

Size of government and political coalition in Brazil (1980-2019)

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This paper seeks to understand the political and institutional determinants of the size of the federal government in Brazil between 1980 and 2019. The hypotheses here evaluated are: (i) the greater the fragmentation in the National Congress, the greater the size of the government coalition; (ii) the larger the government coalition, the greater the number of ministries and secretariats responsible for spending; (iii) the greater the number of ministries and secretariats, the greater the federal government's expenditure expense and, therefore, the greater its size; (iv) the 1988 Constitution also increased expenses and the size of the federal government. Although the results are limited by the length of the time series, there are elements that underscore the importance of analyzing the public budget and the size of the government through the lens of Public Choice. The country's fiscal problems are not restricted to management issues or the need to curb fraud and corruption. They have a relevant political-institutional component. Not considering these aspects makes discussions about administrative and tax reforms sterile.

Keywords: coalition presidentialism, political fragmentation, size of government, Brazil

Tamanho de governo e coalizão política no Brasil (1980 – 2019)

O presente artigo busca compreender os determinantes políticos e institucionais do tamanho do governo federal no Brasil entre 1980 e 2019. As hipóteses aqui avaliadas são: (i) quanto maior a fragmentação no Congresso Nacional, maior o tamanho da coalizão governamental ; (ii) quanto maior a coalizão governamental, maior o número de ministérios e secretarias responsáveis pelos gastos; (iii) quanto maior o número de ministérios e secretarias, maior a despesa do governo federal e, portanto, maior seu porte; (iv) a Constituição de 1988 também aumentou as despesas e o tamanho do governo federal. Embora os resultados sejam limitados pela duração da série temporal, existem elementos que destacam a importância de analisar o orçamento público e o tamanho do governo sob a ótica da Escolha Pública. Os problemas fiscais do país não se restringem a questões de gestão ou à necessidade de coibir fraudes e corrupção. Eles têm um componente político-institucional relevante. Desconsiderar esses aspectos tornam estéréis as discussões sobre as reformas administrativa e tributária.

Palavras-chave: presidencialismo de coalizão, fragmentação política, tamanho do governo, Brasil

Tamaño del gobierno y coalición política en Brasil (1980 – 2019)

Este artículo busca comprender los determinantes políticos e institucionales del tamaño del gobierno federal en Brasil entre 1980 y 2019. Las hipótesis evaluadas aquí son: (i) cuanto mayor la fragmentación en el Congreso Nacional, mayor el tamaño de la coalición gubernamental ; (ii) cuanto mayor sea la coalición gubernamental, mayor será el número de ministerios y secretarías responsables del gasto; (iii) cuanto mayor sea el número de ministerios y secretarías, mayor será el gasto del gobierno federal y, por tanto, mayor será su tamaño; (iv) la Constitución de 1988 también aumentó el gasto y el tamaño del gobierno federal. Si bien los resultados están limitados por la duración de la serie temporal, hay elementos que resaltan la importancia de analizar el presupuesto público y el tamaño del gobierno desde la perspectiva de la Opción Pública. Los problemas fiscales del país no se limitan a cuestiones de gestión o la necesidad de frenar el fraude y la corrupción. Ellos tienen un componente político-institucional relevante. Desestimar estos aspectos hace que las discusiones sobre reformas administrativas y tributarias sean estériles.

Palabras clave: presidencialismo de coalición, fragmentación política, tamaño del gobierno, Brasil

Introduction

The trajectory of researcher Jorge Vianna Monteiro is marked by a pioneering spirit in analyzing the issues of public finance and public policies in Brazil through Public Choice. For the author of “Economia do Setor Público”, “Macroeconomia do Crescimento do Governo”, and “O Ambiente Institucional-constitucional da Política de Gasto Público e das Escolhas Orçamentárias em Geral”, among other publications, it is not possible to understand the fiscal problems of Brazil without considering the institutional matrix and the rules of the country’s political game.

In the practical day-to-day, the large size of the federal government is reflected in less space for the private sector, higher tax burdens, and increased public debt, resulting in social costs that contribute to Brazil’s economic stagnation. In this sense, inspired by the discussions and subject-matter of Monteiro (1987), Monteiro (1990), and Monteiro (2013), this paper seeks to understand the political and institutional determinants of the size of the Brazilian federal government between 1980 and 2019. The hypotheses evaluated here are: (i) the greater the fragmentation in the National Congress, the greater the size of the coalition of government; (ii) the larger the coalition of government, the greater the number of ministries and secretariats responsible for spending; (iii) the greater the number of ministries and secretariats, the greater the federal government’s expenditures and, therefore, the greater its size; (iv) the 1988 Constitution increased expenses and the size of the federal government.

This paper is divided into five sections, in addition to the introduction and final remarks. The first section discusses the size of the government under the lens of Public Choice. The second section presents the relationship between government size and coalition presidentialism in Brazil. The third section reviews the literature on government size and coalition size. The fourth section describes how data for the size of the federal government, fragmentation, and coalitions of Brazil were obtained, processed, and calculated. The fifth section analyzes the data and results of the determinants of the size of the federal government and coalition in Brazil.

Although the results are limited by the length of the time series, there are elements that underscore the importance of analyzing the public budget and the size of the government through the lens of Public Choice. The country’s fiscal problems are not restricted to management issues or the need to curb fraud and corruption; they

have a relevant political-institutional component. Not considering these aspects makes discussions about administrative and tax reforms sterile.

1. Size of government from the point of public choice theory

Understanding variations in the size of government implies knowing the behavior of political agents, the demands of society, the incentives of each agent, and the institutional environment in which they are inserted.

For that, it is necessary to have a theory that encompasses such components among its premises. Public Choice is certainly quite adequate, since it analyzes the behavior of political agents and individuals through the lens of economic sciences, providing insights and assisting with the development of hypotheses to study these relationships.

Jorge Vianna Monteiro, a precursor of research in Public Choice in Brazil, synthesizes in three classes the institutional mechanisms that, according to him, maintain “the frontier of the public economy systematically pressured to expand” (Monteiro, 2010), they are:

M1) The rationality of politicians - Driven by the need to serve their electoral strongholds through “net benefits,” politicians allocate funds from the public budget to local or specific interests and create protective regulations accordingly, in addition to various incentives.

M2) The rationality of bureaucrats - Bureaucrats do not have an elective mandate like politicians, so they act in a way that “maximizes power, influence, prestige, permanence in the post, as well as their chances of ascending the governmental hierarchy.” As a result, they have increasing access to and power over a “growing share of public resources, or over diversified and complex sets of rules.”

M3) The rationality of special interest groups - This is rent-seeking, through which private interest groups benefit from public policies, in their various forms, in exchange for support and campaign financing, among other benefits.

We can go beyond budgetary dimensions with the implications suggested by the author, taking into account party fragmentation and the coalition size —the relationship

between the two and their impacts on federal spending to fund the public sector. Our main hypothesis is that the greater the fragmentation in Congress and the greater the number of parties in the coalition, the greater that public spending is.

An example of an increase in the cost to the State to meet greater demand from interest groups was highlighted by Lisboa and Latif (2013), who observed the creation of public agencies designed to intervene in specific markets to protect interest groups from external competition in exchange for incentives. Rent-seeking is an political-institutional problem with perhaps one of the largest effects on government spending since it not only requires the passage of laws and decrees but also the creation of bureaucratic mechanisms to enforce the guidelines.

Additionally, an increase in public spending, and thereby the size of government, is related to electoral cycles. According to Dal-Ri and Correia (2019, p. 308 and 309), voters form expectations about the behavior of political parties and evaluate parties' performances—particularly concerning inflation and unemployment—against their own expectations. Since the main objective of political agents is to win votes from the electorate, politicians manipulate economic results during their terms to maximize economic performance precisely at election time.

In these ways, we note just how diverse the mechanisms through which political actions increase the size of government are. Monteiro's synthesis (2010) confirms that we cannot be fulfilled with only looking at the budgetary dimension when analyzing the public sector. According to him, we would be underestimating "the effective weight of the government in the economy," as well as losing "the focus of the effective institutional mechanisms that are activated, once the opportunity to intervene in a given market of goods and services is presented."

Besides the political-institutional aspect, it is important to consider that the Brazilian budget process has a very large component of inertia since it is not a "zero-base", as explained by Cintra (2018). As informed by Giacomoni (2011) and Bassi (2019), the 1988 Brazilian Constitution established "bounded revenues" and "mandatory expenses", which require that a minimum percentage of the budget be spent in certain areas, such as health and education. This represents a factor of rigidity and additional inertia to public expenditures. Moreover, bounded revenues also reduce the extent to which the public budget can be used as an instrument of accommodating party interests that make up the support base of the President of the Republic, apart from the bargaining power of the civil service.

Despite these caveats, the question of political coalition and governance must be analyzed to understand the limitations that cause the postponement of fiscal adjustment projects through administrative and budgetary reform and any reform proposal that reduces tax burdens.

2. Coalition presidentialism and government size

The term “coalition presidentialism” was coined by Abranches (1988), to adequately characterize the Brazilian governance model according to the relationship between the legislative and executive powers. This model has characteristics of multi-party parliamentarism, namely the notion of inter-party pacts, or coalitions. Although, like in presidentialism, the two powers are directly elected by popular vote, but separately. There is not any mechanism that matches seats in parliament proportionally to president’s votes. Thus, maybe the government coalition cannot have most seats in Congress. In this sense the elected president can be politically weak. .

While in parliamentarism the inter-party coalitions are composed prior to the electoral dispute, with the aim of guaranteeing a majority in the parliament, thus being able to appoint the prime minister; in a multiparty presidential system, the president is unlikely to have a majority in the congress to fulfill his agenda, so it is up to the president-elect to assemble his coalition government to guarantee governance. Therefore, the coalition in the presidential system refers to the president’s alliances with certain political parties or forces through the distribution of government posts, in exchange for support within the legislative house.

Most Latin American countries, according to Amorim Neto (2006), have multiparty systems, and one of the characteristics they have in common regarding the constitution of ministerial offices is the fact that to assume a ministry, deputies, and senators do not need to abdicate their parliamentary seat, which makes the post more attractive, thus favoring the obtainment of legislative support through these appointments (Amorim Neto, 2006, p.34 and 35), thus making the coalition formation process more flexible for accommodating interests that may arise amid the presidential term.

According to Freitas (2016), coalitions in principle work “as in a contract, parties that accept to participate in the Executive commit themselves to the government.” In this

way, when they assume the ministerial portfolios, they also assume joint responsibility for managing the government. The author also points out that coalitions are not made between individuals. The entire party leadership group that assumes one or more ministries must commit to being part of the government, and this situation only changes if there is any kind of change in this agreement, for example, if a certain party loses all the ministries it held. Such a commitment is made to reduce transaction costs and ensure governance, but it may require a certain flexibility from the executive for the government project, and it may generate additional expenses.

Marcel and Arvate (2010) complete the reasoning by explaining that, “if there is logrolling in the coalition government, neither party vetoes the other party, so as not to be vetoed,” so that the preferences of each are maintained, without major impediments. Therefore, according to the authors, “the number of parties in the coalition becomes of tremendous importance in defining the size of the government.”

3. Literature review on government and coalition size

Kantopoulos and Perotti (1999) find that the greater the number of decision-makers in a government, the less each ends up internalizing the costs that a given policy imposes on others; and based on a study of 22 OECD countries between 1971-1996, Volkerink and Hann (2000) found evidence that a more fragmented government has higher deficits, based on the number of parties in a coalition or the number of expending ministers. Like Volkerink and Hann (2000), Maciel and Arvate (2010) use only the spending ministers in this calculation. To reach these conclusions, the authors analyzed: a) the impact of fragmentation of the size of the government; b) the government’s position before Parliament; c) the impact of ideology.

According to Volkerink and Hann (2000), if the coalition controls more seats in parliament than what is necessary to obtain a simple majority, the power of any partner in the coalition—be it a party or a single deputy—will be weaker. Already, a party will be stronger if it is needed for gathering support in parliament. To reach this conclusion, the authors calculated the excessive number of seats, or the number of seats above those needed for a simple majority, scaled to the number of seats that make up this simple majority. Thus, the more parties that are part of the coalition, the more difficult it is for

the opposition to unite against government decisions.

The authors also used ideological differences in their analysis, based on Tsebelis' (1995) argument that each member of a coalition can be a potential veto actor, and therefore greater ideological differences would make compromise during the agreement more costly.

However, what interests us most in the work of Volkerink and Hann (2000) in the analysis of the Brazilian scenario is their finding regarding the size of fragmentation: the impact of the number of ministers is stronger and more robust than the impact of the actual number of parties in the government.

Bawn and Rosenbluth (2006) examine the political consequences of the number of parties in government using a sample of 17 European countries between 1970 and 1998, seeing if the larger the public sector, the larger the number of parties of the coalition. They conclude that the increase in the number of governing parties increases the fraction of GDP represented by government spending by almost half a percentage point, which means more than one billion dollars in a typical year. They also contend that they found little support for the claim that the number of legislative parties would affect the size of the public sector, except for the increase in the number of parties in the coalition.

According to the same authors, there is a tendency for multiparty governments to externalize costs, which would affect policies in ways other than the size of the public sector, for example, externalizing diffuse costs in the form of price increases and higher unemployment (Bawn and Rosenbluth, 2006).

In addition, electoral responsibility, according to the authors, may differ between long and short coalitions since a party maximizes its marginal contribution according to the well-being of its support groups while externalizing unsupported costs. Such an argument would indicate that greater coalition inefficiency would imply greater spending when more parties are in government; "this does not mean that most government spending is inefficient, but that inefficient trade will be reflected in spending" (Bawn and Rosenbluth, 2006).

Volkerink and Hann (2001) as well as Bawn and Rosenbluth (2006) also find evidence that the impact of the number of ministers is stronger than the impact of the number of parties in the government since "every spending minister is a basic unit, insofar as it participates in the formulation of the general budget."

To verify whether the control of ministries by coalition parties represents

a privileged space in the allocation of parliamentary resources by members of the participating parties, Batista (2015) analyzes the extent to which power within the Executive is shared between the President and the parties that form the coalition through the allocation of parliamentary amendments. Being a member of the minister's party to which a particular resource would be linked, increases the chances of allocating parliamentary amendments that distribute resources. Their results also indicate that parliamentarians from the same party end up benefiting from the allocation of amendments, and the coordination mechanisms allow the president's party to be equally benefited.

In the allocation of resources, we must also consider that the revenue from tax collection that finances distributive policies involves externalities, and the political agents' misperception about true budget constraints directly affects the increase in spending (Volkerink & Haan, 2001).

4. Data on Brazil's federal government size and coalition

It is in the budget that conflicts of interest between different groups, including politicians and bureaucrats, are present in the form of disputes and agreements. To this end, we initially explained how we obtained data on federal government expenditures and described its evolution over the period 1980-2019. Expenses related to the cost of the government's operations (such as "personnel and labor charges") and other expenses (such as the acquisition of consumption material). It is important to note that expanding the time span to include the period prior to democratization (1980-1984) is necessary for contrasting the democratic period (1985-2019) in some analyses. We emphasize that the political conditions of coalition and consensus building are completely different since the previous regime was authoritarian.

However, the fiscal data series is annual (40 observations), which is an insufficient amount for an explanatory model composed of more than one independent variable to have sufficient degrees of freedom to avoid both biases and incorrect confidence intervals. The best we can achieve are linear regressions with up to three explanatory variables at most—limiting the results obtained.

4.1 Fiscal data

The fiscal data of the direct federal public administration is obtained in the publication “Expenses of the Union - Historical Series”¹ of the website “Tesouro Nacional Transparente.” The historical series consists of accounting statements. Union expenses computed by “expense group” were chosen. It contains the settled expenses of the fiscal budget and social security presented according to the structure of Table 1.

Table 1 - Grouping of expenses of the fiscal and social security budgets

CURRENT EXPENSES
Personnel and Social Charges
Interest and Debt Charges
Other Current Expenses
Transfers the States, Federal District, and Municipalities
Benefits Social Security
Other Current expenses
CAPITAL EXPENSES
Investment
Investments Financial
Amortization of Debt
Amortization of debt - Refinancing
Refinancing Debt Securities
Refinancing Debt Contractual
TOTAL (EXCEPT INTRA)
INTRA-BUDGET EXPENSES

Source: Tesouro Nacional Transparente

The primary source is the Federal Government’s Integrated Financial Administration System (a.k.a. ‘SIAFI’) - the most important instrument used to record, monitor, and control the Federal Government’s budget, financial and patrimonial execution.

The present paper, following Maciel and Arvate (2010), seeks a measure for the

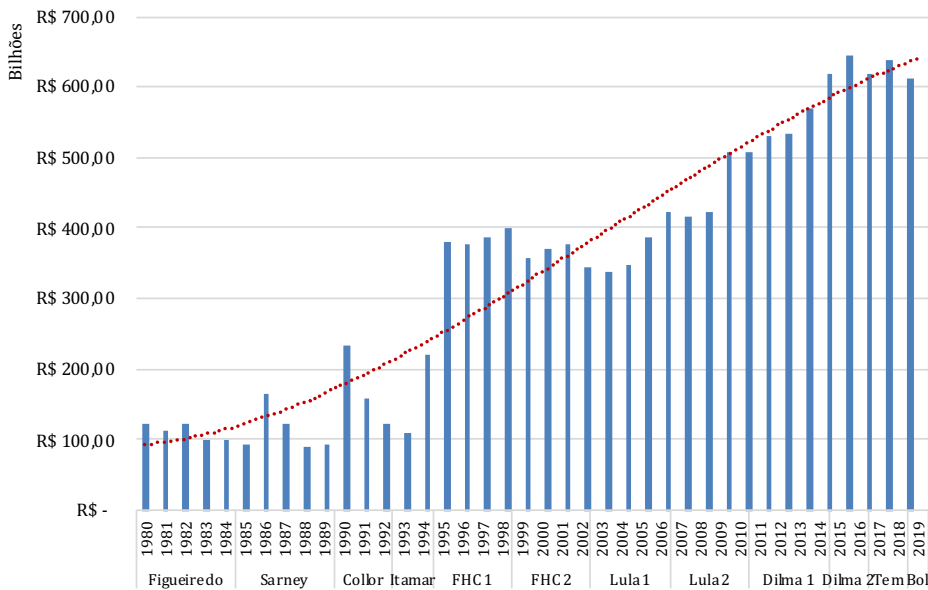
1 <https://www.tesourotransparente.gov.br/publicacoes/despesas-da-uniao-series-historicas/2019/11>. Access: November 19th, 2020.

size of the government, considering only, however, the direct administration (without adding to the state productive sector - federal “state companies”) and, within it, the cost expenses. These expenses are calculated based on “Current Expenses,” considering the sum of the values of “personnel and charges” and “other current expenses,” excluding, therefore, “interest and debt charge,” “transfers to states, Federal District and municipalities” and “social security benefits.” In other words, it seeks to bring the maximum category of expenditures associated with the operation and functioning of the direct federal administration.

It is relevant for the analysis to mention that in the years 1990, 1991, and 1992, the reports of budget expenditures by group did not separate “Social Security Benefits” from “Other Current Expenses.” It is necessary to allocate the cost expenses for these years through the linear interpolation of the “Other Current Expenses - using as a percentage of the “Other Current Expenses” in relation to the total of the “Other Expenses” for the years 1989 and 1993.

The first step was converting all values from 1980 to 1993 to nominal R\$, as they are expressed in the respective currencies, such as ‘cruzeiro,’ ‘cruzado,’ ‘cruzado novo,’ and ‘cruzeiro real.’ With the series expressed in nominal reais, the proportion of cost in terms of gross domestic product was calculated using data from nominal GDP 1980-2019 in R\$ (released by IPEADATA). Then we adopted the inflation index IGP-DI from Fundação Getulio Vargas and carried out the monetary correction for the cost expenses from 1980 to 2019.

Graph 1 – Real cost expenses (1980-2019) - red: trend line

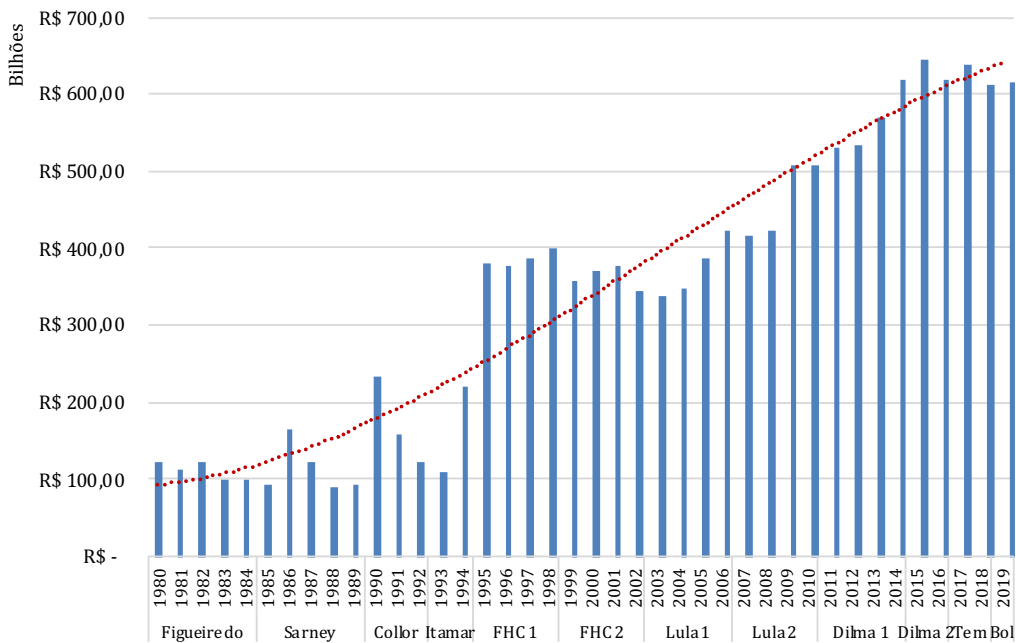


Source: Tesouro Nacional Transparente

It is possible to notice that in Graph 1 the cost values become very high in the second year of José Sarney’s Government, in the first year of Collor’s Government, and at the end of Itamar Franco’s term. The expenses change levels in Fernando Henrique Cardoso’s terms. And again, in the second term of Lula’s government, a new level is reached (above R\$ 500 billion in constant values for 2020).

As a proportion of GDP, as shown in Graph 2, there is an increase from the last three years of the Sarney government, shortly after the enactment of the 1988 Constitution - the level would never again be below 7% of GDP and fluctuates around 8% from then on. Subsequently, Fernando Collor’s government shows a peak in expenditures in its first year and reduces costs in the following years; however, this is reversed in Itamar Franco’s term. Even in the first year of Fernando Henrique Cardoso’s term, the cost reaches 8.8% of the GDP - a value that will only almost be reached in the first year of Dilma Rousseff’s second term, with costs reaching 8.6% of the GDP.

Graph 2 - Cost measured in proportion to GDP (1980-2019) - red: trend line



Source: Tesouro Nacional Transparente

Therefore, the change in cost levels, which operated at around R\$ 100 billion (in constant 2020 R\$) or 4% of GDP until 1988 and, subsequently, started to fluctuate above 7% of GDP—reaching 9% in some years—breaks the R\$ 600 billion (in constant 2020 R\$) from 2014 onwards.

4.2 Political data

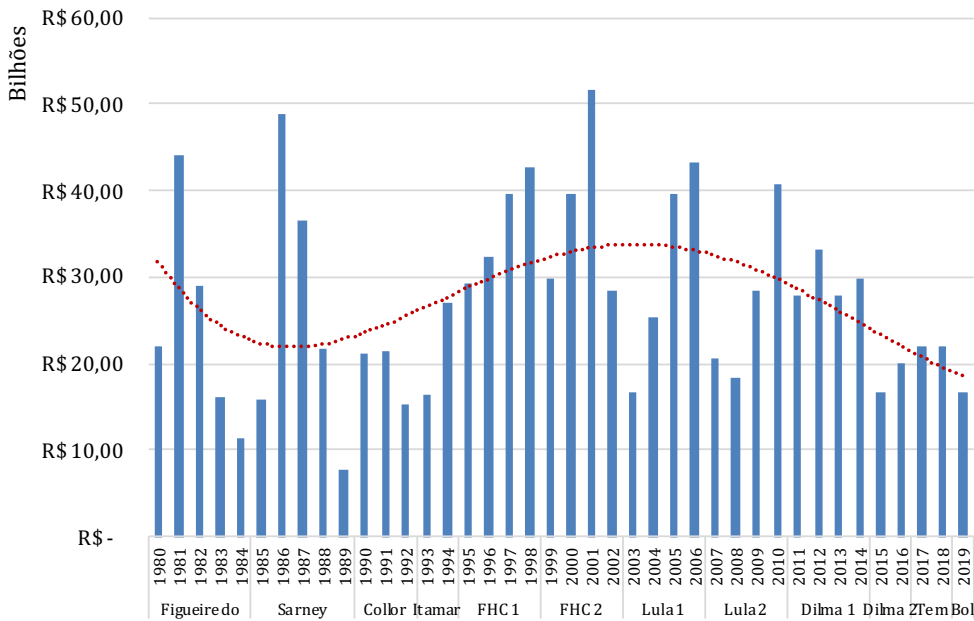
The information and data were obtained from two sources, the first being an organized list of ministries and ministers in office from 1980 to 2019. This base, covering the years 1985 to 2006, was used by Maciel and Arvate (2010), originally developed and provided by political scientist Octávio Amorim Neto, and adopted in the article by Amorim and Borsani (2004).

The basis of the period was revised and completed to 2019, in addition to being retroactive to 1980, and included secretariats with ministerial status, which can also be

considered a space for political bargaining and expenditure planning. Therefore, the data series is broader than that used by Maciel and Arvate (2010) and that of Maciel, Gamboa, and Ghizzellini (2020)—which covered the period 1980-2016.

Graph 3 shows the evolution of the number of “spending ministries,” following Volkerink and Haan (2001)². We noticed that, predominantly, since re-democratization, there have always been more than 15 spending ministries (except in the first three years of Fernando Collor’s term), reaching 33 in the last year of Dilma Rousseff’s first term.

Graph 3 - Number of spending ministries (1980-2019)



Source: authors based on Maciel and Arvate (2010) and Amorim and Borsani (2004)

In short, following Coopedge’s (1997) party-ideological classification, except by the governments classified as “right-wing,” Figueiredo, Collor, and Bolsonaro,

² In practice, these are all the ministries and special secretariats that do not belong to the fiscal-budgetary management. In our case, we excluded the General Secretariat of the Presidency of the Republic (personal trust position of the President) and control autarchies such as the Federal General Comptroller (a.k.a. CGU) and the Federal Court of Accounts (which has ministerial status). A more refined criterion that can be adopted in future studies is to analyze, in the case of special secretariats, the budgetary independence of each one of them (effective untying of the budget of the ministry of origin).

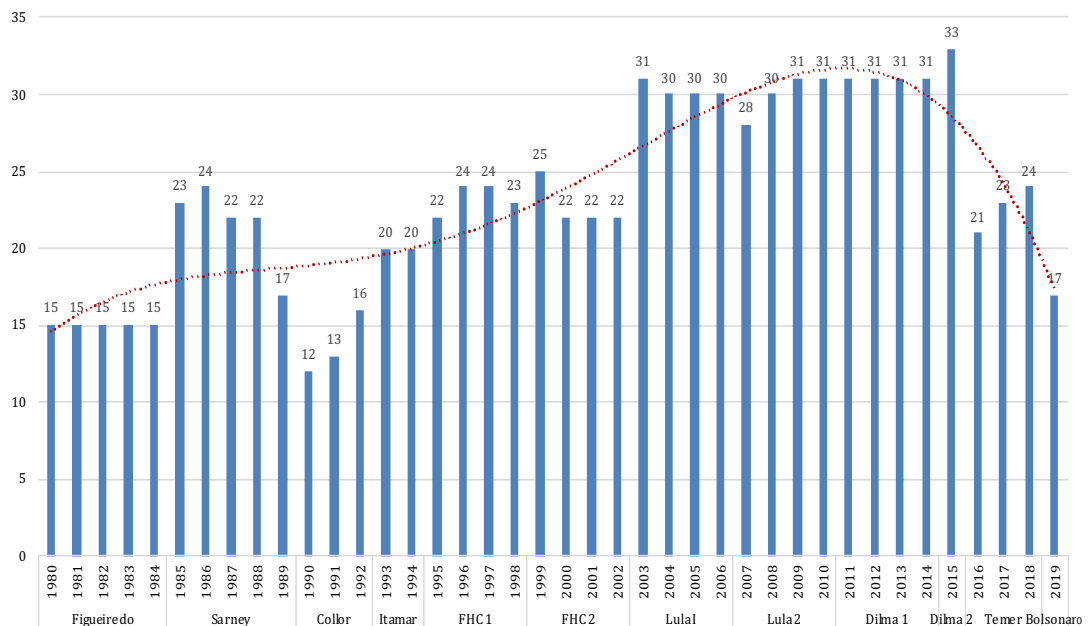
presidential terms in the current Brazilian democratic period are marked by a large number of ministries.

Additionally, with the same source of information, it was possible to measure the number of parties with seats in the ministries. In this sense, the inclusion of special secretariats with ministerial status allowed the review of data from Maciel and Arvate (2010) and Maciel, Gamboa, and Ghizellini (2020) and captured parties with seats that were not previously included.

It is important to note that ministers and secretaries with ministerial status, appointed by political parties, are not necessarily formally affiliated, so it was necessary to access newspapers and online sources from the time of the inauguration to verify the content of the nominations and any inaccuracies that may have occurred, with a marginal effect on the results found.

In a first reading of Graph 4, we noticed the trend of an increasing number of parties participating in the ministerial composition and, therefore, in the coalition government. During the period of re-democratization, the peak occurred during Michel Temer's second year of office, in 2017, with 11 parties occupying ministries.

Graph 4 - Number of coalition parties with seats in the ministries and special secretariats with the ministerial status (1980-2019)

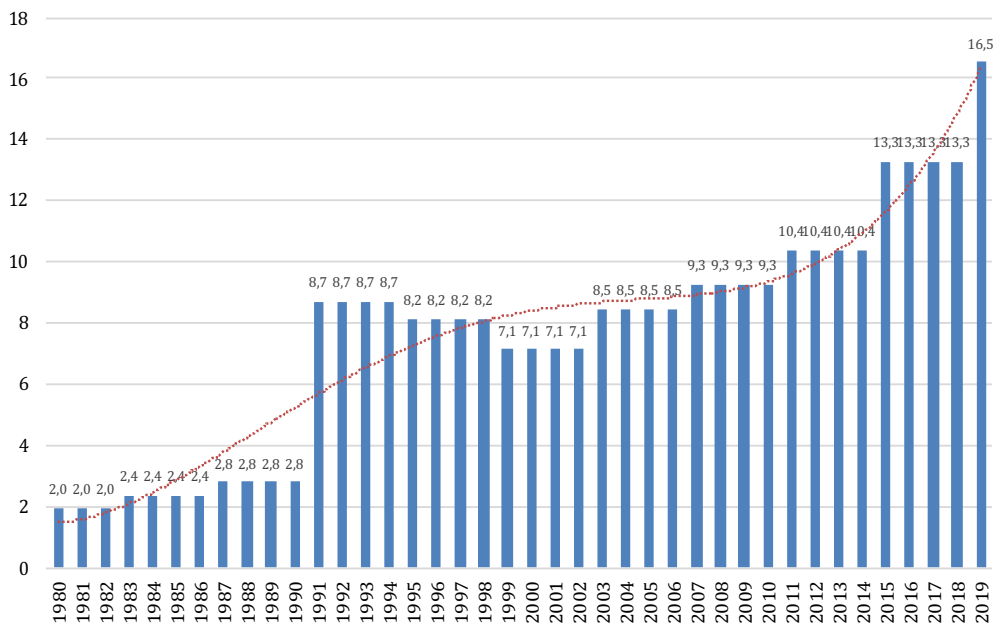


Source: authors based on Maciel and Arvate (2010) and Amorim and Borsani (2004).

The second source of information was initially obtained from political scientist Jairo Nicolau’s website³—“Electoral Data of Brazil”—which was updated until the 2014 election and complemented with analysis of the composition of the Chamber of Deputies (e.g. ‘Lower Chamber’) in the 1979-1982 and 2019-2022 legislatures . The spreadsheet containing the number and percentage of seats occupied by parties with elected representatives was used. From these data, we calculated the classic measure of fragmentation, the Effective Number of Parties (ENP) proposed in Laakso and Taagepera (1979). The measure is nothing more than the inverse of the Herfindahl-Hirschman share (S_i) of the parties in the seats of the Low Chamber - see Equation 1 below and Graph 5.

$$ENP = \frac{1}{\sum_{i=1}^n S_i^2} \quad (\text{Eq. 1})$$

Graph 5 - Effective Number of Parties in the Low Chamber (e.g. ‘party fragmentation’) from 1980 to 2019 – red: trend line



Source: authors based on Nicolau (2018)

It should be noted that in the 1982 elections, still under the presidency of a

3 <https://jaironicolau.github.io/deb/>. Access: June 12th, 2020.

military—General João Figueiredo—two parties took seats (Arena and MDB) and, since 1983, five parties (PDS, PMDB, PTB, PT, and PFL). In the 2018 elections, 28 parties took seats for 2019. In other words, the fragmentation of Congress increased with the resumption of democracy and with the multiparty system. This implies a greater negotiation effort with an increasing number of leaders and the need to accommodate a progressive number of parties in the government coalition. This could, in some way, put pressure on government funding due to the greater number of ministries and secretariats with ministerial status.

5. Analysis of the federal government size and coalition data

Table 1 below presents the descriptive statistics of the variables studied. We then explain the calculations and describe the evolution of each.

Table 1 - Descriptive statistics using observations from 1980 to 2019

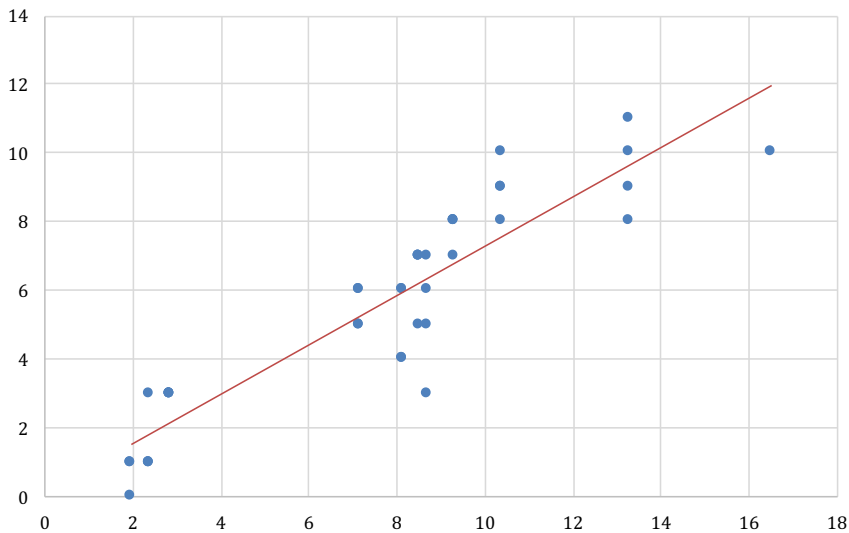
Variable	Mean	Median	SD	Min	Max
real cost expenses	3.42e + 011	3.74e + 011	1.88e + 011	8.87e + 010	6.45e +
Cost expenses %GDP	0.0733	0.0776	0.0170	0.0389	0.116
Expending	23.3	23.0	6.13	12.0	33.0
Coalition parties	5.75	6.00	2.84	1.00	11.0
Party fragmentation	7.63	8.49	3.77	1.98	16.5

Source: authors

Table 1 shows that the distribution of values has a relatively close average, but a lot of variation (very different minimum and maximum values and relatively high standard deviations from the mean).

One way of handling this fiscal and political information together is through measures of association, such as Pearson's correlation. The first relationship we explored is between the fragmentation of the Chamber of Deputies and the number of parties in the government coalition, as illustrated by Graph 6.

Graph 6 - Diagram of dispersion between parties in the presidential coalition and fragmentation in the Chamber of Deputies

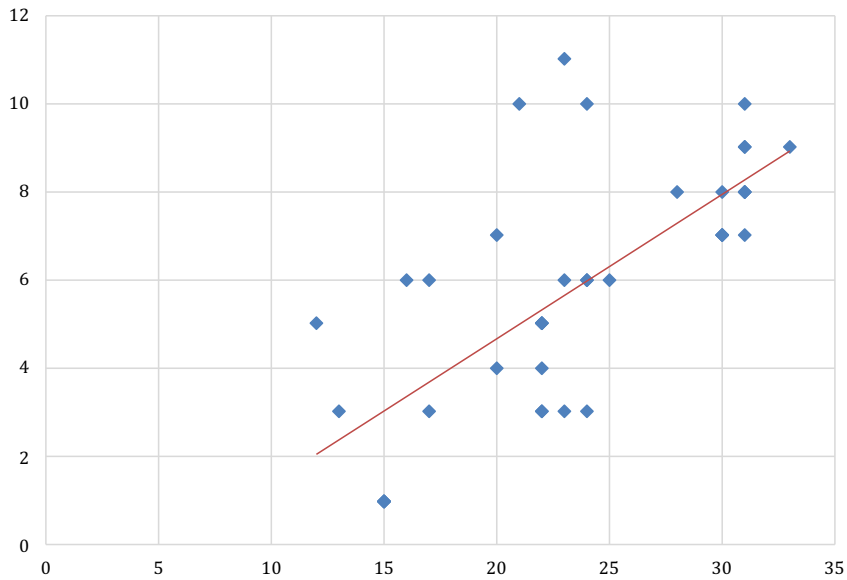


Source: authors

It seems obvious to conclude that the greater the fragmentation in the Lower Chamber, the greater the number of parties in the coalition government—linear correlation of 0.85. However, in practice, it is not so simple. The legislature that started in 2019 is the most fragmented since the re-democratization; however, the government coalition in President Jair Bolsonaro's first year had only six parties.

From the viewpoint of accommodating allies in the executive, the correlation between the number of parties and the number of ministries and special departments responsible for spending is also high: 0.71. Graph 7 illustrates this result.

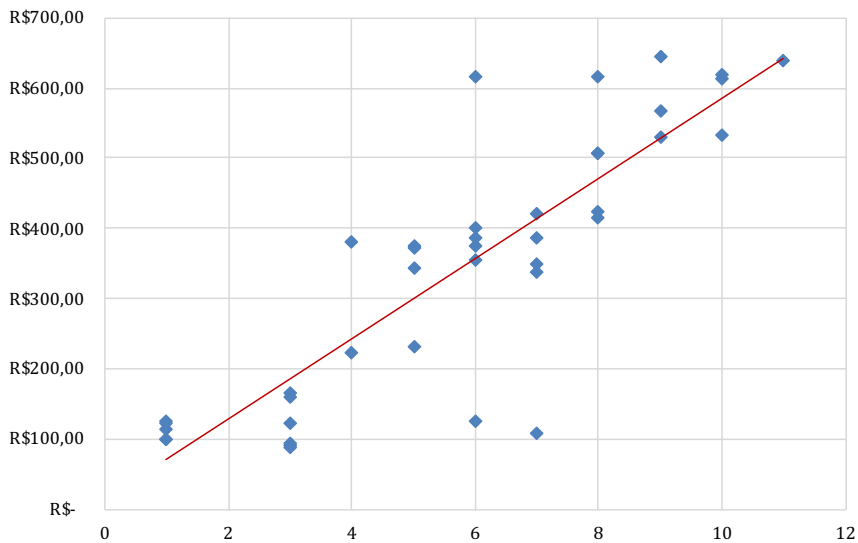
Graph 7 - Diagram of dispersion between the number of spending ministries and special secretariats and the number of parties in the government coalition



Source: authors

The greater fragmentation of the Lower Chamber and the greater number of ministries have implications for public finances. The cost of the federal government is positively correlated with the number of spending ministries and secretariats. Pearson's correlation is 0.65, and Graph 8 shows the respective scatter-plot diagram.

Graph 8 - Scatter-plot of the number of ministries and the cost of administration (in real terms)



Source: authors

As previously stated, there are other determinants of the federal government's costs, such as the binding of revenues and mandatory expenses, the inertial nature of the budget, and the strength of the civil service bureaucracy's lobbies and interest groups. Therefore, the association with data at a high level is not as strong when we compared cost as a percentage of GDP and the amount of expenditure-ordering ministries (linear correlation of only 0.16).

However, as Maciel, Gamboa, and Ghizellini (2020) state, correlation is not causation and has its limitations. The resulting measures of association indicate that the theoretical elements discussed in the previous chapters have validity and bring insights to the Brazilian case but are not conclusive. In the following subsections, we seek to evaluate hypotheses about the behavior of determinants of the variables "parties in the coalition," "number of spending ministries," and "cost expenses for the direct administration." As stated above, our analysis is limited by the number of observations because the data frequency is annual.

5.1 Determinants of the number of parties in the coalition

The first assessment is between the number of parties in the government coalition and party fragmentation in the Chamber of Deputies. We performed a simple linear regression model by Generalized Least Squares – since the White test points out the presence of heteroscedasticity (non-constant variance of the residuals).

Table 2 shows that the fragmentation coefficient is positive and statistically significant at 1%. This model, despite its limitations, indicates that the variation in the fragmentation of the Lower Chamber explains 89% of the variation in the number of parties in the government coalition.

Table 2 - Parties in the Coalition Government and Fragmentation in the House of Representatives by Generalized Least Squares, using observations 1980-2019 (T = 40)

Dependent variable: parties in the governing coalition				
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>
constant	0.347617	0.538992	0.6449	0.5228
Fragmentation	0.719831	0.0686944	10.48	<0,0001 ***
SSR	120.0452	Regression EP		1.777381
R-squared	0.742903	Adjusted R-square		0.736137
F (1, 38)	109.8039	P-value (F)		9.16e-13
Log-likelihood	-78.73731	Akaike criteria		161.4746
Schwarz criteria	164.8524	Hannan-Quinn Criteria		162.6959
rho	0.249687	Durbin Watson		1.285617

Source: authors.

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Due to the limited number of observations, no other explanatory variables can be included if we do not have sufficient degrees of freedom. There is no question that the normality tests of the residues from this first regression show that we must reject the null hypothesis that they are normally distributed.

5.2 Determinants of the number of expenditure-ordering ministries

The second analysis is about the relationship among the number of ministries and special secretariats, spending payers, and the number of parties in the governing coalition. Table 2 shows the results of the estimates. The White and Durbin-Watson tests, respectively, indicated that the OLS model presented heteroscedasticity and the autocorrelation of first-order residues. Thus, we estimated a model with robust errors and corrected for serial autocorrelation, as shown in Table 3.

Table 3: Number of Spending Ministries and Parties in the Coalition Government by Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: number of ministries and special expenditure ordering secretariats					
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>	
constant	4.58997	2.10473	2.181	0.0358	**
Parties	0.489321	0.241647	2.025	0.0503	*
Spending Ministries_1	0.684018	0.124188	5.508	<0,0001	***
Statistics based on weighted data:					
SSR	269.0239	Regression EP	2.733658		
R-squared	0.724475	Adjusted R-square	0.709168		
F (2, 36)	47.32971	P-value (F)	8.37e-11		
Log-likelihood	-92.99775	Akaike criteria	191.9955		
Schwarz criteria	196.9862	Hannan-Quinn Criteria	193.7861		
Rho	0.151987	Durbin h	1.503549		

Source: authors

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

The results of the above estimates show that the coefficient of parties in the coalition is positive and statistically significant at 10%. This implies that one of the main strategies of accommodating government coalition allies is by offering ministries or secretariats transformation into ministerial status. The limitations imposed by the degrees of freedom also apply to this model.

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5.3 Determinants of the cost of the direct federal administration

One of the aspects highlighted in relation to the behavior of cost expenses is the change in level after 1988. It was tested whether this change of mean between the two periods eventually occurs by means of a binary variable (dummy) that assumes the value 0 between 1980 and 1988 and the value 1 from 1989 onwards, as shown in Table 3. Since the dependent variable—costs in proportion to GDP—brought heteroscedasticity

(measured by the White test) and serial autocorrelation of residuals (“inertial effect” of current expenditure) pointed out by the Durbin-Watson test; estimates were made by using the Generalized Least Squares (GLS) method and incorporating the one-year lagged dependent variable (see Table 4).

Table 4: Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: cost expenses as a proportion of GDP					
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>	
constant	0.0321088	0.00612205	5.245	<0,0001	***
cons88	0.0228328	0.00519867	4.392	<0,0001	***
cost_expenses_1	0.312088	0.132730	2.351	0.0243	**
Statistics based on weighted data:					
SSR	124.4894	Regression EP		1.859580	
R-squared	0.865166	Adjusted R-square		0.857675	
F (2, 36)	115.4973	P-value (F)		2.17e-16	
Log-likelihood	-77.97145	Akaike criteria		161.9429	
Schwarz criteria	166.9336	Hannan-Quinn Criteria		163.7335	
rho	0.351067	Durbin h		3.919227	

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Source: authors

The results indicate, in addition to the inertial effect of cost expenditure, that the average for the post-1988 period is higher, indicating a “break” that was suspected when the data were presented previously. This result is compatible with Maciel, Gamboa, and Ghizellini (2020), who evaluated the expenditure of direct administration and the cost of the state-owned enterprises between 1985 and 2016. The Bai-Perron test performed by the authors also showed structural breakage in 1989. This is probably related to the binding of compulsory revenue and expenditures imposed by the 1988 Constitution, following the argument we made earlier.

Tables 5, 6, and 7 depict the results of the ideological evaluation of public spending behavior, as discussed in Tavares (2004) regarding the European case. The ideological classification of parties elaborated on by Coopedge (1997) was based on tables 5 and 6. Table 7 made a small change, classifying the PSDB as “Center,” together with the MDB (the only “Center” party in the original classification). For this purpose, the binary variables “Right” (which assumes value 1 for parties in this ideological spectrum) and “Center” (which assumes value 1 for parties in the middle of the ideological spectrum)

or “Left” (which assumes value 1 for left parties) and “Center” were evaluated.

Table 5: Cost expenses in proportion to GDP and Presidents of the Republic of the Center and Right Wings by Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: costing as a proportion of GDP				
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>
Const	0.00851020	0.00761229	1.118	0.2712
right	0.000725726	0.00565515	0.1283	0.8986
center	0.00256340	0.00293888	0.8722	0.3890
Cost_perc_1	0.892004	0.0969595	9.200	<0,0001 ***
Statistics based on weighted data:				
SSR	291.4278	Regression EP	2.885569	
R-squared	0.787524	Adjusted R-square	0.769312	
F (3, 35)	43.24151	P-value (F)	7.28e-12	
Log-likelihood	-94.55760	Akaike criteria	197.1152	
Schwarz criteria	203.7695	Hannan-Quinn Criteria	199.5027	
rho	-0.006197	Durbin h	-0.048630	

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Source: authors

Table 6: Cost in proportion to GDP and Presidents of the Republic of the Center and Left Wings by Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: cost as a proportion of GDP				
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>
Const	0.0106795	0.00628067	1.700	0.0979 *
center	0.000171058	0.00288943	0.05920	0.9531
left	-0.00243806	0.00411507	-0.5925	0.5573
Cost_perc_1	0.894846	0.106792	8.379	<0,0001 ***
Statistics based on weighted data:				
SSR	242.1843	Regression EP	2.630504	
R-squared	0.782497	Adjusted R-square	0.763854	
F (3, 35)	41.97251	P-value (F)	1.09e-11	
Log-likelihood	-90.94828	Akaike criteria	189.8966	
Schwarz criteria	196.5508	Hannan-Quinn Criteria	192.2841	
rho	0.017857	durbin h	0.149659	

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Source: authors

Table 7: Cost in proportion to GDP and Presidents of the Republic of the Center and Left Wings with PSDB classified as “center” by Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: cost as a proportion of GDP					
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>	
Const	0.0155681	0.00661402	2.354	0.0243	**
center2	-0.000589899	0.00315500	-0.1870	0.8528	
equerda2	-0.00164405	0.00314874	-0.5221	0.6049	
Cost_perc_1	0.825136	0.0899583	9.172	<0,0001	***
Statistics based on weighted data:					
SSR	279.8443	Regression EP		2.827641	
R-squared	0.725091	Adjusted R-square		0.701527	
F (3, 35)	30.77160	P-value (F)		6.36e-10	
Log-likelihood	-93.76670	Akaike criteria		195.5334	
Schwarz criteria	202.1876	Hannan-Quinn Criteria		197.9209	
rho	0.081244	Durbin h		0.613299	

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Source: authors

In all cases, the results show that the signs of ideological variables follow counterintuitively, that is, “right” governments tend to increase cost expenses and “left” governments tend to reduce costs (fiscal adjustments). However, for this universe of data, the results were not statistically significant. This implies that we cannot conclude that governments classified as “left” contained the costs of direct federal administrative costs.

Estimates are made to assess the determinants of the cost expenses in relation to ministries and special secretariats. In all of them, the models present a non-stationary process. Therefore, new estimates are made with the logarithmic difference model of real cost expenses and the number of ministries and special secretariats ordering expenditures.

Table 8: First Difference Logarithm of Cost Expenses as a proportion of GDP and Spending Ministries by Generalized Least Squares, using observations 1981-2019 (T = 39)

Dependent variable: <i>ld_real_cost_expenses</i>				
	<i>coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>p-value</i>
Const	-0.00332615	0.165849	-0.02006	0.9841
Spending_ministries	0.00172965	0.00570111	0.3034	0.7633
Statistics based on weighted data:				
SSR	404.4398	Regression EP		3.306177
R-squared	0.002482	Adjusted R-square		-0.024478
F (1, 37)	0.092044	P-value (F)		0.763294
Log-likelihood	-100.9480	Akaike criteria		205.8959
Schwarz criteria	209.2230	Hannan-Quinn Criteria		207.0897
rho	-0.042022	Durbin Watson		2.079910

Robust standard errors. P-value: * significant at 10%, ** significant at 5% and *** significant at 1%.

Source: authors

The results obtained are not conclusive. Although the largest number of ministries and expenditure-ordering departments positively influence the variation in federal cost, we cannot reject the hypothesis that the estimated coefficient is statistically different from zero.

Final remarks

Based on the literature review and the studies that precede this analysis, it is important to point out that even if we do not find results that confirm the initial hypothesis through statistical methods - on the relationship between coalition size and fragmentation and the increase in the size of government - it is possible from this investigation and preliminary results to understand that even in the face of a system of checks and balances, political agents use the tools available to meet their intentions, which may result not only in an increase in public spending but also in an increase in the scope of government action.

Data analysis points out the fragmentation of the Lower Chamber and the number of parties in the government coalition. Furthermore, data analysis shows that one of the main strategies of accommodating government allies is offering ministerial or

special secretariat positions.

The regressions indicate that from re-democratization onward and especially after the promulgation of the 1988 Constitution, cost expenses increase in level. They do not grow indefinitely but vary throughout and across the terms of the different presidents. No statistical significance was found between the ideological profile of the presidential mandate and cost expenses behavior as a proportion of GDP. Additionally, it cannot be concluded that the cost expenditures in the final period of the military dictatorship are statistically lower than in the period of re-democratization.

We observed that throughout the elections, except in a few years—such as the beginning of Fernando Collor's term, the years of Michel Temer, and the first year of Bolsonaro—the number of ministries and special secretariats ordering expenditures grew. This growth follows the number of coalition parties and, broadly speaking, the fragmentation of the Lower Chamber.

There is a positive association among the increase in ministries and special secretariats, the expenditure payers, and the cost of the direct federal administration as a proportion of GDP. However, we do not have elements, given the limitations of this analysis and the time span of our database, to assertively state that the increase in cost expenses was “caused” by the need to form a coalition with an increasing number of parties, in the search for achieving conditions of governability. There are other elements that determine the behavior of costs, especially the inertia caused by how the public budget is drawn up and the rigidity imposed by compulsory expenditures. However, relevant and interesting results were presented for discussion on the size of the Brazilian government, in addition to the inputs generated for future research.

Despite the limitations of the data, we once again identified the importance of analyzing the public budget from the perspective of Public Choice. It allows us to more deeply identify under what political conditions public spending varies, as advocated by Jorge Vianna Monteiro's pioneering work for Brazil. Only in this way is it possible to discuss and propose the so-desired reforms for the resumption of the country's growth.

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