# Intergovernmental Transfers to the Brazilian Unified Health System and Party Alignment

Veronica I. F. Orellano (FGV-SP)
Taís Tellini (FGV-SP)

**Abstract:** This study investigates the impact of political alignment on intergovernmental transfers to the Brazilian Unified Health System (SUS). We analyzed both automatic transfers based on pre-established rules and discretionary transfers, using two criteria of political alignment between mayors and the central government. For the empirical analysis we used regression-discontinuity design (RDD) and the outcomes of close elections between 2001 and 2017. The results indicate positive and statistically significant effects of party alignment on the two transfer categories, especially discretionary transfers. The effect of direct party alignment, in other words, when mayors and the president are from the same party, is greater than that resulting from coalitions established in municipal and federal elections.

**Keywords:** intergovernmental transfers, health care, SUS, political alignment.

**JEL**: I18. H77.

**Resumo:** Este trabalho estuda o impacto de alinhamento político em transferências intergovernamentais destinadas ao Sistema Único de Saúde Brasileiro (SUS). Foram analisadas tanto as transferências fundo a fundo quanto transferências discricionárias, utilizando dois critérios de alinhamento político entre prefeitos e o governo central. Para a análise empírica foi utilizado o método de regressão com descontinuidade (RDD) em eleições municipais apertadas no período de 2001 a 2017. Os principais dados foram obtidos pelo Tribunal Superior Eleitoral (TSE) e pelo Ministério da Saúde. Os resultados encontrados indicam que há um efeito positivo e significante de alinhamento partidário nas duas categorias de transferências, principalmente em transferências discricionárias. O efeito de alinhamento partidário direto, ou seja, quando prefeito e presidente são do mesmo partido, é maior do que o estabelecido a partir das coligações criadas em eleições municipais e federais.

**Palavras-chave:** transferências intergovernamentais, serviços de saúde, SUS, alinhamento político.

**JEL**: I18. H77.

**Área 5: Economia do Setor Público**

## 1. Introduction

In order to reduce health inequality and to promote a better quality of life for the population, many resources are annually invested in public health in Brazil through the Unified Health System (SUS). One of the various government mechanisms to guarantee the operation of SUS, and to provide a wide distribution of health services, is the transference of resources from central government to local governments. The system is based on the idea that local governments are more able to identify specific needs and, therefore, SUS made the municipalities the main authorities responsible for their populations' health, guaranteeing the receipt of resources, transferred from funds specifically allocated to health.

The 1988 Federal Constitution established the bases of Brazilian federalism and since then the country has been widely using intergovernmental transfers to guarantee the adequate distribution of various public services. Brollo and Nannicini (2012) found evidence that, in municipal election years, municipalities with mayors who were not politically aligned with the president, received an average of 30 percent less transfers for infrastructure. The study reveals that the Brazilian municipalities' dependence, in relation to resources passed on by the central government, may result in an increase/reduction in the transfer, due to political alignments between federal bodies, operating as a mechanism of competition and bargaining, since it promotes political incentives and counter-incentives.

The aim of this study is to evaluate if this mechanism of competition and bargaining also takes place with public health resources in Brazil. The health sector is one of the most complex in society, recognizably being one of the most difficult to coordinate. The Brazilian state is responsible for the universal provision of health services as one of its obligations, making SUS management one of the greatest challenges of public administration in Brazil.

The political affiliation of the elected mayor in a municipality is inevitably related to its characteristics and its citizens who, in turn, determine a series of political decisions. This fact complicates the attribution of a connection between the mayor's political affiliation and any municipal political decision, whatever the sector. With the aim of minimizing problems of endogeneity, we adopted regression-discontinuity design (RDD), using the results of municipal elections in which there was a marginal difference between the elected mayor and its best opponent.

We analyzed the period between 2001 and 2017, using data on federal resources allocated to the health sector, obtained through the Ministry of Health (DATASUS), and electoral data gathered through the Superior Electoral Court (TSE). The research was organized into a further six sections, in addition to this introduction. The second section gives a brief description of federalism in Brazil and the implications of this system for allocating public resources. We then succinctly present some studies on the relation between political alignment and the receipt of transfers. The third section describes the Brazilian electoral system, and the fourth, intergovernmental SUS transfers. In the fifth section, we present data and the empirical strategy, followed by the analysis of the results in the sixth section and, finally, the conclusions.

## 2. Federalism, intergovernmental transfers and political alignment

Federalism was introduced in Brazil in 1879, and has been abolished more than once in the last 130 years. Therefore, it underwent an improvement process until it achieved its current status, which guarantees administrative and fiscal decentralization, and in which the public authorities are divided into the following entities: one central government, one federal district, twenty-six (26) states and more than five thousand and five hundred (5,570) municipalities. This political configuration also has the characteristic of coexistence between the Executive and Legislative powers at the three government levels (federal, state and municipal), and the Judiciary at federal and state levels.

Political and fiscal decentralization is one of the determinants for the formation of federalism, since political and financial dependence prevents federative sub-units from exercising their autonomy and, therefore, mischaracterizes the entire system. The defense of decentralization assumes that local governments have a greater capacity to diagnose needs and, therefore, to allocate resources

more efficiently. In addition, the idea is that the transfer of power to states and municipalities produces greater responsibility from the governments in relation to the use of public resources, enabling public policies that are more suitable for the people, with greater accountability and responsiveness.

However, relations between the central power and local governments may not be that simple and objective, since they involve different institutions at the same time. Leaders, political representatives, parties, decision-making bodies and society interact simultaneously through decisions, choices, mechanisms and strategies, each with different reasons and subterfuge, in order to achieve their own interests.

Therefore, the redistribution of resources may be guided by varying incentives, which may be linked more to political than economic interests. Intergovernmental transfers are transactions that result from both from clearly established criteria and from negotiations between government hierarchies, reinforcing the hypothesis that politicians may use intergovernmental transfers as a way of achieving individual and/or party power through political alignment.

From the perspective of political interests, Duchateau and Aguirre (2010) highlight three possible incentives for budget allocation: electoral competition, ideological favoritism and party alignment; in other words, central-local relations are not always non-partisan. These determinants may produce an inefficient allocation of resources, since the result of ideological favoritism would be of more federal resources allocated to local governments with the same political dogma as the federal government representative. On a more superficial level, we could form a parallel with the position (left or right) that the politician subscribes to; in other words, if the president is from the left, for example, more resources may be allocated to municipalities with left-wing mayors. A similar result would be found when party alignment exists; in other words, more resources may be allocated to municipalities with mayors from the same political party as the president, or the same coalition. Electoral competition would produce incentives for politicians to allocate more resources to municipalities that maximize their probability of winning.

Many empirical studies find evidence on political motivation in intergovernmental transfers. These studies refer to countries with different levels of development and political structure, and use different methodologies. Table 1 summarizes nine of the main studies, highlighting the authors, the countries studied, and the results. The majority identifies a positive effect of local government support to central government on locally received transfers, with the exception of Banful (2010) and Gonschorek, Schulze and Sjahrir (2018). Larcinese et al. (2006), Solé-Ollé and Navarro (2008), and Brollo and Nannicini (2012) found also evidence that party alliances, such as coalitions and party affiliation, for example, may favor the transfer of resources. Gonschorek, Schulze and Sjahrir (2018), Brollo and Nannicini (2012), Bracco et al. (2015) and Corvalan, Cox and Osório (2018) identified effects of the electoral cycle, with the goal of re-election. Although the majority of studies deal with discretionary transfers, Banful (2010) highlights the use of pre-established formulas for the transfers that he had analyzed, identifying political motivation as also influencing the transfer of these resources.

**Table 1 – Empirical studies on party alignment and transfers**

| Author (s) | Country | Results |
|---|---|---|
| Larcinese et al. (2006) | United States | States supporting the president in the last presidential elections are inclined to receive more resources than the others. The effect of party affiliation is also found, in which opponents receive less central government funds. |
| Solé-Ollé and Navarro (2008) | Spain | Party alignment has effects on resources transferred to municipalities, with greater effects when the governments (which donate and receive) are from the same party. Effects are also found when the ruling parties are part of the same coalition. An aligned municipality may receive up to 40 percent more than those which are not aligned. |
| Arulampalam, Dasgupta, Dhillon and Dutta (2009) | India | States that are aligned and, at the same time swing in state elections, receive transfers that are 16 percent higher than a state which is not aligned and is non-swing. |
| Banful (2010) | Ghana | Finds evidence of higher transfers for locations with more undecided voters, despite the adoption of formulas; in other words, political representatives are seeking votes, and party alignment does not have any effect. |
| Brollo and Nannicini (2012) | Brazil | In municipal election years, the municipalities with mayors who are not politically aligned receive an average of 30 percent less in discretionary transfers for infrastructure. |
| Jennes and Persyn (2014) | Belgium | The relation between ministerial representation and transfers may result from a mechanism in which the ministers respond to their electorate in the form of transfers and, in turn, are rewarded by the voters. |
| Bracco et al. (2015) | Italy | Italian municipalities that are politically aligned with the central government receive higher transfers, and the probability of the aligned municipalities being re-elected increases by up to 30 percent. |
| Corvalan, Cox and Osório (2018) | Chile | Intergovernmental transfers increase in the year of municipal elections, and this increase is even higher when the political representatives are aligned, with the objective of re-electing the local political representative. |
| Gonschorek, Schulze and Sjahrir (2018) | Indonesia | Resources are not shared based on the population's needs, but on political need. Regions with little support for the central government receive more than those that give support during the president's first term. This is even clear in the year of central government elections. The authors argue that the president invested in the "districts" that opposed him in his first election, in order to win them over and be re-elected. |

Source: prepared by the authors.

## 3. The Brazilian electoral system

The hypothesis that party alignment influences intergovernmental SUS transfers requires an understanding of the multiple elements that govern both the Brazilian electoral system and the SUS financing system. Knowing the motivators, structural organizations, laws and regulations, which support the systems, enables an understanding of the driving forces of specific behaviors, strategies and instruments used to maximize the benefits of the varying agents who form both systems.

The Executive Power, the focus of this research, is formed by the president, governors and mayors, and elections take place every four years, in even-numbered years, and staggered, so that if municipal elections are held in year t, those for the president and governors take place in year t+2. The elections are direct under the majority system, in which the winning candidate is the one who obtains the majority of the votes. This "majority" may be simple or absolute, depending on the size of the municipality, with a simple majority meaning that the candidate elected is the one who obtained more votes compared with his rivals. In the other majority system, the elections take place in two rounds and the candidate is elected only if, in the second round, more than half of the valid votes from the electoral district are cast on a single candidate; that is, in the second round the winner must obtain the absolute majority. Only municipalities with more than 200,000 voters adopt the absolute majority system. All the elected candidates must serve a four year term and are eligible for re-election.

The Brazilian two round multi-party majority system makes the creation of party alliances favorable during electoral campaigns, also called coalitions. In this context, parties with similar

objectives negotiate support between themselves, to maximize their chances of a candidate's victory; in other words, to obtain an expressive number of votes. Coalitions signal to voters that there is party cohesion, facilitating the transmission of votes. Within the Brazilian context, if the parties' objective is to win the election and/or achieve political representation, then coalitions will be used as a strategy to reduce the risk of losing the election and, therefore, of increasing the chances of gaining political representation. Electoral system metrics and structures will define the benefit of using this strategy for the different types of elections.

In Brazil, different party associations can be identified at varying federative levels; in other words, the composition of coalitions is different at federal, state and municipal levels. This phenomenon may take place because the party composition that maximizes the benefits for a specific election will be different, in accordance with the associated context and regional issues and, therefore, the results of party alignment need to be observed, from the perspective of coalitions established in federal and municipal elections.

## 4. Financing the Unified Health System (SUS)

In the search to equalize different regional needs and to guarantee the right and access to health to all citizens, the constitution in Brazil sets out that health-related actions must be decentralized and promotes an integrated action between the states. Constitutional Amendment 29 of 2000 determines that SUS must be financed through funds collected by the federal government, states, federal district and municipalities, and allows the transfer of resources between the federative units.

The states and municipalities finance SUS, in part, with a minimum of 12 percent and 15 percent, respectively, of the sum collected in taxes that are due to them, but the federal government is the main funder of public health in the country. The percentage financed by the federal government was between 50 percent and 42 percent during the period between 2003 and 2017, but since 2016 the federal government started to contribute with increased percentages from its net current revenue and, since then, resources are budgeted in accordance with a pre-established amount, and adjusted for GDP growth. Although the federal government provides the majority of the resources, the municipalities are the main authorities responsible for allocating the resources originated both from intergovernmental transfers and their own tax revenue.

With respect to the hierarchization of the system, every municipality is responsible for basic and preventive procedures, while other procedures (subject to economies of scale) are allocated to specific municipalities, with the aim of reaching the majority of a region's population. Cosio, Mendes and Miranda (2008) divide intergovernmental transfers into two categories: fund-to-fund and agreements. Both are linked and should be spent and allocated according to a legal specification or contract. Agreements are negotiated between the constituent units and, therefore, are transfers that take place voluntarily, and may be conditional or not. Fund-to-fund transfers are mostly mandatory and automatic, and must be allocated for some specific purposes.

The Health Pact was introduced in 2006, and defined the federative units' responsibilities, clarifying the role of each one. This pact also established six groups of procedures to which the fund-to-fund transfers should be allocated, called financing blocks: (i) basic health care; (ii) moderate and high complexity health care; (iii) health surveillance; (iv) pharmaceutical assistance; (v) SUS management, and (vi) investments (this block is not mandatory and depends on the presentation of a project).

The resources allocated to the basic health care block are mandatory and divided into Fixed and Variable Basic Health Care Levels (fixed and variable PAB). For the fixed component, the amount allocated to executing basic health care activities is calculated based on a per capita sum. Piola (2018) highlights that since 2011 this sum has been defined in accordance with the size of the municipality (divided into bands, as per number of inhabitants). Then the value for each group is adjusted by rates, based on the per capita gross domestic product (GDP) and other measures such as the percentage of the population in a situation of extreme poverty (population receiving *Bolsa Família*, a cash transfer

program), the percentage of the population with private health insurance and the municipality's demographic density.

The variable PAB is the most representative component of the basic health care block, and an average of more than 65 percent of the resources of this block are allocated to this component. As a strategy to encourage programs that promote basic health care, the value of this component is linked to participation in incorporated programs; in other words, they are parametrized in accordance with the municipality's production capacity. The family health, community health agent and oral health programs are the most significant.

The moderate and high complexity health care (MAC) block is allocated to more sophisticated procedures and actions and is divided into two components: the Strategic Actions and Compensation Fund (Faec) and the Moderate and High Complexity Outpatients and Hospital Financial Limit (LFMAC). Not all the municipalities are eligible for the receipt of these resources and the parameters that define the sums that must be transferred are based on production, coverage and the provision of services, in addition to a fixed per capita amount.

The four remaining financing blocks receive less than 20% of the annual resources destined to fund-to-fund transfers. The smallest is the investment block, which was created in 2009, is not mandatory and is conditional on the presentation of a project. The Ministry of Health must approve it following the presentation of a proposal that the Bipartite Interagency Commission (CIB) had previously evaluated. In other words, this block leaves room for negotiations between the institutions involved. But once the project is approved, the resources are automatically transferred from fund to fund.

According to Piola (2018), the health surveillance block is linked to actions to promote health and surveillance, prevention and the control of diseases and risk factors, also guaranteeing the execution of sanitary surveillance actions, and the qualification of laboratory analyses on the topic. The pharmaceutical assistance block is allocated to financing both essential and non-essential medication, as well as long-term actions, such as prevention, diagnosis, treatment and the control of diseases. Finally, the SUS management block is allocated towards guaranteeing efficient administration, with regulation, control, evaluation, auditing and monitoring actions, as well as assistance in implementing and qualifying services and actions.

With respect to voluntary transfers, those are made up of agreements and resource transfer contracts, originating from government projects and defined from agreements, adjustments or other similar instruments, which the competent authorities approve. Cosio, Mendes and Miranda (2008) reinforce the need for intergovernmental transfers being independent of political factors; in other words, the determination of values, metrics and guidelines for division and frequency should take place through clear, transparent and objective criteria. These authors classify the voluntary transfers and the investment block as having little independence, considering that they result from negotiations.

When seeking to understand the complex transfer system that finances SUS services, the question that remains is: Can the criteria for the division of SUS transfers, at least considering fund-to-fund transfers, really be considered clear, transparent and objective?

The criteria for division were constructed and defined by four main regulations: Law No. 8.080/1990, Law No. 8.142/1990, Constitutional Amendment No. 29/2000 and Act No. 141/2012. The first law aimed to reduce the level of discretion in intergovernmental SUS transfers, establishing seven criteria that should be combined for the division of resources, with 50 percent taking place automatically, and the remaining 50 percent following the technical analysis of programs and projects. However, the methodology to establish the criteria was not defined and three months later the Law No. 8.142/1990 was approved, defining the principle that 100 percent of the transfers were regular and automatic, as well as establishing that while the methodologies were not defined, the population criteria should be used for their division. Despite this, only the fixed PAB used the per capita criterion, and the other components use criteria other than those established by law. Act No. 141/2012 added criteria for division and determined that the Tripartite Interagency Commission (CIT) is responsible for proposing the methodology to establish the criteria and submitting the proposal for National Health Council approval. However, the methodology has not yet been approved neither implemented.

This entire process of successive and frustrated attempts to determine objective criteria for the division of resources highlights the difficulties involved in negotiating this type of distribution, and suggests that, despite all the initiatives to avoid discretion, subjectivity and a certain amount of discretion still remain in this area.

The adoption of formulas with established parameters is an instrument that governments use to reduce the political role in the allocation of resources, but Banful (2011) finds evidence that this mechanism does not eliminate political steering in transfers carried out in Ghana to the District Assemblies Common Fund (DACF), which is calculated based on formulas. He finds evidence that the formulas are manipulated for electoral objectives.

With the exception of the Fixed Basic Health Care Limit (fixed PAB), determined by a set rule that depends on the size of the population and other economic and demographic indicators, it appears that loopholes can be found that allow a certain level of flexibility in the decision to transfer health resources. Even though the biggest part of these transfers (the main fund-to-fund transfers) is mandatory and considered automatic, its distribution is based on local production and this is difficult to define and measure. Although the criteria for the division of costs are defined, these rules do not seem to be clear enough to completely prevent divisions that are correlated with party alignment.

## 5. Data and empirical strategy

### 5.1 Data

The data analyzed includes the period between 2001 and 2017 for the 5,570 municipalities spread throughout all the Brazilian states. The data sources were: (i) data made available by the Ministry of Health (DATASUS) on resources allocated to the health sector; (ii) electoral data obtained from the Superior Electoral Court (TSE), with information on elections that took place between 1998 and 2016; (iii) data from the Brazilian Institute of Geography and Statistics (IBGE) on the municipalities' general characteristics; (iv) Institute of Applied Economic Research (IPEA) data on the municipalities' economic characteristics, and, lastly, (v) data obtained from the Federal Court of Auditors (TCU), with information collected from the municipalities.

In Brazil, political positions are occupied by the elected candidate for four years and, following this period, new elections are held. Municipal elections are interspersed with federal and state elections. Therefore, the electoral data for this research includes five federal and state elections (1998, 2002, 2006, 2010 and 2014) and five municipal elections (2000, 2004, 2008, 2012 and 2016). Although the mayors are elected every four years, party alignment between the central and municipal governments may change every two years.

Two different party alignment concepts were defined, called A and B respectively: (A) if the mayor and the president in office in certain year are from the same party, and (B) if the party of the mayor in office is part of the coalition with the president in office. Table 2 presents the percentage of municipalities with party alignment during the period between 2001 and 2017:

An expressive decrease in the number of mayors aligned with the president can be observed in 2003, when there is a change in power in the federal sphere. Nevertheless, since the following municipal election, in 2004, we observe a growth in party alignment that is upheld over the years. In addition, Table 2 suggests that party alignment B is more expressive, and changed significantly following the 2010 presidential elections, despite the Workers' Party (PT) remaining in the presidency.

This study is concentrated on municipalities that had closely-fought elections; in other words, in which the elected candidate had a relatively small margin of victory, compared with its best opponent. Table 3 demonstrates that the number of municipalities with closely-fought elections, divided into bands of difference up to 1, 5 and 10 percentage points, is similar over time.

**Table 2 – Municipalities with party alignment (in percent)**

| Year of Reference | Year of Municipal Election | President's Party | Party Alignment A | Party Alignment B |
|---|---|---|---|---|
| 2001 / 2002 | 2000 | PSDB | 17.8 | 56.2 |
| 2003 / 2004 | 2000 | PT | 3.5 | 8.0 |
| 2005 / 2006 | 2004 | PT | 7.4 | 15.0 |
| 2007 / 2008 | 2004 | PT | 7.4 | 7.6 |
| 2009 / 2010 | 2008 | PT | 10.2 | 11.9 |
| 2011 / 2012 | 2008 | PT | 10.2 | 53.6 |
| 2013 / 2014 | 2012 | PT | 11.6 | 52.6 |
| 2015 / 2016 | 2012 | PT | 11.6 | 60.0 |
| 2017 | 2016 | PMDB | 18.9 | 57.9 |

Source: prepared by the authors with TSE data.

**Table 3 – Municipalities with closely-fought elections (in percent of the total)**

| Year of Municipal Election | Difference of up to 1 percentage point | Difference of up to 5 percentage points | Difference of up to 10 percentage points |
|---|---|---|---|
| 2000 | 4.88 | 23.27 | 43.24 |
| 2004 | 5.28 | 26.32 | 48.82 |
| 2008 | 5.59 | 26.15 | 47.02 |
| 2012 | 5.38 | 26.66 | 49.04 |
| 2016 | 4.70 | 23.34 | 42.42 |

Source: prepared by the authors with TSE data.

In addition to the electoral data, the National Health Fund gross transfer values allocated to the municipalities during the period between 2001 and 2017 were obtained from the Ministry of Health. The fund-to-fund transfers were separated in the six categories existing until 2017: basic health care, moderate and high complexity, health surveillance, pharmaceutical assistance, SUS management, and investment (not compulsory). In addition to the fund-to-fund transfers, agreements and transfer contracts were included in the analysis. Although the values increase over time, we did not observe any significant changes in the relative levels allocated to each category.

The level of discretionary transfers, called agreements, changed its threshold in 2003. In 2000, it represented 16.1 percent and, in 2017, it represented just 8.06 percent. In Table 4, the creation of the "investment" category in 2009 can be identified, as well as the abolition of the "non-regulated" category in 2011. Transfers allocated to moderate and high complexity procedures and services lead the volume, followed by basic health care transfers. If added together, the two categories represent an average of 83 percent of the total transferred, and the category that receives the lowest volume is that allocated to SUS management funding.

The majority of the transfers are dependent on demographic and socio-economic issues and the supply capacity installed in the municipalities, in addition to production criteria, as described in the previous section. When we observe the regional per capita transfer, we identify different levels for each region, highlighting the north region, which receives less transfers per inhabitant, although it has a child mortality rate higher than that of the center-west. This data can be observed in Table 5.

**Table 4 – Municipal SUS transfers by category (in percent)**

| Year | BASIC HEALTH CARE | HEALTH SURV. | PHARM. ASSIST. | MAC | SUS MGT. | INVEST-MENT | NON-REGULATED | AGREEMENT | TOTAL |
|------|------|------|------|------|------|------|------|------|------|
| 2001 | 32.73 | 1.73 | 1.17 | 48.28 | 0.00 | 0.00 | 0.00 | 16.10 | 100.00 |
| 2002 | 27.55 | 3.66 | 1.00 | 53.36 | 0.09 | 0.00 | 0.00 | 14.34 | 100.00 |
| 2003 | 29.11 | 3.71 | 0.88 | 49.26 | 0.13 | 0.00 | 0.00 | 16.91 | 100.00 |
| 2004 | 30.78 | 4.39 | 0.86 | 54.32 | 0.17 | 0.00 | 0.00 | 9.48 | 100.00 |
| 2005 | 29.71 | 4.08 | 0.77 | 54.07 | 0.13 | 0.00 | 0.01 | 11.22 | 100.00 |
| 2006 | 32.45 | 4.63 | 0.90 | 51.52 | 0.32 | 0.00 | 0.11 | 10.07 | 100.00 |
| 2007 | 30.99 | 3.85 | 1.88 | 51.32 | 0.17 | 0.00 | 0.12 | 11.66 | 100.00 |
| 2008 | 29.16 | 3.19 | 2.13 | 56.10 | 0.19 | 0.00 | 0.15 | 9.08 | 100.00 |
| 2009 | 31.32 | 3.38 | 2.18 | 55.02 | 0.19 | 0.00 | 0.19 | 7.71 | 100.00 |
| 2010 | 30.54 | 3.48 | 2.22 | 56.31 | 0.15 | 0.13 | 0.20 | 6.98 | 100.00 |
| 2011 | 30.31 | 3.24 | 2.22 | 54.87 | 0.34 | 0.81 | 0.18 | 8.03 | 100.00 |
| 2012 | 29.98 | 3.42 | 2.61 | 56.01 | 0.32 | 1.43 | 0.01 | 6.22 | 100.00 |
| 2013 | 32.26 | 3.34 | 2.08 | 51.69 | 0.20 | 2.21 | 0.00 | 8.23 | 100.00 |
| 2014 | 29.57 | 3.85 | 2.05 | 51.44 | 0.23 | 3.31 | 0.00 | 9.55 | 100.00 |
| 2015 | 28.40 | 2.98 | 1.74 | 51.84 | 0.13 | 4.33 | 0.00 | 10.58 | 100.00 |
| 2016 | 29.76 | 2.81 | 1.70 | 53.56 | 0.08 | 4.08 | 0.00 | 8.01 | 100.00 |
| 2017 | 30.80 | 3.82 | 1.84 | 50.74 | 0.06 | 4.29 | 0.00 | 8.45 | 100.00 |

Source: prepared by the authors with MS data.

**Table 5 – Transfers by Brazilian region (in percent)**

| Region | Inhabitants | Transfers | Per capita transfers |
|--------|------|------|------|
| CENTER-WEST | 6.3 | 7.8 | 24.0 |
| NORTHEAST | 27.4 | 30.6 | 21.6 |
| NORTH | 8.4 | 7.1 | 16.2 |
| SOUTHEAST | 44.5 | 40.1 | 17.4 |
| SOUTH | 13.3 | 14.4 | 20.9 |

Source: prepared by the authors with MS data.

## 5.2    *Empirical identification strategy*

The aim of this research is to evaluate the impact of party alignment on intergovernmental transfers, from the federal to the municipal sphere, allocated to the Unified Health System in Brazil. The use of methodologies such as ordinary least squares (OLS) may generate biased results, due to endogeneity problems. In order to minimize those problems, that result from factors that simultaneously determine the mayor's party and municipal health policy decisions, we used the regression-discontinuity design (RDD) method. This method selects the municipalities in which the elected candidate had a small margin of victory, in comparison with its best opponent. The hypothesis behind this is that if the election of a candidate was closely-fought, the probability of his victory and of his best opponent would be the same; in other words, closely-fought elections are decided by random factors.

As explained in the third section, municipal elections have a well-established criterion to define the winning candidate, which is the one who obtained the majority of votes (simple or absolute majority). This characteristic favors the use of regression-discontinuity design (RDD), since its application requires an eligibility criterion for comparison between the treatment and control groups.

Only mixed observations were used; that is, only the municipalities in which the opposition candidates had different party alignments (sometimes this may not occur in the case of type B alignment). The politically aligned candidates' percentage of votes was defined as $V_{Ait}$, and $V_{Nit}$ is the non-aligned candidates' percentage of votes, where $i$ represents the municipality and $t$ represents the year of observation, between 2001 and 2017. The margin of victory is given by the advantage or disadvantage that the aligned candidates obtained in relation to their opponents. For this, we defined the margin of victory as $m_{it}$, using the following equation:

$$m_{it} = V_{Ait} - V_{Nit} \quad \textbf{(1)}$$

If $m_{it} > 0$, then the candidate from that municipality was elected with party alignment, while his opponent is not aligned. Municipalities that are in this situation form our treatment group. If $m_{it} < 0$, then the elected candidate is not aligned with central government and his opposition is, and this group is defined as the control group.

Imbens and Lemeieux (2008) argue that when applying regression-discontinuity design, it is possible to identify the average causal effect of the treatment, due to the discontinuity of conditional expectation for the result, given the treatment variable. This effect may be obtained through the following expression:

$$\tau_{RDD} \equiv E\left[Y_{it}(1) - Y_{it}(0) \mid m_{it} = 0\right] = \lim_{m_{it}\downarrow 0} Y_{it} - \lim_{m_{it}\uparrow 0} Y_{it}$$

Where $Y_{it}$ is the dependent variable that, in this study, corresponds to the volume of per capita transfers that the municipality received, for the treatment and control groups. To explore the discontinuity created from the treatment and control groups, we condition to a margin of victory that tends to be 0. Thus, the treatment effect is estimated based on the following equation:

$$Y_{it} = \beta_0 + \beta_1 Al_{it} + X_{it} + f(m_{it}) + \varepsilon_{it}$$

Where Y is defined as the dependent variable, that is, per capita intergovernmental transfers allocated to SUS received by municipality i in t; X is a vector of control variables; $Al_{it}$ is the party alignment dummy (which varies in accordance with the alignment definition and is equal to 1 for the treatment group, and equal to 0 for the control group). Lastly, the function $f(m_{it})$ is a polynomial calculated on the margin of victory, $m_{it}$. Party alignment may be changed every two years, but the difference in votes (in absolute terms) between the main municipal election candidates of year t is the same until t+4. However, it should be highlighted that as $m_{it}$ depends on alignment, its value can be changed in the last two years of the mayor's term and, therefore, the municipalities may become part of the control or treatment group every two years.

Two methods are disseminated for the use of regression-discontinuity design: sharp regression discontinuity design (SRDD) and fuzzy regression discontinuity design (FRDD). We have used the SRDD method, since it is indicated for deterministic variable analysis, as is the case of municipal elections, which, by law, take place in the same years for every municipality, with only one winner, who obtains the majority of votes. The narrow margin of victory that determines the interval around the cut-off point (bandwidth) was calculated based on the algorithm[1] proposed by Calonico et al. (2014), and the cut-off point was established at 0. In order to calculate $f(m_{it})$, the Kernel triangular method[2] was used, and the results were analyzed at levels of significance of between 1, 5 and 10 percent.

There is a high heterogeneity in municipality size and, therefore, the transfer values were converted into per capita values, as already mentioned above, deflated by the 2017 National Consumer Price Index (IPCA), and transformed into a logarithm, with the aim of reducing outlying effects. Municipalities with only one candidate, or that held supplementary elections, were excluded from the analysis.

## 6. Results

The results of the effects of party alignment on intergovernmental SUS transfers were estimated for the total amount of SUS transfers, the total amount of fund-to-fund SUS transfers and for the three main investment blocks (basic health care, moderate and high complexity health care, and agreements), considering the two previously defined political alignment concepts. In principle, regression-discontinuity design models guarantee the internal validity of the results; in other words, they estimate the effect of the treatment variable on the outcome variables for the observations that are close to the cut-off point, which, in the case of this study, correspond to municipalities where elections were won by a close margin of victory. Thus, it cannot be stated conclusively that the results would be valid for all municipalities. This is a limitation of the RDD models, adopted to permit the attribution of causality to treatment, even if only internally. Therefore, testing the internal validity of the results is of the utmost importance.

### 6.1 Internal validity and robustness of the model

We conducted two internal validity tests with the aim of verifying if the treatment and control groups (around the cut-off point) were statistically similar, and so discarding the possibility of manipulating the running variable. The first test conducted is a density test, which was initially created by McCrary (2008) and presented by other authors at a later date. We used the method proposed by Cattaneo, Jansson and Ma (2017)[3], in which the null hypothesis is that there is discontinuity in the running variable density function around the cut-off point. The test was conducted for both types of political alignment analyzed, with a 10 percent bandwidth. The p-value presented in the Figure 1 graphs demonstrates the continuity of the density function for each alignment type.

**Figure 1 – Margin of victory density tests**
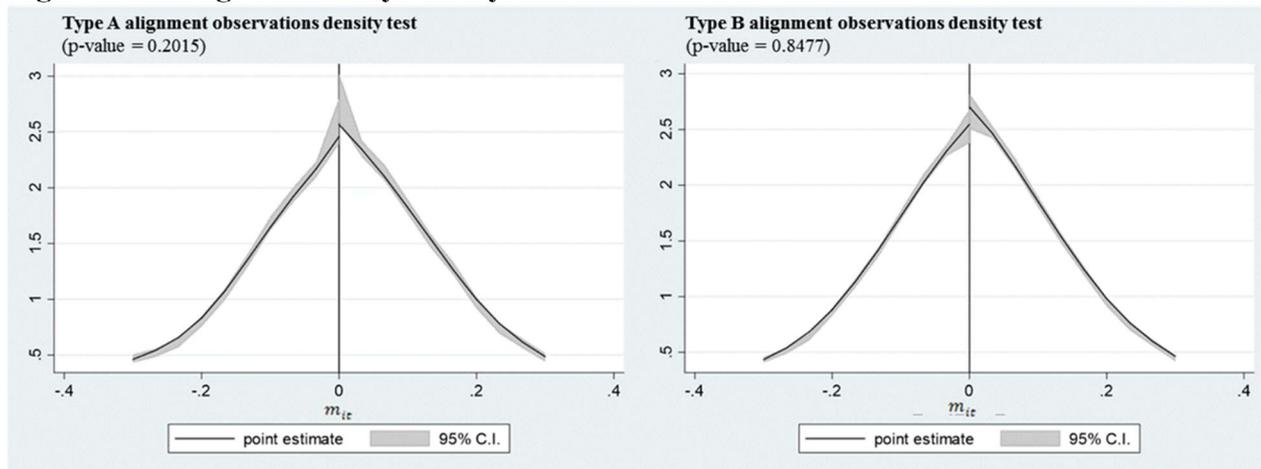
We also tested if the political alignment in the sample of municipalities with closely-fought elections have a correlation with their other characteristics, which may indirectly generate biased results; in other words, we tested the covariate balance. The strategy adopted was of reproducing the regression-discontinuity design using the municipalities' characteristics as dependent variables and verifying discontinuity around the cut-off point. The variables tested were: the per capita GDP logarithm, the GDP per capita squared logarithm, population logarithm, population squared logarithm and the total per capita unconditional transfers logarithm (transfers not destined to a specific sector, called the FMP). The results are described in Table 6.

**Table 6 – Model's internal validity results**

| Dependent Variable | Alignment A | | | Alignment B | | |
|---|---|---|---|---|---|---|
| | Bandwidth | Coefficient | P-Value | Bandwidth | Coefficient | P-Value |
| GDP per capita log | 0.117 | 0.01256 (0.0325) | 0.70 | 0.121 | -0.00329 (0.02279) | 0.89 |
| GDP per capita squared log | 0.117 | 0.02512 (0.06499) | 0.70 | 0.121 | -0.00657 (0.04558) | 0.885 |
| Population log | 0.113 | -0.10019** (0.05075) | 0.05 | 0.141 | -0.02274 (0.03181) | 0.48 |
| Population squared log | 0.113 | -0.20038** (0.10149) | 0.05 | 0.141 | -0.04548 (0.06361) | 0.48 |
| FPM resource log | 0.115 | -0.05273*** (0,02798) | 0.06 | 0.167 | -0.00747 (0.01684) | 0.66 |

**Note**: Levels of significance: * = $p < 0.10$; ** = $p < 0.05$; *** $p = < 0.01$. The sample size is obtained automatically by the optimal bandwidth selection method, using the mean squared error of the RDD estimators.

The majority of the municipalities' characteristics appear to be balanced around the cut-off point m=0. However, the results suggest that the population size and FPM resources are not perfectly balanced in the case of alignment A. Thus, the regressions were conservatively estimated, both with and without controls[4].

## 6.2    Results

Table 7 presents the regression results for the party alignment concept in which the mayor and president in office are from the same party in the year of reference; and Table 8 presents the results for the party alignment concept in which the party of the mayor in office is part of the president's coalition.

Results in Table 7 demonstrate that municipalities with mayors from the same party as the

president receive a higher percentage of transfers for basic health care and discretionary transfers, when compared with municipalities with mayors not aligned to the president's party, since the estimated coefficients for these transfers were positive and statistically significant for alignment A, both in the regression with control variables and the regression without them. The coefficients were also positive and statistically significant for the total SUS transfers and total fund-to-fund SUS transfers, but not for the moderate and high complexity transfer category. This block presented a negative coefficient for the regressions without control variables, but the coefficient loses statistical significance with controls.

The significant and positive effect of alignment with the president's party on transfers are in line with the initial hypothesis put forward in this study, that political alignments with the central power may increase transfers of resources between the federal and state governments and the municipalities. The result, in the case of discretionary transfers, is more commonly found in literature but, in this study, we also suggest the possibility of the effects of party alignment in the case of transfers carried out based on pre-established production regulations, and the results found support this idea. These results are in line with those of Banful (2010) for Ghana, who identifies political motivations as also influencing transfers calculated from pre-established formulas.

When we include coalitions as a form of political alignment, results similar to those in Table 7 were found, with positive and significant effects of the treatment for transfers as a whole, basic health care and discretionary transfers, but now with lower levels of significance and larger samples. Significant effects were not found for the moderate and high complexity transfer category.

To summarize, the empirical results indicate a positive effect of party alignment both in discretionary transfers (those that do not have previously established rules) and non-discretionary transfers (although they have previously defined regulations). As argued in the previous sections, a part of these regulations depends on the productive capacity, and also of taking part in programs promoted by the central government, which may produce entropy in the financing system, and a margin to benefit political allies. In the case of the SUS system, it is possible that this entropy is greater in the basic health care category than in moderate and high complexity, allowing a higher margin for discretion in transfers allocated to the former.

A further important aspect of the empirical results is that the effect of the coalition is less than that of the mayor's party being the same as that of the president. In addition, we highlight that if municipalities with party alignment are favored, then resources are not necessarily being distributed to the municipalities that need them most.

The graphical analyses of the discontinuity of transfers around the cut-off point may be requested from the authors. They enable a visualization of this discontinuity for discretionary transfers, those allocated to basic health care, and for both alignments.

**Table 7 – Results for mayors from the same party as the president**

| Dependent Variable | Initial No. | No controls | | | | | | With controls | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Calculated bandwidth | | | Bandwidth = 10 percent | | | Calculated bandwidth | | | Bandwidth = 10 percent | | |
| | | Bandwidth | Coefficient | Final No. | Coefficient | Final No. | | Bandwidth | Coefficient | Final No. | Coefficient | Final No. | |
| Total SUS fund-to-fund transfers | 18,970 | 0.121 | 0.02183*<br>-0.01151 | 9,994 | 0.02227*<br>-0.0126 | 8,037 | | 0.104 | 0.03143***<br>(0.0112) | 7,805 | 0.03159***<br>(0.01145) | 7,185 | |
| Total SUS transfers | 18,966 | 0.124 | 0.03415***<br>-0.01112 | 9,990 | 0.03539***<br>-0.01236 | 8,033 | | 0.109 | 0.04448***<br>(0.01127) | 7,805 | 0.04474***<br>(0.01177) | 7,185 | |
| Basic health care transfers | 18,962 | 0.136 | 0.04615***<br>-0.00987 | 10,529 | 0.04528***<br>-0.01139 | 8,036 | | 0.097 | 0.04363***<br>(0.00949) | 7,184 | 0.04377***<br>(0.0094) | 7,184 | |
| MAC transfers | 9,536 | 0.116 | -0.1647***<br>-0.0634 | 4,662 | -0.15882**<br>-0.06892 | 3,953 | | 0.139 | -0.08295<br>(0.05967) | 4,219 | -0.06334<br>(0.06994) | 3,170 | |
| Discretionary transfers (agreements) | 7,855 | 0.113 | 0.12012***<br>-0.03979 | 3,810 | 0.1194***<br>-0.04241 | 3,267 | | 0.113 | 0.10221***<br>(0.03409) | 3,614 | 0.10332***<br>(0.03635) | 3,102 | |

**Source**: prepared by the authors with study data.
**Note**: Levels of significance: * = p < 0.10; ** = p < 0.05; *** p = < 0.01. The sample size is obtained automatically by the optimal bandwidth selection method, using the mean squared error of the RDD estimators and manually defined at 10 percent.

**Table 8 – Results for when the mayor's party was part of the president's coalition**

| Dependent Variable | Initial No. | No controls | | | | | With controls | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calculated bandwidth | | | Bandwidth = 10 percent | | Calculated bandwidth | | | Bandwidth = 10 percent | |
| | | Bandwidth | Coefficient | Final No. | Coefficient | Final No. | Bandwidth | Coefficient | Final No. | Coefficient | Final No. |
| Total SUS fund-to-fund transfers | 36,374 | 0.135 | 0.01424* -0.00837 | 20,902 | 0.01694* -0.00981 | 16,032 | 0.128 | 0.01512* (0.00774) | 18,433 | 0.01648* (0.00882) | 14,892 |
| Total SUS transfers | 36,370 | 0.126 | 0.0213*** -0.0081 | 19,857 | 0.02421*** -0.00909 | 16,029 | 0.121 | 0.02195*** (0.00759) | 18,433 | 0.02392*** (0.02392) | 14,892 |
| Basic health care transfers | 36,356 | 0.13 | 0.02076*** -0.00731 | 19,849 | 0.02246*** -0.00829 | 16,024 | 0.105 | 0.01855*** (0.00682) | 16,163 | 0.0188*** (0.00702) | 14,884 |
| MAC transfers | 18,647 | 0.131 | -0.06499 -0.04116 | 10,656 | -0.07097 -0.04694 | 8,170 | 0.173 | 0.00262 (0.03616) | 10,921 | -0.0002 (0.04703) | 7,116 |
| Discretionary transfers (agreements) | 13,540 | 0.161 | 0.04521* -0.02496 | 8,748 | 0.06708** -0.03126 | 5,883 | 0.143 | 0.04347* (0.02276) | 7,756 | 0.05749** (0.0271) | 5,654 |

**Source**: prepared by the authors with study data.

**Note**: Levels of significance: * = p < 0.10; ** = p < 0.05; *** p = < 0.01. The sample size is obtained automatically by the optimal bandwidth selection method, using the mean squared error of the RDD estimators, and manually defined at 10 percent.

## 7. Conclusions

Public health in Brazil is a duty of the state, irrespective of the federative unit and, therefore, the efficient allocation of resources destined to this purpose is also its duty. The health system used in Brazil, SUS, has limited financial resources, which should be allocated based on metrics that aim to maximize the well-being of society and, therefore, should be impartial to political interests. In this study we observed, through an analysis of laws and standards on this subject, that there were frustrated attempts to create these objective criteria and metrics. The current criteria for the division of resources are partially based on the population size, but also on the municipality or state's productive capacity, and on taking part in programs and campaigns promoted by central government, as well as the possibility of direct negotiation between the entities in some categories.

Decentralization is one of the main characteristics of SUS, with the aim of reducing inequality. While this aspect promotes local autonomy, it also encourages interdependence and relations between the central power and local governments. The organization of the electoral system, associated to the interdependence of governments, may produce an allocation of resources based on political interests, which aim to gain/maintain power, and on ideological tendencies. Of the four main criteria for the division of SUS resources, highlighted in the previous paragraph, the last three ones open the way for leaders to use the resources with a political bias, in terms of patronage.

The aim of this research was to identify political bias in SUS transfers, using direct party alignment with the president as a metric, and also the alignment produced by coalitions established in federal elections. We analyzed the total amount of SUS transfers and fund-to-fund transfers (with distribution based on production and participation criteria), the two main categories of fund-to-fund transfers, and discretionary transfers (established mainly through agreements). In order to estimate the causal effect of party alignment on these transfers, the regression-discontinuity design methodology was adopted for the municipalities that held elections with close margins of victory between 2001 and 2017.

The study found robust empirical evidence that party alignment has an effect on transfers allocated to municipalities through SUS, particularly for basic health care and discretionary transfers. Only for the moderate and high complexity fund-to-fund transfer category we did not found a significant effect.

Both the basic health care and discretionary transfers presented relevant findings mainly when the mayor of the municipality is from the same party as the president, with these municipalities receiving more resources than those who were not aligned. When the president's party coalition is analyzed, the effect of party alignment exists, but is smaller.

The result of political benefaction, in the case of discretionary transfers, is more commonly found in literature but, in this study, we also put forward the possibility of the effects of party alignment for transfers carried out based on pre-established production regulations, as is the case of SUS fund-to-fund transfers. The results found support this idea and are in line with those of Banful (2010) for Ghana, who identifies political motivations as also influencing transfers calculated from pre-established formulas.

This result is worthy of attention by public health managers in Brazil, since if municipalities with party alignment are favored, then resources are not necessarily being distributed to the municipalities that are more in need, and equity is known as one of the most important principles that govern SUS.

**Notes**

1 Stata® statistical software was used to estimate the RDD, using the rdrobust command, in which the bandwidth is calculated using the algorithm proposed by Calonico et al. (2014), through the MSE-optimal function.
2 Kernel triangular is the standard function adopted by the rdrobust command, is non parametric and the weight of the observations is less, in so far that they are far from the cut-off.
3 Stata® statistical software was used to estimate the density, using the rddensity command proposed by the authors.
4 The GDP per capita squared and the population squared logarithms were automatically excluded due to multicollinearity problems.

## 8. References

ARRETCHE, M. 1996. Mitos da descentralização: mais democracia e eficiência nas políticas públicas? *Revista Brasileira de Ciências Sociais 31*.

ASHFORD, D. 1990. "Comparing local discretion". *International Review of Comparative Public Policy* 2: 1-24.

ARULAMPALAM, Wiji et al. 2009. Electoral goals and center-state transfers: A theoretical model and empirical evidence from India. *Journal of Development Economics* 88 (1): 103-119.

BANFUL, A.B. 2011. Do formula-based intergovernmental transfer mechanisms eliminate politically motivated targeting? Evidence from Ghana. *Journal of Development Economics* 96: 380-390.

BRACCO, Emanuele et al. 2015. Intergovernmental grants as signals and the alignment effect: Theory and evidence. *Journal of Public Economics* 123 (1): 78-91.

BRAZIL. Constitution. 1988. *Constitution of the Federative Republic of Brazil.* Brasília, DF: Federal Senate.

_____. Constitutional Amendment nº 29, of September 13, 2000. It amends articles 34, 35, 156, 160, 167 and 198 of the Federal Constitution and adds an article to the Transitory Constitutional Provisions Act, to assure minimum resources to finance public health actions and services. *Diário Oficial da União,* of September 14, 2000. Brasília, 2000.

BROLLO, Fernanda and NANNICINI, Tommaso. 2012. "Tying your Enemy's Hands in Close Races: The Politics of Federal Transfers in Brazil." *American Political Science Review* 106 (4): 742-761.
CALONICO, S.; et al. 2017. Rdrobust: Software for Regression Discontinuity Designs. *Stata Journal* 17 (2): 372-404.
CALONICO, S., CATTANEO, M. D., & TITIUNIK, R. 2014. Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs. *Econometrica* 82 (6): 2295–2326.
CATTANEO, M. D., JANSSON, M., & MA, X. 2019. Simple Local Polynomial Density Estimators. *Journal of the American Statistical Association*.
CATTANEO, M. D., & TITIUNIK, R. 2017. A Practical Introduction to Regression Discontinuity Designs. *Cambridge: Cambridge University Press*.

CATAIA, M. 2011. Federalismo brasileiro: as relações intergovernamentais analisadas a partir das transferências voluntárias (União/Municípios). *Revista Geográfica de América Central*, Costa Rica (Número Especial): 1-16.

CGU. Office of the Comptroller General. 2005. **Gestão de Recursos Federais: Manual para Agentes Municipais.** Accessed Sept 18, 2018. http://www.cgu.gov.br/Publicacoes/auditoria-e-fiscalizacao/arquivos/cartilhagestaorecursosfederais.pdf>. Last access on: Sept. 18, 2018.

CORVALAN, A. & COX, P. & OSORIO, R. 2018**.** Indirect political budget cycles: Evidence from Chilean municipalities. *Journal of Development Economics* 133: 1-14.

COSIO, B. F.; MENDES M.; MIRANDA, B. R. 2008. Transferências Intergovernamentais no Brasil: diagnóstico e proposta de reforma. *Text for Discussion 40 - Coordenação de Estudos da Consultoria Legislativa do Senado Federal, Brasília.*

COX, G.; MCCUBBINS, M. 1986. Electoral Politics as a Redistributive Game. *Journal of Politics* 48: 370-389.

COX, G. W. & MCCUBBINS, M. 1993. Legislative Leviathan: Party Government in the House. *University of California Press, Berkeley.*

DIXIT, A. & LONDREGAN, J. 1996. The determinants of success of special interest in redistributive politics. *Journal of Politics* 58: 1132–1155.

DUARTE, A. J. M. et al. 2009. Transferências fiscais intergovernamentais no Brasil: uma avaliação das transferências federais, com ênfase no Sistema Único de Saúde. *Text for discussion 1451- IPEA, Rio de Janeiro*.

DUCHATEAU, P.V. and AGUIRRE, B.M. 2005. A distribuição dos recursos discricionários do governo federal entre as unidades da federação: uma análise empírica das teorias de federalismo fiscal e das teorias positivas da alocação orçamentária. *University of São Paulo, São Paulo.*

GRAU, M. and ZUDENKOVA, G. 2018. Party discipline and government spending: Theory and evidence. *Journal of Public Economics* 164: 139-152.

GONSCHOREK, G. J.,  G G.SCHULZE and SJAHRIR, B. S. 2018. To the ones in need or the ones you need? The political economy of central discretionary grants − empirical evidence from Indonesia. *European Journal of Political Economy* 54: 240-260.

IMBENS, G.W. and LEMIEUX, T. 2008. Regression discontinuity designs: A guide to practice. *Journal of Econometrics 142 (2): 615-635.*

JENNES G. and PERSYN D. 2015.The effect of political representation on the geographic distribution of income: Evidence using Belgian data. *European Journal of Political Economy 37: 178-194.*

LARCINESE, V., RIZZO, L., and TESTA, C. 2006. Budget to the States: The Impact of the President. *Journal of Politics 68: 447–56.*

LEE, D. S. and LEMIEUX, T. 2010. Regression Discontinuity Designs in Economics. *Journal of Economic Literature 48 (2):  281-355.*

LINDBECK, A. and WEIBULL, J. 1987. Balanced-Budget Redistribution as the Outcome of Political Competition. *Public Choice 52: 273-297.*

LINDBECK, A. and WEIBULl, J. 1993. A model of political equilibrium in a representative democracy. *Journal of Public Economics 51: 195–209.*

MADISON, J., HAMILTON, A.,and JAY, J. 1993. Os Artigos Federalistas. Presentation: Isaac Kramnick; translation by Maria Luiza X. de A. Borges. Rio de Janeiro: Nova Fronteira, 1993.

MCCRARY, J. 2008. Manipulation of the running variable in the regression discontinuity design: a density test. *Journal of econometrics 142 (2): 698-714.*

OATES, W. 1999. An Essay on Fiscal Federalism. *Journal of Economic Literature 37: 1120-1149.*

PIOLA, S.F., BENEVIDES, R.P.S., and VIEIRA, F.S. 2018. Consolidação do gasto com ações e serviços públicos de saúde: trajetória e percalços no período de 2003 a 2017. *Text for Discussion 2439 - IPEA, Brasília.*

PIOLA, S.F., PAIVA, A.B., SÁ, E.B., and SERVO, L.M.S. 2013. Financiamento público da saúde: uma história à procura de rumo. *Text for Discussion 1846 - IPEA, Brasília.*

RODDEN, J. 2005. Federalismo e descentralização em perspectiva comparada: sobre significados e medidas. *Revista de Sociologia e Política 24: 9-27.*

SAKURAI, S. N. and M. I. A. THEODORO 2014. Alinhamento político e transferências governamentais: Novas evidências para os municípios brasileiros**.** *Anais do XLI Encontro Nacional de Economia [Proceedings of the 41st Brazilian Economics Meeting] 076, ANPEC - Associação Nacional dos Centros de Pós-graduação em Economia.*

SIMAO, J. B. and ORELLANO, V. I. F. 2015. Um estudo sobre a distribuição das transferências para o setor de saúde no Brasil. *Estudos Econômicos  45(1): pp. 33-63.*

SOARES, M. and MACHADO, J. 2018. Federalismo e Políticas Públicas. *Brasília: Enap*

SOLÉ-OLLÉ, A. and SORRIBAS-NAVARRO, P. 2008. The effects of partisan alignment on the allocation of intergovernmental transfers. Differences-in-differences estimates for Spain. *Journal of Public Economics 92: 2302-2319.*