] The SVP threshold for services was BRL 15 thousand until June 2018 and BRL 33 thousand thereafter.

dependent, and caution should be exercised in its application to ensure optimal outcomes.

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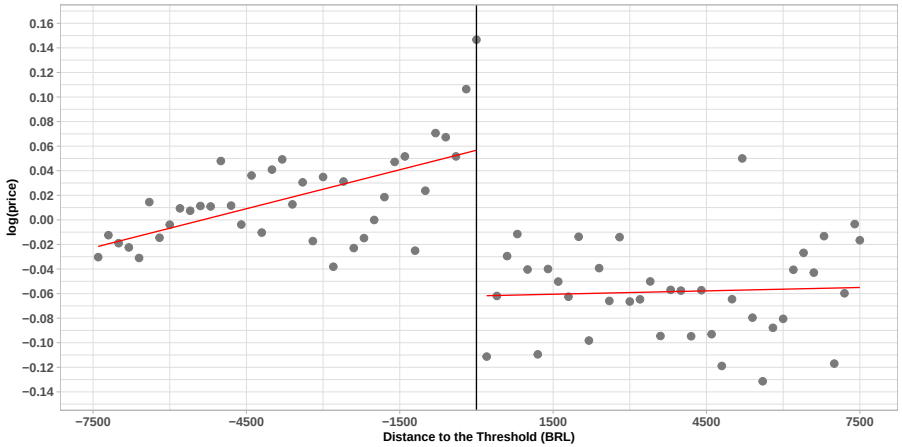
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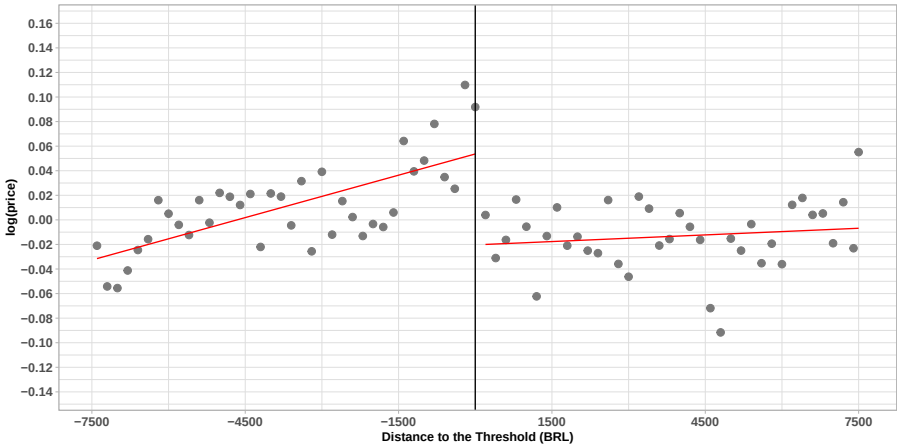
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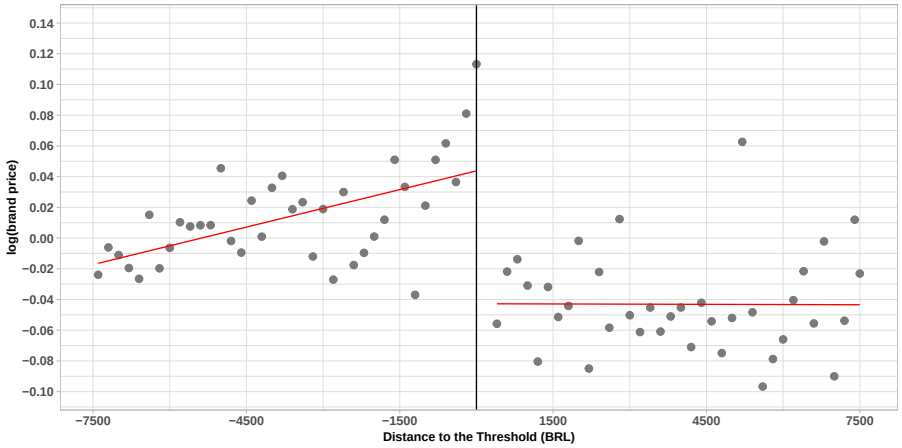
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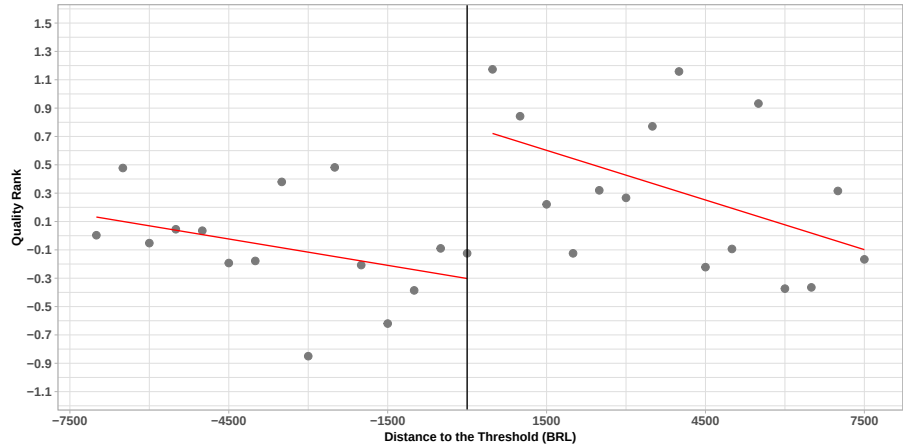
Panel A: log(price) minus product-quarter averages



Panel B: log(price) minus product-brand-quarter averages



Panel C: log(brand price) minus product-quarter averages



Panel D: Quality Rank minus product-quarter averages

Figure 1: *This figure plots price and quality outcomes of products purchased around the small-value purchase threshold. Below the threshold, regulators allow products to be procured with higher discretion by bid waivers. Competitive bidding is the norm above the threshold. In Panel A, I plot the residuals of the logarithm of prices after including product-quarter fixed effects. In Panel B, I plot the residuals of the logarithm of prices after including brand-product-quarter fixed effects. In Panel C, I plot the residuals of the average brand price after including product-quarter fixed effects. In Panel D, I provided the residuals of Quality Rank after including product-quarter fixed effects. A lower value for Quality Rank means higher-quality products.*

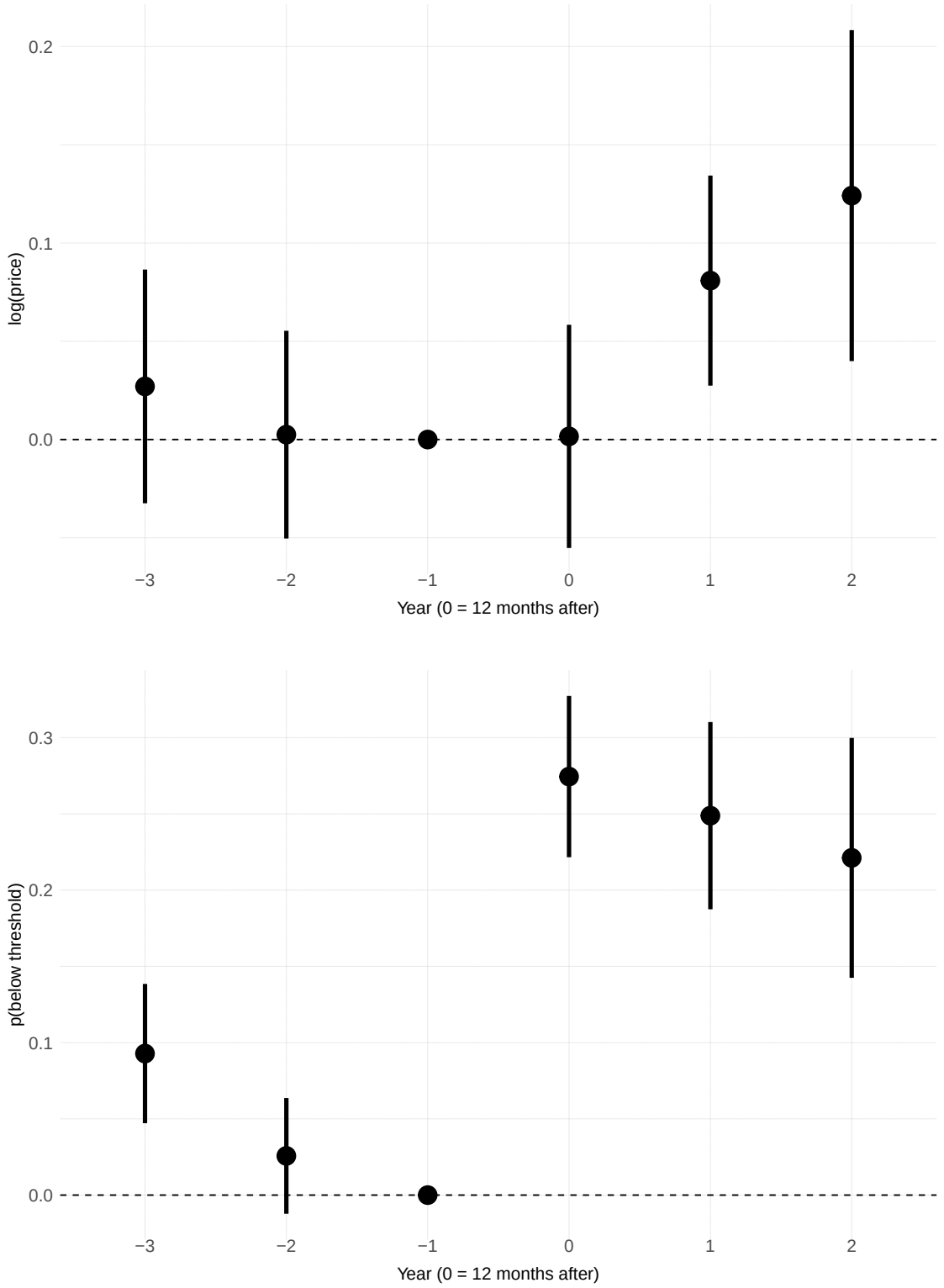


Figure 2: *This figure plots the dynamic treatment effect of the regulatory change that increased the small-value purchase threshold in June 2018 on product prices (Panel A) and on the probability of being below the thresold (Panel B). I normalize the effect for year -1 (the 12 months preceding the reform). I include government-product agency and product-year fixed effects in the specification.*

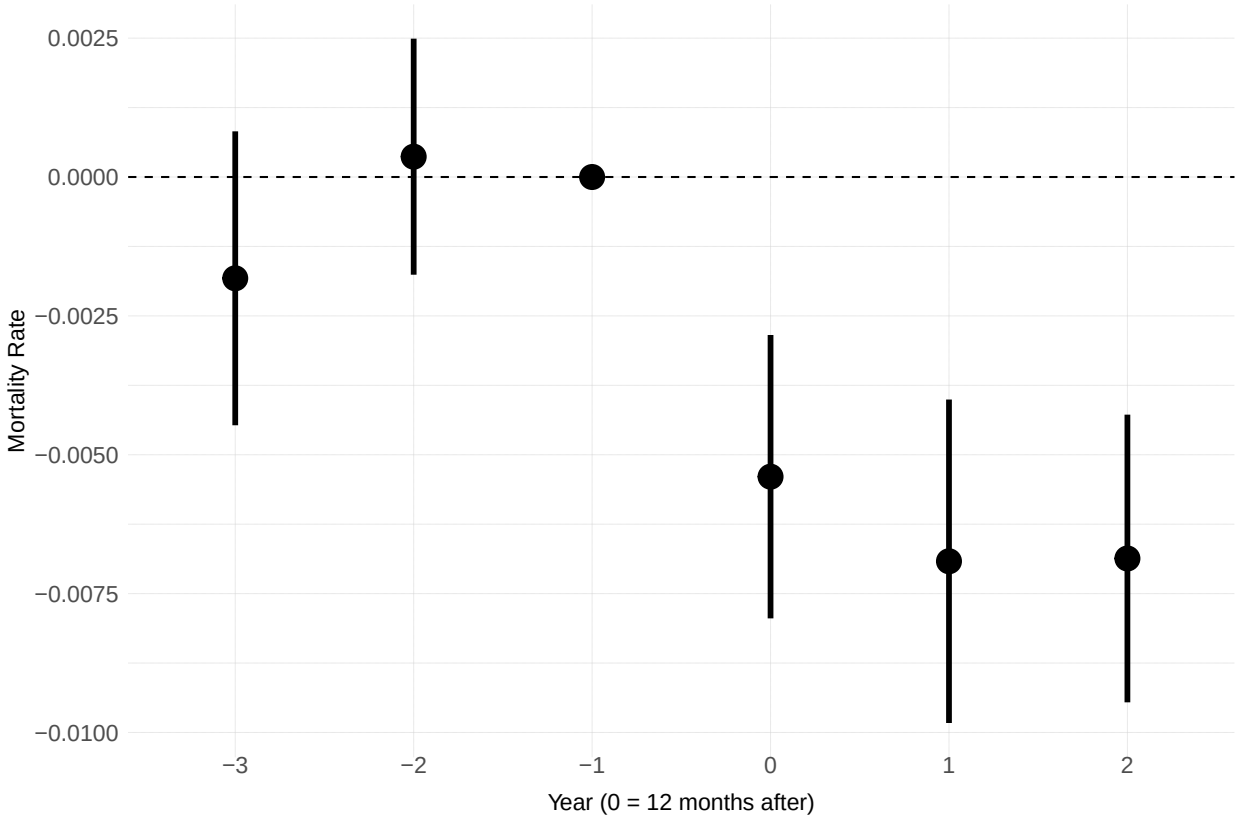


Figure 3: *This figure plots the dynamic effect of purchasing essential medicines below the threshold when comparing to purchases of medicines for the same disease above the threshold. I normalize the effect for year -1 (the 12 months before the purchase).*

Table 1: *Summary Statistics*

		n I	mean II	std dev III	min IV	median V	max VI
Dependent Variables							
log(price)	The logarithm of the unit price of products purchased at each procurement	2,506,809	3.40	2.27	-1.90	3.31	9.19
log(quant)	The logarithm of quantity or products purchased at each procurement	2,506,809	2.63	2.27	0.00	2.30	9.51
# products	The number of distinct products purchased at each procurement	2,506,809	53.95	86.34	1.00	21.00	486.00
log(brand price)	The logarithm of the average brand price of each product purchased in a quarter	2,506,809	3.49	2.23	-1.75	3.40	9.19
mortality rate (all)	The number of deaths divided by the number of patients across all disease categories in public hospitals	961,438	0.05	0.07	0.00	0.02	0.36
mortality rate (cancer)	The number of deaths divided by the number of cancer patients in public hospitals	69,757	0.08	0.07	0.01	0.07	0.36
mortality rate (non-cancer)	The number of deaths divided by the number of non-cancer patients in public hospitals	891,681	0.05	0.07	0.00	0.02	0.33
Independent Variables							
below threshold	The probability of that the procurement is conducted via a bid waiver	2,506,809	0.49	0.50	0.00	0.00	1.00
education	A dummy equal to one if the government agency is a university, school, or a research institution	2,506,809	0.52	0.50	0.00	1.00	1.00
hospitals	A dummy equal to one if the government agency is a hospital	2,506,809	0.05	0.21	0.00	0.00	1.00
armed forces	A dummy equal to one if the government agency is an army, a navy, or an air force agency	2,506,809	0.15	0.36	0.00	0.00	1.00
other	A dummy equal to one for all the other agencies, including public administration, public security, agriculture, and utilities	2,506,809	0.28	0.45	0.00	0.00	1.00

Table 2: *Comparing Procurements Around the Small-Value Purchase Threshold*

	Comparing the Same Product			Comparing the Same Product & Brand		Procurement Level
Dep. Var.	log(price)$_{ipt}$	log(quant)$_{ipt}$	log(brand price)$_{pbt}$	log(price)$_{ipt}$	log(quant)$_{ipt}$	# products$_{it}$
	I	II	III	IV	V	VI
below threshold$_{it}$	0.166***	0.135***	0.134***	0.101***	0.205***	-1.438***
	(0.016)	(0.019)	(0.012)	(0.018)	(0.028)	(0.272)
Product*Quarter FE	yes	yes	yes			
Brand*Product*Quarter FE				yes	yes	
Quarter FE						yes
Obs	977,059	977,059	977,059	977,059	977,059	216,390
R^2	0.890	0.740	0.920	0.969	0.925	0.052

This table compares procurement outcomes above and below the small-value purchase threshold. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). In columns I and IV, the dependent variable is the logarithm of the price of product p procured in procurement i at time t. In the remaining columns, the dependent variables are the logarithm of the quantity procured (columns II and V), the logarithm of the average brand price of product p of brand b purchased in procurements at time t (column III), and the number of products in procurement i at time t (column VI). The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Columns I, II, and III include Product*Quarter fixed effects, comparing outcomes for procurements of the same product and in the same quarter. Columns IV to V include Brand*Product*Quarter, comparing outcomes for procurements of the same brand, product, and quarter. Column VI includes Quarter fixed effects and analyzes aggregated procurement-level outcome: the number of products per procurement. Standard errors clustered at the product level (columns I to V) and at the agency level (column VI) are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 3: *Product Prices and Quality*

Dep. Var.	log(brand price)$_{pbt}$		
Sample	Consumer Products		Pharmaceuticals
	I	II	III
quality rank$_{pb}$	-0.015***		
	(0.003)		
highest quality$_{pb}$		0.103*	
		(0.042)	
quality violation$_{pb}$			-0.226**
			(0.082)
Product*Quarter FE	yes	yes	yes
Obs	5,316	5,316	13,101
R^2	0.982	0.981	0.942

This table shows the relationship between brand prices and product quality. The dependent variable is the logarithm of the average unit price for product p of brand b at time t. For consumer products, quality is measured using technical reviews from PROTESTE and INMETRO. In column I, the independent variable is brand b's quality rank, where rank=1 indicates the highest quality. In column II, the independent variable is a dummy equal to one if brand b has the highest quality rank for product p. For pharmaceutical products (column III), quality violation$_{pb}$ is a dummy equal to one if the laboratory receives any ANVISA batch suspension notifications in the three years following procurement due to manufacturing violations such as chemical composition problem, contamination, or other issues. All specifications include Product*Quarter fixed effects. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 4: *Quality Differences in Procurement Around the SVP Threshold*

Dependent Variable:	quality rank$_{pb}$	highest quality$_{pb}$	quality violation$_{pb}$
	I	II	III
below threshold$_{it}$	-1.196** (0.368)	0.095* (0.042)	-0.092* (0.043)
Product*Quarter FE	yes	yes	yes
Sample	Consumer	Consumer	Pharmaceutical
Obs	13,552	13,552	9,031
R^2	0.429	0.456	0.682

This table compares procurement outcomes above and below the small-value purchase threshold. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). For consumer products (columns I-II), quality is measured using technical reviews from PROTESTE and INMETRO, where quality rank=1 indicates highest quality and highest quality is a dummy for rank=1. For pharmaceutical products (column III), quality violation$_{pb}$ is a dummy equal to one if the laboratory receives any ANVISA quality-related batch suspension in the three years following procurement due to manufacturing violations. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 5: *Decomposing Procurement Outcomes Around the Small-Value Purchase Threshold*

Dep. Var.	log(price)$_{ipt}$					log(brand price)$_{pbt}$				
	I	II	III	IV	V	VI	VII	VIII	IX	X
below threshold$_{it}$	0.101*** (0.018)	0.073*** (0.020)	0.064*** (0.013)	0.039** (0.012)	0.025 (0.015)	0.134*** (0.012)	0.105*** (0.011)	0.081*** (0.009)	0.039*** (0.010)	0.033*** (0.010)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes					
Product*Quarter FE						yes	yes	yes	yes	yes
Low Comp Auctions		yes			yes		yes			yes
Agency FE			yes		yes			yes		yes
Firm FE				yes	yes				yes	yes
Obs	977,059	893,087	977,059	977,059	893,087	977,059	893,087	977,059	977,059	893,087
R^2	0.969	0.969	0.970	0.973	0.974	0.920	0.921	0.924	0.940	0.942

This table compares procurement outcomes above and below the small-value purchase threshold. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). In columns I to V, the dependent variable is the logarithm of the price of product p procured in procurement i at time t. In columns VI to X, the dependent variable is the logarithm of the average brand price of product p of brand b purchased in procurements at time t. The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Columns I and VI present the benchmark coefficients from Table 2. In columns II and VII, I rerun the same specifications but exclude auctions above the threshold with more than 5 bidders, ensuring that procurements around the threshold have similar levels of competition. In columns III and VIII, I include winning firm fixed effects to compare outcomes for procurements with the same winning firm below versus above the threshold. Columns IV and IX add government agency fixed effects, comparing procurements around the threshold conducted by the same agency. Finally, columns V and X include both firm and agency fixed effects and exclude auctions above the threshold with more than 5 bidders (the lower quartile of the number of bidders in procurements above the threshold). All specifications include either Brand*Product*Quarter fixed effects (columns I to V) or Product*Quarter fixed effects (columns VI to X). Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 6: *Exploiting a Change in the Threshold*

Dep. Var.	p(below threshold)$_{ipt}$		log(price)$_{ipt}$		log(brand price)$_{ipt}$
	I	II	III	IV	V
treat$_{ap}$ · post$_t$	0.231***	0.254***			
	(0.024)	(0.038)			
p(below threshold)$_{ipt}$			0.191*	0.127	0.151*
			(0.081)	(0.100)	(0.073)
Estimator	OLS	OLS	2SLS	2SLS	2SLS
Agency*Product FE	yes	yes	yes	yes	yes
Product*Year FE	yes		yes		yes
Brand*Product*Year FE		yes		yes	
F-stat (1st Stage)			89.09	44.52	89.09
Obs	384,521	384,521	384,521	384,521	384,521
R^2	0.567	0.847	0.916	0.966	0.946

This table presents the results exploiting the changes in the small-value purchase threshold from BRL 8,000 to BRL 17,600 in June 2018. The variable treat$_{ap}$ is defined as the proportion of goods purchased before June 2018 in procurements with value between the old and new threshold. Post$_t$ is a dummy equal to one in the three years after June 2018 and zero in the three years before. Columns I and II present the first-stage regression of the probability of procurement i for product p at time t falling below the threshold against the interaction between treat$_{ap}$ and post$_t$. Columns III, IV, and V present the 2SLS estimation where the dependent variable is log(price)$_{ipt}$ (columns III and IV) and log(brand price) (column V). The independent variable p(below threshold)$_{ipt}$ is instrumented by the interaction between treat$_{ap}$ and post$_t$. Columns I, III, and V include agency-product and product-year fixed effects, while columns II and IV employ agency-product and brand-product-year fixed effects. Standard errors clustered at the agency-product level are presented in parentheses. $^+$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 7: *Donut RD: Sensitivity of Results to Manipulation*

Dep. Var.	$\log(\text{price})_{ipt}$	$\log(\text{brand price})_{pbt}$
	I	II
Panel A: Donut RD - BRL 1,000 Radius		
$\text{below threshold}_{it}$	0.096***	0.100***
	(0.022)	(0.016)
Product*Quarter FE		yes
Brand*Product*Quarter FE	yes	
Benchmark RD	0.101***	0.134***
Obs	831,714	831714
R^2	0.970	0.921
Panel B: Donut RD - BRL 2,000 Radius		
$\text{below threshold}_{it}$	0.107***	0.105***
	(0.028)	(0.017)
Product*Quarter FE		yes
Brand*Product*Quarter FE	yes	
Benchmark RD	0.101***	0.134***
Obs	736,587	736,587
R^2	0.971	0.923

This table compares procurement outcomes above and below the small-value purchase threshold by removing observations where manipulation of the threshold is suspected. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). The explanatory variable in all columns, $\text{below threshold}_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. In this specification, the estimated coefficient of $\text{below threshold}_{it}$ still gives the estimates of outcomes at the threshold (as in Table 2), but it now allows for the possibility that observations that are close to the threshold are systematically different from observations farther away. Panels A and B present the results when I drop observations whose procurement value is within BRL 1,000 and BRL 2,000 of the threshold, respectively. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 8: *Comparing Procurements Around the SVP Threshold - Heterogeneous Effects*

Dep. Var.	$\log(\text{price})_{ipt}$		$\log(\text{brand price})_{pbt}$
	I	II	III
Panel A: Heterogeneity Across Agencies			
below threshold$_{it}$ · education$_a$	0.167***	0.114***	0.132***
	(0.022)	(0.023)	(0.017)
below threshold$_{it}$ · hospitals$_a$	0.224***	0.061	0.182**
	(0.063)	(0.072)	(0.059)
below threshold$_{it}$ · armed forces$_a$	0.189**	-0.011	0.199**
	(0.058)	(0.039)	(0.061)
below threshold$_{it}$ · other$_a$	0.093***	0.064***	0.070***
	(0.017)	(0.019)	(0.014)
Product*Quarter FE	yes		yes
Brand*Product*Quarter FE		yes	
Obs	977,059	977,059	977,059
R^2	0.890	0.969	0.920
Panel B: Heterogeneity Across Products			
below threshold$_{it}$ · petrol$_p$	0.006***	0.002***	0.024***
	(0.001)	(0.000)	(0.001)
below threshold$_{it}$ · pencil$_p$	0.242***	0.072*	0.253***
	(0.050)	(0.033)	(0.054)
below threshold$_{it}$ · diesel$_p$	-0.133***	0.022*	-0.161***
	(0.005)	(0.010)	(0.015)
below threshold$_{it}$ · ballpoint pen$_p$	0.301***	0.112**	0.216***
	(0.022)	(0.040)	(0.013)
below threshold$_{it}$ · mineral water$_p$	0.015	-0.061	0.016
	(0.072)	(0.070)	(0.070)
below threshold$_{it}$ · printer cartridge$_p$	0.685***	0.440***	0.443***
	(0.183)	(0.086)	(0.121)
below threshold$_{it}$ · coffee$_p$	0.120*	0.036	0.116***
	(0.056)	(0.074)	(0.033)
below threshold$_{it}$ · essential ER drugs$_p$	0.158***	0.034	0.144***
	(0.043)	(0.042)	(0.036)
below threshold$_{it}$ · other products$_p$	0.148***	0.078***	0.124***
	(0.011)	(0.012)	(0.011)
Product*Quarter FE	yes		yes
Brand*Product*Quarter FE		yes	
Obs	977,059	977,059	977,059
R^2	0.89	0.969	0.92

This table compares procurement outcomes above and below the small-value purchase threshold, exploring variations across different types of government agencies (Panel A) and products (Panel B). On either side of the threshold, I fit a linear function of the distance to the threshold, following equation (1).The dependent variables include the logarithm of the price of product p procured in procurement i at time t (columns I and II) and the logarithm of the average brand price of product p of brand b purchased in procurements at time t (column III). In all columns, the explanatory variable is an interaction between below threshold$_{it}$ – a dummy variable equal to one if procurement i at time t is conducted below the threshold, and zero otherwise — and dummies indicating whether the agencies are classified as education-related, hospitals, armed forces-related, or others. Panel B presents similar specifications, but with interactions between below threshold$_{it}$ and dummies indicating whether the products are classified as petrol, pencils, diesel, pens, mineral water, printer cartridges, coffee, essenial ER supplies, or others. Columns I and III incorporate Product*Quarter fixed effects, effectively comparing outcomes in procurements of the same product and in the same quarter. Column II includes Brand*Product*Quarter fixed effects, effectively comparing outcomes in procurements of the same brand, product, and in the same quarter. I present standard errors, clustered at the product level, in parentheses. $^+$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table 9: *Real Effects of Discretion: Essential Drugs and Hospital Deaths*

Dep. Var.	mortality rate$_{hdet}$									
	all causes				cancer-related causes			non-cancer-related causes		
	I	II	III	IV	V	VI	VII	VIII	IX	X
below threshold$_{hde}$· post$_{et}$	-0.0059*** (0.0009)	-0.0055*** (0.0009)	-0.0053*** (0.0009)	-0.0523*** (0.0083)	-0.0033 (0.0026)	-0.0044^{+} (0.0027)	-0.0012 (0.0027)	-0.0081*** (0.0006)	-0.0068*** (0.0006)	-0.0066*** (0.0006)
log(hospitalizations)$_{hde,t=-1}$· post$_{et}$		-0.0031*** (0.0002)	-0.0027*** (0.0002)	-0.0018*** (0.0002)		0.0111*** (0.0003)	0.0129*** (0.0003)		-0.0054*** (0.0002)	-0.0051*** (0.0001)
$ essential ER drugs per hospitalization$_{hde}$· post$_{et}$			0.0075*** (0.0005)	0.0083*** (0.0006)			2.014*** (0.0747)			0.0053*** (0.0004)
Hospital*Disease*Event FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Disease*Event*Time FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hospital*Event*Time FE				yes						
pre-treat avg(mortality rate)	0.0515	0.0515	0.0515	0.0515	0.0819	0.0819	0.0819	0.0491	0.0491	0.0491
Obs	961,436	933,837	933,837	933,837	69,757	69,752	69,752	891,679	864,085	864,085
R^2	0.831	0.863	0.864	0.883	0.914	0.923	0.927	0.606	0.634	0.635

This table compares hospital mortality rates between essential medicines purchased below and above the threshold. For each hospital-disease pair with a high proportion of emergency room medication purchases made below the SVP threshold, I select other hospital-disease pairs that make essential medicine purchases in the same quarter as controls. These events are then grouped into cohorts, and health outcomes around the date of purchase are compared using a "stacked" difference-in-differences approach. The dependent variable, mortality rate$_{hdet}$, represents the ratio of deaths to hospitalizations in hospital h for disease d in event e at year t. The main independent variable, below threshold$_{hde}$, is a dummy variable equal to one if the purchase of essential medicines for hospital h to treat disease d in event e was predominantly done via procurements below the threshold, and zero otherwise. The variable Post$_{et}$ is a dummy equal to one after the procurement and zero otherwise. Columns I to IV present the results for all diseases, while columns V to VII and VIII to X present the results for cancer-related and non-cancer-related diseases, respectively. All specifications include hospital-disease-event fixed effects and disease-event-time fixed effects. Therefore, this strategy effectively compares purchases of medicines for the same disease below versus above the threshold. In column IV, I further enhance the specification by adding hospital-event-time fixed effects to account for any time-varying changes in hospital characteristics that might explain the outcome. Standard errors, clustered at the hospital-disease-event level, are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

A Online Appendix

In this online appendix, I present supplementary material and detailed information not included in the main manuscript titled 'The Two Sides of Discretion: Assessing Efficiency and Quality in Government Purchases'. This appendix is organized as follows.

Section A.1 investigates whether the characteristics of winning firms differ between procurements below the small-value purchase (SVP) threshold (higher discretion) and those above the threshold (lower discretion). The findings suggest that procurements below the threshold are more likely to award contracts to politically connected and nearby firms, indicating potential favoritism. However, these firms also tend to be larger and more established, suggesting that experience and reliability are important factors in the decision-making process. When controlling for product quality by comparing procurements of the same brand and product, the differences in winning firm characteristics become less pronounced, implying that part of the reason for such preferences is to ensure higher-quality purchases.

Finally, section A.2 presents additional figures and tables that are referenced throughout the main manuscript. These figures and tables serve as robustness tests and provide further support and context for the paper's findings, ensuring the validity and reliability of the results presented in the main text.

A.1 Winning Firm Characteristics

In addition to the effects on inefficiency and quality, discretion and auctions might differ on which firms are being awarded public contracts. On the one hand, awarding contracts to connected firms might direct public funds to possibly inefficient firms (Faccio et al., 2006; Schoenherr, 2019). This may not only translate into overpricing and inefficiencies, but it also represents a diversion of funds for personal gain. On the other hand, government agencies may choose specific firms because they know these firms can provide better-quality products (Butler et al., 2020). Ideally, after controlling for both product and quality, one would want to see these procurements picking firms that are similar to those that win via auctions.

To test this hypothesis, I investigate whether the characteristics of the winning firms are different across different procurement types. To measure whether firms and public agencies are connected, I first calculate a measure of political connection. I consider a firm to be politically connected if it has an owner who is also an elected politician of a party allied to the federal government. I take information on elected officials from the *Tribunal Superior Eleitoral* in Brazil. Data on firm owners comes from *Receita Federal*. An additional measure of connection comes from whether the winning firm is from the same municipality as the public agency. I also use three different measures of firm opacity. The first of them is firm size, a categorical variable equal to 1 for small

firms, 2 for medium firms, and 3 for large firms. The second measure is the number of distinct firm owners, a measure that is also related to firm size. Finally, I calculate firm age as the year of procurement minus the year of the firm's creation. All of these measures are obtained from the Firm Registry dataset of *Receita Federal*.

In Panel A of Table A.1, I find that procurements below the threshold are more likely than procurements above the threshold to award contracts to connected and nearby firms. This suggests a waste of public resources, as public officials appear to be favoring connected firms. In Panel B of Table A.1, I show that these effects decrease when I compare the same product and brand across the threshold. The coefficient on p(connected) decreases slightly by about 10%, while the coefficient on p(same muni) decreases by 25% in magnitude.

Columns III to V of Table A.1 also show that firms awarded contracts in high-discretion procurements are larger in size (columns III and IV) and older (column V). These firms, thus, appear to be more established than the ones awarded contracts above the threshold. Larger and older firms are likely the ones that provide better-quality products to the government. Panel B confirms this hypothesis: once controlled for the same product and brand, the coefficients are smaller in magnitude, but they are still statistically significant.

These findings suggest that discretionary procurement enables agencies to select more established suppliers who can provide better-quality products, aligning with earlier evidence that about two-fifths of the price premium under discretion reflects the purchase of higher-quality brands. However, the persistent preference for connected firms, even when comparing identical products, indicates that not all firm selections under discretion can be explained by quality considerations.

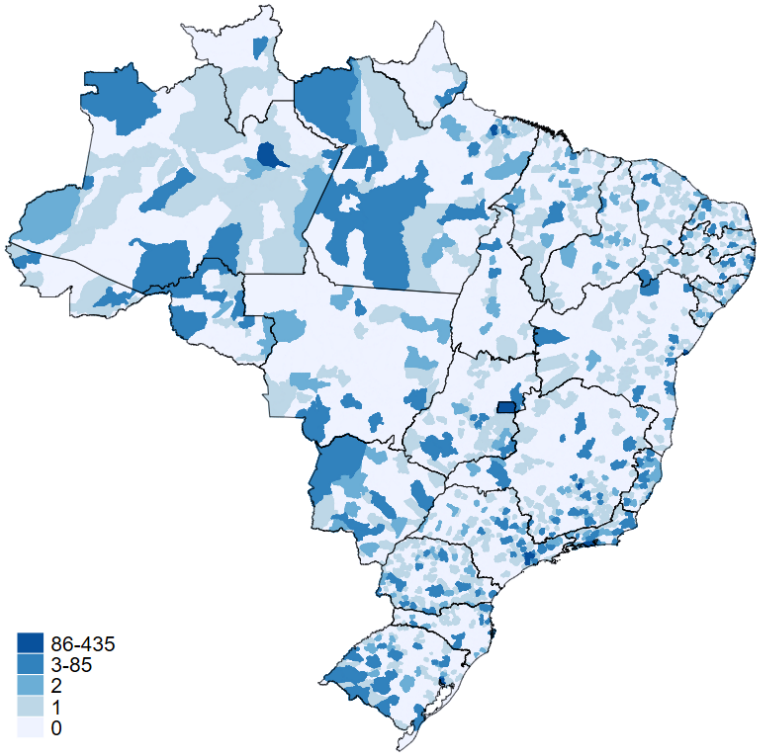
Table A.1: *Winning Firm Characteristics*

Dep. Var.	p(connected)$_{ipt}$	p(same muni)$_{ipt}$	firm size$_{ipt}$	# owners	firm age$_{ipt}$
	I	II	III	IV	V
Panel A: Comparing Same Product					
below threshold$_{it}$	0.0020***	0.208***	0.103***	0.136***	1.696***
	(0.0004)	(0.009)	(0.011)	(0.011)	(0.145)
Product*Quarter FE	yes	yes	yes	yes	yes
Obs	977,059	962,226	977,059	802,713	977,059
R^2	0.355	0.399	0.441	0.385	0.365
Panel B: Comparing Same Product & Brand					
below threshold$_{it}$	0.0018**	0.150***	0.048**	0.104***	0.530**
	(0.0007)	(0.011)	(0.018)	(0.015)	(0.176)
Brand*Product*Quarter FE	yes	yes	yes	yes	yes
Obs	977,059	962,226	977,059	802,713	977,059
R^2	0.819	0.859	0.867	0.858	0.853

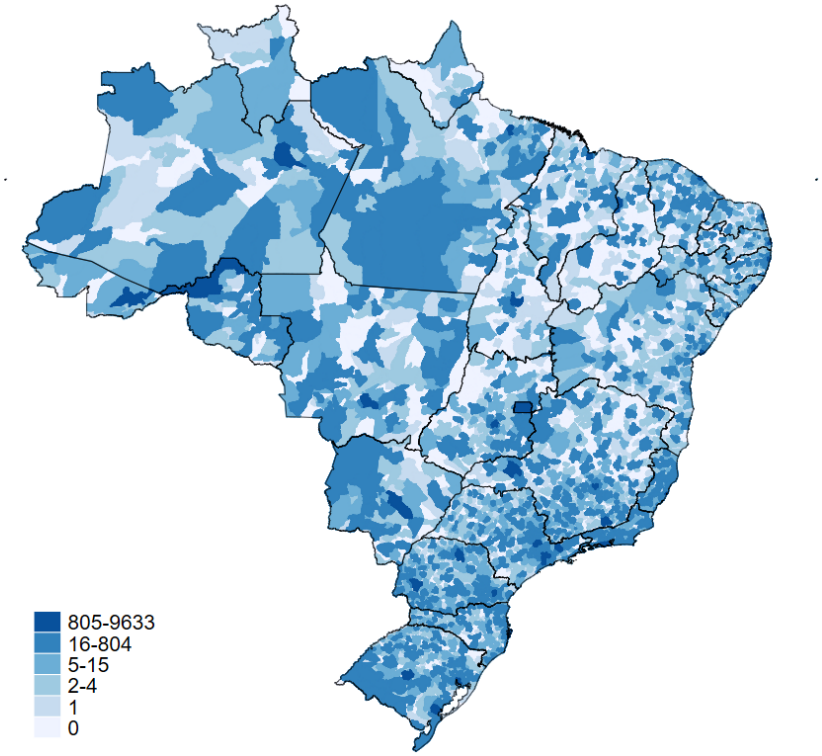
This table compares the characteristics of firms that are awarded procurements above and below the small-value purchase threshold. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). The dependent variables are the probability that the awarded firm politically connected (column I); the probability that the awarded firm is in the same municipality as the government agency (column II); a categorical variable of firm size equal to 1 for small, 2 for medium, and 3 for large firms (column III); the number of firm owners (column IV); and the firm size in years (column V). The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Panel A includes Product*Quarter fixed effects, effectively comparing outcomes in procurements of the same product and in the same quarter. Panel B includes Brand*Product*Quarter, effectively comparing outcomes in procurements of the same brand, product, and in the same quarter. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

A.2 Additional Figures and Tables

Figure A.1: Distribution of Government Agencies and Government Suppliers



Panel A: Number of Government Agencies



Panel B: Number of Government Suppliers

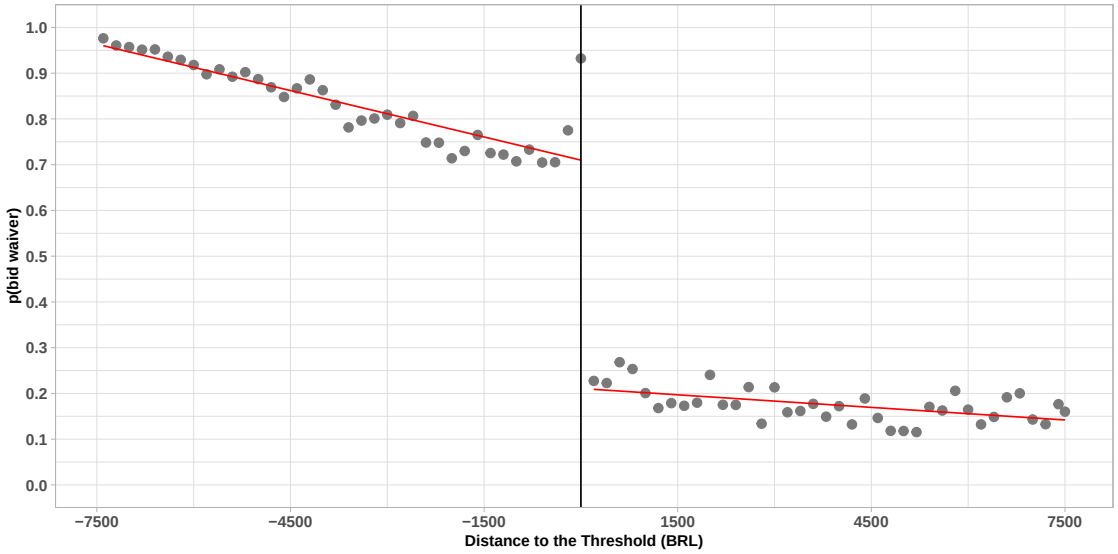


Figure A.2: *This figure illustrates the incidence of bid waivers around the small-value purchase threshold. Below the threshold, regulators permit products to be procured through bid waivers. Above the threshold, bid waivers are only allowed in special cases, such as emergency situations. In other cases, the main procurement procedure involves competitive auctions where the lowest price wins.*

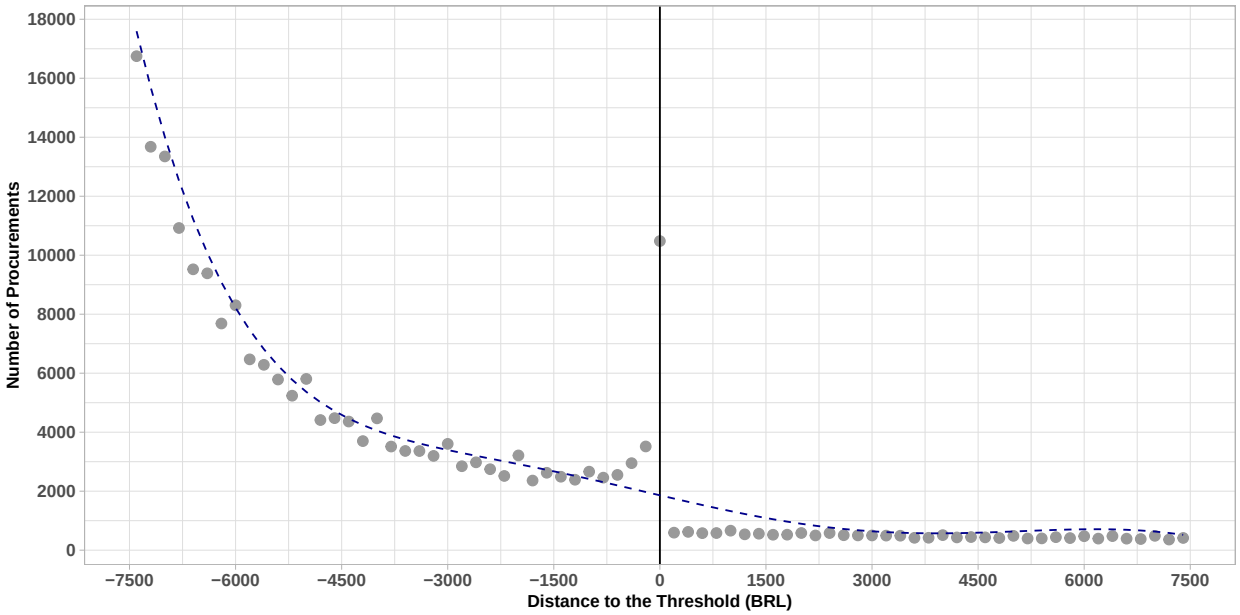


Figure A.3: *This figure plots the number of procurements around the small-value purchase threshold. Below the threshold, regulators allow products to be procured by bid waivers. Competitive bidding is the norm above the threshold, and bid waivers are only allowed in special cases, such as emergency situations. The blue dashed line represents the counterfactual in the absence of selection.*

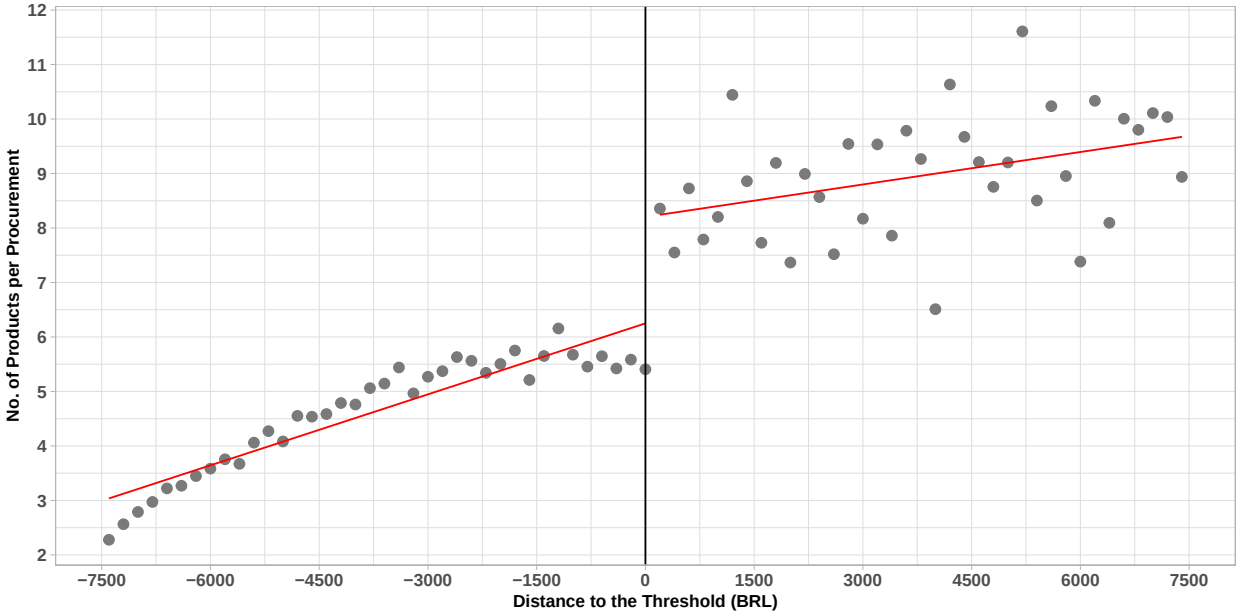
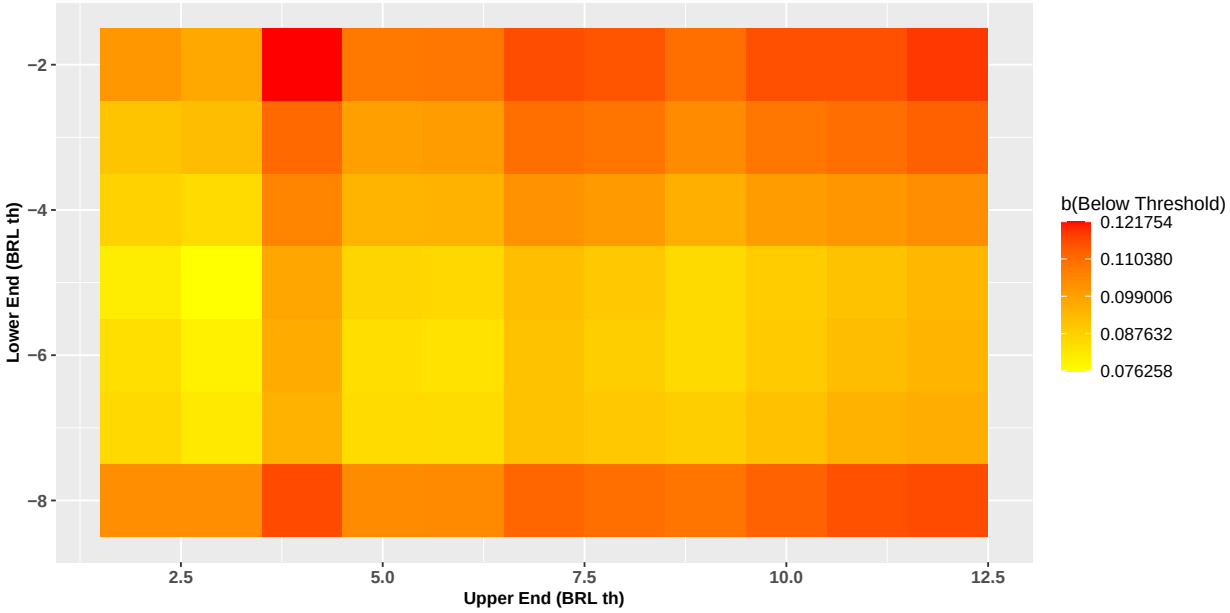
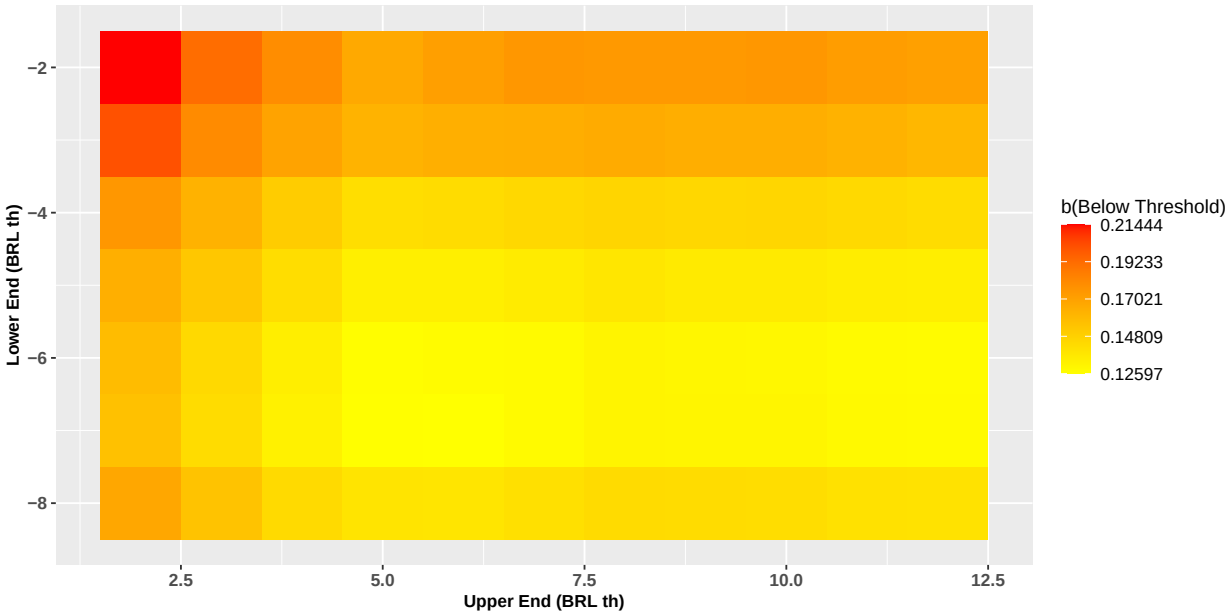


Figure A.4: *This figure plots the number of distinct products purchased per procurement around the small-value purchase threshold. Below the threshold, regulators allow products to be procured with higher discretion by bid waivers. Competitive bidding is the norm above the threshold.*

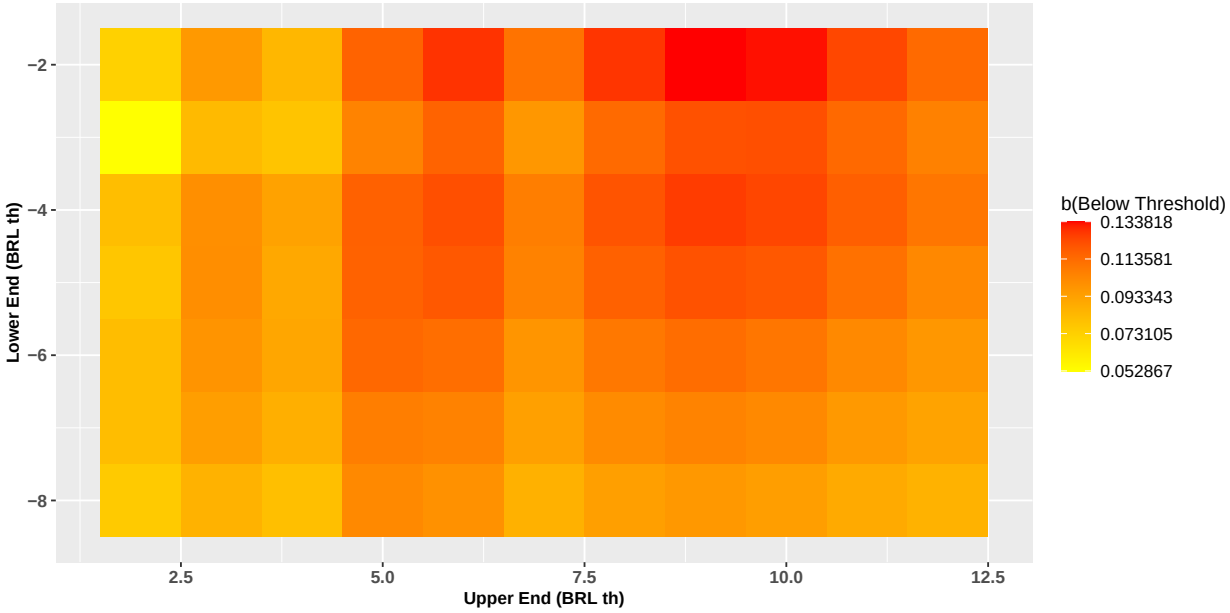


Panel A: Effect on log(price) for different bandwidths, 1st order polynomial

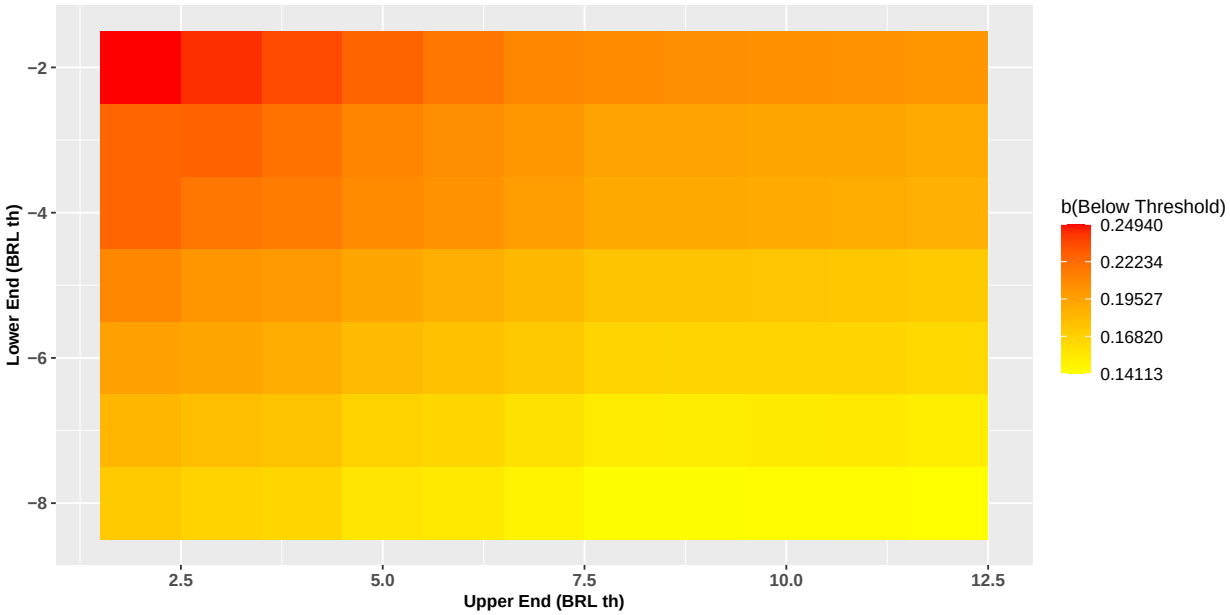


Panel B: Effect on log(brand price) for different bandwidths, 1st order polynomial

Figure A.5: *This heatmap displays the estimated coefficients for estimating equation (1) at various bandwidths around the threshold. For instance, in the upper right corner, I use a bandwidth between BRL 8,000 below the threshold and BRL 12,500 above it to estimate equation (1). In Panel A, the dependent variable is log(price), the natural logarithm of the unit price of product p in procurement i and product-brand-quarter fixed effects are included. In Panel B, the dependent variable is log(brand price), and product-quarter fixed effects are included. In all estimations, I fit a first-order polynomial on either side of the threshold.*

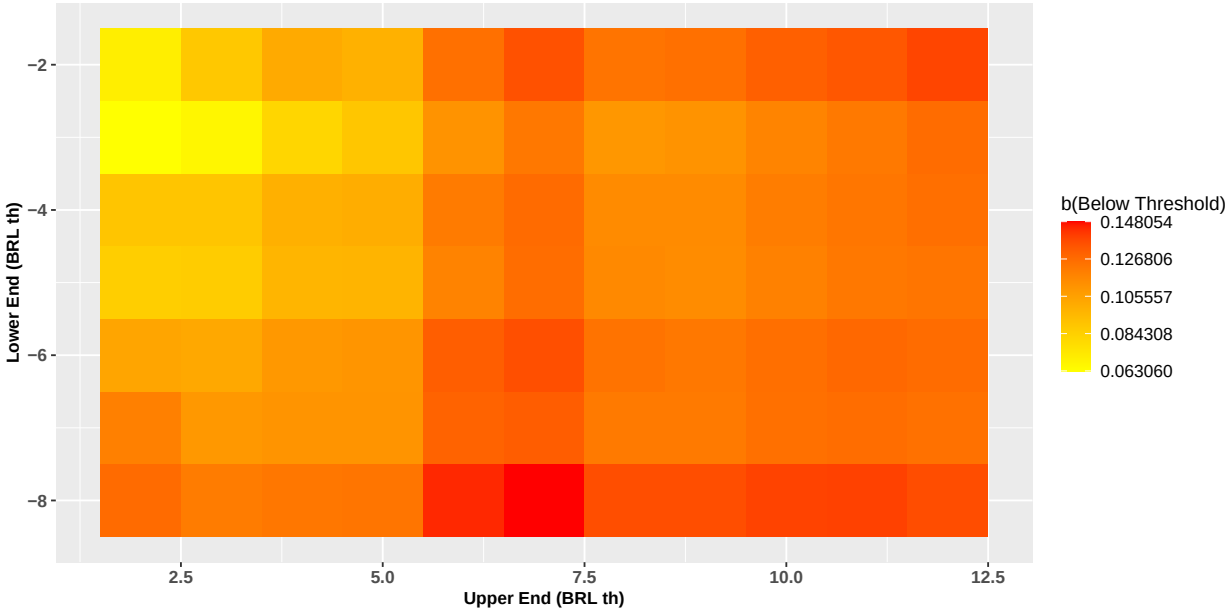


Panel A: Effect on log(price) for different bandwidths, 2nd order polynomial

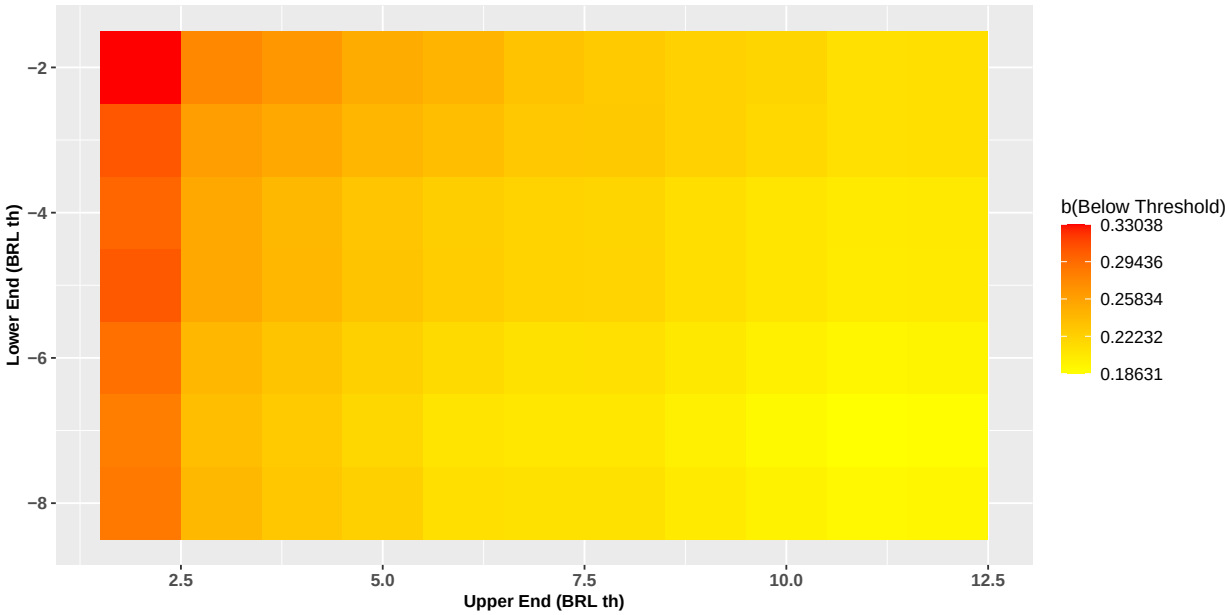


Panel B: Effect on log(brand price) for different bandwidths, 2nd order polynomial

Figure A.6: *This heatmap displays the estimated coefficients for estimating equation (1) at various bandwidths around the threshold. For instance, in the upper right corner, I use a bandwidth between BRL 8,000 below the threshold and BRL 12,500 above it to estimate equation (1). In Panel A, the dependent variable is log(price), the natural logarithm of the unit price of product p in procurement i and product-brand-quarter fixed effects are included. In Panel B, the dependent variable is log(brand price), and product-quarter fixed effects are included. In all estimations, I fit a second-order polynomial on either side of the threshold.*



Panel A: Effect on log(price) for different bandwidths, 3rd order polynomial



Panel B: Effect on log(brand price) for different bandwidths, 3rd order polynomial

Figure A.7: *This heatmap displays the estimated coefficients for estimating equation (1) at various bandwidths around the threshold. For instance, in the upper right corner, I use a bandwidth between BRL 8,000 below the threshold and BRL 12,500 above it to estimate equation (1). In Panel A, the dependent variable is log(price), the natural logarithm of the unit price of product p in procurement i and product-brand-quarter fixed effects are included. In Panel B, the dependent variable is log(brand price), and product-quarter fixed effects are included. In all estimations, I fit a third-order polynomial on either side of the threshold.*

Table A.2: *Examples of Products and Brands*

Product		Brand
Description	Unit	
Ballpoint Pen	1 unit	Bic
Flexible Electric 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 milliliters	Ype
HP Printer Toner Cartridge	1 unit	HP
White Board Pen	1 unit	Pilot
Insulin	3 milliliters	Lantus
Microscope	1 unit	Physis
Gas	1 liter	Petrobras

Table A.3: *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 A.4: *Comparing Procurements Around the Small-Value Purchase Threshold: Sample with High Brand Information Availability*

	Comparing the Same Product			Comparing the Same Product & Brand		Procurement Level
Dep. Var.	log(price)$_{ipt}$	log(quant)$_{ipt}$	log(brand price)$_{pbt}$	log(price)$_{ipt}$	log(quant)$_{ipt}$	# products$_{it}$
	I	II	III	IV	V	VI
below threshold$_{it}$	0.206***	0.115*	0.144***	0.146***	0.128*	-2.025
	(0.046)	(0.046)	(0.033)	(0.036)	(0.052)	(2.642)
Product*Quarter FE	yes	yes	yes			
Brand*Product*Quarter FE				yes	yes	
Quarter FE						yes
Obs	301,404	301,404	301,404	301,404	301,404	301,404
R^2	0.926	0.815	0.948	0.978	0.978	0.736

This table compares procurement outcomes above and below the small-value purchase threshold for products in the upper-quartile of brand information availability. In other words, I only keep those products whose information on brands are available in at least 82.2% of the observations. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). In columns I and IV, the dependent variable is the logarithm of the price of product p procured in procurement i at time t. In the remaining columns, the dependent variables are the logarithm of the quantity procured (columns II and V), the logarithm of the average brand price of product p of brand b purchased in procurements at time t (column III), and the number of products in procurement i at time t (column VI). The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Columns I, II, and III include Product*Quarter fixed effects, comparing outcomes for procurements of the same product and in the same quarter. Columns IV to V include Brand*Product*Quarter, comparing outcomes for procurements of the same brand, product, and quarter. Column VI includes Quarter fixed effects and analyzes aggregated procurement-level outcome: the number of products per procurement. Standard errors clustered at the product level (columns I to V) and at the agency level (column VI) are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.5: *Calonico et al. (2014)'s Robust Nonparametric Estimator*

Dep. Var.	Comparing the Same Product			Comparing the Same Product & Brand		Procurement Level
	log(price)$_{ipt}$	log(quant)$_{ipt}$	log(brand price)$_{pbt}$	log(price)$_{ipt}$	log(quant)$_{ipt}$	# products$_{it}$
	I	II	III	IV	V	VI
below threshold$_{it}$	0.198***	0.035***	0.183***	0.077***	-0.044***	0.035***
	(0.008)	(0.015)	(0.007)	(0.009)	(0.022)	(0.377)
Product*Quarter FE	yes	yes	yes			
Brand*Product*Quarter FE				yes	yes	
Quarter FE						yes
Obs	235,947	153,384	199,424	122,591	46,192	51,128

This table compares procurement outcomes above and below the small-value purchase threshold using the robust nonparametric estimators proposed by Calonico et al. (2014). We fit a linear polynomial on each side of the threshold. The symmetric bandwidths are estimated using the mean squared error (MSE) minimizing procedure described in Calonico et al. (2014) using the Epanechnikov kernel procedure for each specification. In columns I and IV, the dependent variable is the logarithm of the price of product p procured in procurement i at time t. In the remaining columns, the dependent variables are the logarithm of the quantity procured (columns II and V), the logarithm of the average brand price of product p of brand b purchased in procurements at time t (column III), and the number of products in procurement i at time t (column VI). The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Columns I, II, and III include Product*Quarter fixed effects, comparing outcomes for procurements of the same product and in the same quarter. Columns IV to V include Brand*Product*Quarter, comparing outcomes for procurements of the same brand, product, and quarter. Column VI includes Quarter fixed effects and analyzes aggregated procurement-level outcome: the number of products per procurement. Standard errors clustered at the product level (columns I to V) and at the agency level (column VI) are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.6: *Brand quality*

Product	Source	Description
Enamel Paint	INMETRO	Lead concentration in % (the lower, the better)
Toilet Paper	INMETRO	Score based on size, resistance, softness, and effectiveness
Ballpoint Pen	INMETRO	Pen writing capacity (in meters)
Washing Machine	INMETRO	Washing efficiency
Gas Stove	INMETRO	Average yield of burners (in %)
Air Conditioner	INMETRO	Energy efficiency score
Centrifugal Pump	INMETRO	Pump yield (in %)
Fan	INMETRO	Energy efficiency score (in m^2/s/W)
Domestic Fridge	INMETRO	Energy efficiency score
Microwave	INMETRO	Energy efficiency score
Coconut water	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Mineral Water	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Cellphones	PROTESTE	Score based on display, sound, signal, portability, durability, SMS, camera, video, internet, and GPS
Rice	PROTESTE	Score based on acidity, labeling, cooking time, hygiene, chemical and sensorial analyses
Olive Oil	PROTESTE	Score based on acidity, labeling, conservation status, humidity levels, frauds, and sensorial analyses
Coffee	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Beef	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Beans	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Iron (appliance)	PROTESTE	Score based on safety, performance, and instruction manual
Air Fryer	PROTESTE	Score based on noise, instructions manual, power cable, power efficiency, and safety
Yorgut	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Milk	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Pasta	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Butter	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses
Cream Cheese	PROTESTE	Score based on labeling, hygiene, chemical and sensorial analyses

Table A.7: *Selected Critical Manufacturing Issues*

Active Ingredient	Laboratory	Manufacturing Issue and Health Risk
Amoxicillin	Prati Donaduzzi	Substandard antibiotic concentration risking treatment failure and resistance
Benzylpenicillin	Teuto	Failed injection administration tests risking improper drug delivery
Ceftriaxone	Novafarma	Sterility concerns in broad-spectrum injectable antibiotic
Dexamethasone	Farmace	Cross-contamination with bronchodilator causing potential severe adverse reactions
Dobutamine	Novafarma	Quality issues in critical cardiac emergency medication
Dormec	IMEC	Failed dissolution test and incorrect labeling
Duzimicin	Prati Donaduzzi	Quality deviation in antibiotic suspension
Furosemide	Santisa	Critical defects in injectable diuretic affecting emergency treatment
Heparin	Eurofarma	Out-of-specification active ingredient risking anticoagulation failure
Ivermectin	Vitamedic	Manufacturing in non-authorized area affecting product quality
Levofloxacin	Halex	Unstable concentration in injectable antibiotic leading to treatment failure
Mesna	Novafarma	Quality failures in chemotherapy supportive medication
Morphine	Cristalia	Critical sterility breaches in controlled injectable opioid
Norepinephrine	Novafarma	Manufacturing deviations in vital vasopressor medication
Oxacillin sodium	Blau	Foreign particles in injectable medicine creating risk of embolism and infection
Vancomycin	Novafarma	Failed production controls in critical injectable antibiotic affecting safety

Table A.8: *Generic Purchases and Quality Violations Around the SVP Threshold*

Dep. Var.	generic$_{pb}$	quality violation$_{pb}$	
	I	II	III
below threshold$_{it}$	-0.000 (0.0131)	-0.115* (0.0520)	-0.000 (0.0002)
Product*Quarter FE	yes	yes	yes
Sample	Pharmaceuticals	Generic	Non-Generic
Obs	9,031	6,310	2,731
R^2	0.942	0.673	0.985

This table compares the likelihood of generic purchases and subsequent quality violations above and below the small-value purchase threshold. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). The dependent variable in column I is generic*pb*, a dummy equal to one for generic products. In columns II and III, quality violation*pb* is a dummy equal to one if the laboratory receives any ANVISA quality-related batch suspension in the three years following procurement. Column II restricts the sample to generic products, while column III looks at non-generic products. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.9: *Donut RD: Sensitivity of Results to Manipulation*

Dep. Var.	$\log(\text{price})_{ipt}$	$\log(\text{brand price})_{pbt}$
	I	II
Panel A: Donut RD - BRL 2,500 Radius		
below threshold$_{it}$	0.133**	0.122***
	(0.044)	(0.020)
Product*Quarter FE		yes
Brand*Product*Quarter FE	yes	
Benchmark RD	0.101***	0.134***
Obs	635,961	635,961
R^2	0.971	0.924
Panel B: Donut RD - BRL 3,000 Radius		
below threshold$_{it}$	0.120**	0.166***
	(0.037)	(0.025)
Product*Quarter FE		yes
Brand*Product*Quarter FE	yes	
Benchmark RD	0.101***	0.134***
Obs	686,598	686,598
R^2	0.971	0.924

This table compares procurement outcomes above and below the small-value purchase threshold by removing observations where manipulation of the threshold is suspected. On either side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The estimated coefficient of below threshold$_{it}$ still gives the estimates of outcomes at the threshold (as in Table 2), but it now allows for the possibility that observations that are close to the threshold are systematically different from farther away observations. Panels A and B present the results when I drop observations whose procurement value is within BRL 2,500 and BRL 3,000 of the threshold, respectively. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.10: *Comparing Auctions Around the Threshold: Finer Product Classification*

Dep. Var.	$\log(\text{price})_{ipt}$			
	I	II	III	IV
below threshold$_{it}$	0.152***	0.094***		
	(0.017)	(0.019)		
below threshold$_{it}$ · low description length$_p$			0.137***	0.087***
			(0.015)	(0.019)
below threshold$_{it}$ · high description length$_p$			0.182***	0.110***
			(0.023)	(0.030)
Product*Quarter FE	yes		yes	
Brand*Product*Quarter FE		yes		yes
Obs	977,059	977,059	977,059	977,059
R^2	0.918	0.978	0.918	0.978

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. On either side of the threshold, I fit a linear function of the distance to the threshold as in equation (1). The dependent variable is the logarithm of the price of product p procured in procurement i at time t. Columns I and II include product and quarter fixed effects. Columns III and IV include product brand, product, and quarter fixed effects and thus compare outcomes of products of the same brand. High Description Length$_p$ and Low Description Length$_p$ are defined as products above and below the median of their product description length, respectively. The explanatory variable in all columns, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Columns I and III include Product*Quarter fixed effects, effectively comparing outcomes in procurements of the same product and in the same quarter. Columns II and IV include Brand*Product*Quarter, effectively comparing outcomes in procurements of the same brand, product, and in the same quarter. Standard errors clustered at the product level are presented in parentheses. $^+$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.11: *DataSUS: International Classification of Diseases*

Certain infectious and parasitic diseases
Neoplasms
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
Endocrine, nutritional and metabolic diseases
Mental and behavioural disorders
Diseases of the nervous system
Diseases of the eye and adnexa
Diseases of the ear and mastoid process
Diseases of the circulatory system
Diseases of the respiratory system
Diseases of the digestive system
Diseases of the skin and subcutaneous tissue
Diseases of the musculoskeletal system and connective tissue
Diseases of the genitourinary system
Pregnancy, childbirth and the puerperium
Certain conditions originating in the perinatal period
Congenital malformations, deformations and chromosomal abnormalities
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
Injury, poisoning and certain other consequences of external causes
External causes of morbidity and mortality
Factors influencing health status and contact with health services
Codes for special purposes

This table lists different diseases classifications from the World Health Organization's International Classification of Diseases. These categories are also employed by DataSUS in their hospital mortality dataset.

Table A.12: *Real Effects of Discretion: Alternative Treatment Definitions*

Dep. Var.	mortality rate$_{hdet}$						
	all causes			cancer-related causes		non-cancer-related causes	
	I	II	III	IV	V	VI	VII
Panel A: purchases above 33% below the threshold							
below threshold$_{hde}$· post$_{et}$	-0.0053*** (0.0009)	-0.0047*** (0.0009)	-0.0638* (0.0248)	0.0001 (0.0029)	0.0029 (0.0029)	-0.0056*** (0.0010)	-0.0048*** (0.0009)
Hospital*Disease*Event FE	yes	yes	yes	yes	yes	yes	yes
Disease*Event*Time FE	yes	yes	yes	yes	yes	yes	yes
Hospital*Event*Time FE			yes				
Controls		yes	yes		yes		yes
pre-treat avg(mortality rate)	0.0515	0.0515	0.0515	0.0819	0.0819	0.0491	0.0491
Obs	982,549	953,743	953,743	49,927	49,922	932,622	903,821
R^2	0.833	0.866	0.882	0.928	0.940	0.826	0.861
Panel B: purchases above 66% below the threshold							
below threshold$_{hde}$· post$_{et}$	-0.0057*** (0.0009)	-0.0050*** (0.0009)	-0.0456*** (0.0086)	-0.0035 (0.0025)	-0.0016 (0.0026)	-0.0058*** (0.0010)	-0.0049*** (0.0009)
Hospital*Disease*Event FE	yes	yes	yes	yes	yes	yes	yes
Disease*Event*Time FE	yes	yes	yes	yes	yes	yes	yes
Hospital*Event*Time FE			yes				
Controls		yes	yes		yes		yes
pre-treat avg(mortality rate)	0.0515	0.0515	0.0515	0.0819	0.0819	0.0491	0.0491
Obs	988,210	959,850	959,850	71,791	71,786	916,419	888,064
R^2	0.832	0.866	0.883	0.915	0.927	0.825	0.861

This table compares hospital mortality rates between essential medicines purchased below and above the threshold. For each hospital-disease pair with a high proportion of emergency room medication purchases made below the SVP threshold, I select other hospital-disease pairs that make essential medicine purchases in the same quarter as controls. These events are then grouped into cohorts, and health outcomes around the date of purchase are compared using a "stacked" difference-in-differences approach. The dependent variable, mortality rate$_{hdet}$, represents the ratio of deaths to hospitalizations in hospital h for disease d in event e at year t. In Panel A, the primary independent variable, below threshold$_{hde}$, is a dummy variable equal to one if the at least 33% of purchases of essential medicines for hospital h to treat disease d in event e was done via procurements below the threshold, and zero otherwise; in Panel B, this is adjusted to 66%. The variable Post$_{et}$ is a dummy equal to one after the procurement and zero otherwise. Columns I to III present the results for all diseases, while columns IV to V and VI to VII present the results for cancer-related and non-cancer-related diseases, respectively. All specifications include hospital-disease-event fixed effects and disease-event-time fixed effects. Therefore, this strategy effectively compares purchases of medicines for the same disease below versus above the threshold. In column III, I further enhance the specification by adding hospital-event-time fixed effects to account for any time-varying changes in hospital characteristics that might explain the outcome. Standard errors, clustered at the hospital-disease-event level, are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.13: *Real Effects of Discretion: Excluding Repeat Purchases*

Dep. Var.	mortality rate$_{hdet}$			
	all causes			
	I	II	III	IV
below threshold$_{hde}$· post$_{et}$	-0.0040^{+} (0.0021)	-0.0046* (0.0020)	-0.0045* (0.0020)	-0.0486*** (0.0093)
log(hospitalizations)$_{hde,t=-1}$· post$_{et}$		-0.0031*** (0.0002)	-0.0027*** (0.0002)	-0.0018*** (0.0002)
$ essential ER drugs per hospitalization$_{hde}$· post$_{et}$			0.0076*** (0.0005)	0.0082*** (0.0006)
Hospital*Disease*Event FE	yes	yes	yes	yes
Disease*Event*Time FE	yes	yes	yes	yes
Hospital*Event*Time FE				yes
pre-treat avg(mortality rate)	0.0515	0.0515	0.0515	0.0515
Obs	946,376	918,998	918,998	918,998
R^2	0.832	0.865	0.865	0.882

This table compares hospital mortality rates between essential medicines purchased predominantly below and above the small-value purchase (SVP) threshold. For each hospital-disease pair with a high proportion of emergency room medication purchases made below the SVP threshold, I select other hospital-disease pairs that make essential medicine purchases in the same quarter as controls. These events are then grouped into cohorts, and health outcomes around the date of purchase are compared using a "stacked" difference-in-differences approach. I exclude treated hospital-disease pairs that made additional purchases below the threshold in the following 3 years to address potential confounding effects from repeated below-threshold purchases. The dependent variable, mortality rate$_{hdet}$, represents the ratio of deaths to hospitalizations in hospital h for disease d in event e at year t. The main independent variable, below threshold$_{hde}$, is a dummy equal to one if the purchase of essential medicines for hospital h to treat disease d in event e was done via a procurement below the threshold and zero otherwise. Post$_{et}$ is a dummy equal to one after the procurement and zero otherwise. All specifications include hospital-disease-event fixed effects and disease-event-time fixed effects. Thus, this strategy effectively compares purchases of medicines for the same disease below versus above the threshold. In column IV, I further enhance the specification by adding hospital-event-time fixed effects, addressing any time-varying changes in hospital characteristics that might explain the outcome. Standard errors clustered at the hospital-disease-event level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Table A.14: *List of Countries - Small-Value Purchase Thresholds and Direct Awards*

Country	SVP Threshold?	Threshold Value	Law
Australia	Yes	AUD 200,000 for direct purchases from Small and Medium Enterprises	Commonwealth Procurement Rules
Austria	Yes	EUR 100,000 for products and services; EUR 200,000 for works	Federal Public Procurement Act 2018 (BVergG), the Federal Act on the Award of Concession Contracts 2018 (BVergGKonz) and the Federal Act on the Award of Contracts in the Fields of Defence and Security 2012 (BVergGVS)
Belgium	Yes	EUR 30,000	Act of 17 June 2016
Canada	Yes	CAD 25,000 for products; CAD 100,000 for works; CAD 40,000 for other contracts	Contracting Policy Notice 2007-4
Chile	Yes	USD 67,000	Law of Bases of Administrative Contracts for supply and services, No. 19.886
China	Yes	RMB 1 million for products and services; RMB 1.2 million for works	PRC Government Procurement Law
Colombia	Yes	25 to 1,000 monthly minimum wages depending on contracting entity's budget (≈ USD 6,750 to USD 270,000)	Leyes 80 de 1993 y 1150 de 2007, y el decreto 1510 de 2013
Costa Rica	Yes	USD 58,550	Public Procurement Law

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Country	SVP Threshold?	Threshold Value	Law
Czech Republic	Yes	CZK 2 million for products and services; CZK 6 million for public works	Act No. 134/2016
Denmark	Yes	EUR 40,000	Act 1410/2007
Estonia	Yes	EUR 40,000 for products and services; EUR 250,000 for works	Public Procurement Act
Finland	Yes	EUR 60,000 for products and services; EUR 500,000 for works	Section 25 of the Act on Public Contracts
France	Yes	EUR 40,000	Ordinance no. 2015-899
Germany	Yes	EUR 1,000 for products and services; EUR 3,000 for works	German Public Procurement Law
Greece	Yes	EUR 20,000	Law 4412/2016
Hungary	Yes	HUF 15 million for products and services; HUF 25 million for works	Act CXLIII of 2015 on public procurements
Iceland	Yes	ISK 15,500,000 for products and services; ISK 49,000,000 for works	Act on Public Procurement
India	Yes	INR 25,000	General Financial Rules, 2017
Ireland	Yes	EUR 5,000 for products and services	National Irish Procurement Law

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Country	SVP Threshold?	Threshold Value	Law
Israel	Yes	ILS 50,000	Mandatory Tenders Regulations
Italy	Yes	EUR 40,000 for products and services; EUR 150,000 for works	Legislative Decree no. 50/2016
Japan	Yes	Threshold is not disclosed in the law	Article 29-3 section 5 of the Accounting Act
Korea	Yes	KRW 20 million for products and services; KRW 200 million for construction	Public Procurement Law
Latvia	Yes	EUR 4,000 for products and services; EUR 14,000 for works	2006 Law on Public Procurement
Lithuania	Yes	EUR 58,000 for products and services; EUR 145,000 for works	Law of Public Procurement (13/Aug/1996)
Luxembourg	Yes	EUR 8,000	Law of 8 April 2018
Mexico	Yes	Pre-specified and based on Authorized Budged for acquisitions and public works	2023 Federal Government Expenditure Budget
Netherlands	Yes	EUR 33,000 for Products and Services; EUR 150,000 for works	Public Procurement Act 2015
New Zealand	Yes	NZD 100,000 for products and services; NZD 9,000,000 for works	Government Procurement Rules

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Country	SVP Threshold?	Threshold Value	Law
Norway	Yes	NOK 100,000	Public Procurement Act
Poland	Yes	PLN 130,000	Public Procurement Law
Portugal	Yes	EUR 20,000 for products and services; EUR 30,000 for works	Decree-Law n.º 18/2008 of 29 January
Slovak Republic	Yes	Up to EUR 70,000 for products and services; Up to EUR 180,000 for works.	Act No 343/2015
Slovenia	Yes	EUR 40,000 for products and services; EUR 80,000 for public construction contracts	Public Procurement Act (ZJN-3)
Spain	Yes	EUR 15,000 for products and services; EUR 40,000 for works	Ley de Contratos del Sector Público 9/2017
Sweden	Yes	SEK 700,000	Sw. lag (2016:1145)
Switzerland	Yes	CHF 150,000 for products and services; CHF 300,000 for constructions	Federal Law on Public Procurement
Turkey	Yes	TRY 121,304	Public Procurement Law
United Kingdom	Yes	GBP 70,778 for products and services; GBP 884,720 for works	Action PPN 10/21
United States	Yes	USD 10,000 (micro-purchases)	Federal Acquisition Regulation

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Country	SVP Threshold?	Threshold Value	Law

Table A.15: *External Validity: Discretion Above the Threshold and Purchases of Services*

Dep. Var.	$\log(\text{price})_{ipt}$			
	Above the SVP Threshold		Services	
	I	II	III	IV
bid waiver$_{it}$	0.167***	0.091***		
	(0.010)	(0.022)		
below threshold$_{it}$			0.116*	-0.008
			(0.059)	(0.078)
Product*Quarter FE	yes		yes	
Brand*Product*Quarter FE		yes		yes
Obs	1,820,385	1,820,385	73,494	73,494
R^2	0.90	0.96	0.89	0.97

This table provides tests of external validity. Across all columns, the dependent variable is the logarithm of the price of item (product or service) p procured in procurement i at time t. I In columns I and II, I analyze the effects of discretion in product purchases via bid waivers above the SVP purchase threshold. The main independent variable is bid waiver$_{it}$ which is a dummy equal to one if procurement i at time t was exercised with discretion and zero if it was conducted via a competitive auction. In columns III and IV, I study the effects of discretion on the procurement of services around the SVP threshold. On either side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The main independent variable, below threshold$_{it}$, is a dummy equal to one if procurement i at time t is conducted below the threshold, and zero otherwise. Standard errors clustered at the item (product or service) level are presented in parentheses. $^{+}$, *, **, and *** denote significance levels of 10%, 5%, 1%, and 0.1%, respectively.