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TAXATION IN HEALTH CARE SERVICES AND ELECTORAL POLITICS IN THE BRAZILIAN MUNICIPALITIES

Aplicação dos impostos em serviços de saúde e a política eleitoral nos municípios brasileiros

Aplicación de impuestos de servicio de salud y la política electoral de municipios brasileños

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ABSTRACT

Objective: To assess the effects of electoral politics on taxation in health care services in the Brazilian municipalities. **Methods:** This is a descriptive study that used quantitative methods through multiple regression with panel data. The sample consisted of 3.566 Brazilian municipalities and data were collected on the Public Health Budget Information System (*Sistema de Informações sobre Orçamentos Públicos em Saúde – SIOPS*) of the Ministry of Health, on the website of Brazil Finances (*Finanças do Brasil – FINBRA*) of the National Treasury Secretariat, on the repository of the Electoral Higher Court and on the censuses and estimates of the Brazilian Institute of Geography and Statistics during the period from 2005 to 2016. The electoral politics was analyzed in terms of: (i) electoral competition; (ii) party alignment between mayor, governor and president; and (iii) reelection. **Results:** The results show that the party alignment of the mayor with the governor influences positively (p=0.056), while that with the president influences negatively (p=0.00), the taxation in health care services, respectively. The mayor's reelection mandate (p=0.00) and the electoral competition in the run for mayor do not influence taxation in health care services. With regard to geographical location, the Northern municipalities exhibit the lowest percentages of taxation in health care services followed – in an ascending order – by the South, Northeast, Midwest and Southeast regions. **Conclusion:** Party and political alignment and reelection influence municipal taxation in health care services in the analyzed sample while electoral competition has no effect.

Descriptors: Health Expenditures; Politics; Local Government; Financial Policy; Taxes.

RESUMO

Objetivo: *Investigar os efeitos da política eleitoral na aplicação dos impostos em serviços de saúde nos municípios brasileiros.* ***Métodos:*** *O estudo é descritivo e utiliza métodos quantitativos por meio de regressão múltipla com dados em painel. A amostra foi formada por 3.566 municípios brasileiros e os dados foram coletados no Sistema de Informações sobre Orçamentos Públicos em Saúde (SIOPS) do Ministério da Saúde, no Finbra (Finanças do Brasil) da Secretaria do Tesouro Nacional, no repositório eleitoral do Tribunal Superior Eleitoral e nos censos e estimativas do Instituto Brasileiro de Geografia e Estatística durante o período de 2005 a 2016. A política eleitoral foi analisada em relação a: (i) competição eleitoral; (ii) o alinhamento partidário do prefeito com o governador e o presidente; e (iii) reeleição.* ***Resultados:*** *Os resultados indicam que o alinhamento partidário do prefeito com o governador influencia de forma positiva (p=0,056), enquanto com o presidente influencia negativamente (p=0,00) na aplicação de impostos nos serviços de saúde. O mandato de reeleição do prefeito (p=0,00) e a competição eleitoral para o cargo de prefeito não influenciam na aplicação de impostos em serviços de saúde. Já em relação à localização geográfica, os municípios da região Norte possuem menor percentual de aplicação de impostos nos serviços de saúde, seguido, em ordem crescente, pelas regiões Sul, Nordeste, Centro-Oeste e Sudeste.* ***Conclusão:*** *Na amostra analisada pode-se perceber que o alinhamento político-partidário e a reeleição influenciam na aplicação dos impostos municipais dos serviços de saúde, enquanto a competição eleitoral não afeta.*

Descritores: *Gastos em Saúde; Política; Governo Local; Política Financeira; Impostos.*

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RESUMEN

Objetivo: *Investigar los efectos de la política electoral para la aplicación de los impuestos de servicios de salud de los municipios brasileños.* ***Métodos:*** *El estudio es descriptivo y se utiliza de métodos cuantitativos a través de regresión múltiple con datos en panel. La muestra ha sido de 3.566 municipios brasileños y se recogieron los datos del Sistema de Informaciones sobre Presupuestos Públicos de Salud (SIPPS) del Ministerio de la Salud en el Finbra (Financias de Brasil) de la Secretaria del Tesoro Nacional, en el repositorio electoral del Tribunal Superior Electoral y de los censos y estimativas del Instituto Brasileño de Geografía y Estadística durante el período entre 2005 y 2016. La política electoral ha sido analizada respecto a: (i) la competición electoral; (ii) el ajuste partidario entre el alcalde y el gobernador y el presidente; y (iii) la reelección.* ***Resultados:*** *Los resultados indican que el ajuste partidario entre el alcalde y el gobernador influye de manera positiva (p=0,056) mientras que con el presidente influye de manera negativa (p=0,00) para la aplicación de impuestos de los servicios de salud. El mandato de reelección del alcalde (p=0,00) y la competición electoral para el cargo de alcalde no influyen en la aplicación de los impuestos de servicios de salud. Respecto la localización geográfica, los municipios de la región Norte tienen menor porcentual de aplicación de impuestos para los servicios de salud, seguido, en el orden creciente por las regiones Sur, Noreste, Medio Oeste y el Sudeste.* ***Conclusión:*** *Se ha percibido en la muestra analizada que el ajuste político-partidario y la reelección influyen para la aplicación de los impuestos municipales de los servicios de salud mientras la competición electoral no le afecta.*

Descriptores: *Gastos en Salud; Política; Gobierno Local; Política Financiera; Impuestos.*

INTRODUCTION

International and national literature has addressed elements of electoral politics, such as electoral competition, party alignment between the mayor, the governor and the president, and reelection, especially with regard to tax collection, public spending and the provision of public services[1-6].

In Brazilian municipalities, the financing of public expenditure on health is partially funded by the linking of tax resources collected, as established by Constitutional Amendment No. 29/2000 (CA 29/2000) and Supplementary Law No. 141/2012 (SL 141/2012). However, the minimum application limit is not enough to maintain health systems, so municipal managers use a higher volume[7,8]. Thus, since the manager has discretion in the application of tax resources to health services above the minimum limit, the political and electoral aspects may influence decision making, which is the object of research in this study[9,10].

The influence of political and electoral aspects on the execution of public policies has been explained by public choice theory, according to which decision-makers are susceptible to the interests of maintaining power. According to the public choice theory, decision-makers choose the alternative that best suits their own interests to the detriment of or without regard to the public interest and the better functioning of public policies[11]. Thus, depending on the local political context, mayors may generate changes by increasing or decreasing resources directed to the provision of health services in order to achieve better voter ratings in an attempt to increase the likelihood of victory in the elections[12]. Therefore, the mayor may have a strong influence on the management of local health systems and is an important actor that should be taken into account in the evaluation of health promotion[9].

Thus, in the context of public health policies, it is questionable whether the application of resources is influenced by electoral competition for mayor, the party-political alignment between the mayor, governor and president, and the reelection of the mayor[9-12].

The greater electoral competition can positively influence the expansion of the application of tax resources to promote health in the municipalities as the presence of greater competitiveness makes mayors face greater risks of losing the election. Therefore, they seek to minimize the risk by increasing the spending of their own resources to gain greater acceptance from their voters[13,14].

With regard to party alignment between the mayor, governor, and president, it favors ideological alignment between government-level health policy agendas, which reduces federative conflicts and favors greater cooperation. In addition, ideologically aligned municipalities are more likely to receive funds from supranational governments to maintain and broaden their political foundations with a tendency to reduce the spending of their own resources. In other words, political stimulus may distort the allocation of federal and state resources, thereby compromising the formation of an equitable financing system[15,16].

Finally, the mayor's reelection may (i) favor the maintenance of the level of spending using own health resources, as management tends to remain constant, (ii) may reduce spending because the mayor will no longer have chances

to remain in power, or (iii) may increase due to the incrementalism of public policy and the purpose of favoring party continuity[17-19].

In view of the aforementioned issues, this study seeks to assess the effects of electoral politics on taxation in health care services in the Brazilian municipalities.

METHODS

This is a quantitative descriptive study. The sample consisted of 3,566 municipalities whose data were available on the database from 2005 to 2016, thus constituting an unbalanced panel. Data were collected from the databases of the Public Health Budget Information System (*Sistema de Informações sobre Orçamentos Públicos em Saúde - SIOPS*) of the Ministry of Health, of the Brazil Finances (*Finanças Brasil - Finbra*) of the National Treasury Secretariat (*Secretaria do Tesouro Nacional - STN*), from the electoral repository of the Superior Electoral Court (*Tribunal Superior Eleitoral - TSE*), and from the censuses and estimates of the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística - IBGE*). Data were treated using multiple regression with panel data, fixed effects and robust covariance matrix using the Newey and West method[20]. Fixed effects were used because they do not depend on sample randomness to obtain consistent and non-biased results[21]. The statistical model was estimated using the R software with the plm package.

The study used the municipal variables described below in Chart I:

Chart I - Description of the study variables.

Title	Description	Type of variable	Type of data
Applitaxhealth	Percentage of resources originated from taxes allocated to health services in the municipality *i* in the year *t*, according to criteria established by Constitutional Amendment No. 29/2000 and Supplementary Law No. 141/2012	Dependent	Continous
GDPpercap	Gross Domestic Product (GDP) of the municipality	Independent	Continous
Deathsbeforeage15	Number of preventable deaths of children and adolescents aged below 15 years	Independent	Continous
Currenttransfpercap	Amount received through intergovernmental transfers divided by the population of the municipality	Independent	Continous
Electoralcompetition	Measure of competitiveness for mayor estimated by the Golosov method[22]	Independent	Continous
Governoralignment	Identifies when there is political party alignment between the mayor and the governor	Independent	Binary
Presidentalignment	Identifies when there is political party alignment between the mayor and the president	Independent	Binary
Reelection	Identifies reelected mayors	Independent	Binary
North	Identifies whether the municipality belongs to the North region	Independent	Binary
Northeast	Identifies whether the municipality belongs to the Northeast region	Independent	Binary
Midwest	Identifies whether the municipality belongs to the Midwest region	Independent	Binary
South	Identifies whether the municipality belongs to the South region	Independent	Binary

The variables described in Chart I were used in the multiple regression with equation 1, as described below:

$$ln(y)_{it} = \beta_0 + \beta_1\, ln(gdppercap)_{it} + \beta_2\, ln(populationoverage65)_{it} + \beta_3\, deathsbeforeage15_{it} + \beta_4\, ln(currenttransferpercap)_{it} + \beta_5\, electoralcompetition_{it} + \beta_6\, governoralignment_{it} + \beta_7\, presidentalignment_{it} + \beta_8\, reelection_{it} + \beta_9\, north + \beta_{10}\, northeast_t + \beta_{11}\, midwest_t + \beta_{12}\, south_t + \alpha_t + \varepsilon_{it}$$

Y_{it} is the dependent variable referring to the allocation of resources collected through taxation in health care (Applic_tax_health) in the municipalities *i* in the year *t*. Taxes and intergovernmental transfers resulting from taxes that form the basis for calculating health services resource allocation are mainly: Urban Property Tax (*Imposto sobre a Propriedade Predial e Territorial Urbana - IPTU*), Real Estate Transfer Tax (*Imposto sobre a Transmissão de Bens Imóveis - ITBI*), Tax on Services of Any Nature (*Imposto Sobre Serviços de Qualquer Natureza - ISSQN*), Withholding Tax (*Imposto de Renda Retido na Fonte – IRRF*), Municipalities Participation Fund (*Fundo de Participação dos Municípios - FPM*), part of the Excise Tax (*Imposto sobre Circulação de Mercadorias e Serviços - ICMS*) and its export exemption, part of the Motor Vehicle Property Tax (*Imposto sobre Propriedade de Veículos Automotivos - IPVA*), part of the Industrialized Products Tax (*Imposto sobre Produtos Industrializados - IPI*) and revenue from fines and active debt resulting from taxes. β's are the coefficients estimated by multiple regression, α is a fixed effect temporal control term and ε is the random error with normal distribution assumption based on the asymptotic theory and the central limit theory[23].

The study used secondary data sources, and because it did not involve humans directly or indirectly it did not require approval by a Research Ethics Committee. Data are available at: http://www.saude.gov.br/repasses-financeiros/siops, https://siconfi.tesouro.gov.br, http://www.tse.jus.br e https://sidra.ibge.gov.br/

RESULTS

With regard to the demographic and economic aspects and resource allocation, the profile of the municipalities is quite different. Table I depicts the descriptive statistics of the study variables, which included 42,391 observations. The allocation of resources resulting from taxes averaged 20.51%, thus indicating that municipalities allocate resources above the limit established by Constitutional Amendment No. 29/2000 and Supplementary Law No. 141/2012. The GDP is quite different in the municipalities, the mean was R$ 10.35 thousand per capita with a standard deviation of R$ 9.65 thousand. Similarly, the population older than 64 years was also much different between the municipalities, with a mean of 3,033.38 inhabitants and a standard deviation of 20,884.20. The number of preventable deaths of children and adolescents under 15 years old per 1,000 inhabitants was 0.10, with a standard deviation of 0.17. Mean per capita current transfers were R$ 660.34 with a standard deviation of R$ 442.26 and a large variance of R$ 59,958.35 (R$ 59,961.19 - R$ 2.84).

Regarding electoral politics, the mean electoral competition was 1.93 with a standard deviation of 0.48. This result shows that most municipalities have their municipal elections for mayor centered on two candidates. The number of mayors with party alignment with the governor is 20%, while alignment with the president was only 11% in the years analyzed. During the study period, from 2005 to 2016, there were three municipal elections and three state elections.

Table I - Mean, standard deviation, and minimum and maximum values for the study variables. 2005-2016.

Variables	Mean	SD	Minimum	Maximum
Allocation of taxes to health services and actions *(%)*	20.51	4.14	7.93	33.99
GDP *per capita (thousand R$)*	10.35	9.65	1.38	191.70
Population over 64 years of age	3.033.38	20.884.20	52.00	1.096.987
Preventable deaths up to 15 years of age	0.10	0.17	0.00	3.48
Current transfers *per capita*	660.34	442.26	2.84	59.961.19
Electoral competition (Golosov)	1.93	0.48	1.00	6.49
Alignment between the Mayor and the Governor	0.20	0.40	0.00	1.00
Alignment between the Mayor and the President	0.11	0.31	0.00	1.00
Reelection	0.29	0.45	0.00	1.00

SD: Standard deviation
Source: Siops, TSE, Finbra, IBGE

Table II shows the descriptive statistics of the allocation of taxes in health expenditure in the municipalities by party-political alignment and reelection of the mayor. Univariate analysis of mean comparison per group using the Kolmogorov-Smirnov test rejected significant difference. In other words, no difference can be observed by simply comparing the means, which is why multivariate methods should be used since the allocation of taxes in health expenditure results from economic, demographic and political factors.

Table II - Description of the dependent variable by party alignment and reelection during the 12 years analyzed in the study. 2005-2016.

Variables	Mean	SD	Minimum	Maximum
No alignment between the mayor and the governor	20.51	4.15	7.93	33.99
Alignment between the mayor and the governor	20.49	4.11	8.72	33.99
No alignment between the mayor and the president	20.50	4.13	7.93	33.99
Alignment between the mayor and the president	20.60	4.16	9.73	33.98
Reelected mayor	20.61	4.20	7.93	33.99
Mayor in the first term	20.27	4.00	9.73	33.99

SD: Standard deviation
Source: Siops, TSE, Finbra, IBGE

Municipal characteristics were analyzed jointly by multiple regression. The final result of the estimates with the model described in equation 1 is presented in Table III.

The variable electoral competition, measured by the Golosov method[22], was suppressed from the final result because it was not statistically significant in the previous model evaluation estimates. The coefficients of the variables included in the model were statistically significant at approximately 5%. In general, it is possible to observe that demographic, economic and, especially, political variables produce effects on the allocation of taxes in health services at the municipal level.

The control variables GDP per capita and population over 65 years have a positive influence on the allocation of taxes in health services, while the variable preventable death before age 15 has a negative effect. These results corroborate the theoretical indications as higher GDP provides greater availability of tax resources and more people over 65 pressure local governments for more services in different specialties.

The variable Current transfers per capita negatively affects the allocation of taxes in health services, that is, the greater dependence on resources collected by state and federal governments implies lower tax-financed health expenditures. Party alignment between the mayor, the governor and the president was statistically significant with opposite results – positive and negative, respectively. The variable reelection had a negative effect on the allocation of taxes in health services, as expected by the theoretical indications.

The binary variables that verify the differences between the municipalities in the regions also presented statistical significance. The reference region is Southeast. The other regions – North, Northeast, South and Southeast – presented negative coefficients, with the most expressive ones found in the Northeast and South compared with the Southeast. Therefore, the municipalities in the Southeast have the highest percentage of allocation of taxes in health care.

Table III - Inferential statistics between the allocation of taxes to health services and electoral politics. 2005-2016.

Variable	Coefficient	Standard error	t statistics	p value
GDP *per capita*	0.035	0.002	14.641	0.000
Population over 65 years of age	0.006	0.001	4.010	0.000
Preventable deaths up to 15 years of age	-0.054	0.006	-8.655	0.000
Current transfers *per capita*	-0.060	0.004	-14.460	0.000
Party alignment between the mayor and the governor	0.004	0.002	1.909	0.056
Party alignment between the mayor and the president	-0.013	0.003	-4.046	0.000
Reelection	-0.013	0.002	-6.033	0.000
North	-0.125	0.005	-23.741	0.000
Northeast	-0.095	0.003	-28.697	0.000
Midwest	-0.083	0.004	-19.918	0.000
South	-0.110	0.002	-39.710	0.000
Constant	-1.260	0.034	-36.621	0.000
R2	0.111	Number of observations		42.391
Adjusted R2	0.111	VIF		3.24

Source: Siops, TSE, Finbra, IBGE

DISCUSSION

The results showed that the allocation of tax resources in health care actions and services, as recommended by the legal terms defined in CA 29/2000 and SL 141/2012, is influenced by electoral politics elements, particularly party alignment between local, state and national managers and reelection. This shows that the current financing structure of public health policies in municipalities is influenced by the mayors' electoral interests, something that goes against the need for stable financing of the Unified Health System (*Sistema Único de Saúde - SUS*)[24,25].

Fluctuations in health financing due to electoral interest make it difficult to maintain and improve health promotion actions as they reduce planning and execution capacity since the volume of resources is modified by elements exogenous to health systems[25,26-37]. On the other hand, it implies greater difficulty in improving health promotion because achieving greater efficiency and quality derives – to a greater extent – from the planning of long-term health prevention actions rather than from the abrupt expansion and discontinuation of medical actions, which result in higher costs and lower problem-solving capacity[27-30].

The positive effect of party-political alignment between the mayor and the governor reveals that ideological alignment between municipal and state entities favors the expansion of health systems as mayors are more willing to allocate more resources to health care. On the other hand, the alignment between the mayor and the president influences negatively, that is, it favors the reduction of the allocation of tax resources to the health sector. In sum, the results suggest that cooperation between local and state government takes place in different areas of health, which points to the need to expand local spending. The results also show that when alignment occurs with the federal government, cooperation results in increased allocation of resources to health care, mainly because it is responsible for intergovernmental fund-to-fund transfers from the National Health Fund[“5-16,25,31-33], which naturally requires less investment of its own resources, which end up being allocated to different areas of health. In terms of implementation of health promotion policies, these results indicate that political alignment with the governor is preferable since the larger volume of own resources allows better conditions for structuring the equipment needed to provide public health services[8,34].

The reelection of the mayor has a negative impact on the allocation of taxes to health care, that is, in the second term, mayors do not prioritize and allocate the same amount of resources to health actions as in the first term since they are no longer likely to run for a third term, as it is prohibited by electoral law. These results imply greater difficulties for health managers in maintaining health systems in the mayor's second term, which may compromise the quality of services and improvement resulting from the incrementalism of public policies. Financing expansion and retraction movements may compromise the continuous improvement of health services provision mainly due to the improvement of the efficiency and quality of health promotion actions[8,17-18,26,34-36].

The effect of regions on health financing by taxes reveals that regional discrepancies exist mainly among municipalities located in the Southeast region, which have better socioeconomic conditions compared with those in the North. Therefore, the face of inequality in access to public health services can also be seen in the health financing in the municipalities. Thus, the negative sign of the regional coefficients indicates that the municipalities in the Southeast region have better conditions to allocate resources to health promotion actions when compared with the municipalities in the other four regions[10,35-39].

Finally, the findings show that the analysis of health expenditure financing should take into consideration political aspects due to the close relationship between public managers' decision-making, the maintenance of political interests and health promotion[29,38-42].

The main limitations of the present study are the large complexity of the services offered by health systems and the impossibility of separating the expenditure using tax resources by different types of health promotion actions.

CONCLUSION

Although there are norms that define the allocation of tax resources in the municipalities, this study shows that electoral politics in the municipalities produces effects, specifically the party alignment of the mayor with the governor and the president, and reelection. Party alignment between the mayor and the governor was positive, while party alignment with the president had a negative effect. Reelection term also had a negative effect. In this regard, this study suggests the need for normative improvement of rules to allow greater stability in the financing of health expenditure and less influence of politicians' electoral interests to obtain continuous improvement of health services, both by reducing inefficiency and improving quality of health promotion actions.

Further research is needed to investigate other aspects of health services promotion considering the complexity of the services and the amount of preventive actions in relation to the studied political variables, including the political electoral cycle and the ideology of the parties.

CONFLICTS OF INTEREST

There were no conflicts of interest.

CONTRIBUTIONS

Kleber Morais de Sousa and **Monica de Maria Santos Fornitani Pinhanez** contributed to the study design and conception; the acquisition, analysis and interpretation of data; the writing and/or revision of the manuscript; **Wenner Glaucio Lopes Lucena** contributed to the writing and/or revision of the manuscript.

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