THE INFLUENCE OF THE PACT FOR HEALTH ON THE EXPENDITURE ON THE FINANCING OF PUBLIC HEALTH ON THE VIEW OF THE BRAZILIAN STATE

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This article measured the dynamics of public health spending, from 2000 to 2015, in the Brazilian States and also in the Federal District. More specifically, it evaluated the effects of the Pact for Health on public health expenditures in all Brazilian States and in the Federal District, from the State of São Paulo. For this, was used the econometric methodology called Differences in Differences with Polygonal Adjustment. The results showed that the evolution of the public health expenditures in the State of São Paulo, in general, was lower than in the other States and the Federal District, after the entry into force of the Health Pact, in 2006. Still, in general, the combined performance between the State of São Paulo and the other Brazilian States and also the Federal District regressed their investments in public health, from 2006 to 2015. However, a behavioral pattern of public health expenditure after the Pact for Health was not achieved.

Keywords: State public health expenditures; State public finance; State of São Paulo; Pact for Health.

A INFLUÊNCIA DO PACTO PELA SAÚDE NAS DESPESAS DO FINANCIAMENTO DA SAÚDE PÚBLICA NA ÓTICA DOS ESTADOS BRASILEIROS

Este artigo mediu a dinâmica dos gastos com saúde pública, no período de 2000 a 2015, dos estados brasileiros e também do Distrito Federal. Mais especificamente, avaliou os efeitos do Pacto pela Saúde nas despesas com saúde pública em todos os estados brasileiros e no Distrito Federal, a partir do estado de São Paulo. Para isto, utilizou-se da metodologia econométrica denominada de diferenças em diferenças com ajuste de poligonais. Os resultados demonstraram que a evolução dos gastos com saúde pública do estado de São Paulo, de forma geral, foi inferior aos demais estados e do Distrito Federal, após a entrada em vigência do Pacto pela Saúde, em 2006. Ainda, de forma geral, o desempenho conjugado entre o estado de São Paulo e os demais estados brasileiros e também o Distrito Federal regrediu os seus respectivos investimentos em saúde pública, no período de 2006 a 2015. Porém, não foi alcançado um padrão comportamental da dinâmica dos gastos com saúde pública após o Pacto pela Saúde.

Palavras-chave: gastos com saúde pública estadual; finança pública estadual; estado de São Paulo; Pacto pela Saúde.

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LA INFLUENCIA DEL PACTO POR LA SALUD EN EL GASTO EN LA FINANCIACIÓN DE LA SALUD PÚBLICA EN LA ÓPTICA DE LOS ESTADOS BRASILEÑOS

En este artículo se mide la dinámica de los gastos de salud pública, de 2000 a 2015, los estados brasileños y en el Distrito Federal. Más específicamente evaluado los efectos del Pacto por la Salud de los gastos para la salud pública en todos los estados brasileños y en el Distrito Federal, del Estado de São Paulo. Para ello, se utilizó la metodología econométrica denominada Diferencias en Diferencias con Ajuste Poligonal. Los resultados mostraron que la evolución del gasto en salud pública en el estado de São paulo, en general, era más bajo que los otros estados y en el Distrito Federal, después de la entrada en vigor del Pacto para la Salud en 2006. Sin embargo, en general, el rendimiento de par entre el Estado de São Paulo y otros estados brasileños y en el Distrito Federal regresión sus respectivas inversiones en la salud pública, de 2006 a 2015. Sin embargo, no ha llegado a un patrón de comportamiento de la dinámica del gasto en salud pública después de lo Pacto por la Salud.

Palabras clave: gastos de los estados con salud pública; hacienda pública del estado; estado de São Paulo; Pacto por la Salud.

L'INFLUENCE DU PACTE POUR LA SANTÉ SUR LES DÉPENSES DE FINANCEMENT DE LA SANTÉ PUBLIQUE DES ÉTATS BRÉSILIENS

Cet article mesure la dynamique des dépenses de santé publique, de 2000 à 2015, les États brésiliens et le District Fédéral. Plus précisément évalué les effets du Pacte pour la Santé dans les dépenses pour la santé publique dans tous les états du Brésil et du District Fédéral, de l'État de São Paulo. Pour cela, nous avons utilisé la méthodologie économétriques appelé Différences des Différences avec Réglage Polygonal. Les résultats ont montré que l'évolution des dépenses de santé publique dans l'État de São Paulo, en général, était inférieur à celui des autres États et le District Fédéral, après l' entrée en vigueur du Pacte pour la Santé en 2006. Pourtant, en général, le conjugué de performance entre l'État de São Paulo et d'autres Etats du Brésil et du District Fédéral a régressé leurs investissements respectifs dans la santé publique dans la période 2006-2015. Cependant, il n'a pas atteint un modèle de comportement de la dynamique des dépenses de santé publique après le Pacte pour la Santé.

Mots-clés: dépenses de l' etat sur la santé publique; état des finances publiques; état de São Paulo; Pacte pour la Santé.

JEL: I1; I18.

1 INTRODUCTION

With the entry into force of the Federal Constitution of 1998, an effective administrative decentralization took place in Brazil. Falletti (2006) points out that this decentralization happened from the central public entity, and developed to the administrative, political and fiscal scope. As Giambiagi and Além (2011) recall, this process began in the late 1970s and ratified in 1988 with the New Constitution.

The decentralization in a federative model as happened in Brazil causes consequences and processes that lead to intense discussions and negotiations (Falletti, 2006). For, as Riani (1997) points out, public spending is the political choice of governments regarding terms of the services offered to society in each federative entity.

With the introduction of the Fiscal Responsibility Law (FRL) in 2000, government agents had to adjust their revenues and expenses to comply with the new legislation. In this sense, Gerigk and Corbari (2011) argue that the FRL requires decision maker's responsible and efficient fiscal management, with balance in public accounts.

Expenditures are all costs arising from transfers from other spheres of government, which in most cases tied revenues, which do not allow the authorizing officers to exercise discretion in their execution. Also, they are public expenditures to those financed by the entrance of the own revenues of each public entity, be it the Union, States, municipalities and the Federal District.

The problematic of this study discusses if the Pact for Health occurred in 2006, caused changes in public health spending in the Brazilian States? How did the resources destine to the financing of public health in the State of São Paulo behave? The dynamics of public health spending in the State of São Paulo changed after the Pact for Health in 2006, compared to the other States and the Federal District?

In this context, the objective of this study was to evaluate the quality of the health costs of the Brazilian States and the Federal District, from 2000 to 2015. More specifically, to measure the effects of the Health Pact on public health financing for the States and the District from 2000 to 2015, with a structural break in 2006.

For this, we used the econometric model called Difference in Difference with Polygonal Adjustment, which aims to detect trend changes in the variables, after the implementation of the Pact for Health, through Administrative Rule GM/399/2006, in 2006, in the Brazilian States and the Federal District.

The choice of the State of São Paulo occurred due to the high population representativeness estimated in approximately 44.7 million inhabitants in 2016 (IBGE, 2016). Another reason for the choice was the amount of R$ 18 billion destined to the financing of public health that represented in 2015, 21.73% of the Federal District. Furthermore, the State of São Paulo, in the period from 2000 to 2015, allocated more than 264 billion public health financing, updated at the IPCA-E at December 2015 prices.

The relevance of the study is due to the fiscal crisis that affects the three entities of the Federation, mainly in the Brazilian States, as is the case of the Governments of Rio de Janeiro, Rio Grande do Sul, Minas Gerais, and the Federal District, among others.

The study also relevant because of the growing demand from society for public health services due to the political and economic crisis experienced by the country since the 2014 presidential election. In other words, with the crisis families are failing to pay health and private care and migrating to public health. Also, aggravate the situation, from those who need public services, Constitutional Amendment 95/2016 has been in effect, freezing government spending for twenty years.

This article has four sections besides this introduction. The second section presents the theoretical discussion. Afterward, the third section demonstrates the methodology to measure the research objectives. The fourth section describes and discusses the results of the investigation. Finally, the final considerations are summarized.

2 THEORETICAL REFERENCE

Among all the types of expenses that exist in the Public Administration, one of them, are the social expenditures that according to Fernandes *et al.* (1988). Are those aimed at the progress of the living conditions of the population, in general, being short or long term. These are expenses related to programs, projects, and actions developed in different areas, such as health, food, education, sanitation, welfare, security, science, technology, research, development, and others. In this sense, the concepts of Rezende (1997) converge with those of Fernandes *et al.* (1988), since it defines social expenditure destined to public policies for the provision of essential goods and services.

For States to incur expenses, it needs revenue. Thus, government revenue, as defined by the National Treasury Secretariat (NTS) is all non-returnable budget receipts collected by the public power to cover public expenditures.

State revenues surged in Brazil through Financial Law, regulated by Law nº 4,320/1964, in its Articles 51 to 57, which established the right to collect taxes based on two governmental actions: the imposition of tribute and its inclusion in the budget by law, always observing the constitutional precepts.

The object of this study is the decentralization of public health services in Brazil, which was carried out as of the 1988 Constitution, in which the Unified Health System (UHS) was created in Articles 196-200. The Constitution of 1988, as Bercovici (2002) advises, delegated health management in the country in an autonomous and decentralized way to the entities of the federation.

Thus, through Ordinance nº 399/2006 of the Ministry of Health established the Health Pact that constituted, among other considerations, the Management Pact, which provides guidelines for the management of the system in aspects of decentralization. This topic also deals with the basis of calculation that forms each block of financing and the amounts of financial resources destined for each federative entity (Conass, 2015a).

The Ordinance nº 399/2006 ruled that financial transfer to local governments for historical and monitoring purposes should be carried out in blocks. These financing blocks are primary care; medium and high complexity; health surveillance; pharmaceutical care; SUS management. And lastly, the Investments in the Network of Health Services inserted as a block of financing through Ordinance nº 837/2009.

Although successive discussions and several changes occurred after the implementation of 1988, Laws nºs 8,080/1990 and 8,142/1990 regulated and consolidated the decentralization of public health management and financing in Brazil; there is still no consensus on decentralization and on the criteria for allocating financial resources to finance the provision of public health services.

Mendes, Miranda e Cossio (2008) State that despite the changes made by the Ministry of Health, over the years, the norms for transfers and financing remain with similar characteristics to what had previously practiced. In other words, as Simão and Orellano (2015) conjecture, we do not see results in the changes made, and it seems that there is a kind of increase in the counterpart requirement of the federated entities and possible distortions in the distributive role.

In this sense, according to the National Council of Municipal Health Secretaries (Conass, 2015b), in 1994 the Union us responsible for 75% of public health financing in Brazil, twenty years later, or in 2014, this percentage fell to 43%. Meanwhile, States and municipalities accounted for 25% of the funding in 1994. In 2014, the situation reversed, only the municipalities were responsible for 31% of the financial resources of public health financing. The States, for their part, contributed 26%.

The current management model and the criteria used for health financing in Brazil indicate that minimizes differences in responsibilities in the execution of the services provided by the individual participation of the federated entities in the "taxpayer" is disproportionate to expenditure.

In 2014, the participation of each federative entity in the collection of taxes occurred as follows: Union 68.47%; States 25.35%; and municipalities by 6.19% (Brasil, 2017). As tax reform is harder to achieve, the most feasible option would change in funding criteria.

Constitutional Amendment nº 29/2000 set minimum percentages of State and municipal income expenditures for healthcare services in Brazil. For the States, the on-screen amendment set a minimum of 12% of the company's revenues and for the municipalities a minimum of 15%, also on own income. These percentages should be implemented, gradually, in the period from 2000 to 2004.

As a result, the States began the year 2000 with the responsibility of applying these revenues to health actions of 7%. In 2001, 2002, 2003 and 2004 these percentages rose, respectively, to 8%, 9%, 10% and 12%. For municipalities, the percentages were set at 7%, 8.6%, 10.2%, 11.8% and 15%, respectively, for 2000, 2001, 2002, 2003 and 2004 (Conass, 2003).

2.1 The importance of the pact for health and the structural break

As previously mentioned in this section, the Pact for Health emerged through Administrative Rule nº 399 of February 22, 2006. This Pact adopted the implementation of public health services in Brazil, with solidarity and cooperative regionalization as the structuring axis if the decentralization process, as well as the integration of forms of transfers of Union financial resources (Brasil, 2006).

The Health Pact, as noted by Massambani *et al.* (2013), includes three covenants: the Pact in Defense of the SUS; the Management Pact; and the covenant for life. Fadel *et al.* (2009) observe that the Pact for Health appeared after several failed experiences of the operationalization of the SUS in search of the materialization of social equity.

Schneider *et al.* (2009) emphasize that the objective if the Pact for Health is to contribute to the qualification of a set issues that are obstacles to the complete implementation and functioning of SUS. However, as authors argue, it incumbent upon the social subjects, commitment to the human right to health and changes to Pact's proposals to become a reality.

Machado *et al.* (2009) warn that the Pact for Health has as presuppositions some concepts related to the construction of care network by a line of attention, based on economies of scale and scope. The Pact for Health accommodated a new method of an agreement the process of habilitation for States and municipalities.

Another novelty that the Pact for Health presents is a new configuration of the transfer of financial resources destined to the funding of public health in Brazil. This new form is through the financing blocks, as recommended by the Ministry of Health, Ordinance nºs 399/2006 and 837/2009.

The main guidelines for the management of the Unified Health System, after the Pact for Health, are decentralization, regionalization, regional management mechanisms, and finally the financing of the Unified Health

System (Machado *et al.*, 2009). Through these guidelines, the decentralization of the execution of the services becomes the responsibility of the municipalities and the States. Carvalho *et al.* (2012) point out that these new competencies and responsibilities are a federative and intergovernmental policy process.

As for the transfers of financial resources to the States and municipalities, there is a deep fund, that is, from the National Health Fund (NHF) to the State Health Fund (SHF) and Municipal Health Fund (MHF). Also, from the SHF to the MHF. In this way, it facilitates the monitoring of actions and evaluations of SUS Management.

In this scenario, the Pact for Health was the last institutional act in the attempt to offer and guarantee a public health of better quality and with equity for the Brazilian population. This study does not use indicators to measure the quality of services provided. However, it seeks to assess whether there was a financial contribution to the total financing of public health services in the Brazilian States, with the Pact for Health in force in 2006. For this, we used the methodology presented in section 3 below.

3 METHODOLOGY

The econometric model of Differences in Differences (Dif-Dif) with Polygonal Adjustment was used to examine the dynamics of health spending under the Health Pact as employed by Nascimento (2008a) to evaluate the fiscal war of the Brazilian States.

3.1 Database

We used the accounting database provided by the National Treasury Secretariat (NTS) – System of Collecting Accounting Data of States and Municipalities (SCADSM) from 2000 to 2012. In the years 2013, 2014 and 2015, we collected the data on the website of each State and the Federal District through the Summarized Budget Execution Reports (Sber). The IPCA-E reStated all amounts at December 2015 prices.

3.2 Model variables

The Ordinary Least Squares (OLS) method was adopted, using the econometric model of Differences in Differences with Polygonal Adjustments (this model is the Difference in Difference, however, with Polygonal Adjustment). Gujarati (2006) States that the OLS method has very attractive stochastic properties that make it one of the most powerful and widespread regression analysis methods.

The Difference in Difference model exposed by Wooldridge (2001) using binary variables, with Polygonal Adjustment specified in Hoffmann (2006).

The use of the multiple regression models of Differences in Differences with Polygonal Adjustments was necessary to detect changes and trends in the variables between the two periods, from 2000 to 2005 and from 2006 to 2015 and between the two groups analyzed: control and treatment.

We adopted the multiple linear regression models, as used by Nascimento (2008b), Massambani (2013), Santos (2014), Santos, Nascimento and Moura (2016), Santos, Bacchi and Nascimento (2016), Santos and Cremonez (2017). According to equation (1), as presented below:

$$Y_i = \alpha_0 + \beta_0 T + \varphi_0 P_i (T - \Theta) + \alpha_1 L_i + \beta_1 (T \times L) + \varphi_1 P_i (T - \Theta) L_i + \mu_i , \qquad (1)$$

where Y_i = the percentage share of health expenditures of each Brazilian State and the Federal District; P_i = represents the binary that is equal to zero in the first period and equal to one in the second period; T_i = a trend variable; Θ = shows the abscissa of the vertex, which in this model is the year that delimits the previous period (2000-2005) and the later period (2006-2015). So, Θ is equal to 2005; *Li* = represents the binary defined as zero for the control group (State of São Paulo) and one for the treatment group (another State of the country and the Federal District); α_0 ,α_1 ,β_0 ,β_1 ,φ_0 e φ_1 = the coefficients; μ_i = represents the random error; i = indicates a given year.

The expected value in the four different situations will be indicated by h, showing the initial (h = 0) or final (h = 1) and k, the control group (k = 0) or the treatment group (k = 1). We verified that:

a) expected value of before the Health Pact in the control group:

$$Y_{00}^{*} = E(Y_i \mid T_i = 0,\ P(T - \Theta)_i = 0) = \alpha_0 ;$$

b) expected value of Y_i in the period after the Health Pact in the control group:

$$Y_{01}^{*} = E(Y_i \mid L_i = 0,\ P(T - \Theta)_i = 1) = \alpha_0 + \varphi_0 ;$$

c) expected value of Y_i before the Health Pact in the treatment group:

$$Y_{10}^{*} = E(Y_i \mid L_i = 1,\ T_i = 0) = \alpha + \beta_0 ;$$

d) expected value after of Y_i after Health Pact for the treatment group:

$$Y_{11}^{*} = E(Y_i \mid S_i = 1,\ P_i = 1) = \alpha_0 ,\alpha_1 ,\beta_0 ,\beta_1 ,\varphi_0 \text{ e } \varphi_1.$$

In this model, the annual growth of the expected value of is equal to:

a) α_0 : average of the growth of public health expenditures of the two groups (control and treatment);

b) β_0 : in the control group, before structural change;

c) $\beta_0 + \varphi_0$: in the control group, after structural change;

d) $\beta_0 + \beta_1$: in the treatment group, before structural change;

e) $\beta_0 + \varphi_0 + \beta_1 + \varphi_1$: in the treatment group after structural change.

For this study, we used the results of the coefficients φ_0 and φ_1, respectively, of the variables $P_i\,(T-\Theta)$ e $P_i\,(T-\Theta)L_i$. The estimator φ_0 would show the average rate of acceleration of the growth of public health expenditures of the treatment group and the control group in the second period, that is, if there were changes in behavior in the two groups, in the second term, between the years from 2006 to 2015. The estimator φ_1 measures the difference in the mean annual rate of growth acceleration of the public health expenditures of the treatment group, in the second period, about to the control group (Santos, 2014). However, it is necessary to assemble the econometric model with all the variables of equation (1) to measure the parameters of the variables $P_i\,(T-\Theta)$ and $P_i\,(T-\Theta)L_i$.

It is observed the diagnosis of the coefficient of the model whenever it is mentioned average rate; it is an arithmetic rate of variation and not of the geometric rate. The rate shows the variation of the public health expenditures of the confederated States and the Federal District, compared to the State of São Paulo (Nascimento, 2008a).

Finally, the model of Differences in Differences with Polygonal Adjustments has two limitations that can lead the researcher to an error in the interpretation of the data. The first is the improper definition of the cutoff period used, the year of 2005. The second limitation is the statistical properties of the parameters estimated by margin of an error that varies according to the standard deviation. So low variability makes the estimator more reliable.

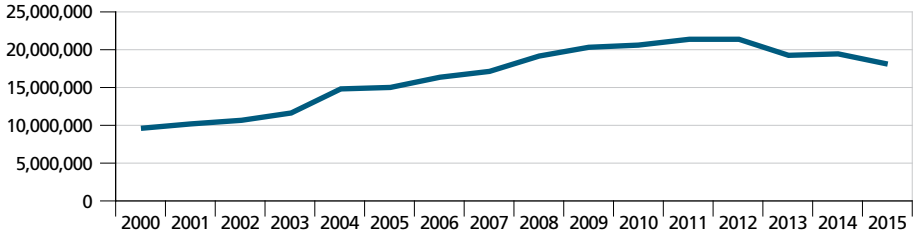
4 RESULTS

In this section, we perform the description of the econometric results of the coefficients φ_0 and φ_1, respectively, of the variables $P_i\,(T-\Theta)$ and $P_i\,(T-\Theta)L_i$ each regression between the State of São Paulo and the other States and the Federal District, from 2000 to 2015. However, before entering the discussion of the econometric results, an analysis is made of the evolution of public health expenditures in the State of São Paulo.

4.1 Public health expenditures by the State of São Paulo

In this subsection, we discuss the evolution of health expenses of the State of São Paulo, from 2000 to 2015, as figure 1 shows.

FIGURE 1
Evolution of health expenses of the State of São Paulo in the period from 2000 to 2015



Authors' elaboration.
Note: Amounts in R$ 1,000 updated at December 2015 prices.

Thus, in 2000 the amounts destined to the financing of public health by the State of São Paulo were R$ 9.5 billion, reaching R$ 10.2 billion and R$ 10.6 billion, respectively, in the years 2001 And 2002. In 2003, the figures reached R$ 11.6 billion. Already, in 2004 the growth of resources destined to the costing and the investment with public health reached R$ 14.7 billion, that is, an increase of more than 25% about the previous year. In 2005 it rose again, but not in the same impetus of the prior period and reached R$ 15 billion.

In 2006, already under the aegis of the Pact for Health, growth was more significant and came to R$ 16.2 billion. At the same pace of growth, in 2007, the values surpassed R$ 17 billion. In 2008, the amounts destined to the financing of public health by the State of São Paulo reached an increase of more than R$ 2 billion and reached R$ 19.1 billion. In the biennium 2009-2010, the amounts destined to the financing of SUS by the State of São Paulo reached, respectively, the amounts of R$ 20.2 billion and R$ 20.6 billion. In 2011 the growth was very conservative and came to R$ 21.3 billion.

However, the State of São Paulo can't maintain the rate of increase that was occurring since the beginning of the series evaluated in this study. Thus, in 2012, expenditures remained practically constant with a decrease of R$ 43 million, which is equivalent to 0.2%. In 2013, the decrease was more significant, and the resources destined to the financing of public health were of R$ 19.2 billion. In 2014, there was a small increase in values and reached R$ 19.4 billion, an increase of 215.7 million. However, this increase was surpassed by the reduction in public health expenditures

by the State of São Paulo and closed the series evaluated in this research in R$ 18 billion, in the year 2015.

The figure 1 shows that public health expenditures by the State of São Paulo did not increase in the same proportion after the Pact for Health in 2006. Thus, in the period between 2000 and 2005 resources varied positively by 56.94%. While in the second term, that is, between the years 2006 to 2015, already under the aegis of the Pact for Health, growth was only 10.95%. The apex of spending was reached in 2011 and fell back in the biennium 2012-2013. In 2014, it showed a slight recovery, but in 2015 it returned to regress, and the values reached the levels of public health expenditures of 2007.

In this scenario, it is evident that the Health Pact in the evolution of public health expenditures in the State of São Paulo in 2006 did not guarantee higher expenses for users of the Unified Health System (SUS) of the State of São Paulo. However, it is worth noting that this is a brief analysis and that subsection 4.2 presents the results of the econometric regressions.

4.2 Analysis and discussion of econometric results

Table 1 presents the results of regressions between the State of São Paulo and other countries of the Federation, as well as the Federal District. Ten of the parameters, φ_0 remained statistically significant at the 5% level and four at the 10% level. However, the values of the remaining levels are not statistically significant at the 5% and 10% levels. Regarding the coefficient, φ_1, fifteen were found to be statistically significant at the 5% level, and only one at the level of up to 10%. The other estimators, that is, ten estimators do not present a statistically significant level at the level of 5% and 10%. In this way, a description of the results of table 1 is made, by Macroregion.

It begins the analysis of the parameters shown in table 1 by the Northern Macroregion of the Country. The result of the parameter φ_0 of the regression between the State of São Paulo and the State of Acre showed that, in a combined way, the two States retreated concerning public health expenditures to an annual average of 0.42% in the period 2006 to 2015. About the coefficient, φ_1 shows that the State of São Paulo, in the period from 2006 to 2015, that is, after the Health Pact, the State of Acre increased its public health expenditures higher than the State of São Paulo Paulo at an average annual rate of 0.85%.

TABLE 1
Results of the regressions of the State of São Paulo in relation to the other States of the country and federal district

States/Federal District	φ_0	*P*-valor	φ_1	*P*-valor
Acre	-0.42	0.00*	0,85	0.00*
Alagoas	-0.37	0.00*	0.75	0.00*
Amazonas	0.09	0.83***	-0.19	0.76***
Amapá	-0.01	0.84***	0.03	0.78***
Bahia	0.47	0.10**	-0.94	0.02*
Ceará	-2.81	0.00*	5.62	0.00*
Distrito Federal	-2.79	0.00*	5.58	0.00*
Espírito Santo	-0.53	0.00*	1.07	0.00*
Goiás	0.17	0.58***	-0.34	0.44***
Maranhão	-0.60	0.00*	1.20	0.00*
Minas Gerais	-0.62	0.06**	1.24	0.00*
Mato Grosso do Sul	-0.04	0.71***	0.09	0.61***
Mato Grosso	0.46	0.00*	-0.93	0.00*
Para	0.05	0.77***	-0.10	0.69***
Paraíba	0.34	0.13***	0.68	0.03*
Pernambuco	0.05	0.86***	-0.10	0.80***
Piauí	0.20	0.39***	-0.41	0.23***
Paraná	0.07	0.72***	-0.15	0.62***
Rio de Janeiro	-1.50	0.04*	3.01	0.00*
Rio Grande do Norte	-0.13	0.40***	0.27	0.24***
Rio Grande do Sul	-1.23	0.00*	2.46	0.00*
Rondônia	0.10	0.22***	-0.20	0.09**
Roraima	0.14	0.01*	0.28	0.00*
Santa Catarina	-0.43	0.07**	0.87	0.01*
Sergipe	-0.11	0.06**	0.23	0.01*
Tocantins	0.11	0.41***	0.22	0.24***

Authors' elaboration.
Note: *, ** e *** = Statistically significant at the 5% level, at the level of 10% e absence of statistical significance.

The regression coefficients between the State of São Paulo and the State of Roraima were statistically significant at the level of up to 5%. In this way, the State of Roraima and the State of São Paulo increased their public health expenditures after the effective implementation of the Health Pact in 2006, at a rate of 0.14% per year. Also, the estimator φ_1 shows that the State of Roraima has exceeded public health spending in the period from 2006 to 2015, at an average annual rate of 0.28%.

The regression between the State of São Paulo and the State of Rondônia showed that the coefficient φ_0 was not statistically significant at the level of 5% and 10% that allows making any statistical inference. However, the estimator φ_1 remained statistically significant at a level of up to 10% and showed that São Paulo surpassed Rondônia on average, after the Health Pact came into force in resources destined to the financing of SUS, by 0.20% to year.

The regressions between the State of São Paulo, in the control group, and the other States of the Northern Macroregion belonging to the treatment group, as described below – Amazonas, Amapá, Pará and Tocantins – do not allow their statistical significance at the 5% and 10% level. Thus, only three of the seven regressions with States belonging to the Northern Macroregion of the Country were able to provide information that allows a prognosis on the performance of public health expenditures. Thus, about spending and jointly with the State of São Paulo and the State of Rondônia also, it was not possible to make any analysis; therefore, the estimator φ_0 did not prove to be statistically significant. But the regression between the State of São Paulo and the State of Roraima and the State of São Paulo and the State of Acre did not maintain a pattern, as there was an expansion of spending in the first regression and a contraction in the second.

Concerning North-East Macroregion, the regressions between the State of São Paulo and Pernambuco, between the control region of São Paulo and Piauí, and the same State and Rio Grande do Norte were not statistically significant at the level of 5% and 10% for the two parameters evaluated in this research. However, the other regressions allowed making at least one of two possible statistical inferences.

The regression between the State of São Paulo and the State of Alagoas was found to be statistically significant in the two coefficients evaluated in this study. The parameter φ_0 showed that the State of São Paulo and the State of Alagoas reduced their public health expenditures in the period from 2006 to 2015. About the estimator, φ_1 it shows that the State of Alagoas has exceeded its resources for the financing of SUS, the State of São Paulo at an average annual rate of 0.75%, after the establishment of the Health Pact in 2006. Regarding the regression between the State of São Paulo and the State of Bahia, the values of the two parameters, that is, φ_0 and φ_1 has been statistically significant, respectively, at the level of 10% and 5%. In this way, the estimators showed that the State of São Paulo and the State of Bahia, in a combined way, increased their spending on public health, after the Pact for Health was in force in 2006. However, the State of São Paulo surpassed the investments in the public health of the State of Bahia, at an annual average of 0.94%, between 2006 and 2015.

The regression estimators between the State of São Paulo and the State of Ceará show that the both reduced together their spending on public health after the Pact for Health in 2006. The reduction was on average of 2.81% to year between 2006 and 2015. Comparing the performance of the States of São Paulo and Ceará permitted to verify that the State of São Paulo has been supplanted by an average of 5.62% to year, in the period after the Pact for Health in 2006. The performance achieved by the State of Bahia compared to the State of São Paulo is the most significant of all the estimators evaluated in this study.

The regression between the State of São Paulo and the State of Maranhão demonstrated that the two parameters, the object of this study, were statistically significant at the level of up to 5%. The two States, together, reduced their public health spending at an average annual rate of 0.60%. Besides, the State of Maranhão, between 2006 and 2015, increased its public health expenditures at an average rate of 1.20% per year, higher than those incurred by the State of São Paulo.

Regarding the regression between the State of São Paulo and the State of Paraíba, only one of the estimators remained statistically significant. Thus, the parameter, φ_0 by the absence of statistical significance can't carry out any inference. However, the estimator, φ_1 of the regression between the two States was significant at the level of up to 5%. Thus, it is possible to infer that the State of Paraíba surpassed the State of São Paulo regarding health spending, in the period between 2006 and 2015, at an average rate of 0.68% per year.

The results obtained from the States of São Paulo and Sergipe showed that it exceeded the one, regarding public health spending, in the period from 2006 to 2015, at an average rate of 0.23% by year. However, the two States, São Paulo and Sergipe reduced their investments in the same period, that is, after the Pact for Health, in 2006 with an average rate of 0.11% by year.

When comparing the dynamics of public health expenditures between the State of São Paulo and the States of Alagoas, Ceará, Maranhão and Sergipe, the estimator, φ_0 shows that each State, together with the State of São Paulo, reduced its investments in The Health Pact in 2006. In the Northeast States, the comparison between the State of São Paulo and Bahia reveals evidence that there were positive results for the two cases. It is possible to affirm that among the statistically significant results; in general, the State of São Paulo and the States of the Northeast reduced their investments in health between 2006 and 2015.

Concerning the estimator φ_1 of the regression between the State of São Paulo and the Northeastern States that remained statistically significant – Alagoas, Ceará, Maranhão, Paraíba, and Sergipe – these surpassed public health investments in the State of São Paulo, after Pact for Health in 2006. Again, only the regression between the State of São Paulo and the State of Bahia did not follow

the pattern of the other States. Thus, the State of São Paulo surpassed Bahia. Also, it is possible to State, in general, that the statistically significant results showed the States of the Northeast surpassed São Paulo.

About the Federal District and the States belonging to the Central-West Macroregion, the regressions between the State of São Paulo and Mato Grosso do Sul and between the State of São Paulo and Goiás did not present statistically significant estimators that would allow any appropriate conclusion. However, the regression between the State of São Paulo and the State of Mato Grosso and between the State of São Paulo and the Federal District was statistically significant at the level of up to 5%.

Thus, another result that deserves attention is the regression between the State of São Paulo and the Federal District. The State of São Paulo and the Federal District, in a combined way, reduced their health spending in the period from 2006 to 2015 at an average rate of 2.79% per year. However, the Federal District surpassed the State of São Paulo in health spending at an average of 5.58% per year, after the Pact for Health, in 2006. This result was the second most significant of all evaluated in this study.

The regression between the State of São Paulo and the State of Mato Grosso presented statistically significant estimators at the level of up to 5%. In this scenario, the two States jointly increased their spending on public health, in the period between 2006 and 2015, that is, after the Pact for Health. The performance of the State of São Paulo surpassed the State of Mato Grosso to an average rate of 0.93% per year for public health expenditures, after the Health Pact in 2006.

Regarding the performance of the State of São Paulo and the State of Mato Grosso and between the State of São Paulo and the Federal District, the results of the first regression showed that the two States increased their spending on health after the Pact for Health. However, the second regression, that is, between the State of São Paulo and the Federal District, has regressed its spending on public health, in the period between the years 2006 to 2015. When comparing the difference in performance of public health expenditures from the State of São Paulo and the Federal District, the parameter φ_1 shows that the Federal District surpassed the State of São Paulo, after the Pact for Health was in force in 2006.

Concerning the States of the Southeastern Macroregion, all the results of the regressions were statistically significant to make statistical inferences. Thus, the regression between the State of São Paulo and the State of Espírito Santo showed that together they reduced their public health expenditures at an average rate of 0.53% per year in the period from 2006 to nowadays. However, the State of São Paulo was supplanted by the State of Espírito Santo, regard to health spending, at an average annual rate of 1.07%, after the implementation of the Health Pact in 2006.

The State of Minas Gerais, in terms of health expenditures in the period from 2005 to 2016, surpassed São Paulo by an average annual rate of 1.24%. And when one analyzes the performance of the expenses of the two States jointly, that is, São Paulo and Minas Gerais, the coefficient φ_0 shows a reduction at an average annual rate of 0.62%.

Finally, the regression between the State of São Paulo and the State of Minas Gerais indicates that its coefficients were statistically significant. Thus, the parameter φ_0 shows that the two States reduced their public health expenditures at an average annual rate of 1.50% in the period from 2006 to 2015. The estimator φ_1, which shows the difference in growth between the State of São Paulo and the State of Rio de Janeiro, where it surpassed it at an average rate of 3.01% by year, in the period from 2006 to 2015.

Thus, the parameters of the three regressions that involved the States belonging to the South-East Macroregion of the country were all statistically significant, thus making inferences about the behavior of public health spending after the Pact for Health in 2006. In Synthesis of the States of Espírito Santo, Minas Gerais and Rio de Janeiro, in conjunction with the State of São Paulo reduced their public health spending after the implementation of the Pact for Health in 2006. And the three States, That is, Espírito Santo, Minas Gerais, and Rio de Janeiro increased their spending on public health compared to the State of São Paulo, from 2006 to 2015.

Finally, the regressions involving the State of São Paulo and the three States that are part of the South Macroregion, only one, was not statistically significant, up to 5% and 10%. This regression was between the States of São Paulo and Paraná. However, the regression between the State of São Paulo and the State of Rio Grande do Sul showed that the two reduced their investments, jointly, after the implementation of the Pact for Health in 2006, at an average annual rate of 1.23%. The other estimator showed that the State of Rio Grande do Sul exceeded the investments of the State of São Paulo at an average rate of 2.46% per year, from 2006 to 2015.

Still, in the South Macroregion, and the last regression evaluated in this research, the State of São Paulo and the State of Santa Catarina reduced their investments with public health at an average annual rate of 0.43%. And the State of Santa Catarina surpassed the State of São Paulo regarding public health investments at an average annual rate of 0.87% per year, after the 2006 Health Pact came into force.

Regressions between the State of São Paulo and the States belonging to the South Macroregion did not result in statistically significant coefficients at the 5% and 10% levels. This regression was between the States of São Paulo and Paraná.

However, the other two regressions showed that the States of São Paulo and Rio Grande do Sul and the States of São Paulo and Santa Catarina reduced their spending on public health between the years of 2006 and 2015. Health in 2006, the regressions also showed that the State of São Paulo was overtaken by Santa Catarina and also by Rio Grande do Sul, regarding investments in public health, after the Pact for Health came into force in February 2006.

5 FINAL CONSIDERATIONS

The 2006 Health Pact did not guarantee higher expenses for users of the Unified Health System in the State of São Paulo (figure 1). Even though public health financing by the State of São Paulo increased from R$ 9.5 billion to R$ 18 billion, respectively, in the years 2000 and 2015. In the last year of the first period, Values allocated by the State of São Paulo to SUS funding were R$ 15 billion. In 2006, the first year under the aegis of the Pact for Health, the values had already surpassed R$ 16.2 billion. Thus, it is easy to identify that the values lost the momentum of growth in the period from 2006 to 2015.

Many parameters were not statistically significant at the 5% level and 10%, although values destined to the financing of the State of São Paulo when jointly analyzed with the others States of the Federation and the Federal District. The investments also diminished in the period 2006 to 2015; that is, after the Pact for Health was in force. However, the dynamics of the public entities evaluated in this research didn't show a clear pattern.

When comparing the dynamics of public health expenditures in the State of São Paulo, it was also generally supplanted by the other States and the Federal District, from 2006 to 2005. Thus, even if part of the coefficients did not remain statistically significant at the level of 5% and 10%, it is possible to affirm that the State of São Paulo lost "force" regarding public health expenditures after the Pact for Health was in effect in 2006. However the econometric evaluation didn't reveal a clear standard.

The analysis on the subject was not exhausted in this research. New studies should be carried out for the real understanding of public health finances at the State and/or municipal level, after the Pact for Health. The research was limited to assess the dynamics of aggregate health spending by States and the Federal District, using for this, an econometric model of variables that capture the trends, making results with statistical robustness.

However, it needs to deepen the study regarding, mainly, the efficiency of health spending with the possibility of maximizing the usefulness of available resources, mostly human, financial and equipment. Another research suggestion is to carry out a comparison among the provision of services in the traditional

public health way with the Social Health Organizations (SHO), or Civil Society Organizations of Public Interest (Csopis) to identify financial costs and maximize the use of the services provided, due to more flexible work relationships. In this sense, there is endless space to be found in new research that collaborates to understand and deepen the topic addressed in this article.

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APPENDIX

TABLE A.1

Results statistical information of the variable $Pi(T-\Theta)$ and regressions of the State of São Paulo x other Brazilian States

States	φ_0	Standard error	Stat *t*	Value *p*	*F* significance	R^2-adjusted
AC	-0.42	0.0683	-6.2776	0.0000	0.0000	0.9999
AL	-0.37	0.1102	-3.4429	0.0019	0.0000	0.9998
AP	-0.01	0.0928	-0.1955	0.8464	0.0000	0.9999
AM	0.09	0.4441	0.2161	0.8305	0.0000	0.9976
BA	0.47	0.2843	1.6603	0.0998	0.0000	0.9983
CE	-2.81	0.5050	-5.5729	0.0000	0.0000	0.9968
DF	-2.79	0.7440	-3.7550	0.0000	0.0000	0.9920
ES	-0.53	0.1802	-2.9684	0.0063	0.0000	0.9996
GO	0.17	0.3145	0.5495	0.5873	0.0000	0.9988
MA	-0.60	0.2021	-2.9807	0.0061	0.0000	0.9996
MG	-0.62	0.3168	-1.9680	0.0598	0.0000	0.9975
MS	0.09	0.1888	0.5136	0.6118	0.0000	0.9998
MT	0.46	0.1631	2.8792	0.0078	0.0000	0.9997
PA	0.05	0 1824	0.2837	0.7788	0.0000	0.9996
PB	-0.34	0.2236	-1.5379	0.1361	0.0000	0.9995
PR	0.07	0.2203	0.3519	0.7277	0.0000	0.9992
PE	0.05	0.2970	0.1717	0.8649	0.0000	0.9986
PI	0.20	0.2392	0.8650	0.3949	0.0000	0.9994
RJ	-1.50	0.7221	-2.0859	0.0469	0.0000	0.9878
RN	-0.13	0.1591	-0.8478	0.4042	0.0000	0.9997
RS	-1.23	0.3189	-3.8719	0.0006	0.0000	0.9983
RO	0.10	0.0839	1.2404	0.2258	0.0000	0.9999
RR	-0.14	0.0568	-2.4966	0.0192	0.0000	0.9999
SC	-0.43	0.2375	-1.8483	0.0759	0.0000	0.9993
SE	-0.11	0.0590	-1.9561	0.0612	0.0000	0.9999
TO	-0.11	0.1359	-0.8359	0.4108	0. 0000	0.9998

Authors' elaboration.

TABLE A.2

Results statistical information of the variable $Pi(T-\Theta)L_i$ and regressions of the State of São Paulo x other Brazilian States

States	φ_0	Standard error	Stat *t*	Value *p*	*F* significance	R^2-adjusted
AC	0.85	0.0967	8.8779	0. 0000	0.0000	0.9999
AL	0.75	0.1559	4.8690	0.0000	0.0000	0.9998
AP	0.03	0.4081	0.2765	0.7843	0.0000	0.9999
AM	-0.19	0.6281	-0.3056	0.7236	0.0000	0.9976
BA	-0.94	0.4021	-2.4380	0.0267	0.0000	0.9983
CE	5.62	0.7142	7.8813	0.0000	0.0000	0.9968
DF	5.58	1.0522	5.3104	0.0000	0.0000	0.9920
ES	1.07	0.2549	4.1980	0.0002	0.0000	0.9996
GO	-0.34	0.4448	-0.7771	0.4440	0.0000	0.9988
MA	1.20	0.2858	4.2154	0.0002	0.0000	0.9996
MG	1.24	0.4480	2.7832	0.0098	0.0000	0.9975
MS	0.09	0.1888	0.5136	0.6118	0.0000	0.9998
MT	0.93	0.2307	-4.0718	0.0003	0.0000	0.9997
PA	-0.10	0.2580	-0.4012	0.6915	0.0000	0.9996
PB	0.68	0.3162	2.1750	0.0389	0.0000	0.9995
PR	-0.15	0.3116	-0.4976	0.6228	0.0000	0.9992
PE	-0.10	0.4201	-0.2429	0.8099	0.0000	0.9986
PI	0.41	0.3382	-1,2233	0,2321	0,0000	0,9994
RJ	3.01	1.0213	2.9499	0.0066	0.0000	0.9878
RN	0.27	0.2255	1.1989	0.2413	0.0000	0.9997
RS	2.46	0.4510	5.4757	0.0000	0.0000	0.9983
RO	-0.20	0.1187	-1.7542	0.0911	0.0000	0.9999
RR	0.28	0.0800	3.5307	0.0015	0.0000	0.9999
SC	0.87	0.3359	2.6139	0.0146	0.0000	0.9993
SE	0.23	0.0835	2.7664	0.0102	0.0000	0.9999
TO	0.22	0.1923	1.1821	0.2478	0.0000	0.9998

Authors' elaboration.

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Direct approval, no need for corrections.