

# Texto para Discussão

## Série Economia

TD-E / 07 - 2008

**Municipality secession, voter's preference and persistence  
of power**

Paulo Arvate  
Vladimir Ponczek



Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto  
Universidade de São Paulo

**Universidade de São Paulo**  
**Faculdade de Economia, Administração e Contabilidade**  
**de Ribeirão Preto**

Reitora da Universidade de São Paulo  
Suely Vilela

Diretor da FEA-RP/USP  
Rudinei Toneto Junior

Chefe do Departamento de Administração  
Marcio Mattos Borges de Oliveira

Chefe do Departamento de Contabilidade  
Maísa de Souza Ribeiro

Chefe do Departamento de Economia  
Maria Christina Siqueira de Souza Campos

**CONSELHO EDITORIAL**

*Comissão de Pesquisa da FEA-RP/USP*

*Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto  
Avenida dos Bandeirantes, 3900  
14049-900 Ribeirão Preto – SP*

**A série TEXTO PARA DISCUSSÃO tem como objetivo divulgar: i) resultados de trabalhos em desenvolvimento na FEA-RP/USP; ii) outros trabalhos considerados de relevância dadas as linhas de pesquisa da instituição. A série foi subdividida em função das principais áreas de atuação da FEA-RP/USP: Economia, Administração e Contabilidade. Veja o site da CPq na Home Page da FEA-RP: [www.fearp.usp.br](http://www.fearp.usp.br). Informações: e-mail: [cpq@fearp.usp.br](mailto:cpq@fearp.usp.br)**

# **Municipality secession, voter's preference and persistence of power**

## **Abstract**

This paper attempts to evaluate municipality secession in terms of the median voter response on the executive local elections. Our results imply that incumbents in the new municipalities have a higher chance of reelection which suggests that the median voter approved the secession process. Moreover, that effect is enhanced because those parties that managed the municipality secession also had the probability of persistence in power (in more than one term) increased.

JEL: H77, D72, H72

Keywords: municipality secession, reelection, voter's preference and persistence of power

## 1. Introduction

This paper attempts to evaluate municipality secession in terms of the ex-post median voter response on the executive local elections. According to the literature on municipalities' secession, the decision undertaken by the local governments invariably involves ex-ante economic arguments. These arguments are concerned with expected net welfare gains to the median voter related to the municipality or country division.

Recent studies incorporate ex-ante economic arguments associated to efficiency of public provision for large jurisdictions (scale gains) and to the costs of having diverse populations within municipality (targeting performance), for secession or integration (see Alesina and Spolaore, 1997, Bolton and Roland, 1997, Person and Tabellini, 2000)<sup>1</sup>. For instance, Brink (2004) places a framework to analyze the break-up of municipalities in Sweden. She finds that different tax bases, political preferences and population size in the municipalities might justify municipalities' division once she identifies different groups after the secession.<sup>2</sup> These papers clarify the role of economic reasons to secede, however the literature lacks investigation about the ex-post evaluation of that secession in terms of the perception of the individuals.

The main contribution of this paper is to evaluate the approval of municipality secessions in Brazil after its occurrence. In other words, we test whether that decision to secede in fact was successful to match the preferences of the median voter and the public policy executed in the "new" municipality. This test is implemented using reelection results. To the best of our knowledge, this is the first paper that attempts to document that relation.

The use of reelection results as an evaluation tool on the part of voters has been used extensively in the political economy literature (Peltzman, 1992, Brender, 2003, Brender and Drazen, 2005a and Arvate et al, 2007). We use a similar approach to evaluate municipality secession. The idea supporting this strategy is that if the secession was beneficial for the median voter the incumbent of new municipality can capture these welfare gains through reelection.<sup>3</sup> The empirical challenge is to disentangle the effects of secession gains from the effects of a high-quality administration. Nevertheless, if we believe that mayors in seceded municipalities conditional on observed

---

<sup>1</sup> Oates (1972) presents the trade-off arguments necessary for taking the decentralization decision. On one hand, a decentralized government has a better perspective of their citizens, matching the public goods provision accordingly. On the other hand, that government might not consider spillover activities neither coordinate redistributive and macroeconomic policies taking into consideration all the municipalities.

<sup>2</sup> See Blanchard and Shleifer, (2001), Bradhan and Mookherjee (2000) and Chiekbossian (2008) for the exposition of trade-off arguments relating to bureaucracy appropriation versus targeting when public policies are designed.

<sup>3</sup> Powell (2000) considers the elections as a tool to control policymakers in a majoritarian electoral system. This claim reinforces the use of reelection as a device to evaluate not only the policymaker but also the policies implemented under his term.

fiscal variables are as good administrators as the ones in the rest of municipalities, differences in reelection probabilities capture the public perception regarding the secession. We are also implicitly assuming that the median voter cannot perfectly distinguish the gains from secession from those coming from the quality of the administration. In other words, we believe that the difference between benefits and costs coming directly from the secession is not observable (a latent variable). The observable variable reelection takes value one or zero depending on the value of this difference: one indicates that the median voter has more benefits with the decentralization than costs and zero otherwise. Therefore, the decision to reelect the incumbent is the device used by the median voter to validate whether the proposed public policy (implemented throughout the secession) was successfully put in place.

The Brazilian decentralization process has two special features that turn out to be extremely useful for this analysis<sup>4</sup>. First, it matters for the voters. The Brazilian municipal decentralization, occurred mostly in the 90's, was compulsorily voted in a local referendum. Second, the reelection of the local politician or local party after the municipal secession through a compulsory electoral process can be considered a reasonable evaluation tool of the decentralization.<sup>5</sup> We assume that the first mayor elected after the secession was a main player in the decentralization process and is hold responsible for the decentralization's success or failure (Acemoglu, Jonhson and Robinson, 2004). The New 1988 Brazilian Constitution establishes that the seceding municipality process depends on the approval of constituent political system on the states, the State Legislative. That characterizes the fact that this process is controlled by state or federal deputies or local leaders who eventually become mayors in those seceding municipalities. This decentralization or secession might happen as a result of cooperative strategy between local and central governments (Cox and MaCubbins, 1986, Lindbeck and Weibull, 1993, Dixit and Londregan, 1996) or as a consequence of local politicians concerned with their career (Leoni, Pereira and Rennó, 2004, Diermeier, Keane and Merlo, 2005).

In order to document the voters' response to the decentralization process, we analyze the impact of secession on two different electoral outcomes: the probability of party reelection in the next period and its persistence of power (number of elections won consecutively by that party) after

---

<sup>4</sup> Brazil is a developing country with per capita GDP about US\$ 3,460 in 2006. It is the fourth largest democracy in the world, after the United States, India, and Indonesia. Its 1988 New Constitution defines as major administrative division's municipalities whose mayors and legislative representatives are elected every four years in a legally binding calendar. It is the first Latin American country to adopt universal suffrage, however voting is compulsory for all elections. This last aspect is in continuous debate in terms of the impacts of mandatory voting on "less sophisticated" voter's decision (Lima Jr., 1990, Power and Roberts, 1995 and Elkins, 2000). In addition, Brazil presents a great variation in socio-economic variables across states. For instance, in 2003 the GDP per capita of the two richest states, Sao Paulo (Southeast region in Brazil) and the Federal District Brasilia (MidWest region), was around US\$ 5,500, similar to Chile and the Czech Republic, while the two poorest states, Maranhão and Piauí (Northwest region), displayed a per capita income of US\$ 850, close to Cameroon and Guinea-Bissau.

<sup>5</sup> Individual reelection was prohibited until 1997.

the break-up<sup>6</sup>. An important challenge of this type of study is to truly identify a *causal* relationship from the municipality secession decision to reelection results. It could be the case that municipalities with popular local leaders are more likely to secede since charismatic leaders may influence over the voter helping breaking-up approval. Their popularity could also be associated to success in future elections. In this case, our results would be capturing a spurious relation between secession and reelection chances. Another source of endogeneity arises from the fact that positive economic shocks in sub regions of a municipality could deflagrate a secession movement inside the region in order to capture the entire gains of the shock. If the shock increases the probability of reelection, our results could be biased. As a robustness check, we also estimate a system of simultaneous equations using the fact that the municipality's assessment to secede is affected by the number of seceded municipalities to create an instrument for the secession variable<sup>7</sup>.

Our results suggest that the secession process was approved by the median voter. That is, incumbents in the new municipalities have a higher chance of reelection. Moreover, that effect is enhanced because those parties that managed the municipality secession also had the probability of persistence in power (in more than one term) increased. This result is contrary to Tiebout (1956) model where individuals “vote with their feet”, since we present evidences that individuals vote for (approve) the change in the size of the jurisdictions and consequently the public sector's budget by secession and not moving away from that municipality<sup>8</sup>.

Next section describes the data. It also addresses the institutional change occurred in 1988 with the new Brazilian Constitution. Section 3 lays out the empirical model and results. Section 4 concludes.

## 2. Data

The data come from three sources. First, information on 1992 municipality election is obtained in the Regional Electoral Courts (State Courts). Second, the data that link mayors and constituent state authority (governor and the majority party in the State Legislative) is found on the Instituto Universitário de Pesquisas do Rio de Janeiro – IUPERJ ([www.iuperj.br/pesquisa\\_banco\\_de\\_dados.php](http://www.iuperj.br/pesquisa_banco_de_dados.php)). Third, IPEADATA ([www.ipeadata.gov.br](http://www.ipeadata.gov.br)) provides the other variables (see Table A1 in the appendix).

We create two indicator variables to characterize the impact of municipality secession: Reelection and Political Persistence. The former is equal to one if the mayor party between 1989

---

<sup>6</sup> See Acemoglu and Robinson (2007) for details on persistence of power.

<sup>7</sup> We use the idea proposed in Arvate et al (2008) which claims that the median voter is not fully informed *ex-ante* on the benefits of secession and use the information on his counterpart's neighbor municipality.

<sup>8</sup> See also Gramlich and Rubinfeld (1982) and Brueckner (2004) for empirical application of Tiebout's model.

and 1992 (the first term after the New Constitution) is reelected to a second term (1993-1996) and zero otherwise. The latter can have four values: zero, one, two and three. It indicates a political persistence of a party on power. It is equal to zero if the mayor party does not get reelected to a second term (1993-1996), it equals to one if the mayor party goes to a second term (1993-1996), it assumes value of two if the mayor party obtains a sequence of two terms (1993-1996 and 1997-2000) and finally, it is three if the first mayor party elected after the New Constitution accomplishes a sequence of three terms in power (1993-1996, 1997-2000 and 2001-2004). Table 1 presents the persistence of parties in power data.

<b>Table 1: Persistence of parties in power</b>						
<b>Number of reelection</b>	<b>All sample</b>		<b>Non-seceded Municipalities</b>		<b>Seceded Municipalities</b>	
	<b>Frequency</b>	<b>Percentage</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Frequency</b>	<b>Percentage</b>
None	4.290	76.99	4063	77.21	227	73.23
One	719	12.9	673	12,78	46	14.84
Two continuous and consecutives	329	5.9	303	5,75	26	8.39
Three continuous and consecutives	234	4.2	223	4,23	11	3.55
<b>Average number of reelection</b>	0,37		0,36		0,42	
<b>Total</b>	5.572	100	5262	94,4	310	5,6

Note that about four percent (4%) of the municipalities maintain the same party in power after four elections (three reelections). This evidence reinforces the use of “time length” of the party in power as a resultant process after the municipality secession<sup>9,10</sup>. We also observe that seceded municipalities continuously reelect the mayor’s party more times on average. The largest difference between seceded and non-seceded municipalities occurs in the second reelection. Seceded municipalities are 16% (14,84%/12,78%) more likely to reelect the party one time, 46% more likely to reelect it two times and 16% less likely to reelect it three times compared to non-seceded municipalities.

We should keep in mind that those figures in Table 1 are unconditional to any characteristic of the municipalities and could possible be capturing difference in the municipalities other than the secession. In order to deal with this problem, we use two types of control variables: at the municipal

<sup>9</sup> The literature focused on the persistence in power is related to two aspects: (i) family dynasty (Dal Bó, Dal Bó and Snyder, 2007, Naritomi, Soares and Assunção, 2007) and (ii) legislative careers (Diermeir, Keane and Merlo, 2005; Merlo and Mattozzi, 2005). Even though the structure of parties in Brazil might not be fully organized (Pereira and Muller, 2003 and Leoni, Pereira and Rennó, 2004), we want to test whether the preferences of the median voter are manifested in the parties election and if these parties manage to take advantage, in terms of reelection, of well succeed policies such as municipality secession.

<sup>10</sup> Two reasons justify the choice of parties as the unit of analysis. First, the politicians may be looking for prospective careers in that party (Pereira and Muller, 2003 and Merlo and Mattozzi, 2005). Second, if the party in Brazil were really weak, one would observe the majority of projects rejected in the Congress. However Ricci (2003) presents that out of 1430 projects, only 30 (15 out of 30 partially) were rejected. This indicates that, at least some organization in the Congress is achieved through parties association. Moreover, a significant positive effect of secession in parties’ reelection only strengthens our argument

and political levels. Concerning the characteristics of municipality: the average tax revenue per capita, the average intergovernmental grants received from both state and federal governments per capita, the average education expenditure per capita, the average health expenditure per capita, the average investment per capita, number of houses in the municipality with sewage treatment (census data, 2000), number of houses in the municipality with electricity (census data, 2000), Gini index (census data, 2000), the percentage of houses in the municipality with trash service (census data, 2000), the (Ln) human capital on the municipality<sup>11</sup> (census data, 2000) and the total population on the municipality in (census data, 2000). The public finance variables are centered on municipality term 1997-2000 for two reasons. First, it permits us to control for the characteristics of the seceding municipality once we do not have data prior its creation. Second, the period of 1997-2000 is the first term after the Constitutional change occurred in 1996 which made more difficult to approve the municipalities' secession process see Table 2, column (3)).

The political characteristics of each municipality are: the average municipal legislative expenditure per capita (1997-2000), the percentage of houses with TV (census data, 2000), the percentage of rural population (census data, 2000), the literacy rate (census data, 2000) and the relationship between the mayor and the constituent power (governor and the state Legislative: a dummy with value equal one if the mayor elected in 1996 belongs to the same party of the governor elected in 1994 and zero otherwise; and a dummy with value equal one if the mayor elected in 1996 belongs to the same party of the one with the majority seats in the state Legislative in 1994 and zero otherwise). The legislative expenditure can be seen as the cost of their administrative autonomy. The percentage of rural population and literacy rate are voters' characteristics. Given that the vote is compulsory in Brazil, a low literacy rate (median of 0.78 on sample) and a considerable number of rural population in municipalities (median of 0.41 on sample), suggests a more naïve voter in Brazil. For this reason, we incorporate TV (median of 0.75 of houses have TV) as a political control. That influences the means that the information reaches the voters. Last, the relationship between the mayor and constituent power is used to control for other political forces that could influence the seceding process. From the perspective of the politician, the local government (mayor) election depend on supporting political (included alliances with parties in the state legislative) at the time of their (personal, party or coalition) reelection, financial supporting of party to fight over the election and the possibility of promotion on career passes by one higher level of government (Enikolpov and Zhuravskaya, 2007, Leoni, Pereira and Rennó, 2004). Therefore, it is possible to assume that a mayor or a state legislative office has also a perspective in terms of regressive and

---

<sup>11</sup> The human capital is the expected present value of the annual earnings (discounted at 10% per year) associated with the schooling level and experience (age) of the economically active population (15 to 65 years old). It is annually calculated by IPEA.



progressive ambition.<sup>12</sup> This is corroborated by the Brazilian 1988 Constitution. It was built after the end of Authoritarian regime and established new rules of municipalities' break up. These rules define a set of incentives as key actors to determine the final number of municipalities within a state<sup>13</sup>

As consequence, we have a large number of municipalities created in the period between the 1988 Constitution as shown in Table 3. This table presents the municipalities' emancipation by regions. There is no systematic difference among regions in terms of number of seceding municipalities even though there is a significant difference among them in terms of per capita income.<sup>14</sup> The regions North and Northeast are the poorest in Brazil. The regions South East and South are the richest. Independent of this, the regions Northeast and South were the regions with higher number of breaking up municipalities in Brazil between 1988 and 1996.

**Table 3: Number of break up municipalities in Brazil by Region**

	1980-1991	1993	1997	2000
<b>Brazil</b>	500	483	533	54
<b>North</b>	93	100	51	-
<b>Northeast</b>	134	49	229	5
<b>South East</b>	22	101	133	2
<b>South</b>	154	185	101	30
<b>Centre West</b>	97	48	19	17

**Source:** Bremaeker (2001)

### 3. Empirical Strategy

We analyze the impact of municipality secession on two political outcomes: the probability of party reelection and the probability persistence of parties in power for two or more terms<sup>15</sup>. In order to investigate the first relationship, we used the following *Probit* model:

$$\text{Pr ob}(\text{Re election}_i = 1 | \text{Secession}_i, X_i) = \Phi(\alpha \cdot \text{Secession}_i + \gamma X_i) \quad [1]$$

where *Reelection<sub>i</sub>* is a dummy variable that indicates if the mayor's party on municipality *i* was reelected to the 1993-1996 term; *Secession<sub>i</sub>* is another dummy variable that indicates if the municipality *i* was seceded during the 1989-1992 period; and *X* is a vector of control variables.

<sup>12</sup> Diermeier, Keane and Merlo (2005) show the political economy of the US Congressional careers.

<sup>13</sup> See Appendix 2 for details about the constitutional rules of municipalities' secession.

<sup>14</sup> The regions South East and South are the richest ones. The regions Northeast and South were the regions with higher number of break up municipalities in Brazil in the 1988-1996 period.

<sup>15</sup> We also estimated a model using party ideology instead of party *per se* (Coppedge, 1997 and Arvate, Avelino and Lucinda, 2007). The idea of this strategy consists of eliminating the fact that a politician can move from one party to another but it is harder to change his ideology. For instance, it is easier for a politician to move from a left party (PT) to a center-left (PDT) than to a center-right one (PPB). All the results are similar.

The following Poisson regression model examines the relationship between secession and persistence in power:

$$\Pr ob(Persistence_i = y_i | \lambda_i) = \frac{e^{-\lambda_i} \lambda_i^{y_i}}{y_i!} \quad [2]$$

where  $\ln(\lambda_i) = \alpha + \gamma_1 Secession_i + \gamma_2 Political Persistence_i$  and  $Political Persistence_i$  is a count variable (0,1,2 and 3) which indicates the number of terms which the mayor party on municipality  $i$  persists ininterruptly in power. More specifically,

$y_i=0$  when there was no reelection to the 1993-1996 term;

$y_i=1$  when there was only one reelection to the 1993-1996 term ;

$y_i=2$  when there was two reelections to 1993-1996 and 1997-2000 terms;

$y_i=3$  when there was three reelections to 1993-1996, 1997-2000 and 2001-2004 terms.

A caveat of this strategy is the possible endogeneity of the municipality secession variable. As discussed before, municipalities with charismatic local political leaders may be more likely to secede since these leaders may influence the decision of breaking-up, or existence of positive economic shocks in sub regions of a municipality could deflagrate a secession movement inside the region in order to capture the entire gains of the shock. As a robustness strategy, we also estimate the following simultaneous model by Full Information Maximum Likelihood (FIML)<sup>16</sup>:

$$Re election_i = 1(\alpha + Secession_i + \gamma_1 X_i + \varepsilon_1 > 0) \quad [3]$$

$$Secession_i = 1(\beta Secession\_State_i + \gamma_2 X_i + \varepsilon_2 > 0) \quad [4]$$

$(\varepsilon_1, \varepsilon_2 | X) \sim N(0,0,1,1,\rho)$

where  $1( )$  is the indicator function,  $Secession\_State_i$  is number of municipality that seceded within the state of municipality  $i$  in the 1989-1992 period; and  $\rho$  is the correlation between the error terms ( $\varepsilon_1$  and  $\varepsilon_2$ ).

A similar strategy is pursued in the case of persistence in power. A FIML is also used<sup>17</sup>. However, in this case, the model is characterized by a *Poisson* model equation and a *Probit* model equation:

$$\Pr ob(Persistence_i = y_i | Secession_i, X_i) = \frac{\exp(-e^{\alpha Secession\_State_i + \gamma_1 X_i + \varepsilon_1}) e^{\alpha Secession\_State_i + \gamma_1 X_i + \varepsilon_1}}{y_i!} \quad [5]$$

$$Secession_i = 1(\beta Secession\_State_i + \gamma_2 X_i + \varepsilon_2 > 0) \quad [6]$$

$$(\varepsilon_1, \varepsilon_2 | X) \sim N(0,0,1,1,\rho)$$

<sup>16</sup> See Wooldridge (2002) p. 478 for more details

<sup>17</sup> See Terza (1998) and Romeu and Vera-Hernandez (2005) for more details.

The idea behind the use of *Secession\_State<sub>i</sub>* as an instrument of the municipality secession has to do to the fact that the municipality is not fully informed about the efficiency gains of the secession in the provision of public goods. On one hand, breaking-up a municipality may decrease the amount of public good provided to each citizen since there could be gains of scale on its production (Oates,1972). On the other hand, breaking-up can be a good solution for the citizens since it eliminates the omitted preferences problem existent in a community when there is public good provision (Tiebout, 1956) and increases the per-capita amount of transfers from the federal government to the municipality increases because the law which rules the transfers benefits smaller cities. The number of neighbor municipalities that seceded within the state is valuable for the municipality because it brings additional information about this trade-off<sup>18</sup>.

It is important to observe that a fundamental assumption of our approach is that, conditional on  $X$ , there is no correlation between the number of municipalities' secession within the state in the previous term and  $\varepsilon_2$  (consequently no correlation with  $\varepsilon_1$ ).

### 3.1. Reelection results

The results for both *Probit* and FIML regressions are reported in Table 4. The estimations suggest that those municipalities created after secession between 1989 and 1992 have a higher probability to reelect the mayor's party to the 1993-1996 term. The results indicate that the seceding process is successful to match the preferences of the median voter and the public policy executed in the "new" municipality. The incumbents of new municipality benefited from these net welfare gains through a higher probability of being reelected. The results are robust with respect to different specifications. All estimated coefficients of the Secession are significant at the 1% level. For instance, in the *Probit* single equation model with both political and municipalities' controls, it is 0.421, which implies a marginal effect of 0.135. Therefore, a mayor of a seceded municipality is 13.5 percentage points more likely to be reelected, the coefficient estimated coefficient. After taking into account the possible endogeneity of the Secession variable, its impact on reelection becomes even stronger. The coefficient estimated in the system of equations model is 1.370, implying a marginal effect of 0.49.<sup>19</sup>

**Table 4: Reelection (Probit)**

<i>Independent variable</i>	<b>Dependent Variable: Mayor Party Reelection</b>					
	<b>Probit</b>	<b>FIML</b>	<b>Probit</b>	<b>FIML</b>	<b>Probit</b>	<b>FIML</b>
<b>Secession</b>	0.280***	1.804***	0.268***	1.352***	0.421***	1.370***

18 A formal model of the relationship between municipality secession and number of seceding municipalities within state is developed by Arvate et al (2008).

<sup>19</sup> Since the variable Secession is binary the marginal effect is indeed an effect of a discrete change of dummy variable from 0 to 1. The tables with the marginal effects are available upon request.

	(0.063)	(0.286)	(0.066)	(0.258)	(0.070)	(0.294)
<b>Municipalities Controls</b>	<i>NO</i>		<i>YES</i>		<i>YES</i>	
<b>Political Controls</b>	<i>NO</i>		<i>NO</i>		<i>YES</i>	
<b>Observations</b>	5571		5361		5284	

**Note:** \*\*\* Significant at the 1% level. Standard errors in parentheses.

Table 5 depicts the results of the *Probit* regression [4]. They suggest that the number of seceding municipalities within state between 1988 and 1992 (*Secession\_State*) positively affected the burning of new municipality. (at 1% level). This result corroborates the model proposed in Arvate et al (2008):

**Table 5: Full Information Maximum Likelihood (Probit)**

<i>Independent variable</i>	<b>Dependent Variable: Secession</b>		
	[1]	[2]	[3]
<b>Secession_State</b>	0.006*** (0.001)	0.006*** (0.001)	0.003*** (0.001)
<b>Municipalities Controls</b>	<i>NO</i>	<i>YES</i>	<i>YES</i>
<b>Political Controls</b>	<i>NO</i>	<i>NO</i>	<i>YES</i>
<b>Observations</b>	5571	5361	5284

**Note:** \*\*\* Significant at the 1% level. Standard errors in parentheses.

### 3.2. Persistence of power

Turning the results to the effect of municipalities' secession on the political persistence of mayor party in the power, estimations on Table 6 suggest that municipalities created in 1993-1996 influence not only the first reelection but the maintenance of first mayor party in the power (more than one term). The secession of the municipalities (1993-1996) significant increases the probability of having the first (the one that won the first election after the break up) mayor's party persisted in the power. The result is robust to all different specification, except the FIML estimator without including political controls. The incidence rate ratio estimated in the single equation Poisson model with both set of control variables is  $e^{0.546} = 1.726$ . For instance, these estimates imply that being a mayor of a seceded municipality increases the expected number of consecutive terms in power by 72.6% ( $100 \times (1.726 - 1)$ ) in the single equation model. The FIML with both set of control variables estimates a much higher coefficient of secession o persistence in power (2.288), which reinforces the single-equation result.

**Table 6: Persistence in the Power (Poisson)**

<i>Independent variable</i>	<b>Dependent Variable: Number of times which the Mayor Party was Relected after the succeeding</b>					
	Poisson	FIML	Poisson	FIML	Poisson	FIML
<b>Secession</b>	0.367***	1.29***	0.369***	0.233	0.546***	2.288***

	(0.068)	(0.137)	(0.072)	(0.266)	(0.074)	(0.525)
<b>Municipalities Controls</b>	<i>NO</i>		<i>YES</i>		<i>YES</i>	
<b>Political Controls</b>	<i>NO</i>		<i>NO</i>		<i>YES</i>	
<b>Observations</b>	5571		5361		5284	

**Note:** \*\*\* Significant at the 1% level. Standard errors in parentheses.

Finally, table 7 shows the regression results of the Probit model [6]. As expected, the results are virtually the same of table 5, confirming the positive impact of neighbor's secessions on the municipality break up.

**Table 7: Full Information Maximum Likelihood (Probit)**

<i>Independent variable</i>	<b>Dependent Variable: Secession</b>		
	[1]	[2]	[3]
<b>Secession_State</b>	0.006*** (0.001)	0.006*** (0.001)	0.004*** (0.001)
<b>Municipalities Controls</b>	<i>NO</i>	<i>YES</i>	<i>YES</i>
<b>Political Controls</b>	<i>NO</i>	<i>NO</i>	<i>YES</i>
<b>Observations</b>	5571	5361	5284

**Note:** \*\*\* Significant at the 1% level. Standard errors in parentheses.

#### 4. Conclusion

This paper attempts to estimate ex-post evaluation of municipality secessions occurred in Brazil using the median voter response on the executive local elections. We test whether seceded municipalities enhance the chances to have the actual mayor's party reelected. That is the same tool used in Peltzman (1992), Brender (2003), Brender and Drazen (2005a) and Arvate et al (2007) to capture the voter's evaluation on incumbent's policy.

We also check this party persistence in the power and find those municipalities that seceded in the previous term have a higher probability to reelected party's mayor. In addition, the secession of the municipalities increases the probability of having the first (the one that won the first election after the break up) mayor's party persisted in the power of the next three elections.

Although the literature (Oates, 1972, Gramlich and Rubinfeld, 1982 and Brueckner, 2004) presents the trade-offs arguments for decentralization that can impose gains or losses to the voters, this paper attempts to capture the correct evaluation on the part of the voters. If the seceding process and the public policy executed in the "new" municipality is successful to match the preferences of the median voter, that party is reelected.

This result suggests that Brazilian individuals can vote for a change in the size of their jurisdiction and their public sector budget. This corroborates Brink's (2004) point that secession is also preference-matching mechanism as opposed to the migration perspective (Tiebout (1956). In addition, our conclusions also put in perspective the ones found in Acemoglu and Robinson (2007).

They obtain that economic results favor the elite, being invariant to political institutions. In particular, Naritomi, Soares and Assunção (2007) find the persistence of family in power as consequence of the colonial heritage (sugar cane and gold cycles). We, on the other hand, show that the parties in Brazil might capture the benefits of a well executed public policy.

## References

- Acemoglu, D.; Johnson, S. and Robinson, J. (2004) Institutions as the fundamental cause of long-run growth. *NBER Working Paper 10481, National Bureau of Economic Research*, Cambridge, Massachusetts.
- Acemoglu D. and Robison, J. (2007). Persistence of power, elites and institutions. *Working paper 12108, National Bureau of Economic Research*, Cambridge, Massachusetts.
- Alesina, A. and Spolaore, E. (1997) On the number and size of nations. *The Quarterly Journal of Economics*, vol 112(4), pages 1027-56.
- Arvate, P; Avelino, G. and Tavares, J. (2007) Fiscal Conservatism in a New Democracy: “Sophisticated” versus “Naïve” Voters. *CEPESP Working Paper*, Centro de Política e Economia do Setor Público da Fundação Getulio Vargas, São Paulo.
- Arvate, P; Avelino, G. and Lucinda, C. (2007) Existe influência da ideologia sobre o Resultado fiscal dos Governos Estaduais Brasileiros? *CEPESP Working Paper*, Centro de Política e Economia do Setor Público da Fundação Getulio Vargas, São Paulo.
- Arvate, P. Mattos, E. and Ponczek, V. (2008) Municipalities Secession and uncertainty on public goods provision. *CEPESP Working Paper*, Centro de Política e Economia do Setor Público da Fundação Getulio Vargas, São Paulo.
- Arzaghi, M. and Henderson, J.V. (2005) Why countries are fiscally decentralizing. *Journal of Public Economics*, vol 87, issue 7, pages 1157-1189
- Blanchard, O. and Shleifer A. (2001) Federalism with and without political centralization: China versus Russia. *IMF Staff Papers*, International Monetary Fund, vol 48(4), page 8.
- Bolton, P. and Roland, G. (1997) The breakup of nations: a political economy analysis. *The Quarterly Journal of Economics*, vol 112(4), pages 1057-90.
- Bardhan, P.; Mookherjee, D. (2000) Capture and governance at local and national levels. *American Economic Review*, vol.90, pages 135-139.
- Bremaeker, F.E.J. (2001) Evolução do quadro municipal brasileiro no período entre 1980 e 2001. *Instituto Brasileiro de Administração Municipal*. Rio de Janeiro.
- Brender, A. (2003) The Effect of Fiscal Performance in Local Government Election Results in Israel: 1989-1998, *Journal of Public Economics*, vol. 87, pages 2187-2205.
- Brender, A. and Drazen, A. (2005a). Political Budget Cycles in New versus Established Democracies, *Journal of Monetary Economics*, vol. 52, pages 1271-1295.
- Brender, A. and Drazen, A. (2005b). How Do Budget Deficits and Economic Growth Affect Reelection Prospects? Evidence from a Large Cross-Section of Countries, *NBER Working Paper 11862, National Bureau of Economic Research*, Cambridge, Massachusetts.
- Brink, A. (2004) The Break-up of municipalities: voting behavior in local referenda. *Economics of Governance*, vol 5, number 2, pages 119-135.

- Brueckner, J. K. (2004) A Tiebout/tax-competition model. *Journal of Public Economics*, vol. 77, pages 285-306.
- Brueckner, J. K. (2006) Fiscal federalism and economic growth. *Journal of Public Economics*, vol. 90, pages 2107-2120.
- Cheikbossian, G. (2008) Rent-seeking, spillovers and the benefits of decentralization *Journal of Urban Economics*, vol 63, issue 1, pages 217-228.
- Cox, G. W. and McCubbins, M. D. (1986) Electoral Politics as a Redistributive Game. *Journal of Politics*, vol.48, pages 370-389.
- Coopedge, M. (1997). A Classification of Latin American Political Parties.” *The Hellen Kellogg Institute*. Working Paper # 244. November of 1997
- Dal Bó, E., Dal Bó, P. and Snyder, J. (2007) Political Dynasties. *Working paper 13122, National Bureau of Economic Research*, Cambridge, Massachusetts.
- Diermeier, D.;Keane, M. and Merlo, A. A Political Economy Model of Congressional Carrers. *The American Economic Review*, vol. 95, number 1, pages 347- 373.
- Dixit, A. and Londregan, J. (1996) The determinant of success of special interests in redistributive politics. *Journal of Politics*, vol 58, number , pages 1132-1155.
- Elkins, Z.(2000). Quem iria votar? Conhecendo as conseqüências do voto obrigatório no Brasil. *Opinião Pública*, 6(1): 109-136.
- Enikolopov, R. and Zhuravskaya, E. (2007) Decentralization and political institutions. *Journal of Public Economics*, vol. 91, issue 11-12, pages 2261-2290.
- Gramlich, E.M.; Rubinfeld, D.L. (1982) Micro estimates of Public Spending Demand Functions and Tests of the Tiebout and Median Voter Hypotheses. *Journal of Political Economy*, vol. 90, number 3, pages 536-560.
- Leoni, E.; Pereira, C. and Rennó, L. (2004) Political Survival strategies: political career decisions in the Brazilian Chamber of Deputies. *Journal of Latin American Studies*, vol. 36, pages 109-130.
- Lindbeck, A. and Weibull, J.(1993) Balanced-Budget redistribution as the outcome of political competition. *Public Choice*, number 52, pages 273-297.
- Lima Jr., O. B. (1990). Alienação Eleitoral e seus Determinantes; notas de pesquisa. *Revista Brasileira de Ciências Sociais*, 14:68-72.
- Merlo, A. and Mattozzi, A. (2005) Potical Careers or Career Politicians? *NBER Working Paper 12921, National Bureau of Economic Research*, Cambridge, Massachusetts.
- Naritomi, J.; Soares, R.R. and Assunção, J.J. (2007) Rent seeking and the unveiling of “de facto” institutions: development and colonial heritage within Brazil. *NBER Working Paper 13545, National Bureau of Economic Research*, Cambridge, Massachusetts.



North, D. (1991) Institutions. *Journal of Economic Perspectives*, volume 5, number 1, pages 97-112.

Oates, W. (1972) *Fiscal Federalism*, Harcourt, New York

Peltzman, S. (1992). Voters as Fiscal Conservatives. *The Quarterly Journal of Economics*, CVII, pages 327- 361.

Pereira, C. and Muller, B. (2003) Partidos fracos na arena eleitoral e partidos fortes na arena legislativa no Brasil: Conexão Eleitoral no Brasil. *Revista Dados*, vol 45, pages 265-302.

Pessach, A. R. (2005) Can decentralization be beneficial? *Journal of Public Economics*, vol. 89, issue 7, pages 1231-1249.

Person, T. and Tabellini, G. (2000), *Political Economics*. The MIT Press. Cambridge, Massachusetts.

Powell, G.B. (2000) *Elections as instruments of Democracy: majoritarian and proportional visions*. New Haven. Yale University Press.

Power, T. J., and Roberts, J. T. (1995). Compulsory Voting, Invalid Ballots, and Abstention in Brazil. *Political Research Quarterly*, 48(4): 795-826.

Ricci, P. (2003) O conteúdo da produção legislativa brasileira: leis nacionais ou políticas paroquiais? *Revista Dados*, vol 46, numero 4.

Romeu, A. and Vera-Hernandez, M. (2005) Counts with an endogenous binary regressor: a series expansion approach. *Econometrics Journal*, vol 81, pages 1-22.

Rubinchik-Pessach, A. (2005) Can decentralization be beneficial? *Journal of Public Economics*, vol 87, issue 7, pages 1231-1249

Terza, J.V. (1998) Estimating count data models with endogenous switching: sample selection and endogenous treatment effects. *Journal of Econometrics*, vol 84, pages 129-54.

Tiebout, C. (1956) A pure theory of local expenditures. *Journal of Political Economy*, vol. 64, number 5, pages 416-24.

Wooldridge, J. W. (2002) *Econometric Analysis of cross section and panel data*. Cambridge, MA. MIT Press.

## Appendix 1

**Table A1: Descriptive Statistics**

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
Reelection 1996	5577	0.23	0.42	0	1
Secession (Born Municipality between 1993 and 1996)	5571	0.09	0.28	0	1
<i>Municipalities Controls</i>					
Average Tax Revenue per capita (1997-2000)	5377	1.605.998	3.548.107	0	8.940.583
Average Intergovernmental Grants received from state government per capita (1997-2000)	5377	9.062.606	1.028.806	0	2.333.002
Average Intergovernmental Grants received from federal government per capita (1997-2000)	5377	1.723.801	1.196.356	2.689.272	1.325.907
Average education expenditure per capita (1997-2000)	5363	1.257.632	7.133.468	0	9.161.731
Average health expenditure per capita (1997-2000)	5363	6.654.359	4.504.743	0	7.234.553
Average investment per capita (1997-2000)	5377	5.247.035	5.390.462	0	1.657.837
Total population on the municipality (2000)	5507	30833.33	186750.6	795	1.04E+07
Percentage of houses on the municipality with trash service (2000)	5506	0.80	0.25	0.00002	1.00
Number of houses in the municipality with sewage treatment (2000)	5507	3.842.516	43.594,26	0	2.604.766
Number of houses in the municipality with electricity (2000)	5507	7.686.911	53.377,58	5.697.633	2.981.753
Gini Index (2000)	5507	0.56	0.06	0.36	0.82
(Ln) Human Capital on the municipality (2000)	5507	1.251.866	1.196.612	9.841.195	199.549
<i>Political Controls</i>					
Average municipal Legislative Expenditure per capita (1997-2000)	5363	1.876.825	1.443.768	0	2.041.805
Percentage of houses with TV (2000)	5507	0.75	0.20	0.06	1.00
Mayor (1996) is the same Governor Party Elected in (1994)	5402	0.30	0.46	0	1
Mayor (1996) is the same Majority State Legislative Party Elected in (1994)	5402	0.24	0.43	0	1
Percentage of rural population (2000)	5507	0.41	0.23	0	1
Literacy rate (2000)	5507	0.78	0.12	0.39	0.99

## Appendix 2

**Table A2: Institutional incentives to municipalities' secession**

<b>Rules</b>	<b>The Authoritarian Constitution (1967)</b>	<b>The New Constitution (1988)</b>
<b>Secession</b>	Three regulations through the period: 1. Responsible: Federal government (1967 Constitution). 2. Responsible: population and income are the criteria to the divide (Constitutional Emend, number 1). 3. From 1969 until 1979 only the President should authorize the division of municipalities (Constitutional Emend, number 11).	Responsible: population directly affected (voting considering only the population of the "future" municipality). However both initial (voting) and final (recognition) processes must be approved by the state Legislative (988 Constitution, article 18, and paragraph 4). <b>After 1996</b> 1. Economic study of economic viability (Constitutional Emend, number 15) 2. After this study a voting occurs with total population affected (both the "future" municipality and original municipality's inhabitants). As before, the initial (voting) and final (recognition) processes must be approved by the state Legislative.
<b>Intergovernmental grants to municipalities (economic incentives)</b>	1. The federal government shares with the municipalities 10% of two federal tax revenue ( IPI and IR, 1967 Constitution, articles 86 and 88.) 2. The state government shares with the municipalities 20% of the largest tax collected, a sales tax - ICMS.	1. The federal government shares with the municipalities 22,5% of two the federal tax revenue ( IPI and IR) 2. The state government shares with the municipalities 25% of the largest tax collected, a sales tax -ICMS.
<b>Distribution of grants among municipalities</b>	1. Federal A. 10% to the state capital; B. 90% to the other municipalities. The criteria of distribution depends on per capita income (inverse) of the state and population (Complementary Law number 5172, article 91) 2. State A. The distribution among municipalities depends on the valued added of each on the State's GDP (The 1968 Decree, Law 380).	1. Federal A. 10% to the state capital; B. 90% to other municipalities (the criteria of distribution depends on population) 2. State A. The distribution among municipalities depends on 75% of their contribution on the state's GDP and 25% is distributed according to each state's law (The 1988 Constitution, article 157).