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**Political party cycle and the generation of own revenues in the brazilian northeastern states**

*Ciclo políticos partidários e a geração de receitas próprias nos estados do nordeste brasileiro*

*Ciclo de partidos políticos y generación de ingresos propios en los estados del nordeste brasileño*

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**KEYWORDS**

Political Ideology. Own Revenues. Fiscal Management.

**Abstract:** The study focuses on whether party ideologies influence budget management, with an emphasis on own revenues, in the northeastern states of Brazil, in the period between 2000 and 2021, analyzing the generation of own revenues and their behavior in four-year cycles in the northeastern states of Brazil. To that end, the following hypotheses were defined: H1 - Political ideology optimizes the generation of own revenues to the detriment of transfer payments. H2 - According to the party cycles, there is a greater evolution in the generation of own revenues over the periods. The data was collected from the SICONFI and the TSE website. The obtained results were analyzed using the Polled approach, used when it is assumed that there is no unobservable individual variation between the units of analysis (heterogeneity) and using the panel data statistical technique, used to present repeated observations over time and/or units. By the end of the study, it was concluded that it was not possible to establish a statistically significant difference between party ideology and the ability of state governments in the Northeast region to raise their own revenue over the period analyzed; however, there was a behavior associated with the electoral cycle, in which state governments tend to use political measures to their own advantage. These theoretical and methodological contributions advance the understanding



of fiscal management and own revenue generation, offering new insights for future research in the area.

**PALAVRAS-CHAVE**

Ideologia Política.  
Receitas Próprias.  
Gestão Fiscal.

**Resumo:** O estudo tem por objetivo verificar se as ideologias partidárias influenciam na gestão orçamentária, com ênfase nas receitas próprias, dos estados do nordeste do Brasil, no período entre 2000 e 2021, onde foram analisadas a geração de receitas próprias e o seu comportamento em ciclos quadrienais, nos Estados do Nordeste do Brasil. Para tanto, foram definidas as seguintes hipóteses: H1 – A ideologia política, otimiza a geração de receitas próprias em detrimento aos repasses de transferências. H2 – Conforme os ciclos partidários há uma maior evolução na geração de receitas próprias no decorrer dos períodos. Os dados foram coletados no site do SICONFI e no TSE. Os resultados obtidos foram analisados através da abordagem de Polled utilizada quando se assume que não há variação individual inobservável entre as unidades de análise (heterogeneidade) e através da técnica estatística de dados em painel, utilizada para apresentar observações repetidas ao longo do tempo e/ou unidades. Ao final da pesquisa, concluiu-se que não foi possível estabelecer uma diferença estatisticamente significativa da ideologia partidária sobre a capacidade de arrecadação própria dos governos estaduais da região Nordeste ao longo do período analisado, contudo, foi verificado um comportamento associado ao ciclo eleitoral, onde, governantes estaduais tendem a utilizar de medidas políticas em benefício próprio. Essas contribuições teóricas e metodológicas avançam o entendimento sobre a gestão fiscal e a geração de receitas próprias, oferecendo novos insights para pesquisas futuras na área.

**PALABRAS CLAVE**

Ideología política.  
Ingresos propios. Gestión  
fiscal.

**Resumen:** El estudio tiene como objetivo verificar si las ideologías partidarias influyen en la gestión presupuestaria, con énfasis en los ingresos propios, de los estados del noreste de Brasil, en el período comprendido entre 2000 y 2021, donde se analizó la generación de ingresos propios y su comportamiento en ciclos cuatrienales, en los Estados del Nordeste de Brasil. Para ello, se definieron las siguientes hipótesis: H1 - La ideología política, optimiza la generación de ingresos propios a expensas de las transferencias. H2 - Según los ciclos partidarios hay una mayor evolución en la generación de ingresos propios durante los períodos. Los datos fueron recolectados del sitio web del SICONFI y del TSE. Los resultados obtenidos fueron analizados a través del enfoque Polled, utilizado cuando se asume que no existe variación individual inobservable entre las unidades de análisis (heterogeneidad) y a través de la técnica estadística de datos de panel, utilizada para presentar observaciones repetidas a lo largo del tiempo y/o unidades. Al final de la investigación, se concluyó que no fue posible establecer una diferencia estadísticamente significativa de la ideología partidaria sobre la capacidad recaudatoria de los gobiernos estatales de la región Nordeste a lo largo del período analizado, sin embargo, se verificó un comportamiento asociado al ciclo electoral, donde, los gobernadores estatales tienden a utilizar medidas políticas para su propio beneficio. Estas contribuciones teóricas y metodológicas avanzan en la comprensión sobre la gestión fiscal y la generación de ingresos propios, ofreciendo nuevas perspectivas para futuras investigaciones en el área.

## Introduction

Government fiscal policies, especially the management of current public revenue, represent one of the main ways in which political decisions have an impact on the economy. They affect both budget revenue increases and public investment, two crucial variables for a state's economic and social development. Expansive fiscal policies can generate a multiplier effect on public investment, contributing to the provision of collective goods and services and, consequently, improving the population's quality of life.

The increase of its own revenue has a positive impact on public investment. By increasing tax collection, the state strengthens its financial capacity and decreases its dependence on external resources, enabling investment in priority areas for economic and social development. Keeping the rate of public investment at high and stable levels reduces economic vulnerability to crises and promotes economic growth (Orair & Siqueira, 2018).

However, these fiscal policies are not formulated in an ideological vacuum; they are deeply influenced by the party ideologies of those in power. Traditionally, economic theory focused on the analysis of economic cycles without considering the influence of political factors. Kalecki (1943) was the pioneer in proposing the theory of political-economic cycles, which links politics and economics, leading the way for subsequent studies on the interdependence between these spheres.

Alesina and Rosenthal (1995) have advanced this line of research, arguing that party ideology significantly influences the management of public finances, including the generation of own revenues. For example, left-wing parties tend to adopt redistributive fiscal policies and increase the tax burden to finance social programs. In contrast, right-wing parties favor policies that encourage investment and economic growth. Baldissera and Araújo (2021) further add that, when implementing these policies, left-wing parties generally adopt expansionist actions on public spending, while right-wing parties seek to contain this spending in order to maintain fiscal and budgetary balance. The theory of political cycles, as defined by Downs (1957), seeks to understand the decision-making of

political parties and voters in a democratic environment. First, Santos, Rodrigues, and Zonatto (2019) demonstrated that public financial performance is affected by political cycles, suggesting that this influence can indicate political and democratic setbacks.

In this context, the change of political party in power can lead to significantly different policy directions, as observed in the literature on political cycles and fiscal results in Latin America (Guerra, Silva, & Aragón 2024). While there are multiple studies on party behavior in relation to budget management and fiscal responsibility (Sakurai, 2009; Sakurai & Menezes-Filho, 2011; Gouvêa & Girardi, 2019; Bartoluzzio & Anjos, 2020), there is still a gap in the direct analysis of the optimization of own revenue generation.

Given this gap, this research seeks to answer the following question: do party ideologies influence the generation of own revenues in the states of the Brazilian Northeast and, if so, how do they behave in party political cycles? The main goal is to study whether party ideologies affect budget management, with an emphasis on the generation of own revenues and the behavior of these revenues during the four-year cycles of government, between 2000 and 2022.

Understanding the political dynamics of the northeastern states is relevant to understanding how political cycles affect budgetary decisions in the public administration of federal entities. Most existing studies focus on public spending and municipal administration, leaving a gap in the analysis of own revenues. This research aims to contribute to the debate on fiscal management, helping to understand public policies aimed at collecting own revenues and budget management, promoting more sustainable and efficient development for Brazilian states.

## Theoretical elements of research

### Political and economic cycles

The theory of political-economic cycles suggests that economic fluctuations are influenced by the political decisions of governments (Nordhaus, 1975) and can generate cycles of expansion and contraction of the economy at regular intervals. There are four main models to

explain political-economic cycles: traditional opportunist, traditional political party, rational opportunist and rational political party.

The traditional opportunistic model proposes that governments adopt expansionary policies before elections to increase employment and economic growth in order to win votes. After elections, governments adopt restrictive policies to contain inflation and other economic pressures (Nordhaus, 1975). According to this model, political-economic cycles are caused by the opportunistic behavior of politicians.

The traditional political party model suggests that political-economic cycles are caused by the power alternation between political parties with different economic views. With each party adopting different economic policies, this leads to fluctuations in the economy (Hibbs Jr, 1977). The model proposes that elections are important in determining which political party will be in power and which economic policy will be adopted.

The rational opportunist model proposes that politicians embrace expansionist policies before elections not only to win votes, but also to benefit themselves personally. According to this model, politicians adopt policies that maximize their own economic well-being, with a view to re-election. After the elections, politicians adopt restrictive policies to contain inflation and other economic pressures (Rogoff, 1990).

The rational party model proposes that political parties adopt economic policies according to their ideological preferences, and not just with a view to re-election. According to this model, voters choose the party that best represents their economic preferences, and the elected party adopts economic policies according to its ideology (Alesina, 1987). This model implies that political and economic cycles are caused by the power shifting between parties with different economic visions.

Manjhi and Mehra (2019) suggest that the political party cycle is one that has clear fiscal preferences, indicative of the preferences of one group of voters or another. For example, one type of party government may prefer to reduce unemployment while another may be interested in reducing inflation.

The efficiency of government revenue management can be influenced by political and electoral priorities, according to the theory of

political-economic cycles. Politicians may prioritize the generation of own revenues from sources that are easier to collect, rather than more efficient sources, in order to increase popularity among the population (Manjhi & Mehra, 2019). However, this strategy could compromise the efficiency of tax collection and, consequently, the state's ability to provide quality public goods and services to society.

Sakurai (2009) observes that, in the debate on the theory of political cycles, party ideology and symbolic representation remain on the fringes of discussions, which makes it impossible to identify the influence of parties on the management of public resources.

Hibbs (1977) and Alesina (1987; 1988) have concluded that research that addresses ideological aspects in political cycles is usually based on two-party environments with clearly established ideological preferences. Such a scenario does not apply to the Brazilian context, which is characterized by a unique party-political dynamic, bounded by ideological incoherence and individual styles of representation, forming a favorable environment for this type of research (Carreirão, 2014; Salles & Guarnieri, 2019).

### **Political party leanings and ideology**

Political party ideology is a concept that shapes the perceptions and social evaluations of individuals in regards to political party groups. Homola et al. (2023) demonstrated that ideology, more than simple party affiliation, has a significant influence on how citizens perceive both their own party groups and opposing groups. That ideological bias results in increased social polarization, where ideological differences are perceived as more pronounced and divisive. Besides, the study highlights that social polarization is not only a reflection of partisan identities, but is largely driven by ideological disagreements.

For Reiljan, Garzia, Ferreira da Silva, and Trechsel (2023), political party ideology is an essential driving force in the way individuals perceive and evaluate political groups. In their study, the authors explored how ideology directly influences the emotions and attitudes of voters towards parties and their leaders. The research revealed that people tend to have more positive

feelings towards parties and leaders they support, while developing more intense negative feelings towards opposing parties and leaders. The phenomenon, known as affective polarization, is intensified by specific political contexts, such as presidential systems and levels of fragmentation in the party system. Therefore, party ideology not only organizes political preferences and identities, but also accentuates emotional divisions and polarized perceptions, reflecting the complex dynamics of political competition and loyalty in modern democracies.

Part of the literature recognizes that the left-right terminology has limited capacity to explain party behavior, as the concepts underlying the classifications vary significantly over time. Rabelo (2023) observed noticeable changes in electoral patterns over the years, with various interpretations of the degree of electoral volatility and the institutionalization of the party system. Bobbio (1995) states that the terms “right” and “left” represent conflicting political actions, with intermediate positions situated between the two extremes, seeking their own space.

Therefore, parties can occupy a central region, called the “center”. Given this position, new categories can be proposed to indicate the distance between parties and the extremes. For Jorge et al. (2020), this movement along the ideological scale is a reflection of the existence of a multiparty and fragmented system, where parties are linked to different ideological lines.

An important challenge related to the dynamics of political parties is that they are not static over time. The perceptions of these parties change as they participate in government, adopt public positions, endorse specific individuals and adjust their programs for elections. Such changes can also influence how analysts perceive the ideology of parties over time (Bolognesi, Ribeiro, & Condato, 2023).

From an empirical point of view, a classification of political ideology into five subdivisions on a left-right continuum scale would be even more difficult in the Brazilian case, due to the excessive pluri-partisanship, as well as the great regional diversities. Given the objectives of this study, and corroborating the arguments presented by the aforementioned authors, the second scale presented will be used, that is, the division only into

left, center and right.

Therefore, based on the literature mentioned in this paper and particularly on the classifications formulated in the studies by Botelho (2002), Carreirão (2006), Arvate, Avelino and Lucinda (2008), the ideological classification of the Brazilian parties on the right-left continuum is defined in this study, according to the following summary: Left-wing parties: PDT, PT, PSB, PMN, PPS, Pros and PC do B; Center-parties: PMDB (MDB) and PSDB; Right-wing parties: PTB, DEM, PP, PSD and PFL.

The criterion adopted resulted in three ideological blocs made up of three pairs of parties. On the right, the PPB and the PFL; in the center, the PMDB and the PSDB; and on the left, the PDT and the PT. These ideological classifications are predominant among Brazilian and foreign political scientists and correspond to those disseminated by the media. The intention here is not to discuss the intrinsic meaning or scientific correctness of this classification. For the purposes of this study, the predominant assessments of specialists, academic studies and the formal media interested in addressing the issue were adopted.

## Empirical Review

Nakaguma and Bender (2010) investigated the determining causes of the existence of electoral cycles in the fiscal policy of Brazilian states through the perspective of the voters' perception, using panel data with the presence of state fixed effects and dummy variables. The authors found that there is a reward for the opportunistic part of the cycles, both in terms of revenue and expenditure.

Meanwhile, Sakurai and Menezes-Filho (2010) have tested the hypothesis of opportunistic and party cycle models in Brazilian municipalities between 1989 and 2005, also using a panel of data. The authors concluded that, during election years, there was an increase in total and current expenditure, and a reduction in municipal investments, local tax collection and the budget surplus.

Bartoluzzio and Anjos (2020) carried out an analysis of the impact of political and electoral incentives on the fiscal management of Brazilian municipalities and their consequences for electoral



results. Using the FIRJAN Fiscal Management Index, the authors highlighted the importance of fiscal balance for re-election and emphasized the asymmetry of information between mayors and electorates as a factor that enables the adoption of opportunistic cycles. According to the authors, mayors can “strategize” to manipulate the fiscal result for a given year, given the delay in releasing fiscal data.

Baldissera and Araújo (2021), when analyzing the influence of the electoral year, change of public manager and electoral mandate on the indebtedness of Brazilian states, failed to establish a relationship between indebtedness and these factors, but found significant relationships with demographic and ideological aspects. Using panel data from the Brazilian states between 2000 and 2016, the authors highlighted the importance of considering these aspects in order to understand the fiscal policy of the states.

Similarly, Bartoluzzio, Costa, Ferreira, and Curi (2022) sought to understand the influence of ideological alignment between the governing political party and the dominant population on the fiscal and budgetary condition of Brazilian municipalities between 2009 and 2016. By using panel data and the Tobit model, the authors found no significant differences between right-wing and left-wing parties, but observed different behaviors in center parties.

In general, it is important to understand the impact of political cycles on budgetary decisions in public administration. Most studies have focused on expenditure and municipal administration.

Based on the presented studies, the following hypotheses were formulated:

- H1: Political ideology optimizes the generation of their own revenue to the detriment of transfer payments.
- H2: According to the party cycles, there is a greater evolution in the generation of own revenues over the periods.

In the next section, the methodological instruments and the variables selected for the econometric model will be presented.

## Methodological elements of research

### Political and economic cycles

The main object of this study is the Northeast region, more specifically the states that comprise the region, taking the period between 2000 and 2021 as its period.

Chart 1

#### Description of the used variables

Variable	Description	Literature
<b>C.arrecadacaoit</b>	Revenue capacity. Variable obtained from the ratio between the state's own revenue and current revenue..	Dependent variable
<b>Di_Esquerdai</b>	Dummy variable. Takes on a value of 1 if the governor's political party in year i is classified as left-wing and 0 otherwise.	Bartoluzzio et al. (2022)
<b>Di_Direitai</b>	Dummy variable. Takes on a value of 1 if the governor's political party in year i is classified as right-wing and 0 otherwise.	Bartoluzzio et al. (2022)
<b>Trendt</b>	Trend. Variable that captures the effect of time (deterministic trend).	Nakaguma e Bender (2010)
<b>Trendpolt</b>	Political trend. Trend over electoral cycles over time. This variable takes on a value of 1 for 2002, 2 for 2006, 3 for 2010, 4 for 2014, 5 for 2018 and zero for all other years	Sakurai e Menezes-Filho (2010)
<b>ALPRESi</b>	Alignment with the president. This variable assumes 1 if the governor is from the same coalition as the president-elect and 0 otherwise.	Baldissera e Araújo (2021)
<b>l_POPit</b>	Logarithm of the estimated population.	Baldissera e Araújo (2021)
<b>l_ReceitaCTran sfit</b>	Logarithm of revenue from federal transfers	Sakurai e Menezes-Filho (2010)

Source: Elaborated by the authors (2023)

The required information for the tax collection capacity variable calculation was obtained from the National Treasury Secretariat (STN, 2023), specifically from the Brazilian Public Sector Accounting and Fiscal Information System (Siconfi).

In order to define the ideological position, information provided by the literature mentioned throughout the paper was used, highlighting the works of Botelho (2002), Carreirão (2006), Arvate, Avelino and Lucinda (2008). This resulted in the following classifications:

- Left-wing parties: PDT, PT, PSB, PMN, PPS, Pros and PC do B;
- Center-parties: PMDB (MDB) and PSDB;
- Right-wing parties: PTB, DEM, PP, PSD and PFL.

The information on political parties and coalitions were gathered from Brazil (2023), through the TSE's platform for reporting election results. The dummy variables were then calculated manually using Stata software. To avoid the problem of perfect collinearity, the dummies were inserted respecting the Di-1 and Dt-1 rule. In this way, the effect of the center political parties in the second year of government is represented in the intercept, while the parameters of the binary variables provide us with the differential of the respective dummies (Wooldridge, 2010).

In addition to the control variables Trend and trendpol, the variables ALPRESi, l\_POP and l\_ReceitaCTransf were added in an attempt to control the model for demographic, political and budgetary factors. Given the presence of non-linearity, the square of the trendpol variable was added, described as trendpol^2. The use of these trend variables has already been done in the works by Brender and Drazer (2005) and Nakaguma and Bender (2010), on the grounds that “[...] the learning and experience gained in successive elections contribute to raising the level of political monitoring, thus reducing the intensity of the cycles” (Nakaguma; Bender, 2010, p. 7).

## Panel Data

The panel data method is a statistical technique used to analyze data with repeated observations over time and/or in different units, in other words, it is a way of organizing longitudinal data. Several approaches exist for analyzing panel data, including the traditional Pooled, fixed-effects and random-effects formulas, which can be seen in Table 2.

Chart 2

### Approach, Pooled, fixed effects and random effects

Pooled	Fixed effects	Random effects
$Y_{it} = \beta_0 + \beta_1 X_{it} + u_{it}$ (1)	$Y_{it} = \beta_0 + \beta_1 X_{it} + u_{it} + \alpha_i$ (2)	$Y_{it} = \beta_0 + \beta_1 X_{it} + v_{it}$ (3) $v_{it} = \alpha_i + u_{it}$ (4)

Where:

$Y_{it}$  is the dependent variable for unit  $i$  at time  $t$ ;  $X_{it}$  is the independent variable for unit  $i$  at time  $t$ ;  $\beta_0$  is the regression intercept;  $\beta_1$  is the regression parameter or linear coefficient;  $u_{it}$  is the stochastic error term;  $\alpha_i$  is the fixed effect for unit  $i$ , or idiosyncratic error term;  $v_{it}$  is the compound error term.

**Source:** Elaborated by the authors based on Wooldridge (2010)

The Pooled approach (Equation 1) is used when it is assumed that no individual unobservable variation exists between the units of analysis (heterogeneity). In this case, the data is grouped into a single data set and the independent and dependent variables are analyzed as if they were measured at a single point in time. Fixed effects (Equation 2) is commonly used when there is unobservable individual variation between the units of analysis. This approach is useful when heterogeneity is considered fixed, in other words, it does not vary over time. While the random effects approach (Equation 3) is similar to the fixed effects approach, however, it assumes that the individual effects are random and follow a normal distribution.

The choice of approach requires, above all, empirical knowledge about the variables to which you want to establish relationships, taking into account factors such as the data used, the answer you want to get from the model, and if possible, the ability to generalize the results obtained. However, there are statistical tests that can help with decision-making, such as the Chow, Hausman and Breusch-Pagan tests.

The Chow test is used to test the null hypothesis that the regression coefficients are equal in two data subsamples. This test can also be used to evaluate the hypothesis that the individual units have different relationships between the explanatory variables and the response variable. In other words, it tests whether the Pooled model is applicable and has the alternative hypothesis that

the fixed effects model fits the data better.

On the other hand, the Hausman test is used to test the null hypothesis that the fixed effects are uncorrelated with the random errors. Its null hypothesis is that the random effects estimator is the ideal one and if the null hypothesis is rejected, then the fixed effects estimator is the most suitable one.

The Breusch-Pagan test is used to test the null hypothesis that the random errors are homoscedastic (that is, they exhibit the same variance in all the individual units). The null hypothesis indicates the use of the Pooled estimator, while the null hypothesis is rejected, which indicates that the fixed effects approach is appropriate.

### Empirical strategy

Based on the literature and empirical evidence presented throughout the paper, the employed strategy was based on the most relevant variables that best suited the proposed problem. Equation (5) describes the econometric model adopted.

Chart 3

#### Econometric model

$$\begin{aligned}
 C. arrecadação (5) &= \beta_0 + \beta_1 Esquerda_i \\
 &+ \beta_2 Direita_i + \beta_3 trend_t \\
 &+ \beta_4 trendpol_t \\
 &+ \beta_4 trendpol^2_t + \beta_5 Alpres_i \\
 &+ \beta_6 \log(pop)_{it} \\
 &+ \beta_7 \log(ReceitaCTransf)_{it} \\
 &+ u_{it}
 \end{aligned}
 \tag{5}$$

Source: Elaborated by the authors (2023)

Therefore, the aim of this study is to verify whether there are significant differences explained by ideological views (right and left) and the impact of the political cycle on tax collection capacity. The ALPRES<sub>i</sub> variable is expected to take on a negative value, since a governor aligned with the acting president tends to receive more federal funds and therefore needs less fiscal effort to balance his budget. This also implies that the ReceitaCTransf variable is expected to take on a negative value.

### Presentation and discussion of results

The predisposition of the northeastern electorate to elect politicians with a left-wing ideological bias is a widely known and proven phenomenon. This tendency can be seen in the significant votes received by the last presidents who represented this political current in the last elections. In the state elections, the reality is no different, as shown in Table 1. During the analyzed period, more than half of the governors elected belonged to left-wing parties, while only around 25% were center parties and approximately 18% were right-wing parties.

Table 1

#### Descriptive statistics

Region/States	Political party ideology			Alignment with the president	
	Right	Center	Left	Yes	No
NE	36	48	114	114	84
AL	0	16	6	18	4
BA	6	0	16	7	15
CE	0	6	16	11	11
MA	6	4	12	14	8
PB	0	10	12	18	4
PE	0	6	16	18	4
PI	2	0	20	3	19
RN	12	2	8	18	4
SE	10	4	8	7	15

Source: Elaborated by the authors (2023)

This behavior has been studied in academic research, including by Martins et al. (2024), which have investigated this behavior. The authors associated this tendency with the receptiveness of voters to public policies that considerably favored the states of this region during the administration of these governments. In addition, the welfarism practiced by left-wing governments is also considered a form of compensation for the social inequality present in the region.

According to the data presented in Table 1, it can be seen that most of the governors elected in the period in question were from the same political party as the incumbent president. This may be one of the explanations for the considerable increase in revenue from transfers from the federal government, as shown in Table 2, which makes these states highly dependent on this type of resource. It is important to note that, on average, just over half of the region's total revenue comes



from its own resources.

Table 2  
Descriptive statistics

Region/States	Revenue capacity (%)	Population (millions)		Federal transfer revenue (growth)	
		2000	2021	R\$ Bilions	(%)
Mean		2000	2021		
NE	55,10	46,77	57,50	6,30	87,74
AL	50,09	2,74	3,37	17,44	255,63
BA	67,82	13,14	14,95	11,57	177,08
CE	61,97	7,20	9,24	10,37	163,56
MA	46,70	5,48	7,03	6,88	117,39
PB	52,67	3,40	4,06	12,94	181,99
PE	65,33	7,64	9,66	6,62	92,86
PI	45,70	2,75	3,29	6,20	112,64
RN	55,48	2,68	3,56	5,83	92,54
SE	50,12	1,74	2,34	84,14	1283,84

Source: Elaborated by the authors (2023)

Table 3 presents the results of the estimated models, as well as the diagnostic tests that helped choose the most appropriate model.

The Hausman test has the null hypothesis that the random effects approach (3) is preferable to the fixed effects approach (2). As the p-value is low, GLS estimates are not consistent and therefore, Fixed Effects are more suitable when compared to Random Effects. However, both the Chow test and the Breusch Pagan test indicate that the pooled technique fits the data better. Therefore, the interpretations will be based on model (1) using the pooled approach.

Through White's test, whose null hypothesis is that the model is homoscedastic (test statistic equal to 60.89 and p-value equal to 1.55076e-08), it was observed that it would be necessary to use a robust variance and covariance matrix to cover this characteristic.

The intercept exhibited a negative sign and statistical significance. However, this parameter alone does not necessarily have economic significance, and it is necessary to analyze it in conjunction with the other variables, especially the dummies. As for the ideological variables, no significant differences could be identified for the states and time period analyzed in relation to right-wing and left-wing parties, as was found in the

work by Baldissera and Araújo (2021), given that the parameters found were not statistically significant at 10%.

Table 3  
Econometric model results

Dependent variable:	Pooled (1)	Fixes effects (2)	Random effects (3)
<b>C.arrecadacao</b>			
<b>Constant</b>	-69,8928 (0,0000)** *	78,432 (0,8489)	-75,2386 (0,0000)* **
<b>Left</b>	0,7884 -0,2213 3,3945	0,858 (0,5476)	-0,0534 -0,9268 4,3872
<b>trendpol</b>	(0,0000)** *	(0,0225)* *	(0,0000)* **
<b>sq_trendpol</b>	-0,6600 (0,0001)** *	-0,7045 (0,0600)*	-0,9334 (0,0000)* **
<b>Right</b>	2,3072 (0,1904)	2,5922 (0,1645)	1,2912 -0,3451
<b>ALPRES</b>	-0,1608 (0,9079)	0,1496 -0,9115	-0,2331 -0,8543
<b>1_POP</b>	0,6652 (0,0260)**	-9,1608 -0,7351	0,4003 -0,0513
<b>1_ReceitaCTransf</b>	5,2614 (0,0000)** *	5,2614 (0,0000)* **	5,5918 (0,0000)* **
<b>trend</b>	- 0,2471894 09 (0,0000)** *	-0,1489 -0,6099	- -
<b>n° de obs: 198</b>			
<b>R-square: 0,3013</b>	<b>B-P test: 0,3864</b>	<b>Chow test (F): 0,3864</b>	<b>Hausman test: 106,04</b>
<b>F (8, 8) : 70,89146 (0,0000)***</b>	(0,0496)** *	-0,9514	(0,0000)* **

Source: Elaborated by the authors (2023)

Note: \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01; (p-value between the brackets below the statistics)

The same occurred with the variables of alignment with the federal government. One possible justification is that, as seen in Table 1, most of the elected governors in the region were aligned with the acting president, and furthermore, there was a significant increase in transfers to the states in the region over the examined period, so that, on average, all the states received considerable flows of federal resources over the period analyzed.

The variables 1\_POP and 1\_ReceitaCTransf have also revealed a positive sign and statistical significance at 5% and 1%, respectively. In other words, the demographic and budgetary dimensions

have a positive impact on tax collection capacity, since population growth has a positive impact on tax collection capacity, since there are more citizens subject to taxation, *ceteris paribus*. As for the variable Revenue from transfers, there is a positive relationship between state revenue (own revenue), which is not what was expected.

These results indicate that state governments do not generally “settle” when they receive more federal funds, which can be considered positive for state management, given that, as Bartoluzzio and Anjos (2020) pointed out, municipalities that are more capable of generating cash or exploiting their capacity to generate income through tax revenues tend to have a more favorable fiscal situation.

As for the trend analysis, both the deterministic trend and the trend associated with the political cycle (trendpol) were statistically significant. The variable trend showed a negative sign, which can be explained by the specific characteristics of the economic cycle itself and conjunctural aspects of the Brazilian economy, such as the occurrence of economic and political crises and movements in the world economy, such as international conflicts and the occurrence of the Covid-19 pandemic.

Regarding the trend associated with the electoral cycle, the variable at the trendpol level had a positive sign, which contradicts Brender and Drazer's (2005) theory that the political cycle manipulation tends to decrease over time, so that economic agents, tax legislation or government authorities are not realizing or have not taken effective measures to combat budget manipulation throughout the political cycle. As for the behavior of the quadratic variable, as a control for the non-linearity of this trend, it behaved as expected, showing a negative sign, which implies that this manipulation of the cycle does not occur indiscriminately.

As for the coefficient of determination (R-squared), the model is well adjusted, given the complex nature of the dependent variable. More specifically, around 30.13% of the variations in the tax collection capacity of the states analyzed over the time period of the study are explained by variations in the model's explanatory variables. While the F-test indicates that the hypothesis that the parameters are not jointly statistically significant is rejected at the 1% level.

Therefore, based on the results obtained, it was not possible to establish a statistically significant difference between party ideology and the revenue-raising capacity of state governments in the Northeast region over the period analyzed. However, there was a behavior associated with the electoral cycle, where state governors have a tendency to use political measures for their own advantage.

Such results are of the utmost importance, as they are in line with what the literature indicates and can be useful in pointing out behaviors that can be detrimental to public management, and reaffirming the importance of state governments seeking other forms of revenue, given that overdependence on federal transfers, in addition to generating budget imbalances, can jeopardize investment capacity in priority areas, which can be detrimental to the growth/development process as a whole.

## Final considerations

This study aimed to verify whether party ideologies influence the budgetary management, with an emphasis on own revenues, of the states of Northeastern Brazil, between 2000 and 2021, by analyzing the generation of own revenues and their behavior in four-year cycles. To fulfill the purpose of the research, the Pooled approach and the statistical technique of panel data, which presents repeated observations over time and/or units, were used.

The research hypotheses were established as follows: H1: Political ideology optimizes the generation of own revenues to the detriment of transfer payments; and H2: According to party cycles, there is a greater evolution in the generation of own revenues over the periods.

It was concluded at the end of the study that it was not possible to establish a statistically significant difference between party ideology and the own revenue capacity of state governments in the Northeast region over the analyzed period. However, there was a behavior associated with the electoral cycle, where state governments tend to use political measures to avoid increasing their own revenue collection. In other words, tax collection or the optimization of collection processes was lower in pre-election periods.

These data answer the question of the study by showing that, in isolation, within the political cycles, only in pre-election and election years, there is a significant influence on revenue collection, with a reduction in own revenue, generally due to lower tax collection. As far as the party cycle is concerned, it was found that political ideology has no significant influence on the generation of own revenue, considering the interest variables in the model.

Such theoretical and methodological contributions advance the understanding over fiscal management and the generation of own revenues, offering insights for future research in the area. Further research could analyze state governments throughout Brazil, relating the results to party alignment between the state and federal governments, as well as the municipalities' alignment with the state and federal governments.

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