Rethinking Discretion in Public Procurement*

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Abstract

Exploiting a rule in Brazil that waives competitive bidding for small-value purchases, I find evidence of an efficiency-quality trade-off when government agencies have more flexibility in awarding public procurement contracts. Products purchased with higher discretion are 16% more expensive than those purchased via auctions. However, about two-fifths of this overpricing is explained by the purchase of higher-quality products. I also document that allowing for discretion in procurement can improve the quality of public services, as demonstrated by lower inpatient mortality rates at hospitals that use discretion to purchase better essential medicines. These findings suggest that regulations limiting discretion in procurement may not necessarily be desirable, as they may also limit the acquisition of higher-quality products.

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1 Introduction

Governments spend around 12% of their GDP purchasing goods and services from private companies in public procurements.[1] There are significant concerns that the procurement process can be prone to inefficiencies and waste of public resources, such as awarding contracts to specific firms in exchange for favors and bribes (OECD, 2016).[2] This behavior not only diverts public money to "favorite" private firms, but it may also lead to the procurement of goods and services from sub-optimal firms. If these firms were the optimal suppliers, they would not need to resort to favoritism to secure public contracts.

To reduce these risks, regulators encourage competitive bidding and increased transparency in public procurements (Transparency International, 2015). Discretion is only permitted in particular cases. For instance, regulators may waive the requirement for competitive bids for procurements below a certain value,[3] while those above this threshold must use competitive auctions. While these regulations aim at minimizing inefficiencies caused by discretion on public finances, there are also concerns that agents may attempt to circumvent these restrictions in favor of discretion, leading to increased waste of government resources.

An alternative view states that when government agencies have freedom to choose their suppliers, they can purchase better-quality products (Bosio et al., 2022). This is because officials may have the power to reject low-quality offers when they have discretion. Additionally, auctions focusing on the lowest price might also lead to a "race to the bottom" in which bidders cut costs by reducing quality.[4] Thus, strict regulations that limit discretion might not necessarily be desirable as they may also curb the acquisition of better-quality goods and services.

In light of these opposing views, this paper examines the price and quality considerations of discretion in public procurement. It aims to answer two main questions: (1) what are the consequences of discretion for the efficiency of procurement procedures and the quality of goods and services purchased and (2) what are the real effects of discretion on the provision of public services? To answer these questions, I exploit a regulatory small-value purchase cut-off in procurement law combined with detailed data on 2.5 million procurement contracts

[1] According to Bosio et al. (2022), the relative importance of procurements is equal to 5% of the GDP in China, 10% in the US, and about 20% in Brazil and India.

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

[3] Other papers have exploited the small-value purchase threshold to understand how discretion affects procurement outcomes in other countries, such as the Czech Republic (Palguta and Pertold, 2017), Italy (Butler et al., 2020), Hungary (Szucs, 2020), and the US (Calvo et al., 2019).

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

for more than 57 thousand different products in Brazil between 2013 and 2020.

Disentangling efficiency and quality can be empirically challenging. For instance, higher prices paid by public hospitals for insulin could be due to overpricing or corruption, or it could indicate the purchase of higher-quality brands. Similarly, procuring goods from local companies may raise concerns about favoritism, but it could also reflect the agency's preference for a supplier with a reputation for high quality. Ultimately, to separate these effects, one would require detailed data on the ex-ante quality of goods and services purchased in public procurements.

To assess the effects of discretion on procurement outcomes, this paper initially compares prices of the *same* product purchased on both sides of the small-value purchase threshold. Procurement outcomes just above the threshold serve as a potential counterfactual for the effects of higher discretion just below the threshold. I find that products purchased with higher discretion below the threshold are bought at 16.6% higher prices than the same product purchased above the threshold.

Using information on product *brand*, I then assess if this difference in prices across the threshold can be attributed to the purchases of higher-quality products. To do this, I compare prices of the same product *and* brand across the threshold and find that the price paid is, on average, 10.1% higher for procurements below the threshold. This drop in magnitude of two-fifths of the initial effect suggests that greater discretion allows purchasing products from more expensive and, thus, higher-quality brands. Indeed, products purchased below the threshold are from brands that are 13.4% more expensive, on average. Overall, evidence supports an inefficiency-quality trade-off of discretion in public procurement. While discretion is more inefficient than auctions, it leads to the purchase of higher quality products.

The analysis above implicitly assumed that more expensive brands are likely to be of higher quality, as well. To validate this statement, I take data on technical quality scores for various products calculated by Brazilian authorities and consumer defense associations. I confirm that higher quality brands are associated with a higher brand price across procurements in Brazil. For instance, the highest-quality brand is on average 10% more expensive than other brands. In addition, I show that products purchased below the threshold are more likely to have better quality scores. For the same product, government agencies are 9.5% more likely to purchase the highest-quality brand below the threshold than above it.

After observing the effects on price and quality, I explore how discretion affects favoritism by comparing the characteristics of winning firms. Ideally, in the absence of favoritism, we should not expect to see any difference in the characteristics of firms awarded public contracts below and above the threshold. I find evidence to the contrary: public agencies

use discretion to favor firms that are politically connected, located in the same municipality as the government agency, larger in size, and older. In addition to suggesting wasteful favoritism by public agencies, these firms may also be chosen because they can supply better quality products to the government. This paper also finds evidence partially supporting the latter channel. Differences in firm characteristics are significantly smaller when I compare products of the same brand. The estimated coefficients are about 10 to 70% weaker in magnitude. These results suggest that part of the favoritism may be due to these firms being able to supply better-quality products.

A concern about the validity of the results is that there may be manipulation of procurements around the regulatory threshold for waiving competitive bidding. Public agencies may strategically design procurements to fall below the regulatory threshold so that they can have higher discretion in choosing their suppliers (see more in Palguta and Pertold, 2017; Szucs, 2020). This paper does find evidence of manipulation, with 17 times as many procurements falling below the small-value purchase threshold as those just above it. 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.

Is the trade-off between efficiency and quality in public procurement due to strategic manipulation of the small-value purchase threshold or to discretion itself? To answer this question, I repeat the analysis after excluding procurement contracts where manipulation is suspected, i.e., those that are very close to the threshold. To the extent that the results of this paper are valid, I should not find that the coefficients are sensitive to removing these observations (Barreca et al., 2011). I confirm this hypothesis. I do not find significant differences in the inefficiency estimates, and the differences in brand prices across the threshold decrease slightly in magnitude from 13.4% to 10%. This suggests that the inefficiency-quality trade-off is mostly driven by discretion rather than manipulation. The strategic behavior around the threshold may, in fact, be associated with slightly higher-quality purchases compared to a scenario without manipulation.

Next, we will discuss the implications of this paper's findings. While it may be true that discretion leads to the purchase of higher-quality products, this does not necessarily mean that it is desirable from a social standpoint. It is possible that government agencies could exploit higher discretion to purchase luxury or unnecessary goods, such as premium coffee for public servants or expensive appliances. In this case, even though the products being purchased are of higher quality, they are still a waste of public resources and provide little to no benefit to society as a whole.

This paper provides evidence of both unnecessary and necessary purchases of higher-quality products in public procurement. On the one hand, I show that public administration offices use discretion to purchase premium brands of office supplies, such as pens, pencils, and printer cartridges with limited marginal benefits to society. On the other hand, hospitals and universities also make use of discretion to purchase better-quality products, which can lead to improvements in healthcare and education. In particular, hospitals are more likely to purchase higher-quality essential emergency-room medicines in higher-discretion procurements.

There is no denying that purchasing better-quality drugs has the *potential* to have a greater impact on the provision of public services than purchasing premium stationery goods. However, it is important to consider whether this potential is actually translated into improved health outcomes. This paper finds that hospitals' mortality rate decreases by 19% of its standard deviation with a 10 percentage point increase in the fraction of essential drugs purchased below the threshold. This result holds even after controlling for time-varying changes in hospital quality by comparing the effect of purchasing medicines for different diseases on mortality rates within the same hospital and quarter. Additionally, the decrease in mortality is primarily seen in preventable deaths, rather than terminal causes. Overall, higher discretion can foster the acquisition of better-quality products, and it can potentially benefit society via, for instance, better hospital services. However, one can also not rule out the use of discretion to purchase premium brands of luxury or other non-essential products.

Throughout the paper, I provide a series of additional tests to address alternative stories that might explain differences in outcomes between procurement types. First, I address possible unobservable factors that may lead procurement agencies to choose discretion over auctions by exploiting a change in the discretion threshold. In June 2018, the maximum value of contracts awarded under small-value purchases increased from BRL 8 thousand to BRL 17.6 thousand. I then run a difference-in-differences estimation by comparing, around June 2018, government agencies that purchased products just above the new threshold before the reform. Government agencies that were procuring goods just above the new threshold might have more incentives to bunch below the new threshold after the reform. I find that this is indeed the case. After the change in the threshold, agencies with a 10 percentage point higher fraction in the value procured just above the new threshold are 5.2% more likely to purchase products via higher-discretion procurements below the threshold after the reform and pay 4% higher prices for these goods. After I control for quality, there still is a higher likelihood that government agencies, on average, will purchase more products below the threshold, but the price increase becomes statistically insignificant from zero, suggesting that the selection happens mostly due to product quality considerations.

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

The contributions of this paper are twofold. The first contribution is the finding of an efficiency-quality trade-off of discretion in public procurements. On average, discretion is less efficient than auctions, but it also allows agencies to purchase higher-quality products. The second contribution is documenting the positive real effects of discretion. Public hospitals that use discretion to purchase essential emergency-room drugs experience decreased mortality rates, particularly for non-terminal diseases. The main takeaway is that regulators should balance efficiency and quality considerations depending on how essential the quality of products and services is for the provision of public goods.

This paper speaks to the literature on the capture of government agencies by the private sector. Previous research has shown evidence of revolving doors (Agarwal et al., 2014; Lucca et al., 2014; Tenekedjieva, 2020; Asai et al., 2021), political connections (Faccio et al., 2006; Schoenherr, 2019),[5] lobbying (Blanes i Vidal et al., 2012; Bertrand et al., 2014), ownership networks (Asai and Charoenwong, 2020), and corruption more broadly (Colonnelli et al., 2022), among other reasons. A paper by Bandiera et al. (2009) argues that most of the inefficiency in public procurements is not due to corruption, but rather to factors such as a lack of skills among public officials or a lack of interest in minimizing costs.[6] My paper also argues that corruption and inefficiency might be overestimated in public procurement, and proposes a novel explanation for this overestimation: the purchase of more expensive and higher-quality brands. In addition, I provide evidence on the real effects of discretion on the provision of public services, such as a decrease in hospital mortality due to the acquisition of better-quality drugs.

This paper is also related to the literature about the effects of discretion on procurement outcomes (Rasul and Rogger, 2016; Palguta and Pertold, 2017; Coviello et al., 2018; Calvo

[5]There is also extensive literature discussing advantages that firms get from being politically connected, such as Fisman (2001) and Faccio (2006).

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

et al., 2019; Decarolis et al., 2020; Szucs, 2020; Bandiera et al., 2022; Butler et al., 2020; Gallego et al., 2022; Baltrunaite et al., 2021). The overall understanding of the literature is that discretion may increase inefficiency, since it is more prone to corruption and favoritism. Recent papers (Decarolis et al., 2020; Carril, 2022) also discuss a possible benefit of discretion in reducing delays, thus, increasing *ex-post* contract quality. My paper contributes to this literature by documenting a trade-off: while discretion is indeed more inefficient than auctions, it also allows for *ex-ante* higher-quality purchases in simple procurement contracts, such as the acquisition of hospital and stationery products. This acquisition of better products may also contribute to the provision of public services.

2 Institutional Background

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

Procurements in Brazil are divided into different types. The most common type is the *bid waiver*, which, as the name implies, waives the requirement for government agencies to conduct proper competitive bids to purchase goods and services. Bids can be waived (a) for small-value purchases, (b) in the case of federal emergencies, and (c) when there is only one supplier of the desired product or service. In terms of small-value purchases, exploited in section 4.1 of this paper, Federal Law 9,648/1998 waived bidding for procurements whose values were below BRL 8 thousand. This threshold was then changed to BRL 17.6 thousand by Presidential Decree 9,412/2018.[7]

The second most common procurement procedure is competitive bidding, i.e., auctions. Since 2005, these auctions of standardized products and services have been mandated to be done electronically, which has greatly decreased procurement participation costs.[8] The electronic format also allows for much more publicity than other methods since the procurement notice is freely available on the internet. This electronic procurement is a first-price open-bid auction where bids are made via the electronic platform during the specified auction period.

[7] Auctions can be performed even for small-value purchases. Similarly, bid waivers are also allowed in emergencies, such as the Covid pandemic, and in situations where there are only one possible supplier for the product. Nevertheless, most procurements below the threshold are bid waivers, and most procurements above them are auctions. Figure A1 in the Internet Appendix plots the frequency of auctions on each side of the threshold. Around the discontinuity, the probability of a procurement being done through competitive bidding jumps from 10% below the threshold to at least 80% above the threshold.

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

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

Procurements in Brazil are monitored by the *Tribunal de Contas da União* (TCU). TCU's mission is to oversee and control expenditures in government contracts, including those resulting from a procurement. TCU attempts to identify fraud and inefficiencies that might lead to losses for the public coffers. For instance, regarding bid waivers, TCU explicitly says that government agencies must not strategically design their procurements so that the purchases will fall below the small-value purchase threshold. In other words, purchases of similar goods and services must be made in one procurement procedure within the same year and not divided into several procedures to exploit the small-value purchase (SVP) threshold. Despite this regulation, the TCU recognizes that it is hard to properly enforce the rules in practice, since government agencies can always say that multiple purchases happen for extraordinary and previously unexpected reasons.[9]

3 Data

The main dataset comes from the ComprasNET portal. It contains information on the universe of federal public procurements in Brazil since 1996. While federal agencies are mandated to use the ComprasNET portal in their procurements, local governments such as states and municipalities can choose to use this platform as well. It is also an electronic platform for government institutions to conduct procurements. I take information from January 2013 to December 2020, totaling 4.38 million contracts. Since I observe the brand of products purchased, I have decided to keep procurements that involve purchasing products and drop those related to services/construction. I define products as the interaction of the goods sold, e.g., coffee, and the size of the package, e.g., 1 kg.[10] To address outliers, I only keep observations where product prices are at most 10 times away from the median price of the product.[11] 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

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

[10] Table A1 in the Internet Appendix provides a list with selected products and their most common brands.

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

for 4,657 federal and local government agencies[12] from January 2013 to Dececember 2020.[13]

Figure 1 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 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 uses a couple of secondary datasets to enrich the analysis. First, I gather firms' registry data from the *Receita Federal*. This dataset contains information on firms' location, industry, and legal structure, among other data, for the universe of Brazilian firms. The firm registry is used to identify the characteristics of firms that are awarded public contracts. Second, I take data on politicians who served a mandate either in local or federal government from the *Tribunal Superior Eleitoral*, the Superior Electoral Court in Brazil, for the elections of 1998-2018. This information, merged with the firm ownership data from *Receita Federal*, will be relevant to measure whether a winning firm is directly connected to the government. Finally, I take data on hospital deaths in Brazil from DataSUS, a publicly available dataset on 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 outcome variables used in the paper.

4 Empirical Analysis

4.1 Procurement Outcomes Around the SVP Threshold

This section evaluates the effects of discretion on prices and quality of products purchased. Discretion can lead to inefficiencies for at least two reasons. First, the lack of competitive bidding would allow suppliers selected in bid waivers to charge price mark-ups. Second,

[12] Table A2 in the Internet Appendix provides a list of selected government agencies.

[13] Table A7 in the Internet Appendix shows that missing information on the brand does not seem to drive our results. When we rerun our main specifications with products with high brand information coverage, the coefficients are virtually unchanged.

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.

This section asks what are the effects of discretion on inefficiency and quality. To do so, I compare procurement outcomes around the small-value purchase threshold. Below this threshold, competitive bidding can be waived, and suppliers chosen freely, while abote it, strict rules must be followed, and the lowest price wins.

I start by looking at the average price paid, a standard way to access inefficiencies in public procurement. Figure 2 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 I am comparing the same product in the same quarter across the threshold. There are three important findings in this figure. First, prices below the threshold are on average higher than those above it, suggesting that procurements with higher discretion are more inefficient than competitive bidding. Second, procurements that are close are 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 2. To understand why, assume a simple example of two procurements (Z and Y) each purchasing two units of a product in via high- and low-discretion, 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 actually explained by the differences in product quality purchased by Z and Y.

As a result, one needs to compare product outcomes for products of similar quality, in this

case, of the *same* brand. In Panel B of Figure 2, I adjust the observations by subtracting their product-brand-quarter averages, thus controlling for product quality. The evidence here shows that (a) the average difference in prices between procurements above and below the threshold is much smaller in magnitude; and (b) the discontinuity in prices around the threshold is much less significant: 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 Figure 3. 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 we get 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[14] similar to a regression discontinuity design (RDD) as follows:

$$y_{ipt} = \alpha_{pt} + \beta \cdot \text{Below Threshold}_{it} + \gamma_1 \cdot \text{Distance}_{it} + \gamma_2 \cdot \text{Below Threshold}_{it} \cdot \text{Distance}_{it} + e_{ipt} \quad (1)$$

where i refers to the procurement, p to the product and t to the date (year-quarter). Below Threshold is a dummy equal to one if the procurement i where product p was purchased is below the SVP threshold and zero otherwise. 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 my 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.[15]

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 a significant apparent 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 can be explained

[14] We follow recent evidence by Gelman and Imbens (2019), who argue that using higher order polynomials of the running variable can bias the results. They conclude that local linear or quadratic functions should be used. Figures A3 and A4 in the Internet Appendix show that this choice is not crucial to our results.

[15] This bandwidth is selected via the the non-parametric optimal bandwith procedure by Calonico et al. (2014). Figure A2 in the Internet Appendix shows that this assumption is not crucial for the results.

by discretion acquiring higher-quality goods, while inefficiencies may explain the other half. Indeed, the average brand price of products purchased in procurements below the threshold is 13.4% higher (column VII).

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. Columns II and V, however, disprove this hypothesis. If anything, procurements below the threshold purchase a higher quantity of items for the same product and brand (Panel B) than those above the threshold. Columns III and VI explain why this is happening: instead of buying a lower quantity for the same product, procurements below the threshold have a lower number of distinct products being purchased.

4.1.1 Product Quality

The evidence in section 4.1 suggests that high-discretion procurements are related to better-quality products purchased. This conclusion is based on indirect evidence on brand prices and implicitly assumes that average brand price and quality are positively correlated. This section's objective is two-fold. First, it explicitly tests this assumption. Second, it also provides direct evidence that higher quality products are being purchased with higher discretion.

To achieve these goals, I collect data from two sources: (a) PROTESTE, a major consumer defense association in Latin America, and (b) INMETRO, the official government institution that certifies products in Brazil. Each of these institutions provides technical quality reviews on a variety of products. In total, I have information on quality scores for 39 distinct products, such as home appliances, food, and beverages. Table A3 in the internet appendix details the quality information for each product obtained from both sources. It contains information in 25 product descriptions, which map to 347 distinct products in the procurement dataset. Because these quality scores have different measurement techniques, a direct comparison of them would not be meaningful. I circumvent this problem by ranking brands based on the quality of each score. For each product, the best quality brand has the highest rank position of 1. has a rank of 1.

First, I show that brand prices positively correlate with higher-quality products, as assumed in the previous section. I calculate the average price of each product-brand-quarter using the data on procurement. Then, I assess whether, within the same product and quarter, higher-quality brands also have higher average prices. Table 3 confirms this hypothesis.

In column I, an one unit higher quality rank position leads to a 1.5% higher average price paid for that brand. Column II shows that products with the highest quality rank, i.e., rank = 1, have a 10.5% higher product brand price. These results highlight that more expensive brands have indeed higher quality.

Second, similarly to the evidence provided in the previous section, I include the product quality rank position as a dependent variable of equation (1) and assess whether better quality products are purchased below the SVP threshold vis-a-vis above it. Table 4 presents the results. Column I shows that products purchased below the threshold are from brands with a 1.2 higher quality rank position than those above the threshold. In addition, column II shows that procurements below the threshold are 9.5% more likely to purchase the highest-ranked product than those just above it. In sum, this evidence confirms that procurements with higher discretion are also associated with higher-quality purchases.

4.1.2 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). Even if this does not necessarily translate into overpricing and inefficiency, it still 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, we 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, we calculate firm age as the year of procurement minus the year of firm's creation. All of these measures are obtained from the Firm Registry dataset

of *Receita Federal*.

In Panel A of Table 5, I find that procurements below the threshold are more likely than procurements above the threshold to award contracts to connected and nearby firms. This initially suggests a waste of public resources, since public officials appear to be favoring connected firms. Nevertheless, in Panel B of Table 5, I show that these effects are muted when I compare the same product and brand across the threshold. The coefficient on p(connected) decreases slightly, while the coefficient on p(same muni) decreases by 25% in magnitude. Overall, it seems that while agencies do favor connected firms, a part of the reason why they do so is to acquire better-quality goods.

Columns III to V of Table 5 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 less opaque than the ones awarded contracts above the threshold. Less opaque 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 still statistically significant.

4.2 Circumventing Regulations on Discretion

This section asks whether public officials prefer high- over low-discretion procurements. As discussed in section 2, discretion is highly regulated. Despite these restrictions, there may be scope for public officials to manipulate procurements around the SVP threshold in order to circumvent the regulations. There are several reasons why they might do this. First, there is a preference for less bureaucratic procedures, as they also reduce competition. Second, public officials might accept higher inefficiency in exchange for favors, bribes or non-pecuniary benefits. Third, discretion might allow agencies to purchase better-quality products and this is desirable for the public agency. Given these reasons, do government agencies manipulate procurement in favor of discretion?

To answer this question, I first assess how procurements are distributed around the SVP threshold. If there is no strong preference for one procurement type, one should expect to see a smooth and continuous transition in the number of procurements across the threshold. Figure 5 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 appears to start within BRL 1,000 from the threshold. In the absence of bunching behavior, the curve would continue decreasing until there was a small and probably not

significant jump across the threshold. Overall, there are strong indications that government agencies prefer to bunch below the threshold to enjoy higher discretion.

How is this bunching achieved? Figure 6 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.

4.3 Disentangling Manipulation and Differences in Procedures

Note that because of the manipulation of the threshold documented above, the results from estimating equation (1) in section 4.1 may not identify the causal effect of discretion. The estimated coefficients may include both the effects of selection and of discretion on procurement outcomes. A concern, consistent with regulators' worry, is that public agencies manipulate the SVP threshold for inefficiency purposes, such as corruption. If that is the case, selection below the threshold might be partially or fully explaining the previous finding discretion leads to higher inefficiency.

This section presents two additional tests to address the possible effect of selection and of discretion on the inefficiency and quality of government purchases. As this section will show, manipulation of the threshold does not seem to explain the differences in inefficiency around the threshold and, contrary to regulators' concerns, it explains about one-quarter of the higher-quality purchase results. Overall, the inefficiency-quality trade-off of discretion is present even in the absence of manipulation of the threshold. In addition, the manipulation itself seems to lead to a higher quality of products purchased vis-a-vis a scenario without manipulation.

4.3.1 Decomposing Outcomes Across the Threshold

To address these concerns, I first remove the procurements close enough to either side of the threshold and reestimate the discontinuity on the remaining sample. This strategy also called "donut RD" assesses whether the estimated discontinuity is being driven by 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 6 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 our main results.

In Panel A, I find that the coefficients when prices and brand prices are the dependent

variables drop from 10.1% to 9.7% 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. Coefficients in columns III to VII show that the donut RD's coefficients on winning firm characteristics are either significantly similar in magnitude to the benchmark results (as in p(connected) in column III, firm size in column IV, and # owners in column V) or are slightly different (as in p(same muni) in column IV, and firm age in column VII). Coefficients in Panel B are surprisingly similar in magnitude to the ones in Panel A, with the exception of firm age (column VII).

Overall, this section alleviates concerns that the manipulation of the threshold observed in section 4.2 significantly explains the differences in outcomes between high- and low-discretion procurements.

4.3.2 Change in the Threshold in June 2018

So far, we have assumed the choice for high- and low-discretion by public agencies as given. This choice, however, might be driven by unobservable factors that might be correlated with the outcomes analyzed in this paper. To address this concern, I exploit a change in the small-value purchase threshold in 2018 by the Brazilian government. The threshold was updated from BRL 8,000 to BRL 17,600. To understand how this change of the threshold impacts the choice for discretion by procurement agencies, I hypothesize that this change would particularly affect government agencies that, before the regulatory change, acquired products in procurements whose value was just above the new threshold. These agencies would have the incentive to move their purchases below the new threshold after this regulatory change.

To test this hypothesis, the treatment group is defined as government agencies that purchased products in procurements with a value between BRL 17,600 and 19,600, i.e., just above the new threshold imposed by the reform. I calculate this variable (Treat_a) in the two years before the reform. I employ a standard difference-in-differences specification, which compares outcomes around the regulatory change for agencies with different potentials of treatment:

$$y_{iapt} = \alpha_a + \alpha_{pt} + \beta \cdot Treat_a \cdot Post_t + e_{iapt}. \tag{2}$$

where i refers to the procurement, a to the procurement agency, p to the product, and t to quarter. Post_t is a dummy equal to 1 after June 2018.

Table 7 provides the results. Column I shows that those agencies that are more likely to be affected by the change in the threshold procure products at a higher price after 2018.

Agencies with a 10pp higher Treat_a purchase the same products at a 4% higher price after the change in the threshold. Column II shows that agencies with a higher fraction of products purchased close enough to the new threshold are more likely to purchase products below the new threshold after the reform. Figure 7 confirms that the treatment effect on prices only comes after the regulatory change, and that we cannot reject the hypothesis of parallel trends prior to the reform, crucial for identification.

Columns III and IV take into account product quality. As one can see from column III, an increase of 10 pp in Treat_a increase prices by 2.6%, but this effect is not statistically significant. Thus, as with the previous results, I cannot reject the possibility that product quality considerations explain a large part of government agencies' preferences for discretion.

4.4 Robustness Tests

Averages around the threshold In my main tests in Section 4.1, I fit a linear function below and above the threshold and compare the jumps around the discontinuity. In this section, I propose additional tests comparing averages of my outcome variables in much closer proximity to the threshold, as follows:

$$y_{ipt} = \alpha_{pt} + \beta \cdot \text{Below Threshold}_{it} + e_{ipt} \tag{3}$$

where $\text{Below Threshold}_{it}$ is a dummy equal to one for procurements up to BRL 2,000 below the threshold and zero in procurements up to BRL 2,000 above the threshold. I present the results of this specification in Table A4 in the Internet Appendix. The results are virtually unchanged in qualitative terms.

Comparing auctions across the threshold In Section 4.1, I exploit a discontinuity around the SVP threshold. Procurements below this threshold are allowed to be done via bid waivers. Nevertheless, around 10% of the small-value purchases are still done via auctions (see Figure A1 in the Internet Appendix). In my previous empirical analysis, I did not remove these auctions from below the threshold, making results harder to find for this paper. However, this fact also allows me to conduct a validation test. Since auctions are less likely to be manipulated by public officials, and since the SVP should not affect the behavior of auctions around the threshold, I should not observe any changes in prices, quantities, or other variables when only comparing competitive biddings happening around the threshold.

Table A5 provides the results of examining the existence of discontinuous differences in procurement outcomes at the threshold for auctions. The table shows no statistically significant differences in outcomes of procurements conducted via auctions above and below

the threshold, except for firm size and number of owners. Overall, this paper's results do not appear to be driven by other changes around the SVP regulatory cutoff.

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

Despite it being an improbable driver of this paper's results, I still further alleviate this concern by employing an even finer classification of products. While this paper's benchmark specifications work with about 57 thousand products, the finer classification gives us a much more detailed classification with approximately 205 thousand distinct products. I rerun the main specifications with this new classification and present the results in Panel A of Internet Appendix Table A6. Again, the coefficients are consistent with the previous findings, in terms of both magnitude and statistical significance.

Nevertheless, it might still be the case that poorly defined products are driving the results. If I only focus on the highly detailed products, the inclusion of brand in the analysis will not change procurement outcomes. I propose a new test that exploits the length of the textual description of each of the 205 thousand products in the finer classification. I normalize this length by the length of the 57 thousand products that they belong to. Products with a long description length are likely measured with higher precision than those with a short description. If increased precision explains why differences between procurements decrease after I control for product brand, I should find that controlling for product brand leads to a bigger drop in the coefficient magnitude for short description length products relative to long description length products. The results in Panel B of Internet Appendix Table A6 show that this is not the case: differences between procurements above and below the threshold are strikingly similar between products with above- versus below-median description length regardless of whether I control for product quality or not. This result suggests that precision does not explain why the differences between procurement types decrease after controlling for product quality.

Functional form and bandwidth The main specifications of this paper fit a linear function on either side of the SVP threshold using procurements within the interval between - BRL 7.5 thousand and + BRL 7.5 thousand. While the bandwidth was selected based on the optimal bandwidth procedure by Calonico et al. (2014), one might ask whether this paper's results are driven by this bandwidth or by the functional form of the polynomial fitted on each side of the threshold.

I provide additional evidence that the results are not driven by the functional form or bandwidth assumptions. I re-run specifications with price and brand price as the dependent variables, but now fitting 1st, 2nd, or 3rd order approximations around the threshold and varying bandwidths from BRL 8 thousand below to BRL 12 thousand above the threshold. Figures A2, A3, and A4 provide the results. In Panel A of these figures, I plot the coefficient of Below Threshold on log(price) while comparing the same product, brand, and quarter. In Panel B, I plot coefficients on log(brand price) while comparing the same product and quarter.

Across all specifications, the increase in quality-adjusted price varies from 5.2% to 14.8%, and the increase in average brand price varies from 12.5% to 33%. The median points of these intervals are 10% for log(price) and 22.75% for log(brand price). The benchmark results in Table 2 (10.1% and 13.4%, respectively) show that while the magnitude of the main coefficient for the log(price) specification is close to the median of the interval of coefficients, while the magnitude for the log(brand price) is very close to the minimum of the interval, suggesting a conservative estimate. This alleviates concerns that the paper's findings are driven by particular assumptions on the sample and functional form. If anything, the brand price's result is conservative when compared to other specifications.

5 Discussion

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

Governments are usually evaluated on the quality of their bureaucracy (Rauch, 1995) and the provision of public services, such as education, health, and infrastructure (La Porta

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

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

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 Tables 8 and 9, respectively. The benefit of purchasing better-quality products might depend on which agency is buying and what the product is.

In Table 8, I divide government agencies into the following types: education, hospitals, armed forces, and others. This last group consists mostly of public administration, utilities, and agriculture agencies. I rerun specification (1) by comparing outcomes around the SVP threshold, but now interacting *Below Threshold* with dummy variables of government agency types.

I find significant variation in both overpricing and quality of products purchased with higher discretion across different agencies. Column I of Table 8 shows that the average prices of products purchased are all higher below relative to above the SVP threshold. The differences range from 14.5% (others) to 30% (hospitals). Once I adjust for the product brand, however, the magnitudes of these coefficients decrease significantly across all agency types. In fact, column II shows that price differences between high- and low-discretion procurements are not statistically for hospitals and armed forces agencies anymore. Thus, on average, there is no inefficiency-quality trade-off for these agencies, since higher product quality explains all of the apparent overpricing of bid waiver procurements. On the other

hand, significant differences in prices remain for education and other agencies even after controlling for quality, supporting the existence of a price-quality trade-off of discretion.

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

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

5.2 Real Effects: Hospital Mortality

The evidence above demonstrates that hospital agencies use discretion to acquire better-quality products. In fact, after controlling for quality, I do not see a statistical price difference for the average procurement by public hospitals around the SVP threshold. However, does this translate into better health outcomes?

To answer this question, this paper takes data on hospital deaths from DataSUS, a publicly available dataset on healthcare performance, with information on deaths and hospitalization for public hospitals in Brazil. I match this information with the public procurements of these hospitals from 2013 to 2019.[16] The final dataset has 63 public hospitals in 25 different states. Finally, I list essential drugs used to treat serious health issues based on World Health Organization (2013). Intuitively, not all products purchased by hospitals are going to contribute to the decrease in the number of mortalities.

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

$$\text{mortality rate}_{hct} = \alpha_{hc} + \alpha_{ct} + \beta \cdot \text{Below Threshold - ER Drugs}_{hct} + \sum_i \delta_i X^i_{hct} + e_{hct} \quad (4)$$

[16] I purposely do not consider data for 2020, to avoid including the COVID pandemic crisis, during which discretion was allowed for all health expenses to fight COVID.

where *Below Threshold - ER Drugs*$_{hct}$ is the fraction of value of essential ER drugs procured below the threshold for hospital h, cause of hospitalization c, and quarter t. The dependent variable is the ratio of hospital deaths to hospitalizations, i.e., the mortality rate, for hospital h, cause c, and quarter t. I also added several hospital controls that might also be correlated with the decrease in hospital deaths. I include the fraction of procurements below the threshold for all products, the fraction of total essential drug procurements and of total procurements, the log of total procurement value, and the log of hospitalizations.

Column I of Table 10 shows that an increase of 10 pp in the fraction of bid-waiver procurements to acquire essential drugs is associated with a 0.08 pp decrease in the mortality rate in hospitals. This represents approximately 1.5% of the standard deviation of the mortality rate in the sample. When I include hospital-level controls in column II, the coefficient increases in magnitude to a drop of 0.14 pp. Column III also adds state-quarter fixed effects, comparing hospitals in the same state, and the magnitude of the coefficient increases to 0.19 pp (about 4% of the standard deviation). All in all, purchasing better-quality essential drugs seems to be associated with a lower subsequent mortality rate. Finally, a concern is that hospitals might have intrinsic quality differences in providing healthcare to the population. To the extent that intrinsic hospital characteristics affect the mortality rates for different causes in a similar way, column IV addresses these concerns by comparing mortality rates within the same hospital-year. The results now show that a 10 pp increase in the fraction of procurements below the threshold leads to a 1pp increase in the mortality rate.

To further sharpen the interpretation of these results, columns V-VII and VIII-X of Table 10 present the same results for cancer and non-cancer-related deaths, respectively. To the extent that purchasing better-quality drugs should reduce mortality, the result should be particularly strong in preventable deaths. This is, in fact, what these columns show. While purchasing essential drugs via bid waiver procurements does not decrease the cancer-related mortality rate, it decreases non-cancer-related deaths. The coefficients in columns VIII to X range from a -0.09 to a -0.24 pp drop for a 10 pp higher fraction of bid waiver procurements to acquire essential drugs.

One alternative explanation would say that purchases made in high-discretion procurements decrease hospitals' mortality rates by being faster and less bureaucratic to implement than auctions. Thus, hospitals that face increased hospitalizations from, say, an infectious disease would strategically increase purchases of ER drugs below the threshold which would lead to a decrease in the mortality rate compared to other hospitals. Note, however, that the results from Table 10 do not support this alternative story. In fact, once I control for the number of hospitalizations in column II, the coefficient of interest (*Below Threshold - ER Drugs*$_{hct}$) almost doubles in magnitude relative to column I.

6 Conclusion

This paper finds evidence of an inefficiency-quality trade-off of discretion in public procurement. Using data on more than 2.5 million product purchases in Brazil, and exploiting a regulatory threshold that allows for higher-quality purchases below the threshold, I show that discretion can lead to both more inefficient purchases and also higher-quality products. While purchasing premium products can still reflect inefficiencies, I provide evidence of at least one case where discretion may have a real effect in improving the provision of public services. Public hospitals' use of discretion to purchase emergency room drugs is associated with a reduction in inpatient non-terminal mortality rates. Overall, this highlights the need for regulators to consider the potential benefits of flexibility for agencies and for product quality, which could result in better purchases that might in turn lead to better public service provision.

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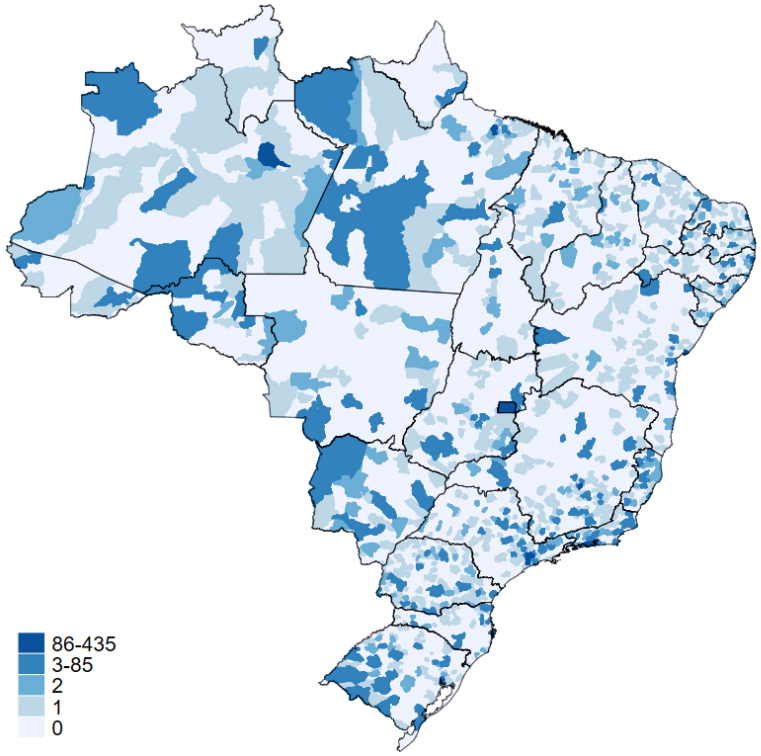
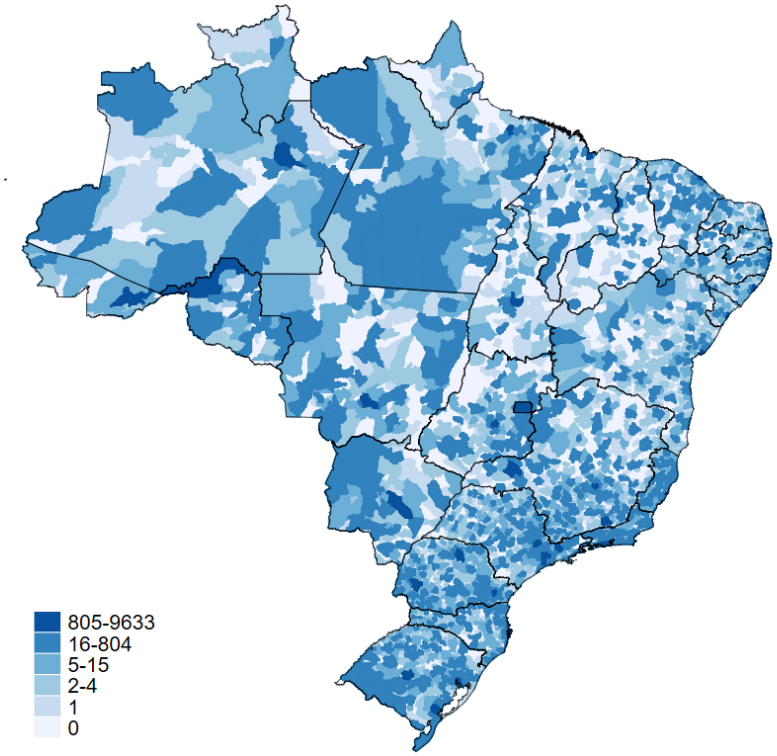
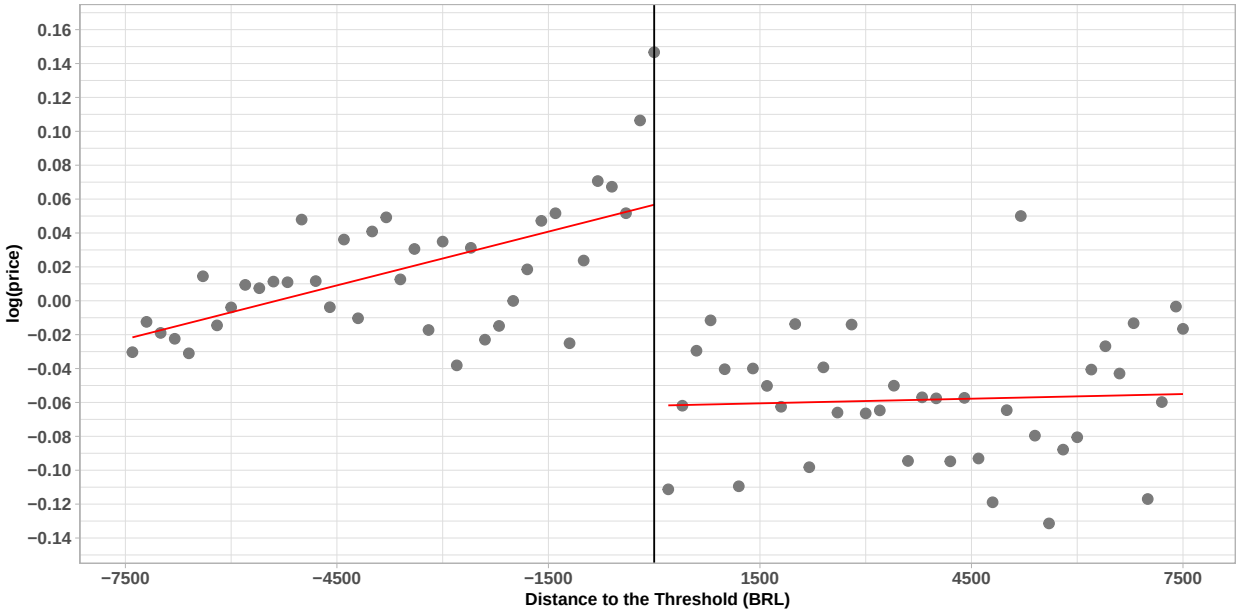
Figure 1: Distribution of Government Agencies and Government Suppliers



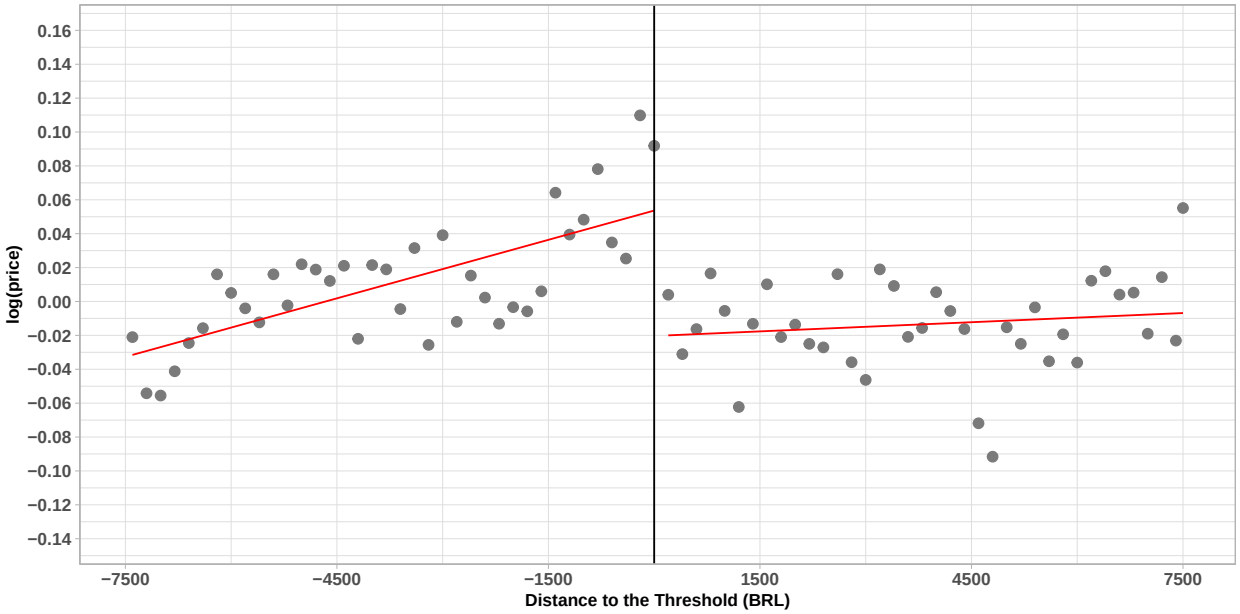
Panel A: Number of Government Agencies



Panel B: Number of Government Suppliers



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



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

Figure 2: *This figure plots the average price 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 log of prices after including product-quarter fixed effects. In Panel B, I plot the residuals of the log of prices after including brand-product-quarter fixed effects.*

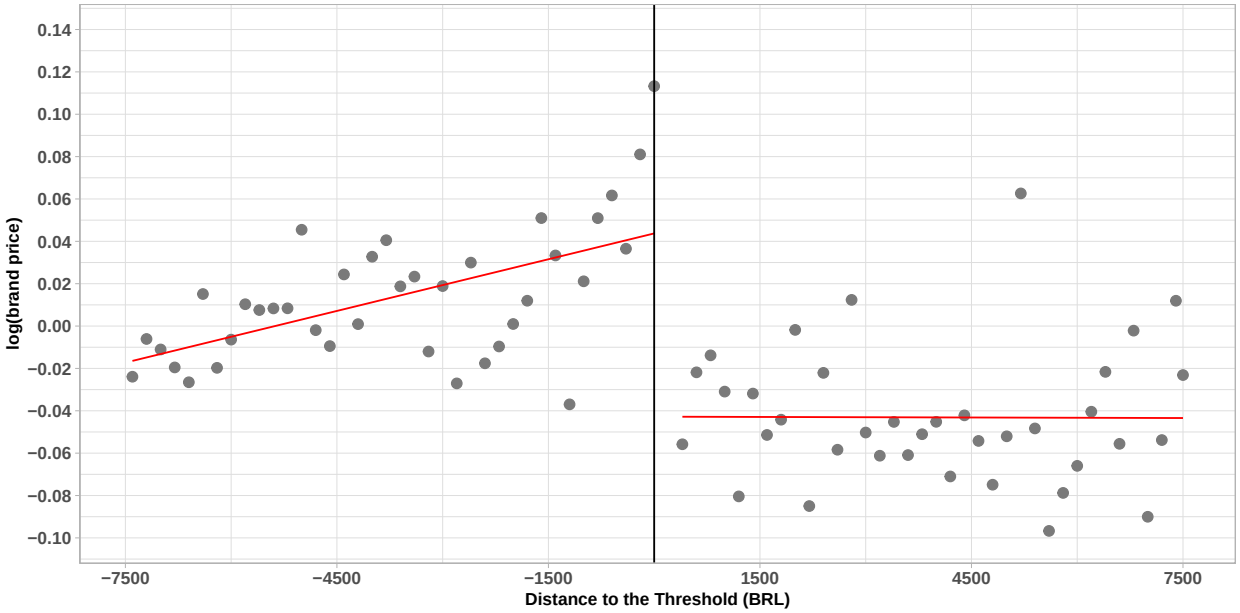


Figure 3: *This figure plots the average brand price around the small-value purchase threshold. Below the threshold, regulators allow products to be procured with higher discretion by bid waivers. Competitive bidding is the norm above the threshold. In both panels, I plot the residuals of the log of brand prices after including product-time fixed effects.*

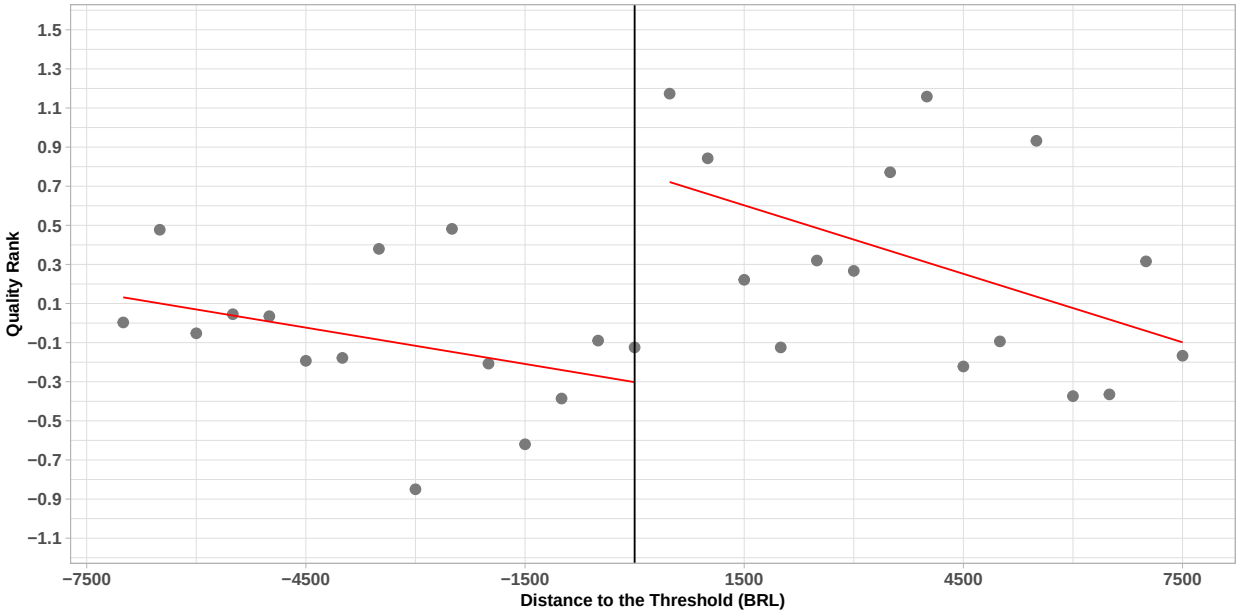


Figure 4: *This figure plots the quality rank around the small-value purchase threshold. A lower value for this rank means higher-quality products. Below the threshold, regulators allow products to be procured with higher discretion by bid waivers. Competitive bidding is the norm above the threshold. In both panels, I plot the residuals of the quality rank after including product-time fixed effects.*

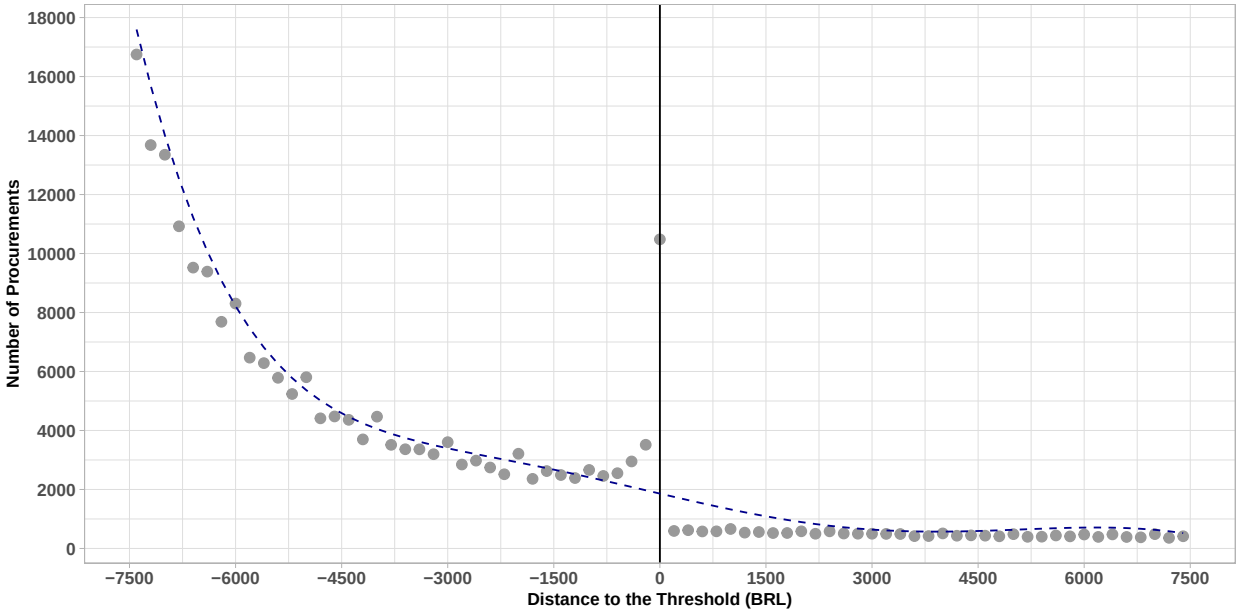


Figure 5: *This figure plots the number of procurements around the small-value purchase threshold. Below the threshold, regulators allow products to be procured by bid waivers. Competitive bidding is the norm above the threshold, and bid waivers are only allowed in special cases, such as emergency situations. The blue dashed line represents the counterfactual in the absence of selection.*

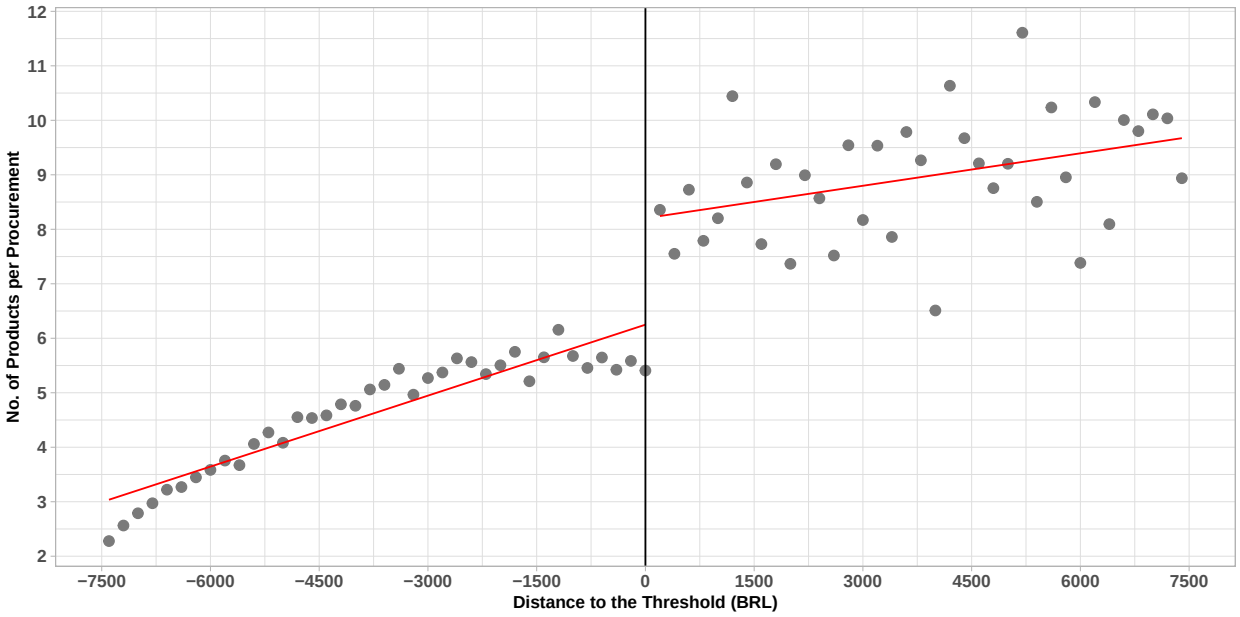


Figure 6: *This figure plots the number of distinct products purchased per procurement around the small-value purchase threshold. Below the threshold, regulators allow products to be procured with higher discretion by bid waivers. Competitive bidding is the norm above the threshold.*

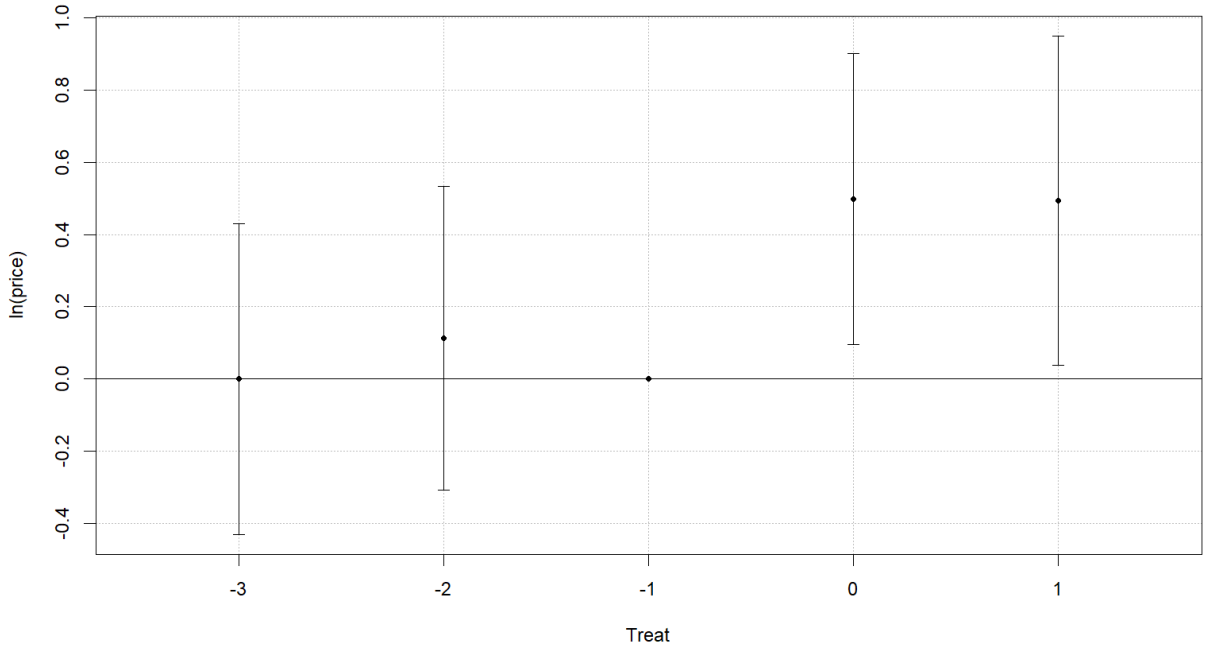


Figure 7: *This figure plots the dynamic treatment effect on product prices of the regulatory change that increased the small-value purchase threshold in June 2018. I normalize the effect for year -1 (the 12 months preceding the reform). I include government agency and product-quarter fixed effects in the specification.*

Table 1: *Summary Statistics*

		n	mean	std dev	min	median	max
		I	II	III	IV	V	VI
Dependent Variables							
ln(price)	Log of the price of products purchased at each procurement	2,506,809	3.40	2.27	-1.90	3.31	9.19
ln(quant)	Log of quantity or products purchased at each procurement	2,506,809	2.63	2.27	0.00	2.30	9.51
# itens	The number of distinct products purchased at each procurement	2,506,809	53.95	86.34	1.00	21.00	486.00
ln(brand price)	The log of the average brand price of each product sold in a quarter	2,506,809	3.49	2.23	-1.75	3.40	9.19
p(same muni)	The probability that the government agency and the winning firm belong to the same municipality	2,462,018	0.35	0.48	0.00	0.00	1.00
p(connected)	The probability that the winning firm is owned or managed by an elected politician who belong to an allied party	2,506,809	0.00	0.04	0.00	0.00	1.00
firm size	A variable equal to 1 for small firms, 2 for medium firms, and 3 for large firms	2,506,809	1.40	0.80	1.00	1.00	3.00
# owners	The number of firm owners	2,035,178	1.74	0.79	1.00	2.00	5.00
firm age	Firm age in years	2,506,809	12.46	11.00	0.00	9.00	48.00
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*

	Same Product-Quarter			Same Product-Brand-Quarter			$\ln(\text{brand price})_{pbt}$
Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	# products_{it}	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	# products_{it}	
	I	II	III	IV	V	VI	VII
$\text{below threshold}_{it}$	0.166***	0.135***	-2.381***	0.101***	0.205***	-3.889***	0.134***
	(0.016)	(0.019)	(0.632)	(0.018)	(0.028)	(0.653)	(0.012)
Product*Quarter FE	yes	yes	yes				yes
Brand*Product*Quarter FE				yes	yes	yes	
Obs	977,059	977,059	977,059	977,059	977,059	977,059	977,059
R^2	0.890	0.740	0.681	0.969	0.925	0.924	0.920

This table compares procurement outcomes above and below the small-value purchase threshold. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). In columns I and IV, the dependent variable is the log of the price of product p procured in procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (columns II and V), the number of distinct products purchased in a procurement (columns IV and VI), and the average brand price of products purchased in each procurement (column VII). Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table 3: *Brand Prices Across The Threshold*

Dep. Var.	ln(brand price)$_{pbt}$	
	I	II
quality rank$_{pb}$	-0.015***	
	(0.003)	
highest rank$_{pb}$		0.105*
		(0.042)
Product*Quarter FE	yes	yes
Obs	5,323	5,323
R^2	0.982	0.981

This table shows the relationship between brand prices and product quality. The dependent variable is the log of the average price for product p of brand b at time t. In column I, the independent variable is the brand b's product quality rank (*quality rank*). In column II, the independent variable is a dummy equal to one if brand b has the highest quality rank for product p. Product quality is taken from PROTESTE, a major consumer defense association in Latin America, and INMETRO, an official government institution that guarantees the quality of merchandise sold in Brazil. I include product and quarter fixed effects in all specifications. Standard errors clustered at the product level are presented in parentheses. $^+$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table 4: *Comparing Procurements Around the Small-Value Purchase Threshold*

Dep. Var.	quality rank$_{pb}$	highest rank$_{pb}$
	I	II
below threshold$_{it}$	-1.219**	0.095*
	(0.387)	(0.042)
Product*Quarter FE	yes	yes
Obs	13,609	13,609
R^2	0.429	0.455

This table compares procurement outcomes above and below the small-value purchase threshold. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). In column I, the dependent variable is brand's b quality rank for product p calculated using information on technical scores by Brazilian authorities. In column II, the dependent variable is a dummy equal to one if brand b has the highest quality among all other brands of product p, i.e. if quality rank$_{pb} = 1$. Standard errors clustered at the product level are presented in parentheses. $^+$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table 5: *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 Products					
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 Products & 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 each side of the threshold, I also 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; the number of firm owners (column IV); and the firm size in years (column V). Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table 6: *Donut RD: Sensitivity of Results to Manipulation*

Dep. Var.	ln(price)$_{ipt}$	ln(br price)$_{pbt}$	p(connected)$_{ipt}$	p(same muni)$_{ipt}$	firm size$_{ipt}$	# owners	firm age$_{ipt}$
	I	II	III	IV	V	VI	VII
Panel A: Donut RD - BRL 1,000 Radius							
below threshold$_{it}$	0.096***	0.100***	0.002	0.113***	0.043	0.110***	0.301
	(0.022)	(0.016)	(0.001)	(0.013)	(0.027)	(0.019)	(0.233)
Product*Quarter FE		yes					
Brand*Product*Quarter FE	yes		yes	yes	yes	yes	yes
Benchmark RD	0.101***	0.134***	0.002**	0.150***	0.048**	0.104***	0.530**
Obs	831,714	831714	831,714	819,828	831,714	684,602	831,714
R^2	0.970	0.921	0.814	0.869	0.874	0.867	0.862
Panel B: Donut RD - BRL 2,000 Radius							
below threshold$_{it}$	0.107***	0.105***	0.002+	0.115***	0.040+	0.117***	0.091
	(0.028)	(0.017)	(0.001)	(0.016)	(0.022)	(0.035)	(0.589)
Product*Quarter FE		yes					
Brand*Product*Quarter FE	yes		yes	yes	yes	yes	yes
Benchmark RD	0.101***	0.134***	0.002**	0.150***	0.048**	0.104***	0.530**
Obs	736,587	736,587	736,587	725,907	736,587	606,837	736,587
R^2	0.971	0.923	0.820	0.874	0.879	0.872	0.869

This table compares procurement outcomes above and below the small-value purchase threshold by removing observations where manipulation of the threshold is suspected. On each 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 1,000 and BRL 2,000 of the threshold, respectively. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table 7: *Exploiting a Change in the Threshold*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\text{p(below threshold)}_{ipt}$	$\ln(\text{price})_{ipt}$	$\text{p(below threshold)}_{ipt}$
	I	II	III	IV
$\text{treat}_a \cdot \text{post}_t$	0.397*	0.524*	0.265	0.684*
	(0.157)	(0.205)	(0.207)	(0.277)
Agency FE	yes	yes	yes	yes
Product*Quarter FE	yes	yes		
Brand*Product*Quarter FE			yes	yes
Obs	1,236,536	1,236,536	1,236,536	1,236,536
R^2	0.889	0.697	0.967	0.911

Treat is defined as the proportion of goods purchased in procurements with value between BRL 17,600 and 19,600, i.e., just above the new threshold imposed by the reform. Post is a dummy equal to 1 in the two years after June 2018 and zero in the two years before. Columns I to III include product and quarter fixed effects, while columns IV to VI employ product brand, product and quarter fixed effects and thus compare outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

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

Dep. Var.	$\ln(\text{price})_{ipt}$		$\ln(\text{brand price})_{pbt}$
	I	II	III
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

This table compares how procurement outcomes above and below the small-value purchase threshold vary according to different government agency types. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The dependent variables are the log of the price of product p procured in procurement i at time t (columns I and II) and the log of the average brand price of the purchased product (column III). I include product and quarter fixed effects in columns I and III and product brand, product, and quarter fixed effects in column II. Standard errors clustered at the product level are presented in parentheses. $^+$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

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

Dep. Var.	$\ln(\text{price})_{ipt}$		$\ln(\text{brand price})_{pbt}$
	I	II	III
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 how procurement outcomes above and below the small-value purchase threshold vary according to different products. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The dependent variables are the log of the price of product p procured in procurement i at time t (columns I and II) and the log of the average brand price of the purchased product (column III). I include product and quarter fixed effects in columns I and III, and product brand, product and quarter fixed effects in column II. Standard errors clustered at the product-agency level are presented in parentheses. $^+$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

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

Dep. Var.	mortality rate$_{hct}$									
	all causes				cancer-related causes			non-cancer-related causes		
	I	II	III	IV	V	VI	VII	VIII	IX	X
below threshold - essential drugs$_{hct}$ (as % of procurement)	-0.008* (0.004)	-0.014** (0.005)	-0.019+ (0.011)	-0.100** (0.033)	0.003 (0.011)	0.005 (0.019)	0.059 (0.045)	-0.009* (0.004)	-0.016** (0.005)	-0.024* (0.012)
ln(procurement value)$_{h,t}$		-0.001 (0.001)	0.000 (0.002)			0.001 (0.004)	0.006 (0.006)		-0.001 (0.001)	-0.001 (0.002)
below threshold$_{ht}$ (as % of Procurement)		0.002 (0.002)	0.001 (0.004)			-0.003 (0.007)	-0.006 (0.014)		0.002 (0.002)	0.000 (0.004)
essential drugs$_{hct}$ (as % of Procurement)		0.001 (0.002)	0.002 (0.005)	0.031+ (0.017)		0.007 (0.009)	-0.033** (0.010)		0.001 (0.002)	0.004 (0.005)
ln(hospitalizations)$_{hct}$		-0.002 (0.001)	-0.003* (0.001)	-0.003* (0.001)		-0.002 (0.007)	-0.034 (0.027)		-0.002 (0.001)	-0.003* (0.001)
Hospital-Cause FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Cause-Quarter FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
State-Quarter FE			yes				yes			yes
Hospital-Quarter FE				yes						
Obs	6833	6831	6831	6831	388	388	388	6445	6443	6443
R^2	0.751	0.751	0.768	0.776	0.784	0.785	0.953	0.743	0.742	0.760

This table provides the relationship between hospital mortality rate and the acquisition of essential drugs via high discretion procurements. The dependent variable is the mortality rate for hospital h, cause c, and quarter t. In columns I to IV, I consider all causes; in columns V to VII, I consider only cancer-related causes; and non-cancer-related causes are in columns VIII to X. The mortality rate is defined as the ratio between hospital deaths and hospitalizations. The main independent variable is the fraction of procurements for essential drugs below the threshold for hospital h, cause c and quarter t Columns I, II, V, VI, IX, and X include hospital-cause and cause-quarter fixed effects. Columns III, VII, and X include hospital-cause, cause-quarter, and state-quarter fixed effects. Column IV includes hospital-cause, cause-quarter, and hospital-quarter fixed effects. Standard errors clustered at the hospital level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

A Internet Appendix

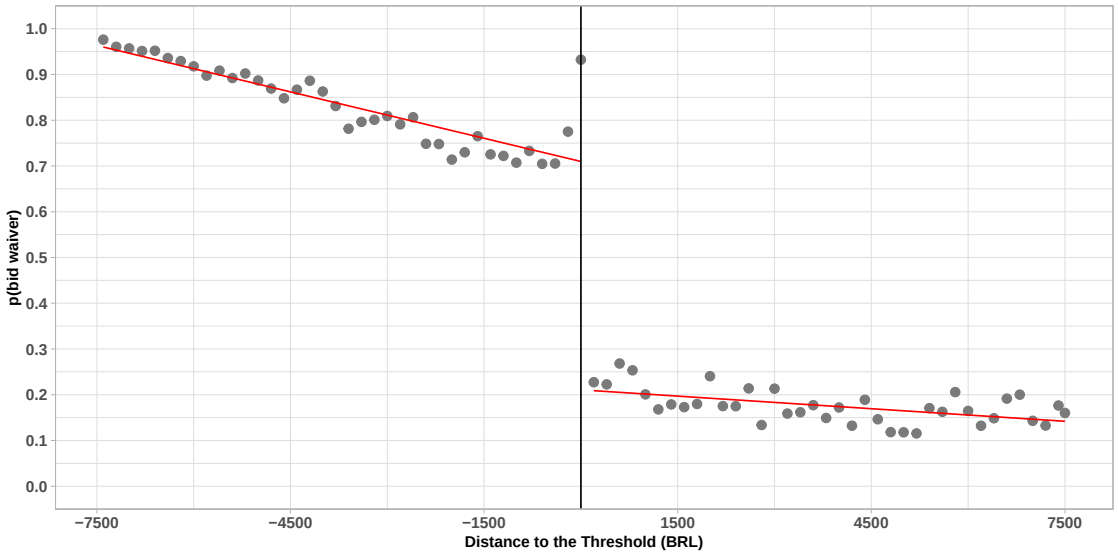
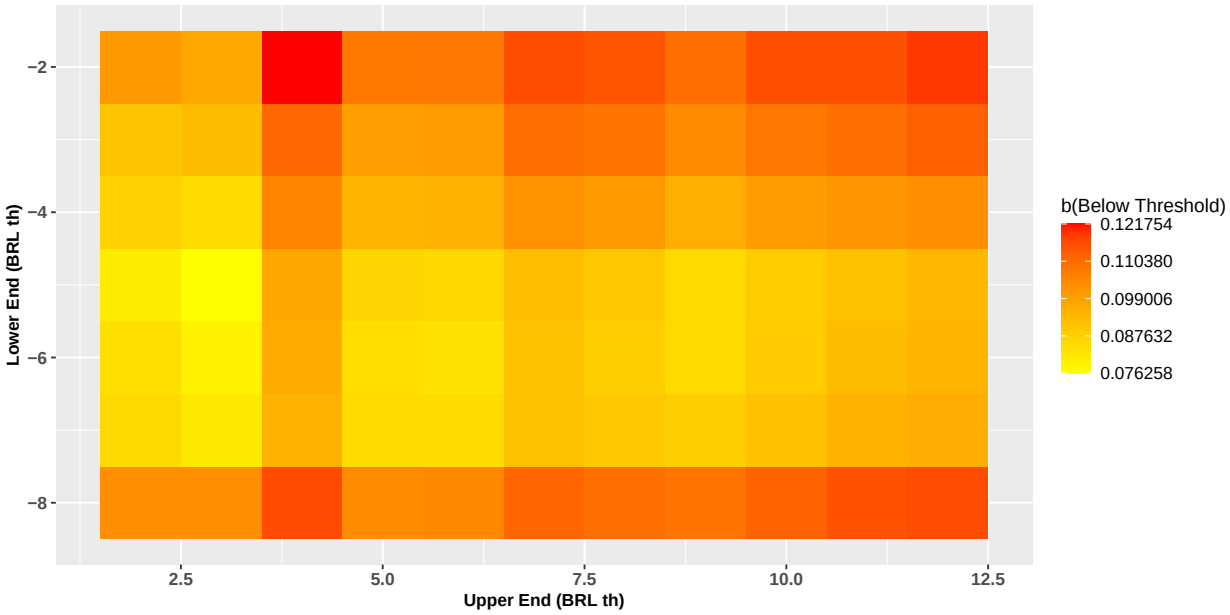
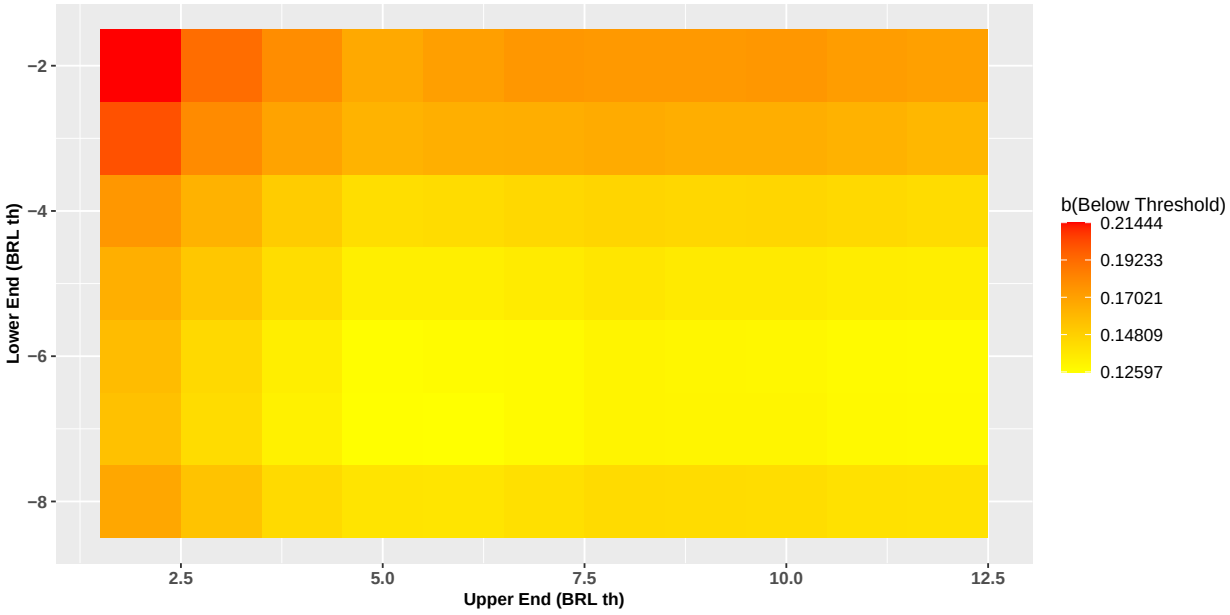


Figure A1: *This figure plots the incidence of bid-waivers around the small-value purchase threshold. Below the threshold, regulators allow products to be procured by bid waivers. Above the threshold, bid waivers are only allowed in special cases, such as emergency situations. In other cases, the main procurement procedure is competitive auctions where the lowest price wins.*

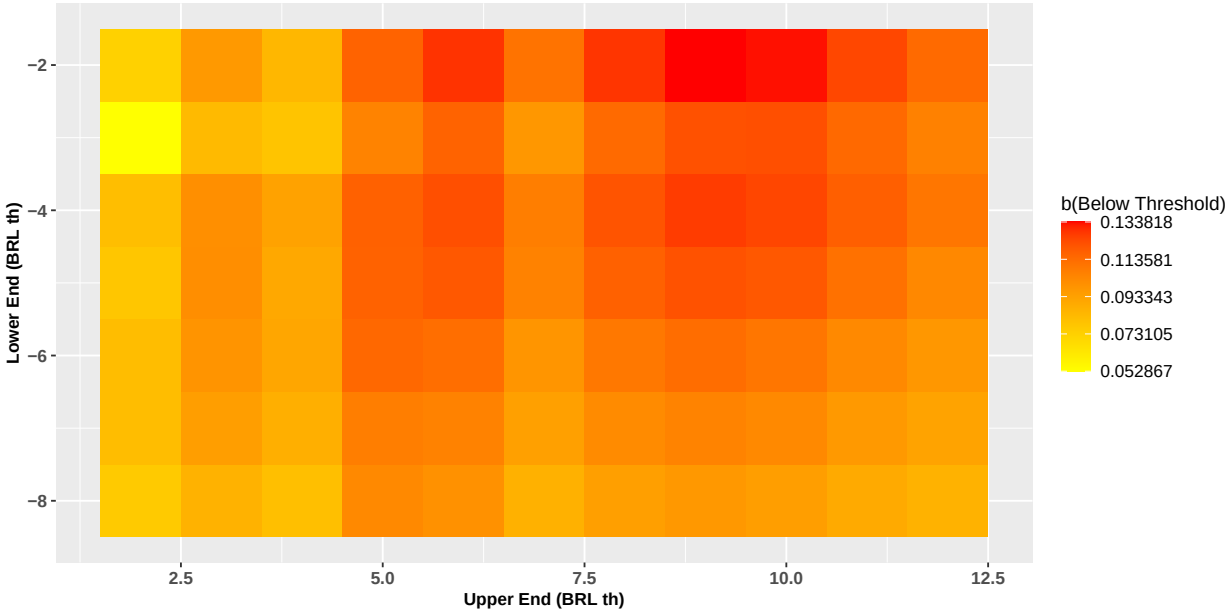


Panel A: Effect on log(price) for different bandwidths, 1st order polynomial



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

Figure A2: *This heatmap shows the estimated coefficients of estimating equation (1) for different 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), 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

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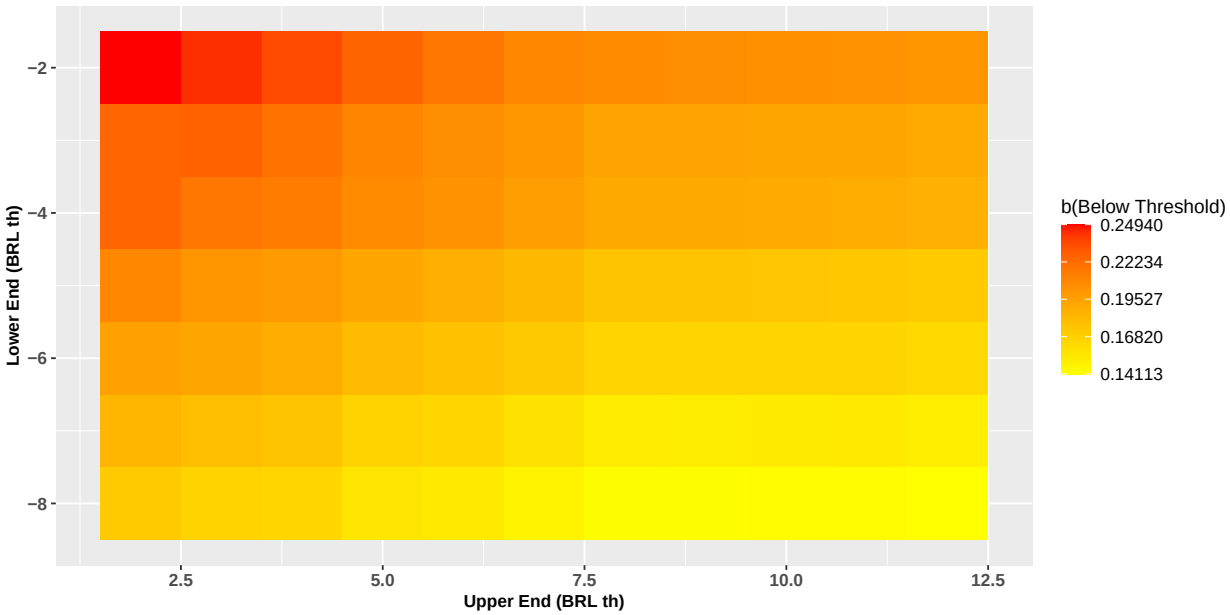
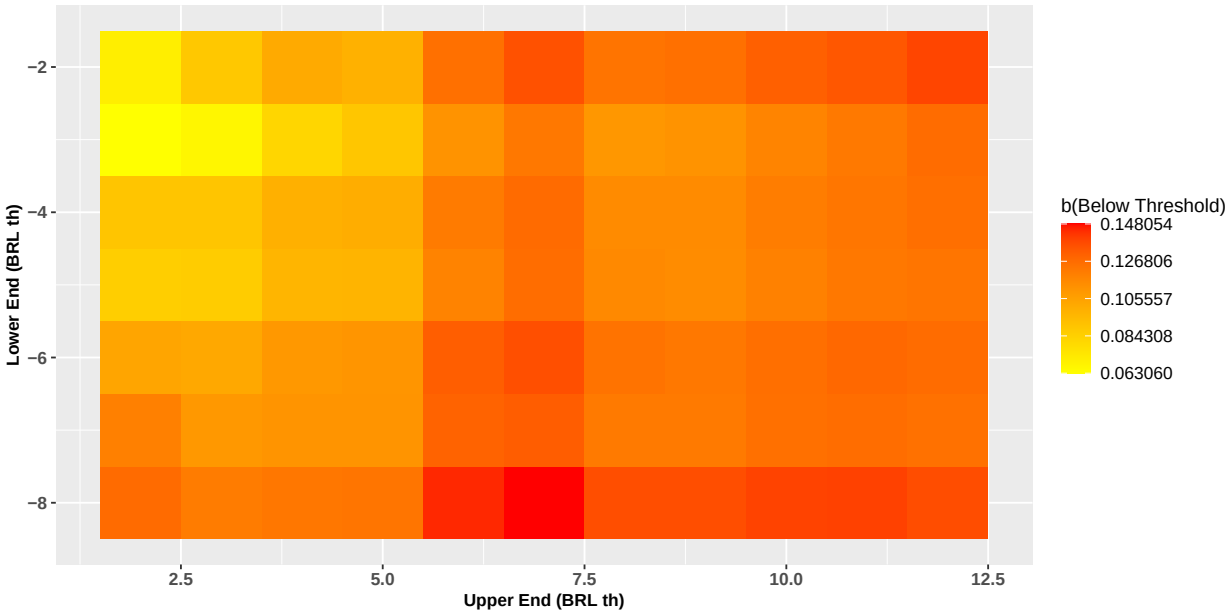
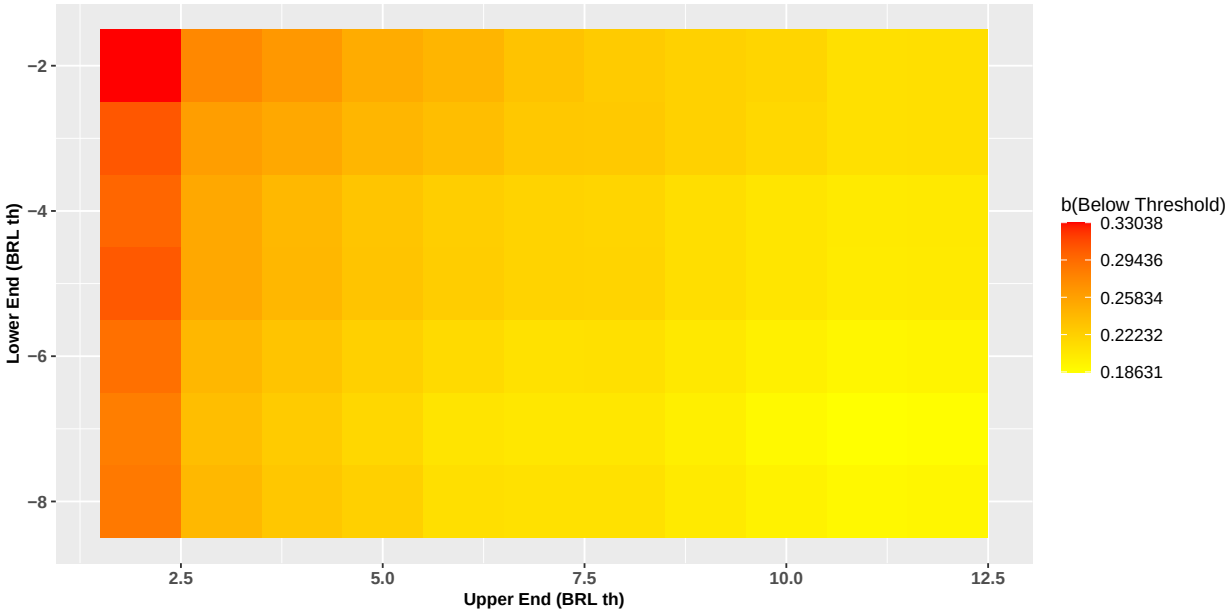


Panel B: Effect on log(brand price) for different bandwidtfirst-orderer polynomial

Figure A3: *This heatmap shows the estimated coefficients of estimating equation (1) for different 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) 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 A4: *This heatmap shows the estimated coefficients of estimating equation (1) for different 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), 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 A1: *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 A2: *Government Agencies*

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

Table A3: *Brand quality*

Product	Source	Description
Enamel Paint	INMETRO	Lead concentration in % (the lower, the better)
Toilet Paper	INMETRO	Score based on size, resistence, 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 A4: *Comparing Procurements Around the Small-Value Purchase Threshold - Averages*

Dep. Var.	$\ln(\text{price})_{ipt}$	$\ln(\text{quant})_{ipt}$	# products_{it}	$\text{p(connected)}_{ipt}$	$\text{p(same muni)}_{ipt}$	firm size_{ipt}	# owners	firm age_{ipt}
	I	II	III	IV	V	VI	VII	VIII
Panel A: Comparing Same Products								
$\text{below threshold}_{it}$	0.156***	-0.042*	-5.160***	0.002***	0.237***	0.132***	0.163***	2.141***
	(0.019)	(0.018)	(1.182)	(0.000)	(0.010)	(0.011)	(0.011)	(0.214)
Product*Quarter FE	yes	yes	yes	yes yes	yes	yes	yes	
Obs	240,406	240,406	240,406	240,406	236,254	240,406	195,824	240,406
R^2	0.920	0.815	0.794	0.601	0.607	0.635	0.599	0.570
Panel B: Comparing Same Products & Brand								
$\text{below threshold}_{it}$	0.089***	-0.043	-4.831***	0.000	0.174***	0.088***	0.124***	1.420***
	(0.019)	(0.028)	(1.116)	(0.001)	(0.016)	(0.015)	(0.019)	(0.351)
Brand*Product*Quarter FE	yes	yes	yes	yes yes	yes	yes	yes	
Obs	240,406	240,406	240,406	240,406	236,254	240,406	195,824	240,406
R^2	0.975	0.948	0.971	0.923	0.926	0.934	0.932	0.921

This table compares procurement outcomes above and below the small-value purchase threshold. I only keep procurements that are at least BRL 2 thousand in value from the threshold. The dependent variables are the log of the price of product p procured in procurement i at time t (column I); the log of the quantity procured (column II); the number of distinct products purchased in a procurement (column III); the probability that the winning firm is politically connected (column IV); the probability that the winning firm is in the same municipality as the government agency (column V); a categorical variable of firm size equal to 1 for small, 2 for medium, and 3 for large firms (column VI); the number of firm owners (column VII); and the firm age in years (column VIII). Panel A of this table includes product and quarter fixed effects. Panel B includes product brand, product and quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

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

Dep. Var.	ln(price)$_{ipt}$	ln(quant)$_{ipt}$	# products$_{it}$	p(connected)$_{ipt}$	p(same muni)$_{ipt}$	firm size$_{ipt}$	# owners	firm age$_{ipt}$
	I	II	III	IV	V	VI	VII	VIII
below threshold$_{it}$	-0.033	0.116***	-0.292	0.000	0.009	-0.031***	0.025+	-0.518
	(0.021)	(0.028)	(1.865)	(0.000)	(0.008)	(0.009)	(0.014)	(0.525)
Product*Quarter FE	yes	yes	yes	yes yes	yes	yes	yes	
Obs	238,028	238,028	238,028	238,028	233,780	238,028	200,058	238,028
R^2	0.910	0.797	0.761	0.512	0.586	0.569	0.516	0.547

This table presents a falsification test by comparing procurement outcomes of auctions that are situated above and below the small-value purchase threshold. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The dependent variables are the log of the price of product p procured in procurement i at time t (column I); the log of the quantity procured (column II); the number of distinct products purchased in a procurement (column III); the probability that the winning firm is politically connected (column IV); the probability that the winning firm is in the same municipality as the government agency (column V); a categorical variable of firm size equal to 1 for small, 2 for medium, and 3 for large firms (column VI); the number of firm owners (column VII); and the firm age in years (column VIII). Panel A of this Table includes product and quarter fixed effects. Panel B includes product brand, product and quarter fixed effects and thus compares outcomes of products of the same brand. Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

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

Dep. Var.	$\log(\text{price})_{ipt}$			
	Same Product		Same Product & Brand	
	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	977059	977059	977059	977059
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 each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). The dependent variable is the log 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. Standard errors clustered at the product level are presented in parentheses. $^+$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.

Table A7: *Comparing Procurements Around the Small-Value Purchase Threshold*

	Same Product-Quarter			Same Product-Brand-Quarter			ln(brand price)$_{pbt}$
Dep. Var.	ln(price)$_{ipt}$	ln(quant)$_{ipt}$	# products$_{it}$	ln(price)$_{ipt}$	ln(quant)$_{ipt}$	# products$_{it}$	
	I	II	III	IV	V	VI	VII
below threshold$_{it}$	0.180**	0.135*	-5.005*	0.108*	0.132+	-4.272*	0.128*
	(0.060)	(0.056)	(2.408)	(0.043)	(0.079)	(1.773)	(0.060)
Product*Quarter FE	yes	yes	yes				yes
Brand*Product*Quarter FE				yes	yes	yes	
Obs	139,692	139,692	139,692	139,692	139,692	139,692	139,692
R^2	0.945	0.867	0.878	0.981	0.950	0.969	0.963

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 88.5% of the observations. On each side of the threshold, I also fit a linear function of the distance to the threshold as in equation (1). In columns I and IV, the dependent variable is the log of the price of product p procured in procurement i at time t. In the remaining columns, the dependent variables are the log of the quantity procured (columns II and V), the number of distinct products purchased in a procurement (columns IV and VI), and the average brand price of products purchased in each procurement (column VII). Standard errors clustered at the product level are presented in parentheses. $^{+}$, *, **, and *** denote significance of 10%, 5%, 1%, and 0.1%, respectively.