Public Finance Notebooks, Brasília, v. 20, n. 2, p. 1-32, set. 2020

Transaction costs in biddings: analysis of the efficiency of the drug purchase process by public organizations

Fabrício da Costa Ferreira

Antônio Artur de Souza

Abstract

From the theory of transaction costs, it was observed that the effects of some transaction costs involved in public biddings produce advantageous results in terms of increasing competitiveness and obtaining better prices, in addition it was found that the bidding process in general is efficient, when compared to the prices practiced in the market, except for a portion of the acquisitions in which prices had significant distortions. Such distortions are verified in the procurement processes through the bidding waiver modality and in the bidding processes with low quantity of items. There were also situations in which the public administration is captured by a restricted market, whose competitive conditions can raise the average value of acquisitions. In spite of this, it is noteworthy that public organizations have the potential to reduce prices for the purchase of medicines through the bargaining power arising from large volumes of purchases.

Keywords: transaction costs, public administration, bidding

Introduction

The Brazilian economic environment is characterized as a challenging scenario for public accounts and, consequently, for government institutions in all ambits and spheres of power. With this, there is an environment of pressure on these organizations to reduce costs without however, failing to deliver effective results to society.

For public institutions to enframe the budgetary limits of the next decade, it will be necessary to improve the execution of their activities, in order to face the growing demand for public services without giving up quality and equal access by all citizens. Discussions about the bidding process, which is an important component to be analyzed and worked on in order to reduce costs and improve the ways of planning and controlling the relations between suppliers and public agencies (CARVALHO, 2017, p. 166-167) ; (CAMPELO, 2016, p. 64-65) and (DE MOURA CAVALCANTE and SANTOS, 2018, p. 186-187).

Within the scope of the Unified Health System (SUS), regulated by Law 8,080/90, the bidding process finds the peculiarities inherent to the nature of the products and services to be acquired to resolve demands associated with medical treatments and research. In this sense, it is not uncommon for products and services purchased under SUS to be supplied by a few companies specialized in these items or even exclusive suppliers. Such a situation can contribute to unfavorable contractual relations with public organizations, with prices for the purchase of inputs and medicines higher than those practiced in the market.

Understanding the transaction costs involved in the relationship between public organizations and their suppliers is relevant to highlight the costs involved in imperfect hires, once information asymmetry and uncertainty cause the market to raise its costs when submitted to this type of transaction exchange environment. Associate to this, opportunistic behavior is also a prominent element in public hires, mainly in the health sector, whose market is characterized by the dependence on companies specialized in the supply of certain inputs and equipment, inducing to a situation of fragility in the contractual relationship by public organizations belonging to SUS, as highlighted by Gadelha, Costa and Maldonado (2012).

Given this context, the purpose of this paper is to make an analysis of the efficiency of the bidding process for the purchase of inputs and medicines under the SUS from the perspective of transaction costs, identifying and comparing the prices obtained in bids with

those practiced in the private market. In addition, the transaction costs involved *ex ante*, *ex post* the bidding process and the costs associated with the execution of the bidding through the Transaction Cost Index (ICT) developed in the present work will also be evaluated.

At the end of the study, a theoretical contribution to finance in the public sphere is made, researching transaction costs and governance mechanisms in bids, and, in addition, a practical contribution is made by identifying the relationship between medicine purchases prices within the scope of SUS in comparison to the prices practiced in the market.

The transaction costs theory

The analysis of bidding processes, based on the transaction costs theory, enables to understand the effort to mitigate the opportunistic behavior of suppliers, the uncertainties present in contractual relations with the government and the information asymmetry resulting from poorly planned or incomplete contracts. According to the works of Coase (1937), transaction costs are those costs incurred to negotiate, monitor and coordinate the behavior of individuals in contractual relationships.

When public organizations are analyzed, transaction costs are manifested in the stages involved in bidding, and, in Hermann's (1998) perspective, these costs are *ex ante*, involving the costs of designing, negotiating and providing for contractual safeguards; *ex post*, which relate to the costs of monitoring and controlling contracts and commercial relations; and the costs associated with the execution of the bidding process, including the costs of preparing the public notice, encompassing the qualification and judgment of the proposals, publishing the winners and the costs associated with the time elapsed between the need to purchase and the receipt of the product.

An essential point of the transaction costs theory brought by Coase (1937) and Williamson (1979) is that these costs make transactions expensive and markets fail to achieve an efficient balance. The authors analyze how emergence of organizations and how decisions are made to outsource certain activities to the market or to verticalize all services in the same firm.

In the case of public biddings, the incidence of transaction costs in the purchasing processes can be verified when analyzing the legislation and regulations on the topic, that is, Laws 8,666/93 and 10,520/02, in addition to Normative Instructions 04/2014 and 05/2017. Within this legal framework, the Public Administration endeavors to plan and properly coordinate the contracting, the detailed specification of the demand and requirements that the supplier must answer, the monitoring of the performance and quality of the delivered products and the punitive measures for opportunistic behavior by part of these suppliers.

The analysis of the trade-off between manufacturing or purchasing from outsourceds gains relevance in the public health sector when analyzing the works of Gadelha (2012) and Gadelha, Costa and Maldonado (2012), in which the importance of investing in a Industrial Economic Health Complex is discussed, which is able to guarantee social well-being through the supply of products, inputs, services, equipment and new technologies for the needs of SUS. Therefore, it is worth highlighting the relevance of this discussion in the scope of health, once, according to Varrichio (2017), the market in this sector has a dynamic of operation in which the dependence of few or only companies to supply certain items of great relevance and essential for the operation of hospitals, laboratories and research institutions may lead the buyer of the relationship to a situation of capture, that is, a situation of subordination at prices higher than the average practiced in the market or with products of inferior quality.

One of the assumptions of the New Institutional Economics approach, in which the transaction costs theory is inserted, is the realization that the market does not work perfectly, with all agents having complete and updated information on transactions at the same time, the behaviors being always fair and pre-defined and the perspectives regarding payments, future demands and market conditions being fully known by all. On the contrary, the New Institutional Economy is in contact with the reality of the imperfection of markets and their relationships, with the elements of uncertainty, opportunism and information asymmetry present in transactions between organizations.

Based on the costs incurred in transacting with the market and the costs incurred in manufacturing the items you need, it can be seen that the bidding process has been in the recent period aiming at improvements in terms of accountability to society and in the development of more technical and efficient criteria in the purchasing planning process and in the monitoring of supplies and contracts. In this sense, evaluating these efforts to mitigate opportunistic behaviors, uncertainties and informational asymmetries, the bidding process

incurs transaction costs to ensure that acquisitions are made efficiently. The table below highlights the main transaction costs and the related theoretical bases:

Table 01 - Main transaction costs in bids and their respective theoretical bases

	Unfolding	*Associated transaction cost element*	*Reference*
a. CT_{ac} - weight 0,33	CT_{ac1} - There was a impeachment / suspension of the bid to answer clarifications about the term of reference (incomplete information or insufficient description of the agency's demand).	Informational asymmetry, Specificity of the transacted asset	Williamson (1979); Hermann (1998); Hobbs (1996); Lamarão (2013); Silva e Brito (2013); Ribeiro (2003)
	CT_{ac2} - Notice foresees the acquisition of a low quantity of items, indicating limitation in the purchase planning.	Frequency at which the transaction takes place, Specificity of the transacted asset	Williamson (1979); Hermann (1998); Ribeiro (2003)
	CT_{ac3} - The acquisition took place through Bidding Waiver, indicating less competition between suppliers compared to the Electronic Auction.	Opportunism, Informational Asymmetry	Hermann (1998); Maher (1997); Hobbs (1996); Mello (2007); Lamarão (2013); Silva e Brito (2013)
	CT_{ac4} - The acquisition took place in isolation for the item - there was no grouping with other items demanded by the agency.	Specificity of the transacted asset, Frequency at which the transaction occurs	Williamson (1979); Hermann (1998); Ribeiro (2003)
b. CT_{pc} - weight 0,33	CT_{pc1}- There are requirements for certificates of technical capacity and respective registration with a professional council or other accrediting institution (CRA, CREA, INMETRO).	Uncertainty, Specificity of the transacted asset	Williamson (1979); Hermann (1998)
	CT_{pc2} - There is a contractual clause that provides for delivery time and punishment for possible non-compliance (items that cannot be discontinued).	Opportunism, Uncertainty	Hermann (1998); Maher (1997); Mello (2007); Ribeiro (2003)
	CT_{pc3} - There is a need to do quality tests on the product provided by technical staff.	Opportunism, Uncertainty	Hermann (1998); Maher (1997); Mello (2007); Ribeiro (2003)
c. CT_{lic}- weight 0,33	CT_{lic1} – There are few participants in the bidding, causing the probability of prices above the market average (score inversely proportional to the number of participants).	Opportunism, Informational Asymmetry	Hermann (1998); Maher (1997); Hobbs (1996); Mello (2007); Lamarão (2013); Reis (2018); Silva e Brito (2013)
	CT_{lic2} - There were purely speculative proposals (without presenting the necessary requirements to participate in the bidding).	Opportunism, Informational Asymmetry	Hermann (1998); Maher (1997); Hobbs (1996); Mello (2007); Lamarão (2013); Reis (2018); Silva e Brito (2013); Ribeiro (2003)
	CT_{lic3} - There was a need to use differentiated treatment for micro and small businesses, according to Law 123/2006.	Uncertainty, Specificity of the transacted asset, Informational asymmetry	Williamson (1979); Hermann (1998); Hobbs (1996); Lamarão (2013)
	CT_{lic4} - There is a high difference in the proposals in relation to the price practiced in the market (it indicates lack of clarity in the basic design of the contract and opportunism on the part of the supplier).	Opportunism, Informational Asymmetry	Hermann (1998); Maher (1997); Hobbs (1996); Mello (2007); Lamarão (2013); Reis (2018); Silva e Brito (2013); Ribeiro (2003)

	CT_{lic5} - The bidding result was contested by appeal.	Informational asymmetry, Uncertainty	Hermann (1998); Hobbs (1996); Lamarão (2013)

Source: Prepared by the author.

Methodological procedures

In order to realize the analyzes, the transaction costs involved in the bidding process were broken down into the three phases described below:

• *ex ante* transaction costs - CTac: costs in designing, negotiating and providing for contractual safeguards;
• *ex post* transaction costs - CTpc: contract monitoring and control costs;
• Bidding costs - CTlic: costs associated with the execution of the bidding, among which are included: the costs of preparing the public notice, fulfillment the bidding and judging the proposals, publishing the winners and the costs associated with the time between need to purchase and receive the product.

The study made it possible to evaluate the efficiency of the purchase process by comparing the prices of the medicines purchased through bidding with the prices practiced in its alternative form of acquisition, that is, the market prices. Thus, it was analyzed whether the process of purchasing medicines by the Public Administration is efficient or not, that is, it sought to answer whether the public administration buys for values lower than those practiced in the market, or if the values practiced in the market are more advantageous for the items searched? This comparison was summarized by the following relationship:

$$P_{lic} \leq P_m$$

on what:

• P_{lic} = price of the product offered by the supplier winning the bid;

• P_m = price of the product on the market;

With the unfolding of the relationship (1), the transaction costs involved in the bidding process were explored, described by the variables in the relationship (2):

$$CT_{ac} + CT_{pc} + CT_{lic} + P_{lic} \leq P_m \qquad (2)$$

The evaluation of the transaction costs "CT_{ac}","CT_{pc}"and "CT_{lic}" of the analyzed bidding processes was carried out through the construction of an index entitled as Transaction Cost Index (ICT). The formulation of the index was based on verifications of the unfolding of these elements, attributing equally distributed weights to each unfolding, as detailed in the following table:

Table 02: Transaction costs assessed on acquisitions

	Desdobramento	***Score***
a. CT_{ac} - weight 0,33	CT_{ac1} - There was a impeachment / suspension of the bid to answer clarifications about the term of reference (incomplete information or insufficient description of the agency's demand).	0,0825
	CT_{ac2} - Notice foresees the acquisition of a low quantity of items, indicating limitation in the purchase planning.	0,0825
	CT_{ac3} - The acquisition took place through Bidding Waiver, indicating less competition between suppliers compared to the Electronic Auction.	0,0825
	CT_{ac4} - The acquisition took place in isolation for the item - there was no grouping with other items demanded by the agency.	0,0825
b. CT_{pc} - weight 0,33	CT_{pc1}- There are requirements for certificates of technical capacity and respective registration with a professional council or other accrediting institution (CRA, CREA, INMETRO).	0,1100
	CT_{pc2} - There is a contractual clause that provides for delivery time and punishment for possible non-compliance (items that cannot be discontinued).	0,1100
	CT_{pc3} - There is a need to do quality tests on the product provided by technical staff.	0,1100
c. CT_{lic}- weight 0,33	CT_{lic1} - There are few participants in the bidding, causing the probability of prices above the market average (score inversely proportional to the number of participants).	0,066/nº participantes
	CT_{lic2} - There were purely speculative proposals (without presenting the necessary requirements to participate in the bidding).	0,0660
	CT_{lic3} - There was a need to use differentiated treatment for micro and small businesses, according to Law 123/2006.	0,0660
	CT_{lic4} - There is a high difference in the proposals in relation to the price practiced in the market (it indicates lack of clarity in the basic design of the contract and opportunism on the part of the supplier).	0,066
	CT_{lic5} - The bidding result was contested by appeal.	0,066

Source: Prepared by the author

After defining the variables related to transaction costs, the criterion for their verification was established using a reference scale. Thus, the scale adopted in a similar way in the studies of Eisenberg (2004), Mello and Slomski (2010) and Holzer and Kim (2006) was

taken into account, which has a score of 0-3 (zero to three) for the identification of the variables, where 0 means the unfolding of the unfolding, 1 is the weak finding of the unfolding, 2 refers to the moderate finding of the unfolding and 3 is the full finding of the analyzed unfolding:

Table 03: Scale for verifying the observed variables

Reference scale		*Multiplication factor*
0	Not identified	0,00
1	Weak finding	33,33
2	Moderate finding	50,00
3	Fully identified attribute	100,00

Source: Prepared by the author

Regarding the construction of the ICT, a quantitative approach was used, based on the identification of the index parameters by the theoretical platform on transaction costs theory developed in the theoretical framework. Thus, for the construction of the ICT, it was done the calculation of the incidence of the unfolding of the groups of elements of the transaction costs mentioned in Table 02. Then, as shown in the table, weights were assigned to each unfolding and verified, through the analysis of the notices and their terms of reference, contracts and spreadsheets the verification of each transaction cost unfolding in the studied documents.

The finding of the unfolding was multiplied by the reference scale factor in Table 03, scoring according to the gradation of the finding of these analyzed items. After analyzing the identified transaction costs, they were grouped into a matrix with the respective transaction cost index found. It should be noted that, for the analyzed sample, there were situations in which P_{lic} proved to be advantageous and situations in which P_m showed better for public administration. With this, the sample was divided into these two categories and the analyzes of the indices found in each of the categories were made, in order to verify in which elements are the highest transaction cost indices and in order to identify the governance mechanisms for public purchases that must be taken into account to improve the efficiency of bidding processes.

The treatment of the data enable to assess which of the three stages of the bidding process is the highest transaction costs incurred in public bids. After that, the variations of these costs in relation to the market price of the analyzed medicines were analyzed. Taking

into account the variations in transaction costs within the developments in table 02, the analysis using the index enable to evaluate the governance mechanisms that can be improved in contracting, with the objective of reducing transaction costs and increasing the percentage of savings obtained in the negotiations.

Population and sample

The population defined for this study refers to the acquisitions made by public agencies from all spheres of power linked to public health institutions, that is, linked to SUS, in 2019. Thus, the study sample for the comparison of values between P_{lic} and P_m was made up of agencies that provided information on their bidding processes through the Federal Government's "Price Panel".

The sampling of medicines whose prices were compared was based on the National Medicines Policy, instituted by Ordinance GM/MS 3,916, of October 30, 1998, which establishes the essential medicines for the operationalization of SUS, as it contemplates a list of products necessary for the treatment and control of most of the prevalent pathologies in the country. Therefore, the analysis was limited to the medicines that were supplied by at least 10 different manufacturers, and, with that, the selection of these drugs excluded those considered less usual. As such, we sought to address the most frequent medications in a wide range of health treatments.

Data collect

For the study, secondary data were collected through the government's management systems such as the Federal Government's Price Panel, Transparency Portal, Managerial Treasury and SIAFI, in which spreadsheets, contracts, notices and terms of reference of the bids that were analyzed are made available. Regarding the research on the prices of medicines practiced in the market, the information consolidated by Anvisa was used, through its list of Medicines Prices for the Consumer, Health Products Price Panel, and a survey of the prices of medicines sold in Brazilian pharmacies through the database "consultaremedios".

Results

After the data was collected, the following information was obtained, in order to verify the veracity of the relationship below:

$$P_{lic} \leq P_m$$

The relationship between the usual prices in bidding processes and the setted prices in the market requires careful analysis depending on the volume of medicines purchased to satisfy SUS needs and the peculiarities involved in the bidding legislation. Thus, the execution of bids may allow public organizations to negotiate very favorable prices, however, in other cases, due to the urgency in the acquisition of some items and the weakness in the planning and execution of these processes, they may subject public organizations to very high prices, due to the cartelization of suppliers and consequent opportunistic behavior.

When observing the percentages of discounts in general, as shown in table 04, the comparison of the prices obtained points out that the general average discount of the P_{lic} and P_m ratio results in the discount percentage for the prices practiced in the market 17.05% higher than the prices practiced in the public bids.

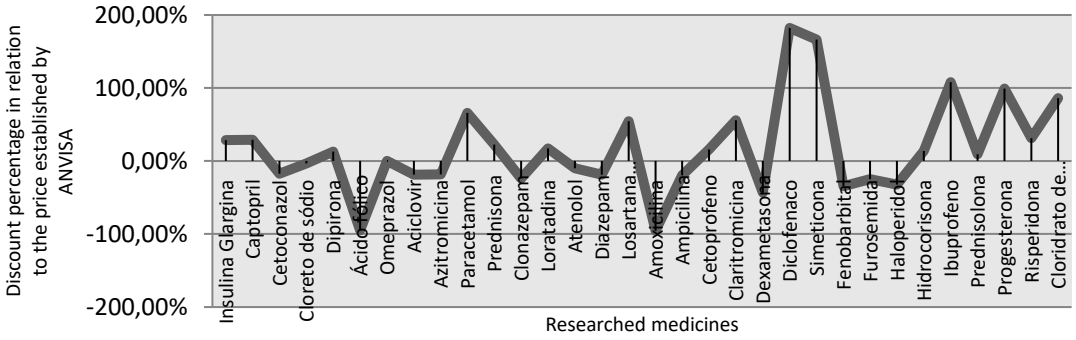
Table 04 - Comparison of prices obtained in bids with prices obtained in the market

Item	Laboratório	PF - PMVG	PMVG - Anvisa	Desvio Padrão em relação à PMVG - Anvisa	Preço médio licitações	Percentual de desconto em relação ao PMVG - Anvisa	PF - PMC	PMC - Anvisa	Desvio Padrão em relação à PMC - Anvisa	Preço médio mercado	Percentual de desconto em relação ao PMC - Anvisa
				S_{lic}	P_{lic}				S_{lic}	P_m	
Insulina Glargina - '100 U/ML SOL INJ CT 1 CAR VD TRANS X 3 ML	Sanofi	101,73	81,22	9,32	68,03	-16,23%	101,73	140,64	44,75	77,36	-44,99%
Captopril - '25 MG COM CT BL AL PLAS INC X 30	Medquimica	10,08	8,05	1,03	6,60	-18,01%	10,08	13,94	4,65	7,36	-47,19%
Cetoconazol - '20MG+0,5MG+2,5MG CREM DERM CT BG AL X 30 G	Belfar	28,63	22,86	14,14	2,87	-87,45%	28,63	39,58	19,63	11,82	-70,14%
Cloreto de sódio - '9 MG/ML SOL INJ IV BOLS PVC INC SIST FECH X 100 ML/COM	Baxter	5,84	4,66	1,49	2,55	-45,28%	5,84	8,07	2,40	4,67	-42,13%
Dipirona - '500 MG/ML SOL OR CT FR PLAS OPC GOT X 20 ML	Belfar	8,71	6,95	2,92	2,82	-59,42%	7,57	11,6	5,92	3,23	-72,17%
Acido fólico - '5 MG COM REV CT BL AL PLAS INC X 30	Aché	19,59	15,64	9,79	1,80	-88,49%	17,02	26,1	1,18	27,77	6,38%
Omeprazol - '20 MG CAP GEL DURA MICROG CT FR PLAS OPC X 28	Biosintética	47,78	38,15	25,30	2,37	-93,79%	47,78	66,05	43,88	3,99	-93,96%
Aciclovir - '200 MG COM CT BL AL PLAS INC X 25	Aché	139,61	111,46	65,73	18,50	-83,40%	139,61	193	88,11	68,39	-64,56%
Azitromicina - '500 MG COM REV CT BL AL PLAS INC X 5	BrainFarma	48,13	38,43	20,99	8,75	-77,23%	48,13	66,54	27,79	27,24	-59,06%
Paracetamol - '500 MG + 65 MG COM REV CT BL AL PLAS INC X 20	Sanofi	18,23	14,55	1,80	12,00	-17,53%	15,84	24,29	14,36	3,99	-83,59%
Prednisona - '20 MG COM CT BL AL PLAS INC X 10	Prati	14,44	11,53	4,69	4,90	-57,50%	14,44	19,96	11,28	4,01	-79,89%
Clonazepam - '2.5 MG/ML SOL OR CT FR PLAS OPC GOT X 20 ML	Hipolabor	10,06	8,03	3,38	3,25	-59,53%	10,06	13,91	3,51	8,94	-35,73%
Loratadina - '10 MG COM REV CT BL AL PLAS AMB X 12	Biosintética	28,03	22,38	8,70	10,08	-54,96%	24,36	37,34	19,04	10,42	-72,10%
Atenolol - '50 MG COM CT BL AL PLAS INC X 30	Sanofi	13,65	10,9	6,65	1,50	-86,24%	13,65	18,87	10,20	4,44	-76,47%
Diazepam - '10 MG COM CT BL AL PLAS INC X 30	Pharlab	11,1	8,86	2,87	4,80	-45,82%	11,1	15,35	2,97	11,15	-27,36%
Losartana Potássica - '50 MG + 12,5 MG COM REV CT BL AL PLAS OPC X 30	Pharlab	25,77	20,57	4,79	13,80	-32,91%	25,77	35,63	22,03	4,47	-87,45%
Amoxicilina - '500 MG CAP GEL DURA CT BL AL PLAS INC X 21	EMSAS	17,21	13,74	1,65	11,40	-17,03%	17,21	19,51	10,82	34,82	78,45%
Ampicilina - '500 MG X 24 COMP	EMSAS	41,3	32,97	15,68	10,80	-67,24%	41,3	57,09	19,25	29,86	-47,70%
Cetoprofeno - '50 MG CAP GEL DURA CT BL AL PLAS INC X 24	Sanofi	33,98	27,13	11,89	10,32	-61,96%	33,98	46,98	25,84	10,43	-77,80%
Claritromicina - '500 MG COM REV CT BL AL PLAS INC X 14	Sanofi	83,41	66,59	7,19	56,42	-15,27%	83,41	115,31	58,07	33,19	-71,22%
Dexametasona - '4,0 MG COM CT BL AL PLAS INC X 10	Aché	13,05	10,42	4,47	4,10	-60,65%	13,05	18,04	2,24	14,88	-17,54%
Diclofenaco - '50 MG COM REV CT BL AL PLAS INC X 20	1Farma	10,31	8,23	7,76	19,20	133,29%	10,31	14,25	4,94	7,27	-48,98%
Simeticona - '40 MG COM CT BL AL PLAS TRANS X 20	BrainFarma	8,22	6,56	5,40	14,20	116,46%	7,14	10,95	3,87	5,48	-49,94%
Fenobarbital - '40 MG/ML SOL OR PED CT FR VD AMB GOT X 20 ML	Sanofi	6,84	5,46	1,33	3,58	-34,43%	6,84	9,46	0,00	9,46	0,00%
Furosemida - '40 MG COM CT BL AL PLAS VDE X 20	Sanofi	13,1	10,46	6,41	1,40	-86,62%	13,1	18,11	7,93	6,90	-61,90%
Haloperidol - '5 MG COM CT BL AL PLAS INC X 20	Cristalia	4,73	3,78	0,72	4,80	26,98%	4,73	6,54	2,74	10,42	59,33%
Hidrocorisona - '10 MG/G CREM DERM CT BG AL X 20 G	União	16,63	13,28	3,83	7,86	-40,81%	14,45	22,16	8,55	10,07	-54,55%
Ibuprofeno - '400 MG COM REV CT BL AL PVC / PVDC X 10	Abbott	14,65	11,7	8,41	23,60	101,71%	12,73	19,52	0,88	18,28	-6,38%
Prednisolona - '20 MG COM CT BL AL/AL X 10	Aché	21,46	17,13	6,10	8,50	-50,38%	21,46	29,67	12,57	11,90	-59,89%
Progesterona - '200 MG CAP MOLE CT BL AL PLAS TRANS X 14	Farmoquímica	26,99	21,55	18,92	48,30	124,13%	26,99	37,31	6,57	46,60	24,91%
Risperidona - '1 MG COM REV CT BL AL PLAS TRANS X 30	Torrent	44,4	35,45	7,46	24,90	-29,76%	44,4	61,38	26,59	23,78	-61,26%
Cloridrato de Naratriptana - '2,5MG COM VER CT BL AL PLAS OPC X 10	Legrand	23,54	18,79	7,57	29,50	57,00%	23,54	32,54	6,68	23,10	-29,01%
				Desconto médio do P_{lic}		**-25,89%**			**Desconto médio do P_m**		**-42,93%**
				Desvio padrão dos descontos P_{lic}		**0,6479**			**Desvio padrão dos descontos P_m**		**0,4084**

Source: Prepared by the author

This information is best observed when worked in a graphic way, as shown below. In the line of the graph, the difference between the discounts obtained for the Average Sales Price to the Government (PMVG) and the discounts and for the Average Sales Price to the Consumer (PMC) is observed, resulting in positive values for the cases in which that the discounts obtained in the market were higher than the discounts obtained in the bids and, in negative values, when the acquisitions through bids were more advantageous:

Graph 01 - Change in the percentage of discount PMVG – PMC



The relative numbers, if analyzed in isolation, could indicate that the relation $P_{lic} \leq P_m$ is false; however, when analyzed from another angle, that is, through the absolute values of the items, it is observed that the prices of medicines purchased through bidding processes are significantly lower than those practiced in the market. This fact is due to the application of the Price Adequacy Coefficient - CAP -, in which the government regulates the prices of medicines in order to meet the public interest and the needs of SUS. Thus, taking the item Insulin Glargine as an example, the percentage of discount obtained in the public sphere was 16.23%, while in the private market it was 44.99%; however, in absolute terms this medicine was purchased by the government for R$ 68.03 per item, while in the private market, the same drug was purchased for R$ 77.36.

The favorable price for public acquisitions, even with a lower discount percentage in relation to that obtained in the market, can be explained by the initial price in which the CAP percentage is applied, that is, the initial price of the drug Insulin Glargina in public acquisitions is of R$ 81.22; in an acquisition in the private market it is R$ 140.64.

As shown below, the items Paracetamol, Prednisone, Losartan Potassium, Clarithromycin, Diclofenac, Simethicone, Ibuprofen, Progesterone, Risperidone and Naratriptan Hydrochloride have significantly higher prices than those found in the market, indicating that, despite the bidding process, it constitutes an efficient instrument for the purchase of medicines, there are situations in which the relationship between buyer and supplier is substantially unfavorable to the public administration. This results in significant amounts being spent on acquisitions that are clearly unfavorable to the public interest and, on the other hand, with disproportionate gains on the part of suppliers. In this context, the efficiency in the acquisition of medicines through the bidding process can be affected by the distortions caused by acquisitions with considerably unfavorable prices.

Table 05 shows the relationship between prices, in absolute values per item, obtained through the bidding process and those obtained by the market. It should be noted that, for the most part, the prices of drug purchases in bidding processes have prices well below market prices. However, situations of abnormal values are highlighted in the selected items.

Table 05 - Difference between absolute prices in P_{lic} and P_m

Item	Average bid price [a]	Average market price [b]	Difference between P_{lic} and P_m [c]	Variation in % [c]/[b]
	P_{lic}	P_m		
Insulina Glargina - '100 U/ML SOL INJ CT 1 CAR VD TRANS X 3 ML	68,03	77,36	-9,33	-12%
Captopril - '25 MG COM CT BL AL PLAS INC X 30	6,60	7,36	-0,76	-10%
Cetoconazol - '20MG+0,5MG+2,5MG CREM DERM CT BG AL X 30 G	2,87	11,82	-8,95	-76%
Cloreto de sódio - '9 MG/ML SOL INJ IV BOLS PVC INC SIST FECH X 100 ML/COM	2,55	4,67	-2,12	-45%
Dipirona - '500 MG/ML SOL OR CT FR PLAS OPC GOT X 20 ML	2,82	3,23	-0,41	-13%
Acido fólico - '5 MG COM REV CT BL AL PLAS INC X 30	1,80	27,77	-25,97	-94%
Omeprazol - '20 MG CAP GEL DURA MICROG CT FR PLAS OPC X 28	2,37	3,99	-1,62	-41%
Aciclovir - '200 MG COM CT BL AL PLAS INC X 25	18,50	68,39	-49,89	-73%
Azitromicina - '500 MG COM REV CT BL AL PLAS INC X 5	8,75	27,24	-18,49	-68%
Paracetamol - '500 MG + 65 MG COM REV CT BL AL PLAS INC X 20	12,00	3,99	8,01	201%
Prednisona - '20 MG COM CT BL AL PLAS INC X 10	4,90	4,01	0,89	22%
Clonazepam - '2.5 MG/ML SOL OR CT FR PLAS OPC GOT X 20 ML	3,25	8,94	-5,69	-64%
Loratadina - '10 MG COM REV CT BL AL PLAS AMB X 12	10,08	10,42	-0,34	-3%
Atenolol - '50 MG COM CT BL AL PLAS INC X 30	1,50	4,44	-2,94	-66%
Diazepam - '10 MG COM CT BL AL PLAS INC X 30	4,80	11,15	-6,35	-57%
Losartana Potássica - '50 MG + 12,5 MG COM REV CT BL AL PLAS OPC X 30	13,80	4,47	9,33	209%
Amoxicilina - '500 MG CAP GEL DURA CT BL AL PLAS INC X 21	11,40	34,82	-23,42	-67%
Ampicilina - '500 MG X 24 COMP	10,80	29,86	-19,06	-64%
Cetoprofeno - '50 MG CAP GEL DURA CT BL AL PLAS INC X 24	10,32	10,43	-0,11	-1%
Claritromicina - '500 MG COM REV CT BL AL PLAS INC X 14	56,42	33,19	23,23	70%
Dexametasona - '4,0 MG COM CT BL AL PLAS INC X 10	4,10	14,88	-10,78	-72%
Diclofenaco - '50 MG COM REV CT BL AL PLAS INC X 20	19,20	7,27	11,93	164%
Simeticona - '40 MG COM CT BL AL PLAS TRANS X 20	14,20	5,48	8,72	159%
Fenobarbital - '40 MG/ML SOL OR PED CT FR VD AMB GOT X 20 ML	3,58	9,46	-5,88	-62%
Furosemida - '40 MG COM CT BL AL PLAS VDE X 20	1,40	6,90	-5,50	-80%
Haloperidol - '5 MG COM CT BL AL PLAS INC X 20	4,80	10,42	-5,62	-54%
Hidrocorisona - '10 MG/G CREM DERM CT BG AL X 20 G	7,86	10,07	-2,21	-22%
Ibuprofeno - '400 MG COM REV CT BL AL PVC / PVDC X 10	23,60	18,28	5,33	29%
Prednisolona - '20 MG COM CT BL AL/AL X 10	8,50	11,90	-3,40	-29%
Progesterona - '200 MG CAP MOLE CT BL AL PLAS TRANS X 14	48,30	46,60	1,70	4%

Source: Prepared by the author

Thereby, it is noted that the $P_{lic} \leq P_{me}$ ratio is true. However, the bidding process allows situations of high deviations from the average prices usually used both in the market and in public acquisitions. Such deviations are relevant elements to be studied and dealt with in order to improve the governance mechanisms used in public administration aiming at achieving efficiency in the acquisition of medicines.

Analysis of transaction costs involved in the phases of bidding processes

Bidding processes in which P_m were most advantageous

The values calculated below through the attribution of weights to the unfolding inherent to the phases of the bidding process reveal the gradations of the values of the transaction cost index in each phase of these processes:

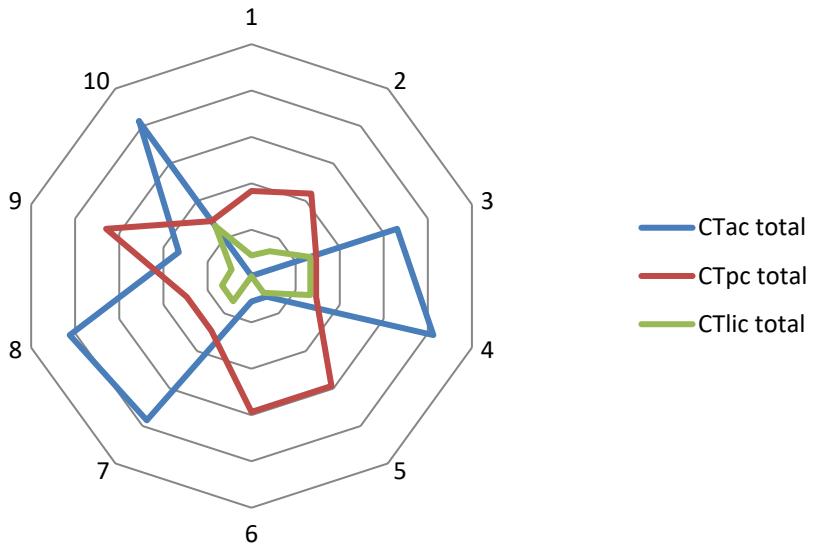
Table 06 - Transaction costs index in situations where Market Prices (P_m) were more advantageous

	CT_{ac1}	CT_{ac2}	CT_{ac3}	CT_{ac4}	$CT_{ac\,total}$	CT_{lic1}	CT_{lic2}	CT_{lic3}	$CT_{lic\,total}$	CT_{ic1}	CT_{ic2}	CT_{ic3}	CT_{ic4}	CT_{ic5}	$CT_{ic\,total}$
Claritromicina	0	0	0	0	0,0000	5,5	3,6663	0	9,1663	0,0165	0	0	2,19978	0	2,2163
Diclofenaco	0	0	0	0	0,0000	5,5	5,5	0	11,0000	0,0165	0	0	3,3	0	3,3165
Losartana Potássica	0	8,25	8,25	0	16,5000	3,6663	3,6663	0	7,3326	0,066	0	0	6,6	0	6,6660
Paracetamol	0	8,25	8,25	4,125	20,6250	3,6663	3,6663	0	7,3326	0,066	0	0	6,6	0	6,6660
Prednisona	0	2,749725	0	0	2,7497	5,5	5,5	3,6663	14,6663	0,033	0	0	2,19978	0	2,2328
Simeticona	0	2,749725	0	0	2,7497	5,5	5,5	3,6663	14,6663	0,033	0	0	0	0	0,0330
Ibuprofeno	0	8,25	8,25	2,749725	19,2497	3,6663	3,6663	0	7,3326	0,066	0	0	3,3	0	3,3660
Progesterona	0	8,25	8,25	4,125	20,6250	3,6663	3,6663	0	7,3326	0,066	0	0	3,3	0	3,3660
Risperidona	0	8,25	0	0	8,2500	11	5,5	0	16,5000	0,066	0	0	2,19978	0	2,2658
Cloridrato de Naratriptana	0	8,25	8,25	4,125	20,6250	3,6663	3,6663	0	7,3326	0,066	0	0	6,6	0	6,6660
Valores totais	**0,0000**	**54,9995**	**41,2500**	**15,1247**	**111,3742**	**51,3315**	**43,9978**	**7,3326**	**102,6619**	**0,4950**	**0,0000**	**0,0000**	**36,2993**	**0,0000**	**36,7943**

Source: Prepared by the author

Among the three phases analyzed, it is observed that, in the preliminary stage (CT_{ac}), that is, the planning phase, the public administration has expended efforts to adequately specify its needs and quantities. This observation was verified by the higher indices of transaction costs in this stage. On the other hand, the competitive phase (CT_{lic}) is less expressive in the acquisitions studied in this part of the work, that is, the acquisitions in which the Market Prices (P_m) were more advantageous than those obtained through the bidding process. The following graph illustrates the values obtained through the transaction cost index identified in the three analyzed steps:

Graph 02 - Transaction cost index in situations where Market Prices (P_m) were more advantageous



Source: Prepared by the author

In the CT_{ac} phase, it is noted that the sub-item CT_{ac2} - "acquisition of low quantity of items" - is an element present in almost all the bids analyzed in which the market prices were higher. This means that the correct and broadest possible estimate constitutes a competitive advantage to be exploited by the public administration and that the absence of exploitation of this advantage constitutes an element of transaction costs for public organizations, once it is linked to the execution of poorly planned bidding processes that are not very attractive to suppliers, and are therefore not very competitive.

In the same sense, through the analysis of the data it was found that the majority of acquisitions took place due to the absence of bidding, as evidenced in the sub-item CT_{ac3}. Thus, it is identified that the quantity of items to be purchased and the type of bidding adopted are relevant elements in the negative results for acquisitions in the public administration. It is also observed that the supply of medicines in low quantity does not allow the public administration to obtain the advantage of economies of scale and that the acquisition through waiver of bidding contributes to the practice of prices that do not reflect those usually used in the market. This is due to the low attractiveness, as mentioned previously, and low disclosure of these bidding processes, since, in the bidding waivers, the stages of disclosure of bid notices and bid offers by suppliers are not carried out, as shown in Law 8,666/93.

In the CT_{lic} phase, the development in the sub-item CT_{lic1} - "few participants in the bidding" - stands out, whose results revealed that, in most of the analyzed bidding processes, there was not due competitiveness, due to the characteristics of the bidding waivers in which the prices, according to Law 8,666/93, are obtained through 03 proposals from different companies and there is no bidding phase between a large number of participants, as in the electronic auction or other modalities.

The observations contained in the sub-item CT_{lic1} are related to the sub-item CT_{lic4} - "high difference in prices in relation to those practiced in the market". This is because the low participation of bidders in these acquisitions reduces the efficiency of the bidding process, since, if there are no other bidders in the dispute, the public administration has to accept proposals with high values to answer the needs of purchasing medicines, which in some cases they are characterized by the urgency in attending health treatments and in the provision of public health institutions.

Based on the results of the transaction cost index analyzed, it appears that the most relevant elements for efficiency in bidding processes are present in the planning of acquisitions, by estimating quantities that enable the public administration to obtain gains of scale, in addition to use of electronic auction to the detriment of bidding waivers, in order to encourage the participation of a greater number of bidders.

Bidding processes in which the P_{lic} were more advantageous

On the other hand, when analyzing the bidding process in which the P_{lic} were more advantageous, it can be seen that, among the three phases of the bidding process analyzed, the bids in which prices were lower in relation to the market had lower transaction costs present in phases different from those identified in the previous section. It is verified in these cases that they constitute better planned and executed acquisitions, once, for these acquisitions, the quantities of items were more adequately estimated, the acquisitions were made through auctions electronic and there were no objections to the notices.

Table 07 - Transaction cost index in situations where Bid Prices (P_{lic}) were more advantageous

	CT_{ac1}	CT_{ac2}	CT_{ac3}	CT_{ac4}	$CT_{ac\,total}$	CT_{pc1}	CT_{pc2}	CT_{pc3}	$CT_{pc\,total}$	CT_{lic1}	CT_{lic2}	CT_{lic3}	CT_{lic4}	CT_{lic5}	$CT_{lic\,total}$
Ácido Fólico	0	0	0	0	0,0000	5,5	5,5	3,6663	14,6663	0,00388	0	0	0	0	0,0039
Clonazepam	0	0	0	2,75	2,7497	5,5	11	3,6663	20,1663	0,066	0	0	3,3	0	3,3660
Amoxicilina	0	0	0	2,75	2,7497	3,6663	11	3,6663	18,3326	0,022	0	0	2,19978	0	2,2218
Dexametasona	0	0	0	2,75	2,7497	5,5	5,5	3,6663	14,6663	0,066	0	0	3,3	0	3,3660
Fenobarbital	0	0	0	0	0,0000	5,5	0	0	5,5000	0,0165	0	0	3,3	0	3,3165
Furosemida	0	0	0	0	0,0000	11	11	3,6663	25,6663	0,00236	6,6	0	3,3	3,3	13,2024
Haloperidol	0	0	0	0	0,0000	3,6663	3,6663	5,5	12,8326	0,033	0	0	2,19978	0	2,2328
Valores totais	**0,0000**	**0,0000**	**0,0000**	**8,25**	**8,2492**	**40,3326**	**47,6663**	**23,8315**	**111,8304**	**0,2097**	**6,6000**	**0,0000**	**17,5996**	**3,3000**	**27,7093**

Source: Elaborated by the author

It is observed that, in the CT_{ac} phase, there were findings of elements of transaction costs only for the sub-item CT_{ac4} - which deals with acquisitions in which the public administration carried out the bidding in isolation for the drug demanded, that is, without the grouping with other public administration needs to make the bidding process more global and more interesting to suppliers. Thus, it is also observed that, for these cases, there were higher rates of transaction costs in the sub-item CT_{lic1}, indicating that, specifically for these bidding processes, the participation of suppliers was a little more restricted.

Notwithstanding this, the CT_{lic} phase points to a greater participation of suppliers when compared to bidding processes in which prices were unfavorable to the public administration. In this case, the sub-items CT_{lic1} and CT_{lic4} stand out, in which, in the case of the first, it indicates the finding of high transaction costs when there are few participants in the bidding and, in the case of the second, the finding of transaction costs when the prices offered have a high difference in relation to those practiced in the market. This is due to the greater exposure to opportunistic behavior on the part of suppliers when there is not the broad competitiveness that is sought through the guidelines of the legislation that regulates the bidding process.

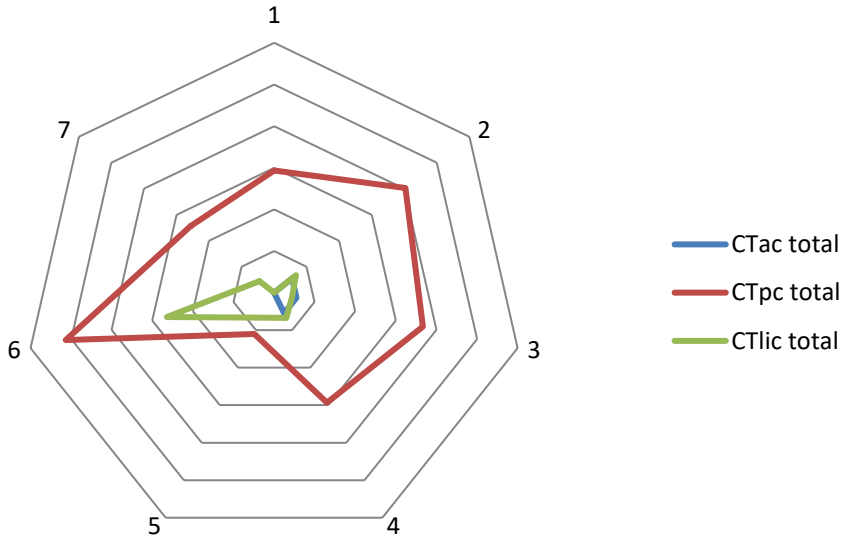
In the case of favorable bidding processes in item CT_{lic1}, the total value was 0.2097, whereas, in unfavorable bidding processes, analyzed in the previous section, this index has a value of 0.4950. It is observed, therefore, that the difference in values indicates lower transaction costs due to the greater participation of suppliers in bidding processes favorable to public administration. Therefore, the sub-item CT_{lic4}, has values of 17.5996 in favorable bidding processes and 36.2993 in unfavorable bidding processes, indicating that, in the first case, the bidding process has proposals with better prices in relation to the second case.

It is important to highlight that the sub-items CT_{lic1} and CT_{lic4} are related, since, the greater the participation of bidders in public purchases, the less likely the offer of bids with

high values in relation to those practiced in the market. That is, the lower the rate of transaction costs in CT_{lic1}, the lower the rate of transaction costs in CT_{lic4}.

It is noted, through the transaction cost index in the CT_{lic} phase, that the number of participants in the bidding was higher, inhibiting the presentation of speculative proposals, that is, with remarkably high prices. It is also observed, in the bidding with favorable prices, that in the CTp_c phase the public administration incurs higher transaction costs. At this stage, because the auctions are more rigorous in planning and executing the competitive stage, there is also more rigor in the definition of mechanisms for monitoring the contractual relationship with suppliers. This implies more rigor in the technical qualification requirements, in the establishment of punishments for the delivery of items that are not satisfied and in the stricter control in the quality of the purchased drugs. These findings are shown graphically below:

Graph 03 - Transaction costs in situations where Bid Prices (Plic) were more advantageous



Source: Elaborated by the author

Summarizing the comparisons between the bidding processes analyzed, the table below shows the differences between the transaction cost indices in the bidding processes in which P_{lic} was more advantageous and in which P_m was more favorable. In general, it can be seen that the planning stage of the bidding has greater prominence in the comparison. It is at this stage that the quantity of items to be acquired and the modality adopted by the public administration for the acquisitions are defined. Thus, the option of waiving bidding has been

shown to be disadvantageous for the public administration, as it is a form of acquisition with low publicity for the demands to be answered and low competitiveness among suppliers.

Related to this, the bidding execution phase also stands out for the factors "number of suppliers" and "difference in prices offered in relation to the market price". Tenders with low participation of suppliers favor opportunistic conduct on the part of companies, since, in this case, management tends to subject itself to higher prices due to the lack of other alternatives and the urgency in acquiring medicines and answer demands users of public health services.

Table 07 - Comparison between the transaction cost indices

	Most advantageous P_m values	***Total P_m***	***Most advantageous P_{lic} values***	***Total P_{lic}***
CT_{ac1} - There was a impeachment / suspension of the bid to answer clarifications about the term of reference (incomplete information or insufficient description of the agency's demand).	0,0000	111,3742	0,0000	8,2492
CT_{ac2} - Notice foresees the acquisition of a low quantity of items, indicating limitation in the purchase planning.	54,9995		0,0000	
CT_{ac3} - The acquisition took place through Bidding Waiver, indicating less competition between suppliers compared to the Electronic Auction.	41,2500		0,0000	
CT_{ac4} - The acquisition took place in isolation for the item - there was no grouping with other items demanded by the agency.	15,1247		8,2492	
CT_{pc1}- There are requirements for certificates of technical capacity and respective registration with a professional council or other accrediting institution (CRA, CREA, INMETRO).	51,3315	102,6619	40,3326	111,8304
CT_{pc2} - There is a contractual clause that provides for delivery time and punishment for possible non-compliance (items that cannot be discontinued).	43,9978		47,6663	
CT_{pc3} - There is a need to do quality tests on the product provided by technical staff.	7,3326		23,8315	
CT_{lic1} - There are few participants in the bidding, causing the probability of prices above the market average (score inversely proportional to the number of participants).	0,4950	36,7943	0,2097	27,7093
CT_{lic2} - There were purely speculative proposals (without presenting the necessary requirements to participate in the bidding).	0,0000		6,6000	
CT_{lic3} - There was a need to use differentiated treatment for micro and small businesses, according to Law 123/2006.	0,0000		0,0000	
CT_{lic4} - There is a high difference in the proposals in	36,2993		17,5996	

relation to the price practiced in the market (it indicates lack of clarity in the basic design of the contract and opportunism on the part of the supplier).				
CT_{lic5} - The bidding result was contested by appeal.	0,0000		3,3000	

Source: Elaborated by the author

Discussion of results based on transaction costs theory

It is observed that the purchase of medicines through the market has transaction costs resulting from monitoring the behavior of suppliers in order to avoid overprices, delivery of items with low quality, failure to meet deadlines, etc. However, on the other hand, it is observed that the production of these items would trigger transaction costs for the coordination of activities for this purpose. With this, there is the trade-off discussed by Coase (1937), wherein, for the object of study of this work, the decision of the public administrator tends to be for the acquisition of the items manufactured by third parties instead of the own production.

However, given the volume of acquisitions and the high values negotiated by the entire public administration, it is necessary to improve the integration between public purchases so that the potential for economies of scale resulting from the grouping of purchases can be exploited, given the weaknesses of the brazilian pharmaceutical market, pointed out by Gadelha (2012); Gadelha, Costa and Maldonado (2012) and Varichio (2017). Thus, a pertinent strategy would be the integration of several public organizations in the form of clans to centralize the acquisition of similar items and increase the bargaining power with the market, which is often monopolized. Such considerations must be taken into account by the public legislator to improve the legislation that regulates public acquisitions, such as Law 8,666/93, Law 10,520/02, Decree 7,892/13 and other rules.

Another relevant point to be highlighted through the information gathered is the discrepancy between the values of the acquisitions between the items, as can be seen in the interpretation of graph 03 and in the analysis of the transaction cost index in the processes in which the market prices are showed more advantageous. With regard to this discrepancy in values, there is that informational asymmetry, in agreement with Hobbs (1996), Arkelof (1978) and Ribeiro (2003), influences the definition of prices and the percentage of discounts given in bidding bids. In this case, when the supplier does not have enough information about

the transaction to be completed, it tends to increase the price of the items to be supplied to avoid possible losses arising from obligations that were not clear at the beginning of the transaction. This is the case of poorly planned bids, the terms of which will be acquired are not properly specified. As a result, as discussed by Mello (2007) and Lamarão (2013), the supplier tends to raise its prices to mitigate any risks of having to fulfill obligations that were not clear at the beginning of the transaction or to protect against late payments.

Informational asymmetry is also an element present in acquisitions made through bidding waivers and, in this case, it is related to the fact that it is characterized by a form of acquisition in which there is no widespread disclosure of purchasing processes among the entire market. Unlike electronic auctions, in which the processes are widely advertised on specialized websites, in the bidding waivers the disclosure is restricted to those suppliers in which the administration quoted the price directly. These in turn, similar to the arguments dealt with by Arkelof (1978) and discussed in this work, tend to increase the values to maximize their profits, and, in this case, the public administration finds itself without the necessary information to adapt the prices to those practiced in the market.

The concepts of asset specificity and frequency of transactions, discussed by Williamson (1979), are applied in this work when it is verified that, in the acquisitions in which the public administration sought to group a larger number of items in the bidding process, there is a tendency to increase the number of suppliers for the competitive stage, since, in this case, bidding is more attractive to the market. In this case, the public administration incurs higher transaction costs in the CT_{ac} stage, that is, in the planning of the bidding, and in less costs in the CTl_{ic} stage, the competitive stage of the bidding. Thus, in bids where there was a greater focus on grouping items and making larger acquisitions, implying less specificity of the asset and higher frequency of the transaction, the bidding process proved to be more efficient. Thus, it is observed that the transaction costs related to the adequate and more rigorous planning of CT_{ac} bids, with a focus on grouping the largest possible number of items and attracting a greater number of participants, are configured as productive for the purpose of increasing the competitiveness among suppliers and obtain better prices.

It is noteworthy that, in the acquisitions in which the public administration sought to group the largest possible number of items and develop more robust purchasing processes, the element of uncertainty was present. In these cases, there was a need to monitor the behavior

of suppliers to ensure the quality of the products delivered and the establishment of penalties for non-compliance with contracts. Thus, the objective of the public administration was to make sure that the suppliers were properly served, revealing that not only are suppliers in situations of uncertainty regarding the fulfillment of obligations when negotiating with the public administration, but also, on the other hand, the purchasing party seeks to minimize uncertainty regarding the fulfillment of its demands.

It should also be noted, through the analyzes carried out, that the element of opportunism is a relevant factor in explaining the price distortions found. According to Maher (1997), opportunism must be taken into account in contractual relationships due to the undesirable effects caused by suppliers in order to maximize the fulfillment of their interests. In the case of medicine purchases, prices are noted in some situations with high distortions, leading to the mistaken perception that the entire bidding process is ineffective. Such distortions are associated with low competitiveness among suppliers, uncertainty regarding the behavior of institutions, as argued by Boehe and Balestro (2006) and the market restrictions pointed out by Gadelha (2012); Gadelha, Costa and Maldonado (2012) and Varichio (2017).

All of these factors contribute to an environment in which suppliers execute self-interested strategies when answering the demands of public organizations. In this sense, the distorted prices of a minority of bidding processes tend to provide the perception that bids are inefficient. However, it can be seen in the present study that the acquisition of medicines from the analyzed sample is done efficiently through the bidding process, that is, it has better prices than those practiced in the market.

In order for the public administration to minimize the distortions in the prices obtained, it is necessary to give adequate treatment to the phases involved in the bidding processes, incurring some transaction costs to plan high volume bids, with wide publicity and participation of the supplier market and with the adequate monitoring of prices and quality of products delivered.

Final considerations

The purpose of this work emerged from the questioning about the efficiency of the bidding process, given the occurrence of situations in which the public administration makes acquisitions in many cases with prices higher than those practiced in the market. Allied to this, there is that the entire structure, mechanisms and work processes used in these organizations have costs to be operationalized. Thus, the main objective of the work was to "analyze the efficiency of the bidding process for the purchase of medicines under the SUS from the perspective of transaction costs, identifying and comparing the prices obtained in bids with those practiced in the private market".

It was found that the purchase process in public administration is marked by relevant aspects related to the elements of uncertainty, information asymmetry and opportunism. The uncertainty is due to the lack of exact prediction of how the agents involved in the transactions will behave throughout the process, and, in this sense, this element is present both on the part of the public administration, when using mechanisms brought by the legislation to monitor the conduct suppliers, as well as suppliers, when raising prices in some situations to compensate for risks of delay or non-payment for products supplied. Informational asymmetry is also noticed on both sides of the relationship, since, on the part of the supplier market, there are situations in which the public administration conducts bidding processes with little accurate information and not widely disseminated to the entire market, and, on the other hand, public administration may also incur incomplete information on the correct price of items when the market works in collusion with other suppliers to maximize profits. With this, there is the element of opportunism in commercial relations; this element is most noticed by the supplier market side through the estimation of distorted prices and self-interested strategies resulting from the formation of oligopolies and situations in which the public administration has urgent demands for certain items. There is a relationship of capture of these public organizations by large corporations in the pharmaceutical market.

Despite the existing external transaction costs, involved in the contractual relationship between suppliers and public administration, and the internal transaction costs, involved in the planning and execution of acquisitions, the bidding process proved to be efficient, that is, with better prices than those market. The reservations are made in situations where there are great distortions in these prices and are noted in acquisitions made through bidding waivers and in

acquisitions of low quantity of items. In the cases of bidding waivers, there are situations of low competitiveness among suppliers, allowing opportunistic behaviors resulting from the high need to purchase items and the capture relationship of the public administration by specific suppliers. In the case of acquisitions in low quantity of items, there is the element of frequency of transactions as a trigger of disadvantageous prices for the public administration. In this case, prices rise in the market in order to offset the costs associated with participating in the bidding process. However, these situations did not occur in a generalized way in the researched sample, being observed that the majority of bids result in lower prices than those practiced in the market.

Thus, the analysis of purchases by the public administration must be worked from the perspective of institutional design approached by Ouchi (1980), Whittington and Dowal (2006) and also from the perspective of Gadelha (2012), in which, through a more between municipal, state and federal public bodies, the laws, legal instruments, information systems and work processes of public agents involved in the acquisition of medicines can be improved in order to conduct purchases in a grouped and coordinated manner, with the objective of confronting the opportunistic behavior of the market when in situations of oligopoly in the supply of these items.

The limitations of this research are in the sense that the sample was made only with medicines and only for the period of 2019. In addition, it is clear that the information provided by the public administration still needs to be improved and qualified, in order to allow deeper analysis of data related to bidding processes.

For future studies, it is suggested to analyze the nominal costs incurred in the execution of bids in face of the percentage of discounts obtained in these processes. With this, one could systematically point out the most expensive activities to be carried out by the public administration to reduce expenses. Allied to this approach, there is also the possibility of analyzing the results obtained in the bidding processes in comparison to the seasonality in which they are executed, since it is the practice of the public administration to release contingent budgets during the year for purchases at the end of the financial years. With this, there is a scenario of an increase in the number of bids published in the market in which the number of suppliers remains the same, that is, an increase in demand by management, without the consequent increase in supply by the market, resulting in processes empty or unattractive bids.

BIBLIOGRAPHIC REFERENCES

AKERLOF, George A. The market for “lemons”: Quality uncertainty and the market mechanism." In Uncertainty in economics, pp. 235-251. Academic Press, 1978.

BANCO CENTRAL. Sistema Gerenciador de Séries Temporais. V2.1. Dívida Bruta do Governo Geral. Disponível em <https://www3.bcb.gov.br/sgspub/consultarvalores/consultarValoresSeries.do?method=visualizarValores>. Acesso em 17 jun. 2018.

BOEHE, D. M., BALESTRO, M. V.. A dimensão nacional dos custos de transação: oportunismo e confiança institucional. REAd-Revista Eletrônica de Administração 12, no. 1, 2006.

BRASIL. Lei nº 8.080, de 19 de setembro de 1990. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/l8080.htm>. Acesso em: 15 ago. 2019.

BRASIL. Lei nº 8.666, de 21 de junho de 1993. Regulamenta o art. 37, inciso XXI, da Constituição Federal, institui normas para licitações e contratos da Administração Pública e dá outras providências. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/l8666cons.htm>. Acesso em: 15 ago. 2019.

BRASIL. Lei nº 10.520, de 17 de julho de 2002. Institui, no âmbito da União, Estados, Distrito Federal e Municípios, nos termos do art. 37, inciso XXI, da Constituição Federal, modalidade de licitação denominada pregão, para aquisição de bens e serviços comuns, e dá outras providências. Disponível em: <http://www.planalto.gov.br/ccivil_03/LEIS/2002/L10520.htm>. Acesso em: 06 set. 2019.

BRASIL. Lei nº 10.742, de 06 de outubro de 2003. Define normas de regulação para o setor farmacêutico, cria a Câmara de Regulação do Mercado de Medicamentos - CMED e altera a Lei nº 6.360, de 23 de setembro de 1976, e dá outras providências. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/2003/L10.742.htm>. Acesso em: 29 out. 2019.

BRASIL. Decreto nº 7.892, de 23 de janeiro de 2013. Regulamenta o Sistema de Registro de Preços previsto no art. 15 da Lei nº 8.666, de 21 de junho de 1993. Disponível em: <http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2013/decreto/d7892.htm>. Acesso em: 12 jan. 2020.

BRASIL. Lei nº 13.808, de 15 de janeiro de 2019. Estima a receita e fixa a despesa da União para o exercício financeiro de 2019. Diário Oficial da União: seção 1, Brasília, DF, p. 1-10, 16 jan. 2019.

BRASIL. Constituição (1988). Constituição da República Federativa do Brasil. Brasília,

Senado Federal, 2006. Disponível em: <http://www.senado.gov.br/sf/legislacao/const/>. Acesso em: 03 mai. 2019.

BRASIL. Painel de Compras do Governo. Portal de Compras do Governo Federal, 2019. Disponível em <https://www.comprasgovernamentais.gov.br/index.php/painel-de-compras-de-governo). Acesso em: 15 ago. 2019.

BRUYNE, P. de; HERMAN, Jacques; SCHOUTHEETE, M. de. Dinâmica da pesquisa em ciências sociais: os pólos da prática metodológica. In: Dinâmica da pesquisa em ciências sociais: os polos da prática metodológica. 1982.

COASE, Ronald H. The nature of the firm. Economica, v. 4, n. 16, p. 386-405, 1937.

CAMPELO, Renistenes Eunice Costa et al. A relação custo-qualidade das aquisições no setor público. Revista Conbrad. v. 1, n. 2, p. 63-70, 2016.

CARVALHO, Maria Balbina. A gestão de compras e o processo de licitação no setor público. Caderno de Graduação-Ciências Humanas e Sociais-UNIT, v. 4, n. 1, p. 165, 2017.

CMED. Resolução nº 03, de 02 de março de 2011. Dispõe sobre o Coeficiente de Adequação de Preços – CAP, a sua aplicação, a nova forma de cálculo devido à mudança de metodologia adotada pela Organização das Nações Unidas – ONU, e sobre o Preço Máximo de Venda ao Governo - PMVG. Disponível em <http://portal.anvisa.gov.br/documents/374947/2920961/Resolu%C3%A7%C3%A3o+n%C2%BA+3%2C+de+2+de+mar%C3%A7o+de+2011+%28PDF%29.pdf/cc29a363-b75c-4b81-951f-e7df82bfb52f>. Acesso em 29 out. 2019.

CONSULTA DE REMÉDIOS. Base de dados para preços de medicamentos. Disponível em <https://consultaremedios.com.br/>. Acesso em 12 jan. 2020.

COOPER, Donald. R.; SCHINDLER, Pamela. S. Métodos de pesquisa em administração, v. 7, 2003.

DE MOURA CAVALCANTE, Andrey; SANTOS, Luciana Guedes. O planejamento da licitação e seu impacto na eficiência e na economicidade do pregão eletrônico para registro de preços. Empírica BR-Revista Brasileira de Gestão, Negócio e Tecnologia da Informação, v. 1, n. 1, p. 185-210, 2018.

EISENBERG, José. Um quadro comparativo de sites de prefeituras municipais. A. Chahin, MA Cunha, PT Knight, & SL Pinto. E-gov.br*:* a próxima revolução, 2004.

FERLIE, Ewan; ASHBURNER, Lynn; FITZGERALD, Louise. Corporate governance and the public sector: some issues and evidence from the NHS. Public Administration, v. 73, n. 3, p. 375-392, 1995.

FUNG, Archon. Varieties of participation in complex governance. Public administration review, v. 66, p. 66-75, 2006.

FUNG, Archon. Putting the public back into governance: The challenges of citizen participation and its future. PublicAdministration Review, v. 75, n. 4, p. 513-522, 2015.

GADELHA, Carlos Augusto Grabois. A dinâmica do sistema produtivo da saúde: inovação e complexo econômico-industrial. Editora Fiocruz, 2012.

GADELHA, Carlos Augusto Grabois; COSTA, Laís Silveira; MALDONADO, José. O complexo econômico-industrial da saúde e a dimensão social e econômica do desenvolvimento. Revista de Saúde Pública, v. 46, p. 21-28, 2012.

GONÇALVES, Carlos Alberto; DE MORAES MEIRELLES, Anthero. Projetos e relatórios de pesquisa em administração. Editora Atlas SA, 2004.

GONÇALVES, M. A.; TEIXEIRA, L.; FROES, E. Gestão estratégica de informações baseada em custo: um estudo de aplicação no setor serviços. *Revista Brasileira de Administração Contemporânea* (RBAC) /ANPAD; Rio de Janeiro: ANPAD. 1998.

HAIR, Joseph et al. Fundamentos de métodos de pesquisa em administração. Bookman Companhia Ed., 2005.

HERRMANN, Isadora. Licitações públicas no Brasil: explorando o conceito de ineficiência por desenho. 1998.

HOBBS, Jill E. A transaction cost approach to supply chain management. Supply Chain Management: An International Journal 1, no. 2. 15-27, 1996.

HOLZER, Marc; KIM, Seang-Tae. Digital governance in municipalities worldwide (2005): a longitudinal assessment of municipal websites throughout the world, 2006.

IBGE. PIB recua 3,6% em 2016 e fecha ano em R$ 6,3 trilhões. Agência IBGE Notícias. Disponível em <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2013-agencia-de-noticias/releases/9439-pib-recua-3-6-em-2016-e-fecha-ano-em-r-6-3-trilhoes.html>. Acesso em 17 jun. 2018.

IBGE. PIB cai 3,5% em 2015 e registra R$ 6 trilhões. Agência IBGE Notícias. Disponível em https://agenciadenoticias.ibge.gov.br/2013-agencia-de-noticias/releases/17902-pib-cai-3-5-em-2015-e-registra-r-6-trilhoes.html. Acessoem 17 jun. 2018.

JENSEN, Michael C.; MECKLING, William H. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journalof financial economics, v. 3, n. 4, p. 305-360, 1976.

JÚNIOR, José Ronaldo de Castro Souza et al. Simulações da Trajetória da Dívida Bruta do Governo Geral (2017 a 2037). 2017.

JÚNIOR, Temístocles Murilo Oliveira; DA COSTA, Frederico José Lustosa; MENDES, Arnaldo Paulo. Perspectivas teóricas da corrupção no campo da administração pública brasileira: características, limites e alternativas. Revista do Serviço Público, v. 67, p. 111-138, 2016.

LAKATOS, Eva Maria; MARCONI, Marina de Andrade. Técnicas de pesquisa. São Paulo: Atlas, v. 205, 1996.

LAMARÃO, Ronaldo Coelho. Os custos de transação do contrato administrativo derivado de licitação: uma incidência da teoria da imprevisão. Revista Direito em Discurso, v. 4, n. 2, p. 11-21.

LUZ, Tatiana Chama Borges et al. Trends in medicines procurement by the Brazilian federal government from 2006 to 2013. PloS one, v. 12, n. 4, p. e0174616, 2017.

MAHER, Maria E. Transaction cost economics and contractual relations. Cambridge JournalofEconomics, v. 21, n. 2, p. 147-170, 1997.

MANCEBO, Deise. Crise político-econômica no Brasil: breve análise da educação superior. Educação & Sociedade, v. 38, n. 141, p. 875-892, 2017.

MATIAS-PEREIRA, José. A governança corporativa aplicada no setor público brasileiro. Administração Pública e Gestão Social, v. 2, n. 1, p. 109-134, 2010.

MCLAVERTY, Peter; Participation, Chapter 26;In Mark Bevir (ed.) The SAGE Handbook of Governance; London, p. 402-418, 2013.

MELLO, Gilmar Ribeiro; SLOMSKI, Valmor. Índice de governança eletrônica dos estados brasileiros (2009): no âmbito do poder executivo. JISTEM-Journal of Information Systems and Technology Management (Online) 7, no. 2. 375-408, 2010.

MELLO, Maria Tereza Leopardi. Law and Economics of Public Organizations–A transaction costs approach. 2007.

MINAYO, Maria Cecília de Souza. O desafio do conhecimento: pesquisa qualitativa em saúde. 2014.

NEVES, Jorge Alexandre Barbosa. Modelo de equações estruturais: uma introdução aplicada. 2018.

OUCHI, William G. Markets, bureaucracies, and clans. Administrative science quarterly, p. 129-141, 1980.

PEREIRA, José Matias. Avaliação dos efeitos da crise econômica-política-ética nas finanças públicas do Brasil. Revista AmbienteContábil, v. 9, n. 2, p. 117-141, 2017.

NORTH, Douglass C. Institutions. Journal of economic perspectives, v. 5, n. 1, p. 97-112, 1991.

PERES, Ursula D. Custos de transação e estrutura de governança no setor público. Revista Brasileira de Gestão de Negócios, v. 9, n. 24, p. 15-30, 2007.

PLANEJAMENTO, Ministério do. Painel Processos de compras. Disponível em <http://paineldecompras.planejamento.gov.br/QvAJAXZfc/opendoc.htm?document=paineldecompras.qvw&lang=en-US&host=QVS%40srvbsaiasprd04&anonymous=true>. Acesso em 01 jun. 2019.

PONDÉ, João Luiz; FAGUNDES, Jorge; POSSAS, Mario. Custos de transação e política de defesa da concorrência. Revista de Economia Contemporânea 1, no. 2, 1997.

PREVEDELLO, Maria Inês; PESSALI, Huáscar Fialho; ALMEIDA, Felipe. Desenho institucional e custos de transação: um estudo sobre a reestruturação do Programa Banco Social no Paraná. Revista de Administração Pública, v. 47, n. 1, p. 157-176, 2013.

REIS, Paulo Ricardo da Costa; CABRAL, Sandro. Para além dos preços contratados: fatores determinantes da celeridade nas entregas de compras públicas eletrônicas. Revista de Administração Pública, v. 52, n. 1, p. 107-125, 2018.

REPÚBLICA, Presidência da. Comunicado n.º 15, de 21 de setembro de 2018. Divulga o novo Coeficiente de Adequação de Preços (CAP). Diário Oficial da União: seção 3, Brasília, DF, p. 3, 24 set. 2018.

RIBEIRO, José Mendes. Restrições de informações, custos de transação e ambiente regulatório em saúde suplementar. Ministério da Saúde, ANS; Montone J, Castro AJW, organizadores. Documentos técnicos de apoio ao fórum de saúde suplementar, 2003.

ROSSI, Pedro; MELLO, Guilherme. Choque recessivo e a maior crise da história: A economia brasileira em marcha ré. Centro de Estudos de Conjuntura e Política Econômica-IE/UNICAMP: Nota do Cecon, n. 1, 2017.

SAÚDE, Ministério da. Portaria n.º 3.733, de 22 de novembro de 2018. Estabelece a Relação Nacional de Medicamentos Essenciais - Rename 2018 no âmbito do Sistema Único de Saúde (SUS) por meio da atualização do elenco de medicamentos e insumos da Relação Nacional de Medicamentos Essenciais - Rename 2017. Disponível em <https://portalarquivos2.saude.gov.br/images/pdf/2018/dezembro/17/170407M2018final.pdf>. Acesso em 28 out. 2019.

SILVA, Adilson Aderito Da; BRITO, Eliane Pereira Zamith. Incerteza, racionalidade limitada e comportamento oportunista: um estudo na indústria brasileira, 2013.

SINGER, André; LOUREIRO, Isabel. As contradições do Lulismo: a que ponto chegamos?.Boitempo Editorial, 2017.

TEIXEIRA BARTH, Enise. A Análise de Dados na Pesquisa Científica. Importância e desafios em estudos organizacionais. Desenvolvimento em questão, v. 1, n. 2, 2003.

TRIBUNAL DE CONTAS DA UNIÃO. IN nº 63, de 1º de setembro de 2010. Estabelece normas de organização e de apresentação dos relatórios de gestão e das peças complementares que constituirão os processos de contas da administração pública federal. Disponível em <http://www.fazenda.gov.br/assuntos/atuacao-internacional/arquivos/instrucao-normativa-tcu-no-63-de-1o-de-setembro-de-2010.pdf/view>. Acesso em 03 mai. 2019.

VARRICHIO, Pollyana C. SUS: o maior comprador de medicamentos do país. 2017.

WHITTINGTON, Jan; DOWALL, David E. Transaction-cost economic analysis of institutional change toward design-build contracts for public transportation. Working Paper, 2006.

WILLIAMSON, Oliver E. "Transaction-cost economics: the governance of contractual relations." *The journal of Law and Economics* 22, no. 2: 233-261, 1979.

WILLIAMSON, Oliver E. Corporate finance and corporate governance. The journal of finance, v. 43, n. 3, p. 567-591, 1988.

WILLIAMSON, Oliver E. The economic institutions of capitalism. Firms, markets, relational contracting. In: Das Summa Summarum des Management. Gabler, p. 61-75, 2007.