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**THE IMPACT OF GOVERNMENT WEAKNESS, POLITICAL
INSTABILITY AND IDEOLOGY IN THE OFFER OF PUBLIC
GOODS: A CASE STUDY OF PUBLIC SAFETY
THROUGHOUT BRAZILIAN FEDERAL UNITS**

**São Paulo
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The impact of government weakness, political instability and ideology in the offer of public goods: a case study of public safety throughout Brazilian federal units

Monograph presented to the course of Economic Science, as a partial requirement to the attainment of the Bachelor's Degree from Insper Institute of Education and Research.

Advisor: Professor Marcelo R. dos Santos - Insper

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1. Introduction
2. Theoretical Model
3. Operationalization
4. Empirical Results
5. Conclusion
6. Bibliography
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Professor Marcelo Rodrigues dos Santos
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Abstract

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The offer of public goods is something essential to modern civilization. However, in Brazil there is a great discrepancy in the offer of those goods across the country. For example, while there are some states, which have beaten the homicide epidemic (rate lower than 10 homicides per 100 thousand inhabitants), which plagues the country, like Roraima, São Paulo and Santa Catarina, other states maintain rates of over 30 homicides per 100 thousand inhabitants like Alagoas. While in the Southeast more than 80% of the households have access to sewage or septic tanks, in the Northeast this number doesn't even reach 20% of the household according to PNAD 2013. What are the reasons these differences occur? Due to distinct levels of income? Due to greater urban density, making it easier to offer public goods to a greater percentage of the population? This paper focus on another aspect, if the political instability, government weakness and political ideology can impact the delivery of public goods to the population. This study focused on the state level of power, with the objective to understand how the political decision-making process can affect the offer of those goods, which in general depends on the offer given by the government. I used as proxy for public goods the homicide rate per 100 thousand inhabitants. The conclusion that was reached was that, while political instability affects negatively the offer of public goods, the other two political variables were statically insignificant.

Key Word: Public Goods, State, Government, Political Instability, Politics, Public Safety

Resumo

Toenjes, Renan Henrique Frinzi. O impacto da fraqueza do governo, instabilidade e ideologia políticas na oferta de bens públicos: um estudo de caso sobre segurança pública nas unidades federativas brasileiras. São Paulo, 2017. 64p. Monografia – Faculdade de Economia e Administração. Insper Instituto de Ensino e Pesquisa.

A oferta de bens públicos é algo essencial para a civilização moderna. Porém, no Brasil vemos uma grande variação na oferta desses bens por todo o país. Por exemplo, enquanto alguns estados venceram a epidemia de homicídios (taxa abaixo de 10 homicídios por 100 mil habitantes) que assolam o país como Roraima, São Paulo e Santa Catarina, outros estados vivem com taxas de mais de 30 homicídios por 100 mil habitantes como Alagoas. Enquanto no Sudeste mais de 80% dos domicílios tem acesso a rede de esgoto ou fosse séptica, no Nordeste esse nível não chega nem a 20% de acordo com a Pnad de 2013. Qual é o motivo dessas diferenças ocorrerem? Diferentes níveis de renda? Maior densidade urbana facilitando a produção de bens públicos a uma maior parcela da população? Esse estudo focou em outro aspecto, se a instabilidade, fraqueza e a ideologia política podem impactar a entrega de bens públicos a população. Esse estudo foi no âmbito da esfera estadual, visando entender como o processo de decisão política pode afetar a oferta desses bens que em geral dependem da oferta dada pelo governo. Eu usei como proxy de bens públicos a taxa de homicídios por 100 mil habitantes. A conclusão que foi obtida foi que, enquanto a instabilidade política afeta negativamente a oferta de bens públicos, as outras duas variáveis políticas foram estatisticamente insignificantes.

Palavras-chave: Bens Públicos, Estado, Governo, Instabilidade Política, Política, Segurança Pública

LIST OF ABBREVIATIONS AND ACRONYMS (PARTIES)

DEM	Democrats (Party)
PC do B	Communist Party of Brazil
PCB	Brazilian Communist Party
PDC	Democratic Christian Party
PDT	Democratic Labour Party
PFL	Liberal Front Party
PL	Liberal Party
PMDB	Brazilian Democratic Movement Party
PP	Progressive Party
PPB	Brazilian Progressive Party
PPR	Reform Progressive Party
PPS	Popular Socialist Party
PRN	National Reconstruction Party
PSB	Brazilian Socialist Party
PSD	Social Democratic Party
PSDB	Brazilian Social Democratic Party
PT	Labour Party
PTB	Brazilian Labour Party
PV	Green Party

LIST OF ABBREVIATIONS AND ACRONYMS (STATES)

AC	Acre
AL	Alagoas
AM	Amazonas
AP	Amapá
BA	Bahia
CE	Ceará
DF	Federal District
ES	Espírito Santo
GO	Goiás
MA	Maranhão
MG	Minas Gerais
MS	Mato Grosso do Sul
MT	Mato Grosso
PA	Pará
PB	Paraíba
PE	Pernambuco
PI	Piauí
PR	Paraná
RJ	Rio de Janeiro
RN	Rio Grande do Norte
RO/RD	Rondônia
RR	Roraima

RS Rio Grande do Sul

SC Santa Catarina

SE Sergipe

SP São Paulo

TO Tocantins

LIST OF ABBREVIATIONS AND ACRONYMS (OTHERS)

FBSP	Brazilian Forum on Public Safety
HDI	Human Development Index
IBGE	Brazilian Institute of Geography and Statistics
IPEA	Institute of Applied Economic Research
PNAD	National Household Sample Survey
SNIS	National Sanitation Information System

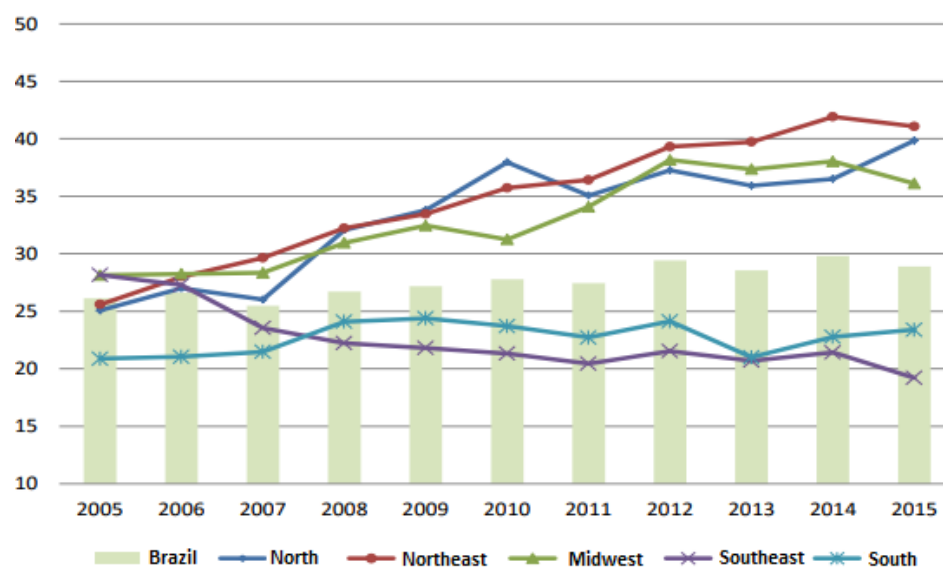
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1. Introduction

According to the PNAD carried out in 2013 by IBGE (Brazilian Institute of Geography and Statistics), 85,3% of Brazilian households have access to running water, while only 64,3% had access to sewage collection or septic tank. The difference between the regions were significant, while the Southeast had 88,7% with access to this service, only 19,3% enjoyed it in the Northeast (IBGE, 2014) When it comes to public safety, we have similar disparities. While the Northeast has a homicide rate by 100 thousand inhabitants of 32,8 in 2014, the Southeast reached a level of 14,0 homicides by 100 thousand inhabitants. The only three states, which had low enough levels for homicide to not be considered an epidemic in 2014 by WHO standards (10 homicides per 100 thousand inhabitants were Roraima, São Paulo and Santa Catarina (Waiselfsz, 2015). In the case of homicide rate, this difference has only been widening as can be seen in the graph below (Graph 1.1).

Graph 1.1 – Homicide rate in Brazil and its Regions, 2005 to 2015



Graph 1.1 Source: IBGE/Research Department. Coordination of Population and Social Indexes. Department of Studies and Analysis of Demographic Dynamics and MS/SVS/CGIAE – System of Information about Mortality (SIM). Elaboration by Diest/Ipea and FBSP (Atlas da Violência)

When it comes to garbage collection, Brazil has numbers a little less alarming. About 17,3 million people live in locations, which had no access to garbage collection in 2014, which would be about 8,5% of the total population of the country, if considered the estimated population for 2014 (Ministério das Cidades, 2014 and IBGE, 2014).

But, what do all these services have in common? They are all public goods. When it comes to public safety, for example, it isn't possible to exclude someone from

the neighbourhood wherein this service is provided, even if this person evades taxes. The cop, who will patrol the neighbourhood will create safety for both the citizen, who evaded taxes and the one that didn't. In other words, its service is non-exclusive. And the fact that if someone enjoys this service, it doesn't affect the capacity of someone else to enjoy it too makes it non-rival. Public safety would be a service very similar to a perfect public good by being non-rival and non-excludable. The same can be said about basic sanitation. From the time, you are connected to the system, your consumption turns into non-rival and non-excludable. This type of good is commonly provided by the government to avoid problems with free-riders created by the inability of excluding people from accessing these goods (Gruber, 2012; Buchanan, 1965 and Samuelson, 1954).

It is precisely because public goods are normally provided by the government that political process may affect their supply. A very interesting case study to reinforce this hypothesis is Gurgaon, India. Gurgaon is a city with the third highest GDP per capita in the country hosting 250 of the Forbes 500 companies. However, it has difficulties in providing public goods to its population. The city of 2 million inhabitants is commonly dubbed the shantytown of the rich because, even though it is a rich city, its public transportation system is almost non-existent, the population suffers from chronic power outages, its police is under-equipped and it has no sewerage that includes the whole city. Truth be told, its sewage is collected by trucks and deposited in local rivers. Although it is called the India's Singapore, it is unable to match city-state's public goods services. A lot of this lack of public goods can be traced by the history of urbanization of the city and the functioning of its public administration.

Gurgaon was no more than village in a desert region, when its administration was split from the administration the more populous and richer Faridabad in 1979. Due to its low population, Gurgaon was directly administered by the state government of Haryana, where both Faridabad and Gurgaon are located. During this time, the state government of Haryana started to simplify the process of acquisition and development of rural areas into urban. As Gurgaon did not possess a local government, it had two advantages. First, there were no local zoning laws on top of regional laws, which would create hindrances to the work for construction companies and developers. Secondly, because the cost of corruption could be concentrated in only one level of government, and not in two, it ended up making it easier to acquire licenses to build in Gurgaon.

Because of that the city lived through a population boom, starting with a total population of 121 thousand in 1991 to 870,000 in 2001 and finally to 1,5 million in 2011. However, it was a double-edged sword. As there was no local government until 2008, the private developers didn't internalize the positive externalities of public goods, since there was no one with enough scale to provide them and internalize these externalities, role normally played by the government or natural monopolies guaranteed by it (Rajagopalan and Tabarrok, 2014). A practical example of how the government can act to internalize these positive externalities is by taxing properties. If, for example, public safety in a region is improved, the value of the properties in that region will increase and so will the revenue of the property tax to the local government. In other word, the residents will internalize the costs of the public goods through taxes, which will in turn pay for the public goods, minimizing the problem of free-riding (Grube, 2012).

The main point in this tale is show that political process can impact the level of public goods provided in a determined location, and it is not exclusively related to how rich a region is. Bringing it back to Brazil, Guillermo Alves in its article of 2015, On the determinants of Slum Formation, shows that when PT was in power in some cities, it may have influenced how public policy was done by giving priority to policies of urbanization of slum, which in turn generated a greater growth in the slums ruled by the party, because the costs of living in a slum diminished. Given the fact that one of the main variables in the study to define slums is the lack of public goods, it is possible that political variable may also affect directly the level of supply of these goods.

Given the aforementioned examples and the great disparity between the federal units, this study will focus on the following question:

“How does the political process (government weakness, political instability and political ideology) affects the supply of public goods in Brazilian states?”

I will focus on the state level of government to allow for an in-depth study of each to allow me to generate some of the political variable in question. Nevertheless, many of the institutions responsible to provide public goods are connected to the state level administration in Brazil. Some of them are the Military and Civil polices, responsible for public safety; High Schools, responsible for secondary education and some of the public sanitation companies, which are responsible for basic sanitation

and providing running water. Of course, not all are provided by the state government, the local government provides garbage collection and basic education for example. However, the proxy I will use for public goods in this paper is the number of homicides by 100 thousand inhabitants obtained from Atlas of Violence (Atlas da Violência, translation by the author).

The main variables explanatory variables in this study will be government weakness, political instability and ideology. Political instability is defined by frequent changes of the group in power, and because of that, the group in power where there is high political instability wouldn't invest in public goods, as these investments take more time to mature in political benefits. In other words, due to that high instability, the group may not maintain power for long enough to reap the political benefits of investing in public goods, so it **chooses** to not invest. To measure political instability I used an probit regression on pooled cross-state time series data to estimate the probability of transfer of power. Government weakness is defined by the situation where the government is not strong enough to control the administration, so it **cannot** invest in public goods, even though it may want to. A situation like this can be illustrated by the situation, where an assembly does not approve of the budget defined by the executive branch so it changes it, forcing the executive branch to forgo its plans. To measure government weakness I measured how much support the regional government had in the state assembly (Edwards and Tabellini, 1991). Political ideology, even though hard to defined, may be an important variable as it was for Guillermo Alves (2015). The causal relation may be through the difference in the groups ideologically more favoured goods. While left-wing parties favour actions, which will help more popular and poverty-ridden sectors of the society, right-wing parties would favour policies closer to the interests of the middle-class or elite. As the ones with less access to public goods are normally poor people, who live in the suburbs (Kowarick, 1979), the left-wing parties would be the ones, who would favour an expansion of the number of people with access to public goods, as this is its electoral base. This also happens in Brazil as a whole as can be seen in the map below (Image 1.1).

Image 1.1 – Map of HDI of each municipality versus vote in the 2014 presidential election

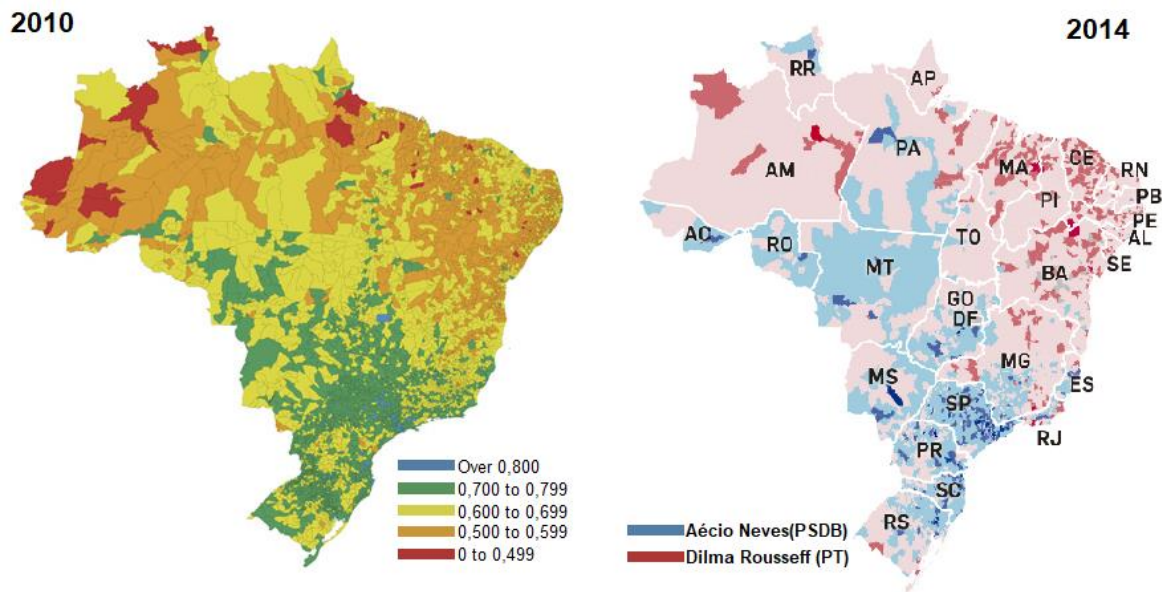


Image 1.1 The map on the left show the level of HDI (Human Development Index) by municipality in 2010 and the one on the right shows the vote on the second turn of the presidential elections of 2014. Source: Atlas do Desenvolvimento Humano/TSE. Elaboration by: G1 and Estadão

If we compare the map of HDI with the one of the presidential elections of 2014, it is possible to see that areas, which are more developed tend to vote for Aécio Neves from PSDB, a party with a more centrist position, while areas, which are less developed tend to vote for Dilma Rousseff from PT, the main left-wing party in Brazil. Later, we will see that right-wing parties receive barely any support in elections. In order to measure such ideological differences, I used the paper written by Zucco (2011) in which he uses a survey methodology to classify the Brazilian parties in a left-right spectrum to classify each party. Its survey was applied to federal Brazilian congressman and he used the data to classify each party relatively to each other in the political spectrum.

The results were different from predicted. Political instability was significant in all the models estimated, with the predicted sign. A higher political instability generated less homicide per 100 thousand inhabitants. Government weakness wasn't significant in any models, however with the sign as predicted. Higher government weakness generates less supply of public goods. Finally, neither parties' ideologies were significant in any of the models, however, their sign were as predicted.

2. Theoretical Model

To answer the question about in what way each of the political variable may impact the supply of public goods we must understand exactly how they impact it. Banerjee, Iyer e Somanathan (2006) have supported that most of the variation of the access to public goods comes from interventions connected with a “top-down” approach (government) than from a “bottom-up” one (population/private sector). Bonduki and Rolnik (1982) bring this discussion to Brazil, more specifically to São Paulo. They show in a case study about poverty the paulistan capital, that access to public goods (called collective goods by them) is raised mainly due to political will from some politician, who wants to win votes or ease political pressure from that specific population over them.

2.1. Political Instability

Sebastian Edwards (1996) in its paper about savings in Latin America covers the relationship between political instability and the supply of public goods. He uses game theory to discuss how political incentives may or may not encourage governments to raise public savings, and in turn raise the capacity to supply public goods, according to the level of political instability in the country. He describes a L and an R party, with different preferences for public goods, and which fight for political power. If there is a high chance that power will change between them, they might choose not to invest in public goods. The reason behind this is the assumption that any investment in public goods are felt with a lag by the population, in other words, beyond the time of only one term, in the case of a democracy. If, for example, party L is in power, but it predicts that will lose the next election to R, then L will not invest in public goods because it will incur the cost by investing its budget to generate political benefit to the party R in the next term. This situation is one, in which L **deliberately decides** to not invest in public goods due to the political instability. So, one of the main determinants of how much public savings a country has is political instability according to Edwards (1996). As public savings is the source of the capacity of the government to supply public goods, so will political instability impact the production of public goods, albeit indirectly. The impact is expected to be an inverse relationship, in which the higher the political instability the lower is the supply of public goods. However, what Edwards have missed in its paper is that its argument may also hold for other public

goods, and that public savings are, in itself, a public good. Higher savings, which are equal to higher fiscal surplus, are able to lower the necessity of financing by the public sector, lowering interest rates in the economy, at the same time lowering inflation as money will not be needed to be printed to help finance part of the public deficit through inflation tax or seigniorage (Carlin and Soskice, 2006). Edwards and Tabellini (1991) do make a study based on the same theory explained above to analyse the effect of political instability in the use of inflation as source of revenue by the government, the inflation tax mentioned above. As described in the paper lack of inflation can be seen as a public good, as it is not possible to exclude anyone from the use of a currency with stable value and its use does not impact negatively to its use by another, in other words is non-rival. The government could use the inflation tax to raise investments in short term policies to reap political benefits if it thought it couldn't win the next election, which could be seen as the government disinvesting in the public good of low inflation. Inflation would grow in the next term during the term of their political rival, taking a political toll on him. The authors do find a significant relationship between political instability and the use of inflationary tax by the government.

A study of political stability in Brazil is done by Carlos Ranulfo (2010), in which each of the states is analysed. He shows that the electoral dispute is very different when comparing the regional landscape and the national one. While, there is a great polarization between PSDB and PT in national level, this polarization is much weaker in the federal units. He analyses the elections of all states between the period of 1990 and 2006. He says that only in the state of Santa Catarina, two parties (PP and PMDB) concentrates most of the votes and reached the second round of the state election in 4 of 5 elections. In other seven states, two or three parties occupy the first or second place in three of the five elections. These states were Piau  (PMDB and PFL), Pernambuco (PMDB, PSB and DEM), Paran  (PMDB and PDT), Rio Grande do Sul (PT and PMDB), Bahia (PT and DEM), Roraima (PTB and PSDB) and Amap  (PSB and PDT). It is possible to add to this list states, where at least two parties could launch competitive candidates (voting over 10%) in at least four of five elections. In this last category, Acre (PT and PMDB), S o Paulo (PT and PSDB) and Minas Gerais (PT and PSDB) would be included. However, a good share of this supposed instability that Ranulfo presents us actually comes from prominent political figures changing parties, for examples governors changing parties, when they run for re-election. This is the

case of Ciro Gomes in Ceará and Anthony Garotinho in Rio de Janeiro. This happens due to the personal characteristic of the vote in Brazil, which is discussed by Pereira and Mueller (2003). This personal vote is casted mainly for the candidate and not for the party. Because of that, the operationalisation of the variable political instability will focus on the candidate rather than the party, which will be described later on.

2.2. Government Weakness

The main part of the theory of government weakness is also based on the paper by Edward and Tabellini (1991), where they say that government weakness is the **incapacity** of the government to make choices, even if it might want to invest in public goods, for example. They also use the government weakness to analyse the use of inflationary tax by the government to finance its deficits, however they found no significant relationship. Nonetheless, I will use government weakness in this study to make sure this is the case with any public goods. There is another reason for doing so connected to the Brazilian political system.

Pereira and Mueller (2003) discuss how the executive branch dominates the legislative process because of a few rules embed in the rules of how our government works. They base their analysis on the federal level, and they demonstrate how president Fernando Henrique Cardoso used its power as leader of the executive branch to force the Brazilian legislative branch to do his bidding. There are three aspects from the executive power and legislative power, which enables such a dominance by the executive branch. Firstly, the capacity of the executive to enact legislation through Provisional Measures (MPs)¹. Secondly, due to the great number of congressman, the negotiation focuses on the parties' leaders. Thirdly, the executive branch concentrates the distribution of political and financial resources. It is the sum of these three aspects that allows the executive branch to dominate the legislative branch. How does this occur? Given that every congressman wants to get re-elected, it seeks to approve parliamentary amendments to the national budget to created benefits to its electoral base, boosting its chances to get re-elected. As shown by

¹ They are order signed by the president with the force of law, with immediate effect. They are supposed to be used in situations of emergency, however they are broadly used. The still have to be voted by both houses of Congress to turn into a permanent law, if it is not voted within 45 days, it will enter in what is called an urgency regime. This regime freezes all votes of Congress until the MP is voted.

Pereira and Mueller (2003), the approval and execution of the amendments really raises the chances of a congressmen to get re-elected. However, due to the great number of parliamentarians, it is impossible for the government to negotiate with each one. So they end up having to rely on their leader to make negotiate their projects. In order to win favour with the leader, they tend to vote accordingly to the orientation of the party. However, even if a parliamentary amendment is approved, it does not mean that it will be executed. The execution of individual amendment only became mandatory in 2015 with the approval of PEC 358/13, which is outside the period considered by the study. However, collective amendments presented by groups of congressmen are still of non-mandatory execution. Due to this, the executive branch could stop the execution of these amendments any time it wanted. So, if a party stopped voting according to the government, it just had the slow down or stop altogether the execution of the amendments of that party. And according to Pereira and Mueller (2003), an amendment approved and not executed lowered significantly the chances of a congressman to get re-elected. To sum it up, to vote with the government raise the chances of parliamentarian getting re-elected as the amendments were going to be approved and executed. To vote with their party's leader meant there were greater chances that the leader would assist him in passing its individual amendment. Lastly, as the executive branch have legislative powers, it could force a change in the schedule of the votes of legislation, for example, through Provisional Measures (MPs), directing the legislative process. This is how the coalition presidential system² functioned in Brazil.

However, when it comes to the regional governments only two of these three aspects stay the same for all intents and purposes. They are the executive branch's capacity to legislate and its capacity to stop the execution of parliamentary amendments. The third changes drastically, as the number of congressman diminishes considerably. While the House of Representatives has 513 congressmen and the Senate has 81 senators, the biggest state assembly has only 94 members (São Paulo) and the smaller has 24 members (Roraima). That is the same to say that the concentration of power of negotiation in the hands of the parties' leaders may not be

² Broadly speaking, the coalition presidential system is a system of government where the president rules together with a coalition of a great number parties, which is common to parliamentary systems and not in presidential systems.

true in the state level as this lower number of congressman creates incentives for individual behaviour of the members of the assembly during votes, weakening the connection with the party. That is why, excluding the legislative branch from the analysis of the political process cannot be done in this situation, so the variable government weakness must be included, as it is the best proxy for these dynamics between the executive and legislative branch as stated by Edwards and Tabellini (1991). It would be extremely tasking to analyse each of the state assembly members to determine whether they were pro-government or not, so I used partisan affiliation to generate a variable of government weakness, even though I am aware of the possible weak link between partisan affiliation and vote in the state level of government.

2.3. Political Ideology

The theory of how political ideology can impact is based on the assumed preferences of goods along the lines of the political spectrum. According to Zucco (2011), the difference between left-wing and right-wing parties is, at least within the views of the Brazilian congressman, still viewed as a difference in how much economic interventionism there must be in an economy. While left-wing parties tend to be associated with bigger government, while right-wing parties tend to be associated with smaller government. As public goods are generally provided by the State (Gruber, 2012), left-wing parties would be in a better position to improve the supply of public goods. However, this is not the only reason. Left-wing are more commonly associated with poorer electoral bases, while right-wing parties are more commonly associated with middle class and elite electoral bases. As seen in Image 1.1, this does hold true in practice, at least in Brazil. And so, left-wing will favour the needs of its electoral base, where there is little to no access to public goods, as poverty-ridden suburbs have little infra-structure (Kowarick, 1979). The operationalization will be based on the paper by Zucco (2011).

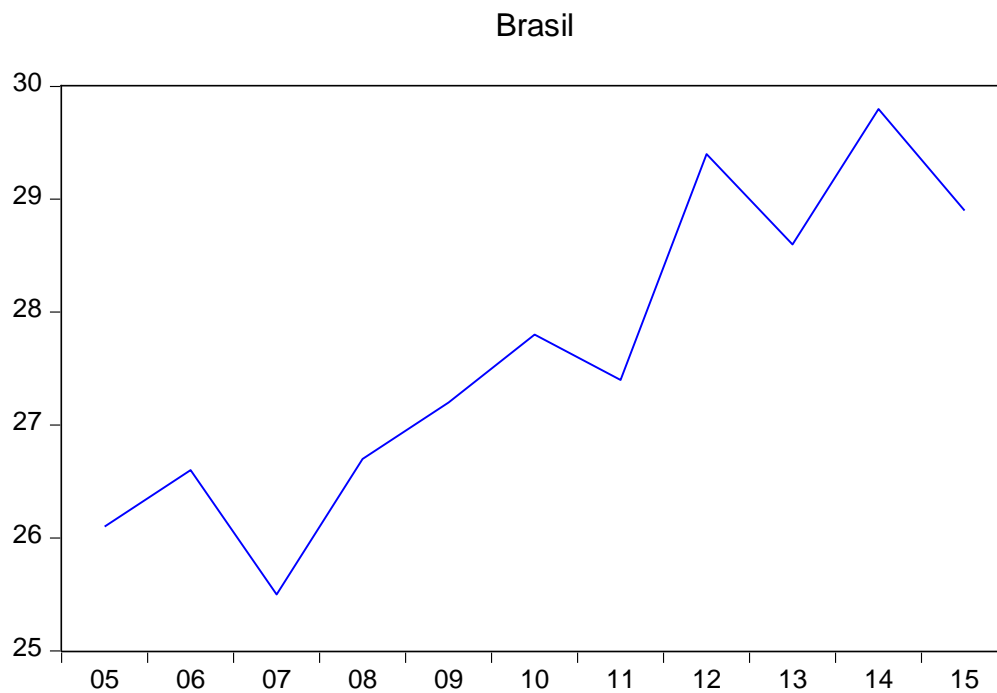
3. Operationalization

In this section, I will describe how each of the variables were calculated with the main decisions concerning each variable and why each of these decisions were made. The first major decision was on which level of government to focus the paper, on local or regional level. Aside from the justification already given in the introduction about allowing me to do an in-depth study of the politics of each state, there were two more reasons. The first one is the highly personalistic type of politics associated with local elections, which can be clearly seen in the local elections of 2016, where there even were alliances between PSDB and PT, both parties that polarize the national elections. The newspaper O Globo, even called it the politics of “*vale-tudo*” (Vasconcellos, 2016), or anything goes in a literal translation, which gives a hint on how the politicians in the local level may not have preferences for governmental goods really defined as they may more easily support someone just because they know that person even though they may have different preferences, when it comes to governmental goods. The second reason is that there is a strong relationship between the electoral performance between electing a governor the state and the candidates supported by him (Ranulfo, 2010). In the end, studying the state level government seemed as the best option between the two. Another important aspect of the operationalization are the control variables. They were based in the paper by Fainzylber, Lederman and Loayza (2000).

3.1. Access to Public Good

The main decision here was to decide which public good to choose to include as dependent variable in the main model. The main public goods provided by the state level governments are public secondary education, public safety, basic sanitation, running water and some aspects of public health. The first to be ruled out was public health, as the local and regional governments share responsibilities in the system in a way that is hard to separate the results of each level of government. The second to be ruled out was public secondary education, due to possible high correlation with the quality of previous level of education, making the results of state level administration dependant on the performance of local level administration. Access to running water was ruled out as it was very similar to basic sanitation with much lower variation between states. Finally, the decision came down to public safety and access to basic sanitation. There were problems with both variables. The variation in public safety

level may be due to variables of hard mensuration such as the growth of PCC, Capital's First Command in a literal translation, which is a mafia group that lowers criminality in the states, which it dominates, as there are no enemies. When there are enemies, conflicts arise between the different factions, creating higher homicide rates than before, for example. Other aspects, such as cycles of drug consumption and effectivity or not of public policies may impact how much public safety the regional government is capable of providing (Feltran, 2010 and 2012). In the first aspect, there is the difficulty in measuring drug consumption and the possible lack of reliability of the data. In the second one, there is the possibility that a regional government's policies may not work, even though it has political will and has put in practice investments to provide better public safety, while policies to improve access to basic sanitation are more easily implemented with more reliable results, and it doesn't depend so much on environmental variables. There were two main points favouring the use of basic sanitation. The possibility of isolating the regional public companies by using the SNIS database and that it still maintains significant relevance, when it comes to impact in population as 70% of the Brazilian municipalities have its services provided by a regional public sanitation company (ABCON, 2016). However, the data from the SNIS had serious problems. Due to the participation in the system being voluntary, some companies did not send data to the database, and when they did, they normally did not send complete data. For example, in a year, a public company may send data for 200 municipalities, in the following year, it may send data for 150 municipalities. This makes the data incomparable on a yearly basis. So between an unreliable proxy for public service access and a reliable proxy, with possibly omitted variables, I chose the second option. The proxy I used for public safety was the homicide rate per 100 thousand inhabitants, as it is one of the most reliable criminal data in Brazil. For example, theft may not even be reported, however a murder is a bit harder to not be registered.

Graph 3.1 – Homicide per 100 thousand inhabitants

Graph 3.1 Source: Own elaboration based in data from *Atlas da Violência*

In the graph, the homicide rate has been constantly going up since the start of the series in 2005. However, their behaviour is not standard across the federal units of Brazil, as it can be seen in Appendix 1. States from the Southeast have seen a slight decrease, while the one from South have seen a slight increase in the homicide rate. The others, mostly, have had their homicide rate increase over the years.

3.2. Political Instability

To operationalize political instability, I will follow the paper of Edwards and Tabellini (1991), in which they use an estimate of change based on a probit regression on pooled cross-state time series data, albeit with a few changes. The dependent variable of the probit regression will be change in power, meaning change of the political group in power. I used a second dependent variable to make another estimate, changes in power, when there were elections, in order to eliminate the effect of term revocations. The variable created with the first estimate I called *Political Instability (1)* and with the second estimate, I called *Political Instability (2)*.

There are two groups of other variables, economic variables and political variables. The economic variable include mainly inflation per state and GDP growth

per state. The political variables include, personal scandal, national scandal for PT and national scandal for other parties affected, re-election and elections.

After estimating the best model with these variables, I estimated the probability value of a political group losing their power in the next election by using the estimated model and assuming that elections could happen any year, in order to create a proxy for the probability of that political group not having power in the next term. It would be the equivalent of not being in power when the lagged effect of the investment in public goods generate political benefits, that was described by Edwards and Tabellini (1991). I did that for both *Political Instability (1)* and *Political Instability (2)* for the time period between 2003 and 2014.

3.2.1. Change in Power

The change in power is a variable created as a dummy. If there is change in power, it is one, if there is not, it is zero. Due to the individualistic nature of the elections in Brazil as discussed previously (Pereira and Mueller, 2003), there are some details, which are important and that must be highlighted. As the power is focused not in the party, but in the figure of each governor, due to that individualistic nature of the vote, the change in power will occur not when there a change in party in power, but when a candidate supported by the incumbent (or the incumbent himself) loses the election. It is an important distinction.

Let's take the example of former governor of Alagoas Ronaldo Lessa (PDT-AL). Even though there was a candidate that its party supported in election for the governor of the state of Alagoas, Lenilda Lima (PT-AL), he supported another candidate, which won the election. That candidate was Teotônio Vilela Filho (PSDB-AL), who later cut ties with Ronald Lessa in 2007, after the election. Since Ronaldo Lessa supported Teotônio Vilela during the election I considered there was no change in power, even after they broke up as in 2007, as the group had turned into Teotônio's group and wasn't Lessa's group anymore.

Another interesting case study is Espírito Santo. Paulo Hartung (PMDB-ES) was governor of Espírito Santo between 2003 and 2010. As he could not run for office again, as it is not legal to hold a term for an executive branch's office three times in a row, he supported another candidate from another party, Renato Casagrande (PSD-

ES). Casagrande won, so there was no change in power. However, Hartung came back in 2014, and ran against Casagrande for office and won against his former ally. As Casagrande was the one in power by then, there was a change in power. Similar situations happened all over Brazil, for example in Rio de Janeiro and in the Federal District in 2006.

The logic behind this arrangement is that a vote for a candidate supported by the incumbent is the true vote for continuity, not for change. So, when people voted for Teotônio, they voted for continuity, even though he broke up with Lessa later. When people voted for Casagrande in the first election, they voted for continuity, however, a vote for Hartung was a vote for change in the government of Casagrande. Nonetheless, when there was no evidence of the governor supporting someone different from his or her party, I assumed the candidate of the incumbent's party was the one, which would receive the vote for continuity. I did that for the 27 states throughout the period of 2003-2014, including the elections of 2006, 2010 and 2014.

3.2.2. GDP growth and Inflation

The decision to include these two variables is based on the iso-vote curve theory, which are analogous to indifference curves, but instead of utility they use votes. According to this theory, for different levels of GDP growth and Inflation, there can be many combinations, where there is no loss of votes. If you raise just inflation, but do not raise GDP growth, the politician will lose votes. If you only raise GDP growth, without raising inflation, the politician will gain votes. However, if both are raised, there are points, in which their effects will be negated, these points make up the iso-vote curve (Putnam, 1988). What matters here is that GDP growth and inflation are theoretically important to measure, if someone may lose power or not.

To operationalize GDP growth, I used chained volume of each federal unit's GDP, with the year of 2002 (base=100) as its reference. The series exists between 2002 and 2014. Then, I obtained the GDP in constant prices of 2002 of each state from IBGE. After that, I multiplied the chained series by the GDP of 2002 in current prices, obtaining the GDP between 2002 and 2014 in constant prices of 2002. It was only needed now to calculate the percentage growth between the years to obtain a series of GDP growth between 2003 and 2014.

To obtain inflation of each state, I obtained the GDP in current prices from 2002 to 2014 from IBGE (2014), divided each GDP in current prices by the GDP in constant prices of 2002, and discounted all the previous years' inflation.

3.2.3. Personal Scandal, National Scandal for PT and for Others

The scandal variables were basically created in similar ways. They are all dummy variables, where one is when a scandal is happening, while zero is when there is no scandal. The most important point here is that I used an assumption when choosing, whether there was a scandal happening or not. From the moment it started, its effects would only last until the next election and no further, in other words, only one, election cycle. It didn't matter if it started in 2007 or 2010, it last until the election of 2010. To find out the year, when each scandal began I used extensive internet research from locals' newspaper to parties' sites, while only recognizing the existence of a scandal, when there were multiple sources identifying it.

The personal scandal are scandals directly connected to the incumbent governor or very close allies such as state secretaries. The other two are based on the hypothesis that national scandal involving the incumbents' party may hurt the chances of his political group to stay in power. I did separate PT from others, because he was the incumbent at national level at the time, so it was reasonable to assume that PT would be most hurt politically from the occurrence of national scandals.

3.2.4. Re-elections and elections

Re-elections are the possibility of governor to run for a second consecutive term in office. However, there is a problem here. It is fairly common practice in Brazil to renounce an office in his or her last year of term to be able to run for office in the legislative branch or other executive office. This is mandatory according to the electoral law current in vogue. If the vice-governor, who has just now assumed as governor for less than a year tries to get elected in the next election, he will be technically running for a re-election, however it isn't in practice due to the high individualistic politics practices in Brazil. Vice-governors are barely known before they take office, so these are not actually re-elections. I considered re-elections only when the incumbent had served more than half the term or two years. It is also a dummy variable.

Elections are also a dummy variable for the year, when there were elections. I used this variable to estimate the variable *Political Instability (2)* and to differentiate the effect of GDP growth and inflation during the year of the elections and during the rest of the years.

3.3. Government Weakness

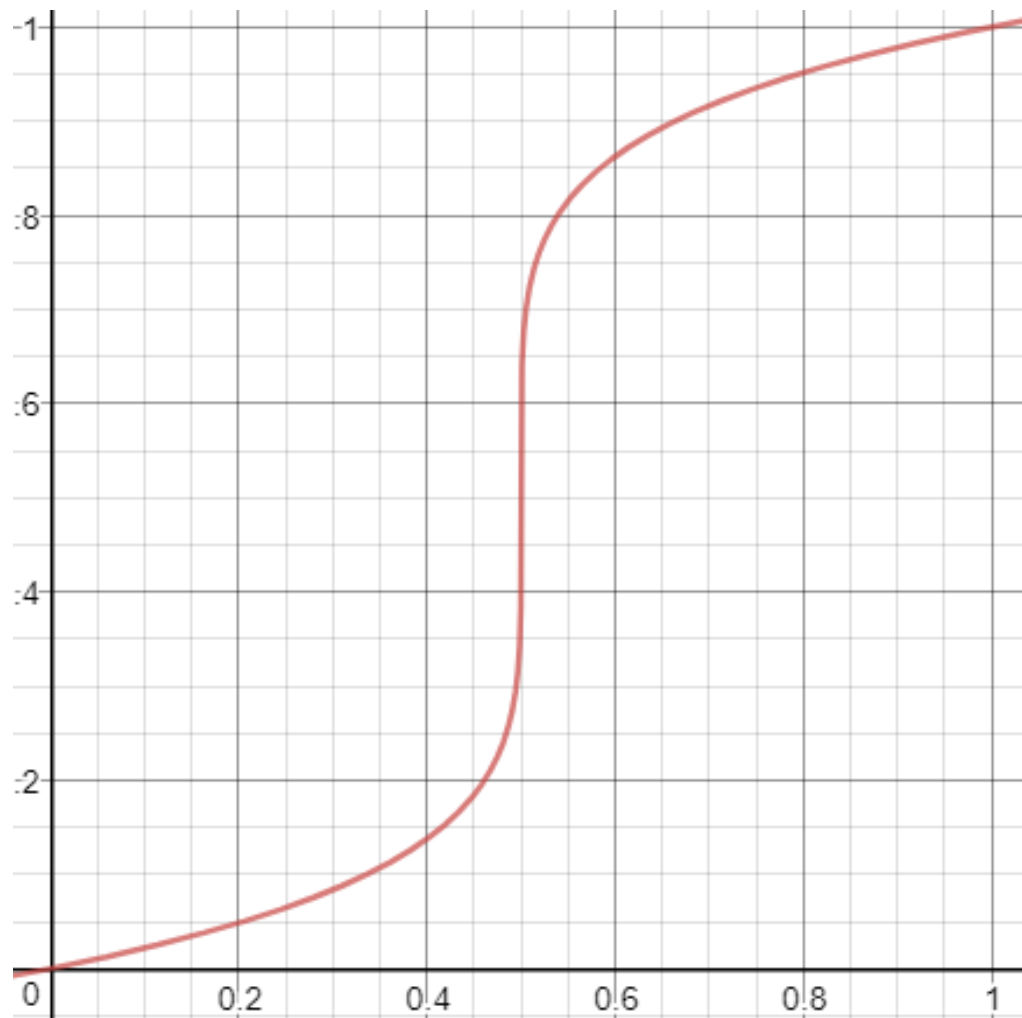
The operationalization of government weakness is also based on Edwards and Tabellini (1991) way of operationalization, however I did create a second measure for such variable, due to reasons that I will explain further below.

However, firstly, the calculation of the proportion of the governmental base in the state assembly was based on the coalition made during the elections for governor. Every member of the state assembly elected by one of the parties of that coalition were considered as part of the government base. This would effectively ignore the different coalitions made for legislature elections. The coalition was chosen preferably from 2nd round coalitions, and if not available, from 1st round coalition. It was done this way to allow for bigger states to reach significant state assembly bases as they tend to have more political forces, being more disperse, and in turn having smaller coalitions in the 1st round. Even though, their government may not be necessarily weak, as it will negotiate support in the 2nd round. There are some problems with this approach, as we have commented about the dominant of the executive branch over the legislative branch (Pereira and Mueller, 2003), albeit weaker at state level. This would allow for weak government to negotiate support later on. However, it was next to impossible to find every single change in party allegiance for every single one of the 27 states. There was also a second reason. I assumed that the base from the election would be closer to a strong base of the government, instead of weak allies, who act individually, as we have seen that state assembly's members may tend to do. And so, to both variable.

The first variable for government weakness is a dummy variable where it is 1 for governments with 50% or more of political base in the state assembly and it is 0 for those, who haven't. This actually is a measure of government strength, the inverse of government weakness, so the expected sign, which is positive (the greater government weakness, the higher homicide rate, and the lower the level of supply of public goods), will be reverted to negative. This dummy variable was called *Government Strength (1)*.

The second variable was born out of dissatisfaction with throwing away so much information. Is it right, for example, to consider a government with a legislative base of 45% as weak as a government with a legislative base of 10%, even though it is common to negotiate support after the election as Edwards and Tabellini (1991) do? No, it is not. I needed a variable that grows very little in beginning, as having a support as low as 10% is very close to having none, and then grows very fast the closer it got to 50%, the turning point from minority to majority. It should, then, reach 1 very fast, as having 80% of the chamber as your allies is not that different from having 90% of it. In other words, where derivative reaches the highest value at 50% and have lower values the farther away it got from 50%. Something with the behaviour as show below:

Graph 3.2 – Behaviour of second variable for government weakness
Government Strength (2)



Graph 3.2 Source: Own elaboration using Desmos' tool.

The correspondent equation for that particular behaviour is the one below, where x is the proportional base of support for the government:

$$\text{Government Strength (2)} = \tan^{-1} \left(\frac{(x - 0,5) * \left(\frac{\pi}{2}\right)}{0,25 * \pi * \cot(0,03125)} \right)^{1/5} + 0,5$$

This equation was obtained after extensive trial and error, and using as base Steward (2010), until a satisfactory equation was modelled. Finally, I used such equation to create the variable *Political Strength (2)*. Again, it is the inverse of the measure of government weakness, so its sign is also expected to be reversed. The greater the political strength, the lower homicide rate, the greater the supply of public goods, in this case, public safety.

3.4. Political Ideology

As previously discussed, the political ideology will have its operationalization based on the work by Zucco (2011), where parties are relatively classified on the political spectrum against each other by using data from surveys with congressman at federal level. And so, I created a dummy for left-wing parties and another dummy for right-wing parties. Those who didn't feature in neither of them were centrist parties. Zucco does not provide us with numerical value, only with the chart below:

Table 3.1 – Left-Right spectrum as elaborated by Zucco from 1990-2009

Year												R ²	
1990	PC do B	PT	PCB	PSB	PDT	PSDB	PMDB	PTB	PL	PDC PRN	PFL	PDS	0.91
1993	PC do B	PT PSTU	PSB	PPS	PDT	PSDB	PMDB	PP	PTB	PL PFL	PPR	PRN	0.88
1997	PC do B	PT	PSB	PPS	PDT	PMDB	PSDB	PTB	PL	PFL	PPB		0.98
2001	PC do B	PT	PSB	PDT	PPS	PMDB PSDB		PTB	PL	PFL	PPB		0.86
2005	PC do B		PSB PT		PPS	PDT	PMDB PSDB	PTB	PL	PFL	PP		0.79
2009	PSOL	PC do B	PSB PT		PDT	PV	PPS	PMDB PSDB	PTB	PR	PP	DEM	0.87
	Left-Wing			Centrist				Rigth-Wing					

Table 3.1 Source: Zucco

Those lines on the chart were drawn with the objective in mind to keep a certain balance in the number of parties in each category. Where the lines crossed over parties' names, the party was considered part of the category in which most of its name was found on. For example, PSDB and PMDB were considered centrist parties throughout the sample. The classification was made by terms and considered the last available data before the start of the term. For example, for the term 2011-2014, I used data from the year of 2009. For the term 2007-2010, I used data from 2005, and so on.

3.5. Urban Population (% total population)

This control variable was included, based on the assumption that providing basic sanitation is easier in areas where there is greater population density, like urban areas. The urban population was obtained from the SNIS database for all states and its municipalities, however the IBGE is the primary source of data. From the SNIS database, I obtained the total population of all Brazilian municipalities (POP_TOT) and the total urban population of all Brazilian municipalities (POP_URB) for each state. I summed it all by state and divided POP_URB by POP_TOT. As more densely populated areas tend to ease the supply of public goods by governments through economies of scale, states with more urban areas will tend to have greater access to public goods, including public safety.

3.6. GDP per capita

This variable may affect the supply of public goods, as greater wealth in a region will generate greater revenue for the government, which will, in turn, provide better public goods. The GDP per capita was obtained by dividing the state's GDP in constant prices of 2002, previously obtained, by the estimated population made by IBGE. I calculated this way in order to isolate the regional economic growth from inflation.

3.7. Predicted Signs

To sum up the discussion, every predicted sign is show below. I also included the concept of Government Weakness in there, so as to make it easier to understand as most of the discussion focused on this concept, but the variable measures its inverse.

Table 3.2 – Predicted Signs for all variable and concepts

	Homicide per 100 thousand	Supply of Public Goods
Political Instability	+	-
Government Strength (used variable)	-	+
Government Weakness (concept)	+	-
Right-wing parties	+	-
Left-wing parties	-	+
Growth of the percentage of Urban Population	-	+
GDP per Capita Growth	-	+

Table 3.2 Source: Own Elaboration

4. Empirical Results

The empirical results will be divided in two sections, the first one will be about the results obtained during the probit regression for both variables of Political Instability. The main reason for that is to highlight the variables utilized to estimate this variable for the main model. After that, I will show the results of the main model, which uses homicide per 100 thousand inhabitants as dependent variable.

4.1. Political Instability

The table below shows the results obtained for the estimation of the model, which will be used to generate the variable *Political Instability (1)*, which considers both changes of power due to elections and term revocations.

Table 4.1 – Model estimation for Political Instability (1)

Model	Probit Regression on pooled cross state time series data		
Period	2003-2014		
Number of Observations	324		
Dependent Variable	Change in Power		
	(1)	(2)	(3)
Coefficient	-1,574*** (0,398)	-1,519*** (0,373)	-1,813*** (0,336)
GDP Growth	-11,077* (6,783)	-11,226** (6,681)	
GDP Growth in the Year of the Election	18,179*** (7,187)	17,658*** (7,106)	8,307*** (4,023)
Inflation	-9,523*** (4,809)	-9,873*** (4,692)	-10,367*** (4,550)
Inflation in the Year of the Election	11,282*** (4,754)	11,799*** (4,423)	13,968*** (4,229)
Reelection	-0,089 (0,297)		
Personal Scandal	1,059*** (0,267)	1,040*** (0,264)	1,061*** (0,259)
National Scandal PT	0,478 (0,511)		
National Scandal Other Parties	0,838*** (0,333)	0,761*** (0,321)	0,847*** (0,315)
McFadden R2	40,49%	40,06%	38,70%
Schwarz criterion	0,568	0,535	0,527
Akaike info criterion	0,463	0,454	0,457
Hannan-Quinn criterion	0,505	0,486	0,485

Table 4.1 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

For every variable, except the dummies, unit root test was run, and it was determined that GDP growth and inflation were stable variables. I used the information criteria displayed above to determine, which model was better than another, when deciding, which variable to take off. Schwarz and Akaike were the main criteria used, while Hannan-Quinn was used as the tie breaker. To those used to the R^2 measure, McFadden's R^2 may cause a little confusion as even though a higher is better than a lower one as in the R^2 , the McFadden's R^2 is already considered an "excellent" fit between 0,2 and 0,4 in McFadden's own words (McFadden, 1979).

There are two interesting results to highlight here is that, even though national scandals did have a negative effect on other parties being able to keep power, it did not have such an effect for PT as previously expected. National scandal for PT was non-significant in all models. The second result are the sign of the GDP growth and inflation. GDP growth had a negative sign, when alone and a positive sign, when considered only GDP growth in the year of the election. The expected sign for GDP growth was negative as a higher GDP growth would lower the chances of losing power. In the third model, GDP growth was taken out, based on the criteria explained above. Inflation had the same mystery around it. Its sign was negative when alone and positive when only considered the inflation in the year of the election. Its expected sign was positive, as a higher inflation would lead to higher probability to the candidate losing power. A possible explanation for those discrepancies is that due to having two of the same variables in the model, they are, in a way, correcting each other's effect. After this, I used this model (3) on Eviews to estimate the probability of losing power, considering that an election could occur any time, to create a proxy to the probability of the same political group not staying in power by the next term or lag. In the next, it is possible to see the results for *Political Instability (2)*.

Table 4.2 – Model estimation for Political Instability (2)

Model	Probit Regression on pooled cross state time series data		
Period	2003-2014		
Number of Observations	324		
Dependent Variable	Change in Power through elections		
	(1)	(2)	(3)
Coefficient	-1,348*** (0,441)	-1,305*** (0,404)	-1,761*** (0,358)
GDP Growth	-45,253 (46,827)	-43,825 (44,620)	
GDP Growth in the Year of the Election	51,490 (46,832)	49,394 (44,595)	8,561** (4,070)
Inflation	-73,116 (91,538)	-71,100 (86,548)	-28,665*** (11,903)
Inflation in the Year of the Election	74,039 (91,437)	72,077 (86,431)	32,291*** (11,853)
Reelection	-0,144 (0,298)		
Personal Scandal	0,886*** (0,307)	0,869*** (0,304)	0,880*** (0,295)
National Scandal PT	0,471 (0,520)		
National Scandal Other Parties	0,873*** (0,365)	0,780*** (0,348)	0,906*** (0,337)
McFadden R2	51,20%	50,68%	48,17%
Schwarz criterion	0,469	0,436	0,434
Akaike info criterion	0,363	0,354	0,364
Hannan-Quinn criterion	0,405	0,387	0,392

Table 4.2 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

The criteria used to choose the best model were the same as in *Political Instability (1)*. However, between the model number (2) and number (3), it is possible to see that the criteria doesn't work. I chose to go forward with the third model, as the information criteria were all very similar to model (2), but most of the variables turned out to be significant only in model (3). The two main points here are that the national scandal for PT still stays not significant and that GDP growth by itself was also not significant and had to be taken out of the model again. I also used model (3) to estimate *Political Instability (2)* through the same means as used by *Political Instability (1)*.

4.2. Access to Public Goods (homicide per 100 thousand inhabitants)

Now, for the main results. I ran unit roots test and adjusted those that need adjustment. They were all done using OLS regression with Fixed effects on cross-section and normal effects on the period. To decide on this model, I ran Chow, LM and Hausman tests for each of them. There will be four tables of results as there are two variables for Political Instability and for Government Strength. So, I ran models for all combinations. The criteria for deciding the best model was the adjusted R^2 . The results are presented in the next four pages.

Table 4.3 – Homicide rate using Political Instability (1) and Government Strength (1)

Model OLS estimates with Fixed Effects						
Period 2006-2014						
Number of Observations 243						
Dependent Variable Variation in homice per 100 thousand people						
	(1)	(2)	(3)	(3)	(4)	(5)
Coefficient	0,697	0.716	0,278	1,022***	0,879***	1,241***
	(0,619)	(0,609)	(0,425)	(0,338)	(0,245)	(0,328)
Political Instability (1)	2,427**	2,496**	2,508**			
	(1,400)	(1,348)	(1,344)			
Government Strength (1)	-0,152	-0,1636		-0,202		
	(0,675)	(0,671)		(0,654)		
Right-wing parties	0,324	0,325			0,803	
	(1,111)	(1,108)			(1,018)	
Left-wing parties	-0,563	-0,574				-0,887
	(0,758)	(0,754)				(0,703)
Growth of the percentage of Urban Population	-62,327**	-58,831***				
	(34,596)	(29,260)				
GDP per Capita Growth	1,502					
	(7,882)					
R2	17,90%	17,89%	15,80%	14,47%	14,68%	15,06%
R2 ajusted	5,39%	5,83%	5,22%	3,73%	3,96%	4,39%

Table 4.3 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

Table 4.4 – Homicide rate using Political Instability (1) and Government Strength (2)

Model OLS estimates with Fixed Effects						
Period 2006-2014						
Number of Observations 243						
Dependent Variable Variation in homice per 100 thousand people						
	(1)	(2)	(3)	(3)	(4)	(5)
Coeficient	0,632 (0,546)	0,648 (0,540)	0,278 (0,425)	0,953*** (0,232)	0,879*** (0,245)	1,241*** (0,328)
Political Instability (1)	2,422** (1,402)	2,503** (1,349)	2,508** (1,344)			
Variation in Government Strength (2)	-0,077 (1,091)	-0,059 (1,085)		-0,296 (1,088)		
Right-wing parties	0,374 (1,086)	0,381 (1,084)			0,803 (1,018)	
Left-wing parties	-0,563 (0,762)	-0,577 (0,757)				-0,887 (0,703)
Growth of the percentage of Urban Population	-62,112** (34,598)	-58,070*** (29,099)				
GDP per Capita Growth	1,710 (7,872)					
R2	17,89%	17,87%	15,80%	14,46%	14,68%	15,06%
R2 ajusted	5,37%	5,80%	5,22%	3,72%	3,96%	4,39%

Table 4.4 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

Table 4.5 – Homicide rate using Political Instability (2) and Government Strength (1)

	(1)	(2)	(3)	(3)	(4)	(5)
Model OLS estimates with Fixed Effects						
Period 2006-2014						
Number of Observations 243						
Dependent Variable Variation in homice per 100 thousand people						
Coefficient	0,611 (0,634)	0,617 (0,628)	0,181 (0,447)	1,022*** (0,338)	0,879*** (0,245)	1,241*** (0,328)
Political Instability (2)	2,841** (1,545)	2,878** (1,469)	2,902*** (1,459)			
Government Strength (1)	-0,164 (0,675)	-0,169 (0,670)		-0,202 (0,654)		
Right-wing parties	0,295 (1,110)	0,295 (1,107)			0,803 (1,018)	
Left-wing parties	-0,532 (0,758)	-0,536 (0,755)				-0,887 (0,703)
Growth of the percentage of Urban Population	-60,927** (34,626)	-59,477*** (29,246)				
GDP per Capita Growth	0,627531 (7,976)					
R2	18,05%	18,05%	15,98%	14,47%	14,68%	15,06%
R2 ajusted	5,56%	6,01%	5,43%	3,73%	3,96%	4,39%

Table 4.5 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

Table 4.6 – Homicide rate using Political Instability (2) and Government Strength (2)

Model OLS estimates with Fixed Effects						
Period 2006-2014						
Number of Observations 243						
Dependent Variable Variation in homice per 100 thousand people						
	(1)	(2)	(3)	(3)	(4)	(5)
Coeficient	0,542 (0,565)	0,547 (0,561)	0,181 (0,447)	0,953*** (0,232)	0,879*** (0,245)	1,241*** (0,328)
Political Instability (2)	2,832** (1,547)	2,883** (1,469)	2,902*** (1,459)			
Variation in Government Strength (2)	-0,082 (1,090)	-0,073 (1,084)		-0,296 (1,088)		
Right-wing parties	0,349 (1,085)	0,352 (1,082)			0,803 (1,018)	
Left-wing parties	-0,533 (0,762)	-0,539** (0,758)				-0,887 (0,703)
Growth of the percentage of Urban Population	-60,703** (34,631)	-58,688*** (29,084)				
GDP per Capita Growth	0,858 (7,965)					
R2	18,03%	18,02%	15,98%	14,46%	14,68%	15,06%
R2 ajusted	5,54%	5,98%	5,43%	3,72%	3,96%	4,39%

Table 4.6 *** is significant at 5%, ** is significant at 10% and * is significant at 15%. Source: Own elaboration

The results were a bit different from expected. Political instability was significant in all models with the expected sign. It was positive. In other words, the higher the political instability, the higher the homicide rate, the lower the public safety, in other words, the lower the supply of that public good. An increase in 1 p.p. in the probability of the current government losing the next election, generates an increase between 2 and 3 in the homicide rate per 100 thousand inhabitants of a state. This is quite a considerable effect.

When it comes to Government Weakness, I have reached the same conclusion as Edwards and Tabellini (1991). Government Weakness is not significant to the supply of public goods in any of the models, however, interestingly enough, its sign is as predicted in all models.

The same can be said of the variable about ideology. Left and Right ideologies were found to be non-significant in any of the models, however they also kept the predicted sign in all models.

One hypothesis to why only political instability was the only variable, which was found to be significant is the one already mentioned before. Many variables correlated with violence are difficult to measure, such as drug consumption, number of illegal guns in each state or if the state is controlled by the PCC or not. Some control variables, even though theoretically easier to measure, were not available at state level, such as years of education of the population.

5. Conclusion

According to the data obtained, the conclusion that we can reach is that there is some relationship between political variables and the supply of public goods, specially, when it comes to political instability. However, the results may have been impaired by the lack of control variables in the study. Similar studies with other proxies for public goods as variables would be extremely important to prove the external validity of this hypothesis. Another proxy could be, for example, the financial results of the states, which is similar to the study by Edwards and Tabellini (1991) about inflation. Some external validity may be reached as Edwards and Tabellini reached the same results as this paper.

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7. Appendix

Appendix 1 – Homicide per 100 thousand inhabitants for every federal unit

