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CREATION OF MUNICIPALITIES, FISCAL ILLUSION AND CAPTURE EVIDENCE FROM BRAZILIAN MATOPIBA REGION

CRIAÇÃO DE MUNICÍPIOS, ILUSÃO FISCAL E CAPTURA EVIDÊNCIAS DA REGIÃO BRASILEIRA DO MATOPIBA

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ABSTRACT

This article empirically evaluates the effects of the creation of new municipalities in the states of Maranhão, Tocantins, Piauí and Bahia (MATOPIBA) on the municipalities' budget in terms of revenues and expenses (social, economic and overhead). Estimations made using panel data for fixed effects using the differences-in-differences method between 1995 and 2011 produce relevant evidence. First, the dismemberment of new municipalities contributed to an increase in the size of governments on the tax side. On the expenditure side, there was a reduction in per capita social expenditure, indicating a possible fiscal illusion in these municipalities. There was also an increase in per capita overhead expenses, which may suggest a capture of public resources in these municipalities. The use of resources on the expenditure side can vary significantly depending on whether they are funded by own or transferred revenues, reinforcing the hypothesis of fiscal illusion in these local governments.

Keywords: Decentralization, Fiscal Illusion, Capture, Difference in Difference, MATOPIBA
JEL: H21, H41, H77

RESUMO

Este artigo avalia empiricamente os efeitos da criação de novos municípios nos Estados do Maranhão, Tocantins, Piauí e Bahia (MATOPIBA) sobre o orçamento dos municípios pelo lado das receitas e das despesas (sociais, econômicas e de overhead). As estimações realizadas por vias de dados em painel para efeitos fixos pelo método das diferenças em diferenças entre 1995 e 2011 produzem evidências relevantes. Em primeiro lugar, o desmembramento de novos municípios contribuiu para o aumento do tamanho dos governos pelo lado dos tributos. Pelo lado das despesas, evidenciou-se uma redução das despesas sociais per capita, indicando possível ilusão fiscal nestes municípios. Também se verificou elevação das despesas em overhead per capita, o que pode sugerir captura de recursos públicos nestes municípios. A aplicação dos recursos pelo lado das despesas pode variar sensivelmente se os mesmos são financiados por receitas próprias ou transferidas, reforçando a hipótese de ilusão fiscal nestes governos locais.

Palavras-chave: Desmembramento, Ilusão Fiscal, Captura, Diferenças em Diferenças, MATOPIBA

Introduction

One of the characteristics of the Brazilian economy is its regional heterogeneity, there are many specificities in different parts of the country and the implications of the public policies are distinct. During the 1990s and 2000s, Brazil presented an important process of proliferation of the municipality, the empirical literature has shown many results of this phenomenon in many aspects. But can the effects of the aggregate regions be extended to a specific region? According to part of the theoretical literature, the most decentralized forms of organization of a federation can improve the allocative function of the public budget to meet the needs of the citizens compared to most centralized governments. Another part of the literature has shown that the presence of the fiscal illusion can lead to an underprovision of these public goods because voters don't have information about the real size of government and its costs. It can favor the emergence of the rent seeking groups, and the capture of public resources.

In Brazil, institutional aspects can vary among different regions. In the last decade, many municipalities have been created and the agricultural frontier has been shifted to the North and Midwest regions. Throughout the centuries, the territorial occupation in Brazil kept a close relationship with agricultural frontier expansions. The occupation of the Northeast during the sugar cane cycle, the Southeast during the gold and coffee cycle, and now due to the corn, cotton, and soybean cycle have driven national development towards the Midwest and North, incorporating the Brazilian states of Maranhão, Tocantins, Piauí, and Bahia, the region popularly known as MATOPIBA. This was only possible due the EMBRAPA revolution and the scientific investments that made the Brazilian cerrado productive.

Since the enactment of the 1988 Constitution, Brazil went through an intense process of municipalization. However, in the North and Midwest regions, there are still demographic gaps and precarious infrastructure. What motivated this research is to know if, due to the specific characteristics and the expansion of the Brazilian agricultural frontier, it has led to greater allocative efficiency in the new municipalities of MATOPIBA. Who was favored in the distribution of the municipality? The increase in competition between local governments has improved the allocation in favor of the population? Or have small groups of the influents rent seeking benefited from the fragmentation? The objective of this article is to comprehend how the municipality creation has affected the budget organization in local governments for this specific region of Brazil. The methodology used in this article is the differences in differences applied to panel fixed effects for annual data between 1995s and 2011s. Some procedures are realized as robust.

The decentralization process in Brazil had some specifics, is possible to find more specifics when evaluating the behavior of some regions. Because of this, there are two hypotheses in this article, the first is that the most decentralized organization of a region can approximate the citizens of the government's decisions, decrease the information asymmetry and improve the allocation of public goods, under the penalty of the citizens *"vote with their feet"*. The second hypothesis is that due to Brazilian institutional peculiarities, the channelling of fiscal grants for financing local governments' budgets, has caused fiscal illusion, and it has provoked the capture of public resources on the expenditure side and the increase of the government's size on the revenue side of the budget.

This article is divided into seven sections after this brief introduction. Section two presents the theoretical literature on which the hypothesis of this article is based. The third section will recount some historical aspects of the decentralization phenomenon in Brazil. The fourth section will discuss about the MATOPIBA. The fifth section will specify the models and the empirical technique used in the estimations. The sixth section will present the results and the analysis, finally the seventh section will be some final considerations.

2 – Theoretical Review

The literature about public finance considers the better allocation of public goods at local levels of government (Tiebout, 1956). One argument is that the local provision of public goods is more efficient than the central government because the nearness between citizens and politician has reduced the information asymmetry (Oates, 1972), and preferences are revealed (Gruber, 2009) mainly at the moment of elections (Tullock, 1959; Wyckoff, 1988). Besides that, this proximity between voters and politics also favors a better allocation of public resources, because the voter's influence on the government is greater at local levels than central governments, easing the development of accountability institutions (Abrucio and Loureiro, 2004).

The main assumption for the defense of the local governments is the better efficiency of the allocation of public goods, according to Tiebout (1956) in a federalist model featured for concurrency between governments, if the allocation is not efficient, the citizens can "*vote with their feet*". This efficiency defended by these authors also occurs on the tax side, because at local levels governments can not only identify the preferences of voters and the payment disposition and capacity (Lindhal, 1919). In this sense, another advantage of fiscal decentralization is that concurrency has become an instrument of control of the government's size (Ruggieri, 1993). It can cause a disadvantage to the local provision of public goods, because many kinds of these goods depend on a large scale for their supply, and if the concurrency between governments reduces their size, can unviable the provision of some goods (Oates, 1999).

However, it is possible that the local provision of public goods is not efficient, some authors argue that it occurs in the presence of the fiscal illusion (Puviani, 1903). The main feature of the fiscal illusion presence is the inability of voters to identify the real size of the government. In other words, in the presence of the fiscal illusion, citizens tend to underestimate the costs of the public sector and overestimate its benefits. The causes of fiscal illusion can be different in many kinds of situations, for example, in macroeconomic policy, the fiscal illusion can be caused by inflationary financing of the government budget (Cagan, 1956). But at local levels, it can be caused by fiscal grants presence from more comprehensive government levels funding the local government budget, in a system of vertical imbalances (Davoodi and Grigorian, 2007).

There are many consequences of the fiscal illusion in the economy. The first consequence is the increase in the size of the government (Buchanan and Wagner, 1977). The concern about the government size is traditional in literature and the main consequence of the fiscal illusion, Wagner (1890) wrote about the famous law of the increase of government spending and, consequently, size, and Friedman (1798) proposed the "*starve the beast*" to refer to public expenditure growth, and Brennan and Buchanan (2000) argued that there is a tendency of governments to increase their size, and it can occur through the budget expansion.

Another consequence is the favoring the emergence of rent seeking groups (Niskanen, 1972; Krueger, 1974). The assumption of democracy as a political regime, and the existence of information asymmetry in a public good provision, can favor the organization of groups with influence about the allocation decisions, in a kind of "*collusion hypothesis*" (Pereira, 2000). These groups use their influence to look for profit and cost a large share of the budget, this share is called "*capture*" (Mendes, 2002).

In the federalist regime, the rent seeking can occur in two ways: the first consists of the tax side when the local government receives fiscal grants from more comprehensive government levels and chooses not to charge a tax from its residents. If it's verified, it can be assumed that the government incurs a low "*fiscal effort*" (Fenochieto and Pessino, 2013). A

low fiscal effort is characterized by favoring resident citizens and charging non-residents in the local budget. The second way in which rent-seeking normally captures public resources is through public expenditures, and it occurs when the government allocates in compositions that do not favor the "*median voter*" or the majority of citizens, but when the government channels public resources for compositions that favor the bureaucratic or political elite.

3 – Decentralization in Brazil

The history of municipality creation in Brazil followed some peculiarities. It was not until the mid-60s, after the inauguration of Brasília, that the urban population became larger than the rural population[1] (Furtado, 2006). Before the urbanization of the country, the process of decentralization presented one cyclical behavior depending on the political regime, in general, when there was more democracy there was also more decentralization, and when there was less democracy or dictatorship, there was more centralization (Afonso *et al.*, 1998; Mora e Varsano, 2001). For instance, the period historically known as the *República Velha* was characterized by more decentralization, then there was the Varguista dictatorship, known as *Estado Novo*, in which, according to Serra and Afonso (1999), there was more centralization. The same tendency of proliferation of municipalities was observed during the *Quarta República* (1945 – 1964), and after that, there was another period of centralization during the military government (1964 – 1985).

With the return of the democracy and after the promulgation of the Constitution of 1988, which delegated to the state governments the regulation for the creation of new municipalities, it began a new period of decentralization in Brazil. In the mid-80s there were in Brazil around 3.974 municipalities constituted, in 2005 its number had passed to 5.564, it meant that was created in Brazil 1.561 new municipalities (Cigolini e Cachatori, 2012). Besides that, the new Constitution reinforced some of the instruments for financing these municipalities, increasing the contribution of resources from central to local governments. For example, the percentage of the income tax, and tax on industrialized goods in the Fundo de Participação dos Municípios (FPM) was increased. The Fundo de Manutenção e Desenvolvimento da Educação Básica (FUNDEB) was also created in 1996.

This phenomenon provoked many imbalances in the Brazilian economy, the quantity of resources channel from central to local governments has increased and contributed with macroeconomic imbalances. In 1996, the Brazilian government approved the Constitutional Amendment 15/1996a, which binds the new creation of new municipalities to the demographic criteria for each region of the country. For this new law, the Brazilian Northeast was submitted to more rigorous standards of subdivision, according to which the minimum population for the creation of new municipalities is 7.000 inhabitants, while in the other regions of the country, the population minimum is 5.000 people, and in the Midwest region, the population minimum is 3.000 to permit the creation. But in general, municipalities were created in 1991, 1993, 1997, 2000 and 2005, after these years, the Brazilian dismemberment process has stopped.

There are many studies dedicated to investigating the cause of this process of federal decentralization. Bremaeker (1992) and Noronha (1997) point to the neglect of the original community over the divided region. Mota Junior (2002) argues political interests as the motivation of the secession. While Tomio (2002) points out the existence of a cultural standard, in which the society believed that dismemberment as something beneficial to all.

4 – The MATOPIBA

The name MATOPIBA is given to a region comprised in the North and Northeast of Brazil, that comprises municipalities of the states of Maranhão, Tocantins, Piauí and Bahia. The territory called MATOPIBA does not include the entire territory of these states, but an

area duly delimited by Decree 244/15 of the Ministry of Agriculture, Livestock and Supply (Andrade, 2020), which, according to Embrapa, includes a total of 337 municipalities, that concentrate, according to Bolfe et al. (2016), a population of 5.9 million. According to EMBRAPA, the region also has 324 thousand agricultural establishments, 46 environmental protection units and 35 indigenous demarcation areas, in addition to 781 agrarian reform settlements.

Due to its predominantly flat relief, MATOPIBA, has about 80% of its territory composed, according to Garcia et al. (2018) by flat and wavy areas. This region has recently consolidated itself as an important food producer and, according to the Companhia Nacional de Abastecimento (CONAB), has been responsible for displacing the national agricultural frontier. Its main production item is soy, however crops such as cotton and rice are also important in this region.

Since this is an area compposed predominantly of Cerrado biome, that is, 90.4% of the territory defined as MATOPIBA is within this biome, the municipalities of these states were selected as a proxy for the purpose of this article.

The importance of studying the creation of municipalities in the MATOPIBA region occurs, in addition to its economic importance, because the State of Tocantins was created in 1988, being the most recent Brazilian state. In addition, of the 1,438 municipalities created in Brazil after the 1988 Constitution, 375 were created exactly in the four states that make up this region, that is, about 26% of the total number of municipalities created in Brazil during the democratic period, with the State of Tocantins leading this process of emancipation of municipalities, which lead to the great majority of dismemberments. Table 1 shows the number of municipalities created in the MATOPIBA states after 1988.

Table 1 - Evolution of the Number of Municipalities in the States of MATOPIBA

State	Municipalities in 1988	Municipalities in 2005	Createds Until 2005
Maranhão	132	217	85
Tocantins	6	139	133
Piauí	116	223	107
Bahia	367	417	50
Total MATOPIBA	621	996	375

Source: Instituto Brasileiro de Geografia e Estatística (IBGE)

The distribution of the municipalities created in the states that make up MATOPIBA is quite uneven, likewise, the demographic profile of these municipalities is quite heterogeneous. Regarding the states of Tocantins and Piauí, the profile of municipalities created is, according to Tomio (2002), predominantly composed of populations of less than 5.000 inhabitants, with respectively 62% and 72% of the municipalities created having a population in this demographic range. Regarding those created in the States of Maranhão and Bahia, there is a balance in the creation of municipalities with a population greater than 5.000 inhabitants, with 86% and 100%, respectively.

5 – Empirical Evidence

Since the beginning of the dismemberment around the 1990s, many consequences were evaluated for the literature. There were implications for the way local governments organized their budget, for instance, the proliferation of municipalities causes a decrease of the fiscal effort. As already mentioned, this process was characterized by the channel of resources from the central government to the municipalities, looking for equalizing the regional differences between heterogeneous regions in Brazil through some compensatory instruments (Blanco and Carvalho, 2001). The presence in a large scale of fiscal grants in de municipalities budget gives to the local politic the option that doesn't use your tax instruments for financing the public goods of their population (Salomão and Saiani, 2019). According to Guedes and

Gasparini (2007), the cause of the increase of the size of local government is not the local's tax increase, but the presence of subsidies (Cossio, 1998).

One of the specified aspects of the Brazilian dismemberment process was that all the municipalities created had a population of less than 20.000 inhabitants (Cigolini and Cachatori, 2012). According to Gomes e McDowell (2000), three factors are consequences of the dismemberment: first, this process caused the transfer of resources from the larger and medium-sized municipalities to the small and micro localities, causing difficulties for the financing of public goods in the large centers. Second, these small municipalities are not poorer than larger and medium ones. Third, since grants fund the budget of small municipalities, these resources are channeled for legislative functions instead of public goods that supply the necessities of the average voters. Evidence of capture is shown in Salomão and Santos (2023), the authors estimate Probit/Logit panel data and verify that an increase at fiscal grants increases the probability that the municipality increases its spending on workers.

The sum of the effects of the increase in the size of government and the elevation of the grant's share in the local budget has caused distortions in allocative functions of the local public sector. In this sense, Mendes (2002) and Mendes and Rocha (2003) estimate the increase in public expenditure with legislative functions, a phenomenon that this authors call "*capture*". In the same sense, Salomão and Saiani (2019) showed the decrease in social per capita expenditure and the expansion of overhead spend in Brazilian municipalities.

Many other evidence is pointed out by literature because of the decentralization process in Brazil, for instance, Rezende (1997) argues that had decreased the economic expenditures in Brazil. Also, social indicators were affected by the creation of municipalities, was verified worsened in the provision of public goods like IHD, years of study and illiteracy, public goods also were affected like garbage, sewage collected and the electricity access (Mattos *et al.*, 2013). Already Saiani (2012) showed that basic sanitation services improved caused by the increase in competition between local governments. Also, Rocha *et al.* (2017) state that dismemberment and loose of municipalities' scale had caused public investment restrictions and access deficits in the water supply services.

6 – Empirical Strategies

Considering the previous hypothesis that a more decentralized structure of the organization of the country can provide better public goods for society, I can consider the above-mentioned process of creating municipalities as a proxy for decentralization (Mattos *et al.* 2013; Salomão and Saiani, 2019). The econometric technique to be used in the estimates is the "*difference in difference*" for a fixed-effects panel for annual data between 1995 and 2011. I consider two types of municipalities: first, those that dismembered in these years, second, as a counterfactual, those that did not dismember. If the municipalities have a similar characteristic on a public revenue and expenditure, the analysis of the dismemberment can dodge the trajectory of the treated municipality vis a vis the non-treated one (Roy, 1951; Rubin, 1974; 1978).

For the tests, four explanatory variables are considered, one of the revenue side and three of the expenditure side, all variables in per capita terms and deflated in R$ of 2011. Starting with revenues, the interest of this article is to comprehend whether decentralization has caused an increase in the size of the government or a low fiscal effort because of the fiscal grants: i) Imposto Sobre Serviços de Qualquer Natureza (ISS-QN), ii) Imposto Predial Territorial Urbano (IPTU) e iii) Imposto Sobre Transações de Bens Intervivos (ITBI). The sum of these variables is available in the STN's (Secretaria do Tesouro Nacional) FINBRA (Finanças do Brasil) database.

For the expenditure side, the criteria of the budget per function foreseen in law 4.320/64 will be used to construct three variables, explained according to Teixeira (2001).

- Social Expenditure: the sum of expenditure on health, education, culture, housing, basic sanitation, sports, welfare, science, and technology.
- Economic Expenditure: the sum of expenditure on agriculture, communications, industry, trade, energy, transport, labor, foreign relations, and regional development.
- Overhead Expenditure: the sum of expenditure on administrative, legislative, judicial, essential to justice and public safety expenses.

Once presented the explained variables, the equations that will be estimated, following Salomão and Saiani (2019), by (1) and (2) specifications are:

$$Y_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 T_{it} + \beta_4 W_{it} + \beta_5 A_t + \mu_i + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 T_{it} + \beta_3 D_{it}.T_{it} + \beta_4 W_{it} + \beta_5 A_t + \mu_i + \varepsilon_{it} \quad (2)$$

By: $t = 1995, \dots, 2011$.

Being: Y_{it} the aforementioned variables depending on the municipality *i* in the period of *t*, β_0 the equations' intercept, variables of interest are D_{it}, dismemberment dummie, which allows the comparison between treated and untreated municipalities, T_{it} the total revenues transferred *per capita* in the municipalities, which allows the measurement of influence on non-resident financed revenues and, $D_{it}.T_{it}$ the interaction between the dismemberment dummie and the transfers *per capita*, restricted to equation (2) which aims to establish if the influence of the transfers is different, in treated and untreated municipalities. There is also an annual dummie vector A_t accompanied by coefficient β_5. Finally, as argued above, the dismemberment decision is not random, and it can cause self-selection bias. Because of this, the model includes a vector of covariate variables (control variables) widely based on the literature W_{it}, as specified by Square 1. This strategy is important because there are factors presented in the municipality that can influence the dismemberment decision, being necessary to control this characteristic in the estimations. Because it is not the main interest of this article, the results of the estimations of the control variables will be available in Appendix A.

Square 1 – Control Variables

Variables	Descriptions	Sources
Population	Total population (thousands of residents)	IBGE
Urban activities	The Ratio among formal employees in commerce, industry, services, and public administration. The total number of formal employees	M.T.E.
Fundamental	The Ratio between formal employees with complete primary education or higher, and total formal employees	M.T.E.
Formalization	The Ratio between formal employees and the economically active population (PEA)	M.T.E.
Per capita Mass	Salary mass in minimum wages *per capita* (in BRL – 2000.00)	IBGE
Youth	The Ratio between population below age 19 to the total population	IBGE
Elderly	The Ratio between population above age 60 to the total population	IBGE

Note: IBGE – Brazilian Institute of Geography and Statistics; MTE – Ministry of Labor and Employment.

Another important characteristic of the behavior of dismembered municipalities is that the dismemberment effect can change over time (Mattos et al., 2013; Rocha et al., 2017). This is because, in a period immediately after the dismemberment, the municipality have some expenditures with the structuration of some public goods previously offered by the original municipality. Therefore, an additional equation will be estimated, controlling the dismemberment effects according to year of creation, according to equation (3).

$$Y_{it} = \beta_0 + \beta_6 D_{it}^{1997} + \beta_7 D_{it}^{2001} + \beta_8 D_{it}^{2005} + \beta_2 T_{it} + \beta_4 W_{it} + \beta_5 A_t + \mu_{it} + \varepsilon_{it} \quad (3)$$

By: $t = 1995, \dots, 2011$.

The specification (3) consists of an adaptation of the equation (1). During the period of the sample, there was dismemberment in the years 1997, 2001, and 2005, so the

dismemberment dummie D_{it} is replaced for three dummies equal to 1 conform the year of dismemberment D_{it}^{1997}, D_{it}^{2001} and D_{it}^{2005} , respectively. With this specification, it is possible to evaluate if dismemberment effects change over time.

7 – Results

The results analysis should be started with the descriptive statistics of the explained variables, presented in Table 2. It is possible to see that the tax average is lower than the average of expenditure variables, which demonstrates how insufficient are the taxes for financing the local public spend in the municipalities. Therefore, the need for subsidy financing is evident. On the other hand, the standard deviation of the tax side is higher than that of social and overhead expenditures, which demonstrates heterogeneity.

Table 2 – Descriptive Statistics (Explained Variables)

Variable	Average	Standard-Deviation	Minimum	Maximum
Tax	279696	5953202	0	2533375
Social	4929897	4476715	1555581	188222
Economics	3759814	6250601	0	3659814
Overhead	890482	1327957	4169123	690908

Having made some initial considerations about the descriptive statistics, before presenting the analysis of the results, it is necessary to make some summary of the specifications that will be presented in tables (3) to (6). Specifications I and II consist of estimation based on the equation (1), but in specification II, the estimation was given by a balanced panel. Specification III was estimated based on equation (2), in which was included the interaction $D_{it}.T_{it}$. Finally, specification IV was estimated based on equation (3), in which the dismemberment dummie was exchanged for the annual dismemberment dummies.

The first result presented in Table 3, the effects of the dismemberment dummie on the per capita tax-revenues are significant at 1% confidence only in the specification III, in which the coefficient points to an average increase of the R$33,58 in the per capita tax-revenues caused for dismemberment. This shows evidence in favor of increasing the size of government. Also in specification III, it was verified at 1% statistical significance, that the interaction between dismemberment dummie and fiscal grants exerts an average effect of around -R$0,04 on the created municipalities. The results suggest evidence in favor of Leviathan Hypothesis, that is, dismemberment may influence the expansion of government size in the dismembered municipalities.

Table 3 – Result: dependent variable tax-revenues *per capita* (Fixed Effects).

Specifications	I	II	III	IV
Dismemberment	2.488	6.400	33.583	-
	(8.249)	(14.894)	(8.041)***	-
Dismemberment in 1997	-	-	-	2.537
	-	-	-	(9.201)
Dismemberment in 2001	-	-	-	0.000
	-	-	-	(.)
Dismemberment in 2005	-	-	-	2.286
	-	-	-	(18.574)
Dismemberment*grants	-	-	-0.044	-
	-	-	(0.002)***	-
Grants per capita	-0.085	-0.033	0.112	0.085
	(0.002)***	(0.008)***	(0.002)***	(0.002)***

Controls	Sim	Sim	Sim	Sim
Annual *Dummies*	Sim	Sim	Sim	Sim
Constant	Sim	Sim	Sim	Sim
Observations	99.990.000	2.343.000	99.990.000	99.990.000
Prob > F	0.0000	0.0000	0.0000	0.0000
R^2 (overall)	0.340	0.421	0.336	0.389

Note: Standards-error in parenthesis. *** Significant to 1%. ** Significant to 5%. * Significant to 10%.

Further evidence from these tests involves the effects of per capita grants on the explained variable. These results show statistical significance at 1% in all specifications, but the coefficient value is inconclusive, since specifications I and II show negative signs and specifications III and IV present positive signs, and it is not possible to claim that fiscal grants in the local government budget increase or decrease their fiscal effort.

The second result presented in the estimations is about social expenditures in Table 4. In these tests, all coefficients referring to the dismemberment dummie presented statistical significance and negative signs, in specification I to III average effects on social expenditures of -R$38,72 -R$34,60 and -R$83,37 respectively were estimated, and statistical significance at 1% in all models. When it is observed the specification IV lies statistical significance to 10% and an average effect of -R$38,30 of the 1997 dismemberment on the social expenditures. These results show strong evidence that in the MATOPIBA municipalities, the dismemberment effects caused damage to the need of the average voters in the form of a decrease in social expenditures. Based on these results, is possible to verify strong evidence of prejudice to the needs of the average voter who, by hypothesis, prefers social spending in a local allocation of public spending. One can suggest evidence in favor of fiscal illusion on the expenditure side of the budget.

Table 4 – Result: dependent variable socials expenditures *per capita* (Fixed Effects)

Specifications	**I**	**II**	**III**	**IV**
Dismemberment	-38.762 (9.736)***	-34.608 (20.947)***	-83.371 (19.690)***	- -
Dismemberment in 1997	- -	- -	- -	-38.301 (21.362)*
Dismemberment in 2001	- -	- -	- -	0.000 (.)
Dismemberment in 2005	- -	- -	- -	-5.881 (43.122)
Dismemberment*grants	- -	- -	-0.072 (0.004)***	- -
Grants per capita	0.361 (0.006)***	0.356 (0.012)***	0.305 (0.006)***	0.361 (0.006)***
Tax per capita	0.631 (0.024)***	0.408 (0.030)***	0.747 (0.025)***	0.631 (0.024)***
Controls	Sim	Sim	Sim	Sim
Annual *Dummies*	Sim	Sim	Sim	Sim
Constant	Sim	Sim	Sim	Sim
Observations	99.990.000	2.343.000	99.990.000	99.990.000
Prob > F	0.0000	0.0000	0.0000	0.0000
R^2 (overall)	0.956	0.975	0.957	0.956

Note: Standards-error in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

In specification III based on equation (2), there was statistical significance at 1% and negative signs in the interaction between dismemberment and fiscal grants. The effect estimated is the decrease of R$0,07 in the remittance of transfers in the created municipalities. When is observed the effects of the funding source on social spending, it is verified statistical significance at 1% and positive sings in all models and for the grants and tax effects.

However, when comparing these effects, the coefficient of the tax effects on social expenditures are bigger than the effects of the grants for all specifications, this occurs because voters are more demanding in claiming the application of the resources they paid for (Mendes, 2002). There are many reasons for the positive sings in the parameters of the fiscal grants, in the Brazilian economy there are many constitutional bindings of resources for the social area. However, the value of the coefficient of the tax effects bigger than fiscal grants effects can be considered evidence in favor of fiscal illusion.

The third results of this article refer to economics expenditures and are presented in Table 5. Statistical significance was verified at 1% only in specifications III and IV, according to the result of this estimation, in the MATOPIBA municipalities, the dismemberment has exercised a positive effect of about R$29,96 on the economics expenditures. In the specification IV, on the other hand, there is statistical significance at 10% for the year 1997, and the coefficient showed that the average effect on economics spending is R$15,19. These results show an increase in allocation of public resources in economics expenditures. This is due to the fact that many municipalities in MATOPIBA are new and lack infrastructure. The literature discussed in section 2 is inconclusive on whether these expenses benefit more the citizens (median voters) or the elite (rent seeking groups). This is because many agricultural enterprises may be beneficiaries of these budgets lines, while the population may prefer social expenditures.

Table 5 – Result: dependent variable economics expenditures *per capita* (Fixed Effects)

Specifications	I	II	III	IV
Dismemberment	12.229	19.468	29.963	-
	(8.208)	(12.986)	(7.790)***	-
Dismemberment in 1997	-	-	-	15.192
	-	-	-	(9.154)*
Dismemberment in 2001	-	-	-	0.000
	-	-	-	(.)
Dismemberment in 2005	-	-	-	1.128
	-	-	-	(18.479)
Dismemberment*grants	-	-	-0.059	-
	-	-	(0.002)***	-
Grants per capita	0.065	0.014	0.020	0.065
	(0.002)***	(0.007)***	(0.003)***	(0.002)***
Tax per capita	-0.127	-0.016	-0.032	-0.127
	(0.010)***	(0.019)***	(0.010)***	(0.010)***
Controls	Sim	Sim	Sim	Sim
Annual *Dummies*	Sim	Sim	Sim	Sim
Constant	Sim	Sim	Sim	Sim
Observations	99.990.000	2.343.000	99.990.000	99.990.000
Prob > F	0.0000	0.0000	0.0000	0.0000
R^2 (overall)	0.504	0.206	0.563	0.504

Note: Standards-error in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

As for the specification III, it was estimated the interaction effects on the economic expenditures, according to the estimation, was verified 1% of significance and the average effects of -R$0,05. When analyzing the effects of the variables of the source of financing in the economic expenditures, starting for the fiscal grants, there is statistical significance at 1% and positive signs for all specifications, the estimated coefficient is 0,06, 0,01, 0,02 and ,060 for the I, II, III, and IV specifications, respectively. As for the tax effects on economic expenditures, there is again statistical significance at 1%, but now the signs are negative, with the value of the parameters being -0,12, -0,01, -0,03 and -0,12 for the I, II, III, and IV specifications, respectively.

These results show how the institutional aspects of Brazilian public finance can influence budget performance, because, as is known, there are many Constitutional links between some types of taxes and their application on expenditure side. For instance, the Constitution requires that 15% of Net Revenues of all Brazilian municipalities be spent on health, and 25% on education. Therefore, there is little margin for local governments to increase, with their own resources, the expenditures in economics lines.

Finally, the last estimated model searches for the effects of dismemberment on the overall expenditures in MATOPIBA municipalities, here considered as those that benefit bureaucracy and rent seeking groups, the results follow in Table 6. Positive signs were verified in all specifications, statistical significance at 1% in specification III and 5% in specification II estimated by the balanced panel. According to these results, the average effects of the dismemberment on indirect spending are R$20,65 and R$34,74 for the specifications II and III respectively. According to the literature, these are the composition that benefits the bureaucracy and political elites, so there is evidence that the dismemberment has caused the capture of public resources in these municipalities. The interaction between the dismemberment dummie and the fiscal grants was significant at 1% with negative signs, pointing an average effect of -R$0,03 on the overall expenditures.

Finally, in the results for the funding sources, starting with fiscal grants, it was found that the oscillations were positive and with statistical significance in all specifications, the results being 0.01 in specifications I, II and IV and 0.04 in specification III. As for tax revenues, statistical significance was found for all specifications at 1% again, but now the values of the estimations were negative. The results are -0.02, -0.03, -0.08 and -0.02 respectively, for specifications I to IV. These results allow making inference about the presence of fiscal illusion in dismembered municipalities of MATOPIBA, because, as argued above, voters are more rigorous in the fiscalization paid by them, thus, tax resources are less susceptible to capture than fiscal subsidies.

Table 6 – Result: dependent variable overhead expenditures *per capita* (Fixed Effects)

Variáveis/Especificações	I	II	III	IV
Desmembramento	6.974	20.650	34.741	-
	(8.477)	(9.677)**	(8.370)***	-
Desmembramento em 1997	-	-	-	11.663
	-	-	-	(9.454)
Desmembramento em 2001	-	-	-	0.000
	-	-	-	(.)
Desmembramento em 2005	-	-	-	12.052
	-	-	-	(19.085)
Desmembramento*	-	-	-0.038	-
Transferência	-	-	(0.002)***	-
Transferências per capita	0.011	0.015	0.040	0.011
	(0.003)***	(0.005)***	(0.003)***	(0.003)***
Tributárias per capita	-0.026	-0.030	-0.088	-0.026
	(0.010)***	(0.019)***	(0.010)***	(0.010)***
Controles	Sim	Sim	Sim	Sim
Dummies Anuais	Sim	Sim	Sim	Sim
Constante	Sim	Sim	Sim	Sim
Observações	99.990.000	2.343.000	99.990.000	99.990.000
Prob > F	0.0000	0.0000	0.0000	0.0000
R^2 (overall)	0.888	0.491	0.893	0.888

Note: Standards-error in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Conclusions

The objective of this article was satisfactory, there are many significant results and inferences about the dismemberment process in the MATOPIBA region. It was possible to

verify that this dismemberment process favored small elites (rent seeking), such as bureaucratic and agricultural business, harming the needs of the median voters. According to the results it is possible to refute Tibout's (1956) hypothesis, in which there should be many benefits in secession and increase government competition. Strong evidence was found for Brennan and Buchanan (2000) Leviathan hypothesis.

The first characteristic of this type of government is the increase in the size of the government on the revenue side. From the estimation results, it was found that the dismemberment process has a positive average effect on local taxation for this simple. The second evidence in favor of the Leviathan government hypothesis is the increase in general expenditures and the decrease in social expenditures, that is, these results show the capture of public resources in the municipalities of MATOPIBA. These significant results clearly show the loss of average voters who have preferences for social spending in favor of the bureaucratic and political elite.

Finally, evidence of fiscal illusion was found in the municipalities of MATOPIBA, mainly because the results pointed out that the tax stimulus causes larger average effects on social expenditures than the stimulus of fiscal subsidies. Also, because in general expenditures, it was found that the tax stimulus showed a negative sign while the stimulus from fiscal subsidies showed a positive sign. In other words, when citizens feel paid to finance governments they are more careless in overseeing the application of these resources, because subsidy resources are more susceptible to capture than tax resources.

Notes

[1] IBGE Census Data.

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Tabela A.1 – Resultados das variáveis de controle (Receitas tributárias *per capita*) – complemento da Tabela 1.

Especificação	I	II	III	IV
Massapct	47.106	126.548	40.171	47.106
	(5.017) ***	(15.667) ***	(4.845) ***	(5.018) ***
des_dpct	-0.067	0.234	-0.073	-0.067
	(0.002) ***	(0.016) ***	(0.002) ***	(0.002) ***
Propjovem	-103.627	-236.864	-110.607	-103.623
	(41.512) **	(89.956)***	(40.029) ***	(41.516) ***
Propidoso	-495.532	-501.866	-562.933	-495.530
	(63.561) ***	(140.138) ***	(61.341) ***	(63.565) ***
População	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000) ***	(0.000)	(0.000)
vínculo formal - indústria de transformação	0.010	0.012	0.010	0.010
	(0.001) ***	(0.001) ***	(0.001) ***	(0.001) ***
vínculo formal - construção civil	0.001	0.002	0.001	0.001
	(0.001)	(0.001) *	(0.001)	(0.001)
vínculo formal - comércio	0.001	-0.003	0.002	0.001
	(0.001)	(0.002) **	(0.001) **	(0.001)
vínculo formal - serviços	0.001	0.001	0.001	0.001
	(0.000) ***	(0.001)	(0.000) ***	(0.000) ***
vínculo formal - administração pública	0.001	-0.000	0.001	0.001
	(0.000)	(0.001)	(0.000) ***	(0.000) *
fund_analfa	1.965	-13.580	3.452	1.966
	(3.468)	(8.659)	(3.344)	(3.468)
d_96	-0.550	-6.558	-1.104	-0.550
	(2.724)	(5.822)	(2.627)	(2.725)
d_97	-1.687	-3.935	-5.058	-1.687
	(2.629)	(5.847)	(2.538) **	(2.630)
d_98	-0.242	-22.550	-4.486	-0.243
	(2.827)	(5.996) ***	(2.731)	(2.829)
d_99	-6.507	-22.298	-11.773	-6.508
	(2.837) **	(6.019) ***	(2.743) ***	(2.839) **
d_00	-4.553	-29.880	-10.072	-4.554
	(3.358)	(7.762) ***	(3.245) ***	(3.359)
d_01	-10.052	-18.972	-16.396	-10.053
	(3.361) ***	(7.763) **	(3.250) ***	(3.362) ***
d_02	-0.702	-32.587	-10.058	-0.703
	(3.350)	(8.108) ***	(3.250) ***	(3.351)
d_03	-5.191	-20.566	-15.481	-5.192
	(3.379)	(8.091) **	(3.281) ***	(3.380)
d_04	-7.500	-20.213	-19.906	-7.500
	(3.452) **	(8.346) **	(3.361) ***	(3.453) **
d_05	-7.804	-21.251	-22.472	-7.805
	(3.516) **	(8.704) **	(3.435) ***	(3.516) **
d_06	-4.810	-20.176	-20.468	-4.811
	(3.529)	(9.006) **	(3.454) ***	(3.530)
d_07	-12.090	-21.218	-30.202	-12.091
	(5.570) ***	(13.771)	(5.414) ***	(5.570) **
d_08	-13.955	-18.540	-35.464	-13.955
	(5.965) **	(14.781)	(5.809) ***	(5.965) **
d_09	-13.531	-15.314	-34.829	-13.532
	(6.186) **	(15.319)	(6.019) ***	(6.186) **
d_10	-12.891	-16.333	-37.501	-12.891
	(6.720) *	(17.035)	(6.547) ***	(6.721) *
d_11	-27.943	-16.049	-57.366	-27.943
	(6.879) ***	(17.811)	(6.726) ***	(6.880) ***

Notas: Erros-padrão entre parênteses. *** Significativo a 1%. ** Significativo a 5%. * Significativo a 10%.

Tabela A.2 – Resultados das variáveis de controle (Despesas Sociais *per capita*) – complemento da Tabela 2.

Especificação	I	II	III	IV
massapct	-21.316	-164.351	-15.358	-21.362
	(11.704)*	(22.362)***	(11.516)	(11.705)*
des_dpct	0.331	0.728***	0.349	0.331
	(0.006)***	(0.023)	(0.006)***	(0.006)***
propjovem	95.993	-156.769	119.470	95.521
	(96.412)	(126.712)	(94.830)	(96.417)
propidoso	-73.299	22.371	94.937	-73.585
	(148.056)	(197.664)	(145.922)	(148.061)
população	0.000	0.001	0.000	0.000
	(0.000)***	(0.000)***	(0.000)**	(0.000)***
vínculo formal - indústria de transformação	-0.001	0.012	-0.001	-0.001
	(0.002)	(0.002) ***	(0.002)	(0.002)
vínculo formal - construção civil	0.008	0.006	0.007	0.008
	(0.002)***	(0.002)***	(0.002)***	(0.002)***
vínculo formal - comércio	-0.001	-0.008	-0.004	-0.002
	(0.002)	(0.002)***	(0.002)	(0.002)
vínculo formal - serviços	-0.004	-0.001	-0.003	-0.004
	(0.001)***	(0.001)*	(0.001)***	(0.001)***
vínculo formal - administração pública	0.003	0.001	0.003	0.003
	(0.001)***	(0.001)*	(0.001)***	(0.001)***
fund_analfa	6.071	5.554	3.398	5.992
	(8.051)***	(12.185)	(7.919)***	(8.052)
d_96	20.325	3.527	21.300	20.343
	(6.325) **	(8.191)	(6.221)***	(6.325)***
d_97	15.484	1.070	21.226	15.602
	(6.103)***	(8.224)	(6.011)***	(6.106)**
d_98	27.923	-10.097	34.934	28.048
	(6.564)***	(8.460)	(6.468)***	(6.567)***
d_99	31.746	-7.175	41.163	31.874
	(6.589)***	(8.491)	(6.502)***	(6.592)***
d_00	51.487	-10.696	61.094	51.599
	(7.797)***	(10.954)	(7.688)***	(7.799)***
d_01	87.789	38.424	99.390	87.893
	(7.807)***	(10.933)***	(7.706)***	(7.808)***
d_02	88.733	-1.057	104.207	88.837
	(7.779)***	(11.444)	(7.700)***	(7.780)***
d_03	94.470	30.529	111.999	94.573
	(7.846)***	(11.395)***	(7.779)***	(7.847)***
d_04	106.966	34.621	128.246	107.074
	(8.016)***	(11.754)***	(7.975)***	(8.018)***
d_05	122.688	34.981	147.722	122.750
	(8.164)***	(12.257)***	(8.153)***	(8.165)***
d_06	178.526	78.828	204.843	178.591
	(8.195)***	(12.680)***	(8.195)***	(8.195)***
d_07	194.886	71.981	226.084	194.926
	(12.934)***	(19.377)***	(12.843)***	(12.935)***
d_08	255.475	107.708	292.477	255.510
	(13.853)***	(20.795)***	(13.784)***	(13.853)***
d_09	282.233	140.470	318.839	282.268
	(14.366)***	(21.550)***	(14.279)***	(14.366)***
d_10	371.290	208.885	413.271	371.324
	(15.606)***	(23.962)***	(15.531)***	(15.606)***
d_11	428.454	258.556	480.095	428.490
	(15.986)***	(25.054)***	(15.991)***	(15.987)***

Notas: Erros-padrão entre parênteses. *** Significativo a 1%. ** Significativo a 5%. * Significativo a 10%.

Tabela A.3 – Resultados das variáveis de controle (Despesas Econômicas *per capita*) – complemento da Tabela 3.

Especificação	I	II	III	IV
massapct	18.412	-10.587	23.298	18.433
	(5.016)***	(13.863)	(4.707)***	(5.016)***
des_dpct	0.038	0.152	0.052	0.038
	(0.003)***	(0.014)***	(0.002)***	(0.003)***
propjovem	107.172	95.192	126.425	107.391
	(41.316)***	(78.553)	(38.758)***	(41.318)***
propidoso	16.608	123.337	154.580	16.741
	(63.447)	(122.539)	(59.639)***	(63.449)
população	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
vínculo formal - indústria de transformação	-0.000	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
vínculo formal - construção civil	0.002	0.002	0.002*	0.002
	(0.001)**	(0.001)	(0.001)	(0.001)**
vínculo formal - comércio	0.001	-0.000	-0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
vínculo formal - serviços	-0.001	-0.000	-0.000	-0.001
	(0.000)*	(0.000)	(0.000)	(0.000)*
vínculo formal - administração pública	-0.001	-0.000	-0.001	-0.001
	(0.000)*	(0.001)	(0.000)*	(0.000)*
fund_analfa	8.948	4.428	6.756	8.985
	(3.450)***	(7.554)	(3.237)**	(3.450)***
d_96	3.259	0.260	4.058	3.250
	(2.711)	(5.078)	(2.543)	(2.711)
d_97	1.231	2.535	5.940	1.176
	(2.615)	(5.098)	(2.457)**	(2.617)
d_98	-1.217	-8.266	4.533	-1.275
	(2.813)	(5.245)	(2.643)*	(2.814)
d_99	-5.817	-9.182	1.905	-5.877
	(2.824)**	(5.264)*	(2.657)	(2.825)**
d_00	-2.550	-11.351	5.330	-2.602
	(3.341)	(6.791)*	(3.142)*	(3.342)
d_01	-2.766	-6.594	6.748	-2.814
	(3.345)	(6.778)	(3.149)**	(3.346)
d_02	0.233	-10.806	12.924	0.185
	(3.333)	(7.095)	(3.147)***	(3.334)
d_03	-6.614	-11.687	7.762	-6.662
	(3.362)**	(7.064)*	(3.180)**	(3.363)**
d_04	-10.215	-11.415	7.237	-10.265
	(3.435)***	(7.286)	(3.260)**	(3.436)***
d_05	-17.202	-17.344	3.329	-17.231
	(3.499)***	(7.599)**	(3.332)	(3.499)***
d_06	-13.190	-22.485	8.393	-13.220
	(3.512)***	(7.861)***	(3.350)**	(3.512)***
d_07	-16.676	-22.994	8.909	-16.695
	(5.543)***	(12.013)*	(5.249)*	(5.543)***
d_08	-12.173	-19.661	18.173	-12.189
	(5.936)**	(12.892)	(5.634)***	(5.937)**
d_09	-23.905	-25.119	6.116	-23.921
	(6.156)***	(13.359)*	(5.836)	(6.156)***
d_10	-20.001	-20.953	14.429	-20.017
	(6.688)***	(14.855)	(6.347)**	(6.688)***
d_11	-31.778	-22.366	10.573	-31.794
	(6.851)***	(15.532)	(6.536)	(6.851)***

Notas: Erros-padrão entre parênteses. *** Significativo a 1%. ** Significativo a 5%. * Significativo a 10%.

Tabela A.4 – Resultados das variáveis de controle (Despesas de Overhead *per capita*) – complemento da Tabela 4.

Especificação	I	II	III	IV
massapct	9.498	87.868	6.314	9.531
	(5.180)*	(10.320)***	(5.057)	(5.180) *
des_dpct	0.296	0.211	0.287	0.297
	(0.003)***	(0.011)***	(0.003) ***	(0.003) ***
propjovem	-34.585	20.358	-47.133	-34.241
	(42.671)	(58.476)	(41.643)	(42.672)
propidoso	-27.963	-194.924	-117.879	-27.754
	(65.529)	(91.220)**	(64.080) *	(65.528)
população	-0.000	-0.000	-0.000	-0.000
	(0.000)***	(0.000)***	(0.000) ***	(0.000) ***
vínculo formal - indústria de transformação	-0.004	-0.008	-0.004	-0.004
	(0.001)***	(0.001)***	(0.001) ***	(0.001) ***
vínculo formal - construção civil	-0.004	-0.002	-0.003	-0.004
	(0.001)***	(0.001)**	(0.001) ***	(0.001) ***
vínculo formal - comércio	0.003	0.004	0.004	0.003
	(0.001)***	(0.001)***	(0.001) ***	(0.001) ***
vínculo formal - serviços	0.001	0.000	0.001	0.001
	(0.000)***	(0.000)	(0.000) **	(0.000) ***
vínculo formal - administração pública	-0.001	-0.000	-0.001	-0.001
	(0.000)**	(0.000)	(0.000) **	(0.000) **
fund_analfa	-0.789	-6.761	0.640	-0.731
	(3.563)	(5.623)	(3.478)	(3.564)
d_96	-9.012	-4.020	-9.533	-9.025
	(2.799)***	(3.780)	(2.732) ***	(2.799) ***
d_97	3.537	4.642	0.468	3.451
	(2.701)	(3.795)	(2.640)	(2.702)
d_98	-18.319	-12.140	-22.067	-18.411
	(2.905)***	(3.904)***	(2.840) ***	(2.906) ***
d_99	-16.966	-12.017	-21.999	-17.059
	(2.916)***	(3.918)***	(2.855) ***	(2.917) ***
d_00	-28.797	15.057	-33.932	-28.879
	(3.451)***	(5.055)***	(3.376) ***	(3.452) ***
d_01	-6.795	3.768	-12.996	-6.871
	(3.455)**	(5.045)	(3.384) ***	(3.456) **
d_02	-41.462	-16.346	-49.732	-41.537
	(3.443)***	(5.281)***	(3.381) ***	(3.443) ***
d_03	-31.744	-11.789	-41.113	-31.819
	(3.472)***	(5.259)**	(3.416)***	(3.473) ***
d_04	-36.434	-12.138	-47.807	-36.513
	(3.548)***	(5.424)**	(3.502)***	(3.549)***
d_05	-34.764	-5.339	-48.144	-34.810
	(3.613)***	(5.657)	(3.580)***	(3.614)***
d_06	-47.806	-10.733*	-61.871	-47.853
	(3.627)***	(5.852)	(3.599)***	(3.627)***
d_07	-52.758	-5.613	-69.432	-52.787
	(5.725)***	(8.942)	(5.640)***	(5.725)***
d_08	-67.995	-8.876	-87.771	-68.021
	(6.131)***	(9.597)	(6.053)***	(6.131)***
d_09	-56.822	1.098	-76.387	-56.847
	(6.358)***	(9.945)	(6.271)***	(6.358)***
d_10	-75.220	-7.929	-97.658	-75.245
	(6.907)***	(11.058)	(6.820)***	(6.907)***
d_11	-85.950	-10.207	-113.550	-85.976
	(7.075)***	(11.562)	(7.022)***	(7.075)***

Notas: Erros-padrão entre parênteses. *** Significativo a 1%. ** Significativo a 5%. * Significativo a 10%.