Putting Competitive Procurement On Hold: The Case of Pharmaceutical Products in Peru

RESEARCH PROPOSAL: Competition in Latin America and the Caribbean

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1. Introduction

The purchase of medicines (or pharmaceutical products or drugs) accounts for 17-25% of the healthcare government budget in advanced economies, and between 35% and 45% in middle-income economies (IDB, 2017). Given its importance, governments have implemented different mechanisms to promote competition between suppliers and achieve efficiency gains in the procurement of pharmaceutical products (centralized purchases, electronic catalogues, electronic auctions, public information on prices, among others). However, many of these mechanisms were left aside in the context of the Covid crisis, when governments faced expenditure needs at an unprecedented scale, and implemented mechanisms that gave bureaucrats high levels of discretion (Rose-Ackerman, 2021). This relaxation of procurement procedures facilitate the response of governments, at the cost of potential opportunities of rent seeking and corruption (Prem et al., 2021). It is tempting to look at prices during the window of these big changes in procurement rules, but unfortunately they coincide with the disruption of the supply chains and the observation that prices skyrocket in many cases (OECD, 2020). In this proposal we look at a few years before the crisis to avoid the complexities of this event. But, as in the Covid episode, we seek to exploit a temporary change in the way auctions of medicines were implemented in Peru during "normal times" (late 2017 and 2018), which in practice allowed for no competition in auctions, to address its effects over prices and other outcomes.

The procurement of medicines in Peru can be implemented via a centralized scheme, or using a decentralized one. In the first case, all the government bodies aggregate their individual demands for a group of medicines, and a special institution of the Ministry of Health, Cenares (*Centro Nacional de Abastecimiento de Recursos Estratégicos en Salud*), is in charge of the procurement process. In recent years, Cenares typically used electronic auctions to implement these procedures. The decentralized scheme considers the possibility that a group of public institutions at a regional level aggregate their demands, or simply, each institution (e.g. a hospital) implements its own procurement process. In this case, there are different options to buy the products; using a direct purchase (when certain conditions are met, e.g. during the state

of emergency), a simplified acquisition (below certain threshold for the potential value of the contract), a public tender procedure (above the threshold), an auction, among others.

The changes in the rules of procurement that we seek to exploit were implemented at the end of 2017. After three months of the entry of a new government in July 2016, a corruption scandal of one of the main health advisors of the President (link) determine the announcement (link) and implementation (link) of an anti-corruption policy in the health sector. These events coincide with a high turnover rate of the authorities of Cenares and reports of problems with the stocks of medicines.[1] In this context, the Law N 30680 was enacted in November 2017. The law indicate that until December 2018, all the purchases of drugs executed by Cenares via electronic auctions were authorized to be awarded in the scenario of just one bidder (naturally, before and after the period of implementation of this law there should be at least two bidders to win an auction).[2] By definition, if there is only one bidder, there is no competition.

Similarly, a corruption scandal related to the health sector in the city of Buenos Aires was exploited by Di Tella and Schargrodsky (2003) in a seminal paper of the procurement literature. Their focus was on how a crackdown on corruption reduced prices paid by hospitals. This strand of the literature has grown over time (see a recent book by Bandiera et al. (2021b) on procurement during the Covid crisis), focusing on the tradeoff between discretion and rules, and how this tradeoff affects competition and prices. A majority of the papers (Bandiera et al., 2009; Coviello et al., 2018; Decarolis et al., 2020; Bandiera et al., 2021a) has shown directly or indirectly the benefits of increasing discretion, although there are exceptions and, naturally, the results are driven by the quality of institutions of the country (Palguta and Pertold, 2017, Bosio et al., 2022 and Bandiera et al. (2021b) for the Covid crisis). Like in Di Tella and Schargrodsky (2003) and Best et al. (2019), the use of pharmaceutical products in our project facilitates the analysis, since goods are well classified by the health national authorities (for example, Best et al. (2019) use machine learning techniques to classify other types of goods). Naturally, the paper is related to other strands of the literature. For example, in the health sector Alé-Chilet and Atal (2020) provides micro evidence on how gynecologists in one city in Chile created a trade association to collude and improve their bargaining power, in order to increase their rates. In terms of the micro empirical literature of firms competition in developing countries, Talamas (2022), Bergquist and Dinerstein (2020), Macchiavello and Morjaria (2020), and Busso and Galiani (2019) are recent examples.

2. Data

Data on government procurement is public in Peru. Data since 2018 can be found at the web page of Peruvian Supervisor of Public Procurement (OSCE) (see the following link). Data prior to 2018 can be accessed by a formal requirement (*Solicitud de Acceso a la Información Pública*). At the time of the elaboration of the proposal, the authors already have access to this public data since 2016. The data is at the contract-item level. For example, one institution would

[1] For example, during December of 2017 all the main health public institutions of Peru's capital (*Unidades Ejecutoras*) reported low levels of stocks of medicines (link).

[2] *Artículo 26 ... Dispónese que, excepcionalmente, en los procedimientos de selección para la adquisición de medicamentos mediante subasta inversa electrónica se autoriza al Ministerio de Salud a través del Centro Nacional de Abastecimiento de Recursos Estratégicos en Salud CENARES, que se convoquen a partir de la vigencia de la presente Ley y hasta el 31 de diciembre de 2018, la buena pro pueda ser otorgada con solo una oferta válida.*

like to buy a set of products (which are considered different Items) in only one procurement procedure or contract (under any of the modalities described in the previous section). Goods are categorized according to the Itemcubso, a classification of more than 10 thousand types of goods or Items typically acquired by government institutions. We have data between 2016 and 2020. When we consider health related items (which includes medicines but also other medical supplies that are purchase by Cenares), we have 31 thousand contract-items. Since the centralized purchases by Cenares are considered one contract, when we split each of these contracts by the final public institutions (e.g. a hospital) that acquire the products, we have 145 thousand contract-items. In the same sample, there are 9.3 thousand types of products. Information on the date of the call (start of the purchasing procedure) and the date in which the contract is awarded is available, and can be use to determine the time window in which the law was implemented. The information also includes the initial reference value of the contract-item (before competition starts), the awarded value of the contract-item, and the number of goods purchased (quantity). Using the information on the value of the contract and the quantity we can calculate the unit price. We have the national identification number and legal name of the public institution buying the goods, as well as the information on the firm that supplies the good. For the same sample, we have 1.1 thousand public institutions and 3.7 thousand firms or suppliers of health products. Using this information we can characterize the degree of concentration of the market. Finally, the information includes the number of participants in each procedure.

3. Research Questions

We aim to answer the main following question:

- What is the effect of the suspension of competition in auctions over prices and other procurement outcomes?

Due to the relative importance of medicines expenditures on government's budgets, to have an accurate measure of the impact of competition on prices is relevant for public policy (IDB, 2017).

In an initial exploration of the data, Figure 1 plots the distribution of two indicators: (1) the price of medicines (panel A), and (2) the ratio of the final value of the awarded contract over its initial estimated value (panel B). We show three sets of contracts. The first two were not affected by the law: the decentralized purchases (executed by each public institution) via auctions (figures (a) and (d)), and the centralized purchases executed by Cenares using procurement procedures different from auctions (figures (b) and (e)). The third set of contracts are those affected by the law: the purchases of Cenares via auctions (figures (c) and (f)). Each figure shows the distribution of the variable before the implementation of the law (2016 up to October 2017) and during the implementation of the law (November 2017 until December 2018).

The figures are indicative of a negative effect on prices (increase) from the implementation of the law that suspend competition in auctions. First, in the case of those prices not affected by the law, during the end of 2017 and 2018 there was a decrease in prices (executed via auctions or not, by Cenares or individual public institutions). The opposite occurs for those contracts affected by the law. In panel (c) there seems to be week evidence of a minimum increase in

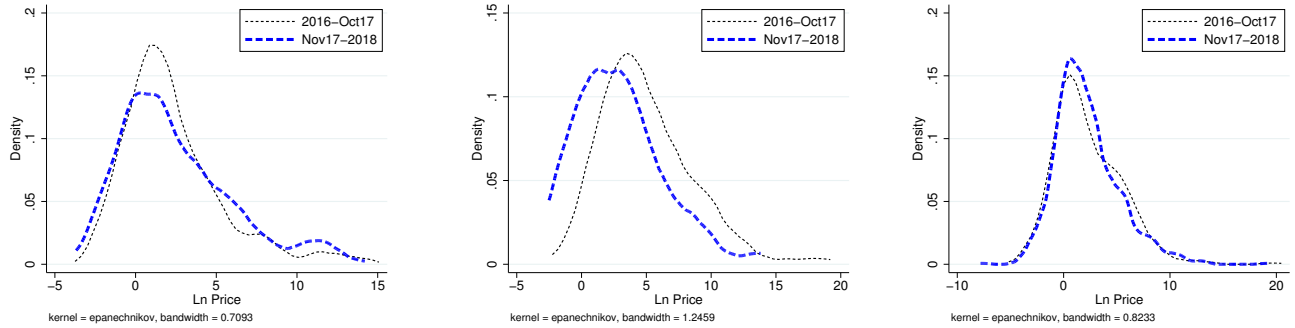
prices for those auctions without competition, exactly during the same period in which the rest of prices show a contraction. The same pattern arises in panel B when we focus on the ratio between the awarded value of the contract over the initial estimation of the value of the contract. Hence, our initial hypothesis is that the suspension of competition raise prices. Naturally, this should be tested formally, and for that we need to construct a dataset on characteristics of the products, following the literature on public procurement.

Figure 1. Price of Medicines and the Ratio of the Final Value of the Awarded Contract Over its Initial Estimated Value, for the Period Before (2016-Oct17) and During the Implementation of the Law (Nov17-2018)

[Panel A]: LOG OF PRICE

Law Does NOT Affect These Purchases | Law Does Affect These Purchases

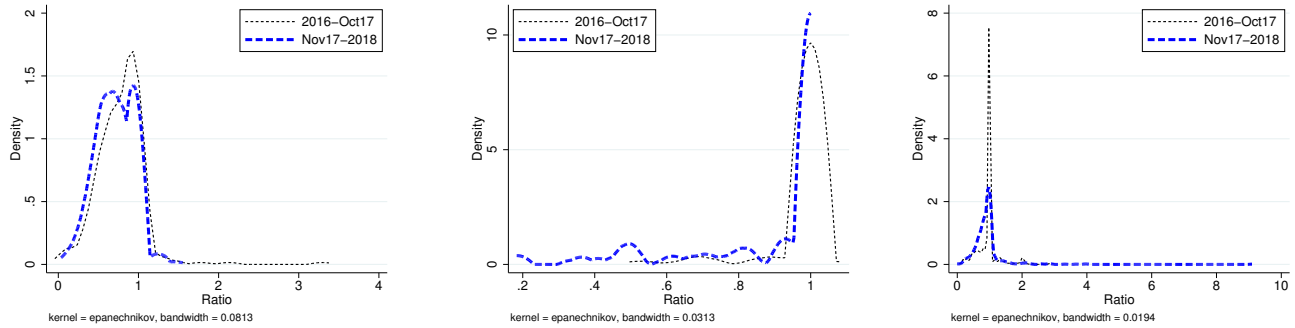
(a) Decentralized Purchases - Auctions | (b) Cenares - No Auctions | (c) Cenares - Auctions



[Panel B]: RATIO: FINAL VALUE OF THE AWARDED CONTRACT / INITIAL ESTIMATED VALUE OF THE CONTRACT

Law Does NOT Affect These Purchases | Law Does Affect These Purchases

(d) Decentralized Purchases - Auctions | (e) Cenares - No Auctions | (f) Cenares - Auctions



Other procurement outcomes include the number of bidders or participants in each purchase, the time length of the procurement process, and if the firms with awarded contracts had been sanctioned due to any problem with a previous contract.

In addition to this main question, other questions that are part of the project are:

- What is the degree of market concentration (firms-suppliers & public institutions) for public procurement of pharmaceutical products and health related products in Peru between 2016 and 2020? The year 2016 is a good point to start the analysis since the current Peruvian law for procurement entry into force in this year.

- What other factors determine the implementation and the not renewal of the Law N 30680? To answer this, we will contact the relevant policymakers during the period 2017-2018.

4. Methodology

We follow two recent papers of the procurement literature (Camboni et al., 2021; Prem et al., 2021) that aims to measure the effects of the state of emergency related to the Covid crisis over procurement outcomes in Russia and Colombia. Camboni et al. (2021) interact a temporal dummy since the state of emergency with other time-invariant institutional characteristics of public institutions, to analyze the heterogeneity of responses by institutions during the crisis (for example, they look what type of institutions are using contracts with high levels of discretion for bureaucrats). Prem et al. (2021) interact the dummy of the emergency with a pre-crisis indicator of corruption of the municipality, showing that local governments more prone to corruption, are those with a higher chance of using a more flexible type of contract, and also those municipalities that allocate more resources to this type of contracts with high discretion.

In our project, we use the fact that before a good is purchase using an auction, a technical file (*ficha técnina*) must be created, and once it is created, all the future acquisitions of this good must be carry out using electronic auctions (via the centralized system of Cenares or using a decentralized scheme).[3] Hence, we are going to create a dummy variable $\mathcal{A}_{gt}^{pre-law}$ that shows those goods with technical files for the pre-law period purchased by Cenares, and then interact this set of goods with a time dummy D^{law} for the period in which the Law N 30680 was in place. Considering this, we will estimate the following specification:

$$x_{ifgt} = \eta \ln \mathrm{Q_{ifgt}} + \omega \mathrm{X}_g + \rho \mathcal{A}_{gt}^{pre-law} + \alpha \mathcal{A}_{gt}^{pre-law} D_{law} + \lambda_t + \delta_i + \gamma_f + \kappa_g + \mu_{ifgt}$$

Where x_{ifgt} is our variable of interest (for example, the log of the price) for the contract where institution i is buying good g from firm f in period t. As it is typical in the literature of procurement (see for example Bandiera et al. (2021a) for an experiment in Pakistan), the quantity of goods Q as well as a set of goods characteristics $\mathrm{X_g}$ are part of the set of controls. These goods characteristics must be constructed using the description of the goods. In addition to the previously described dummies $\mathcal{A}_{gt}^{pre-law}$ and D^{law}, we include a set of fixed effects for period (λ), public institution (δ), firm o supplier (γ), and type of good (κ). Our main coefficient of interest is α. Since we expect that auctions are cheaper than other procurement methods, then $\hat{\rho} < 0$ (in the case of the log prices). In addition, if our main hypothesis holds, then the gains for auctions in terms of savings should be diluted as a consequence of the implementation of the law, in such a way that $\hat{\alpha} > 0$. We will clustered standard errors at the goods-public institution level.

[3] About electronic auctions: *Es un procedimiento de selección a través del cual las entidades públicas contratan bienes y servicios incluidos en el Listado de Bienes y Servicios Comunes (LBSC), donde el postor ganador es aquel que oferte el menor precio por los productos objeto de la Subasta... La Central de Compras Públicas – PERÚ COMPRAS genera y aprueba las fichas técnicas de los bienes y servicios a ser incluidas en un Listado de Bienes y Servicios Comunes....* In addition: *Ahora bien, de conformidad con el numeral 26.2 del articulo 26 de la Ley y el numeral 111.1 del artículo 111 del Reglamento, en caso los bienes y servicios requeridos por la Entidad se encuentren incluidos en el Listado de Bienes y Servicios Comunes, su contratación debe realizarse obligatoriamente mediante el procedimiento de Subasta Inversa Electrónica.*

5. Research Team & Legal Representative

Antonio Cusato Novelli [Team Leader]. Ph.D. in Economics (Rutgers University, 2016) and Associate Professor of the Economics Department at Universidad del Pacífico (Lima Peru). Previously, he has been a visiting scholar at the Federal Reserve Bank of Atlanta (2015), and a consultant at the Office of Evaluation and Oversight of the Inter-American Development Bank (2008-2010). His research has been published at the Review of International Economics, Journal of Macroeconomics, and Economics Bulletin. Currently, he is working in three areas: (1) firms export performance, credit, productivity and export subsidies; (2) public procurement, firms, bunching of contracts, and the effects of discretion of public officials; (3) the political economy of sovereign default.

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