



UNIVERSIDADE CATÓLICA PORTUGUESA

Administrative reorganization of the territory of the parishes in Portugal: a political scheme?

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As Maya Angelou considered, “You are the sum total of everything you’ve ever seen, heard, eaten, smelled, been told, forgot - it’s all there. Everything influences each of us, and because of that I try to make sure that my experiences are positive”. Thanks to my beloved family and friends, so far, I experienced the most positive influences in my life.

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I want to dedicate this thesis to my grandfather who unfortunately passed away during this period. He was the most erudite/educated person I have ever known and for that reason I tribute him with this dissertation, hoping that one day “gerrymandering” appears in crosswords (his favourite hobby).

“Stones on the way? I keep them all, one day I will build a castle...”

Fernando Pessoa

Resumo

O gerrymandering é uma prática comum que prevalece na política. Surgiu nos Estados Unidos da América, mas está, atualmente, bastante difundida. A presente dissertação pretende clarificar se estratégias do tipo do gerrymandering são uma realidade em Portugal, dado estas ocorrerem com frequência aquando reformas territoriais.

Refletindo no ano de 2013, realizou-se uma importante reorganização administrativa do território das freguesias (RAFT) em Portugal, que levou a alterações na composição das freguesias, o que, por sua vez, levou a alterações no número de eleitores por freguesia. Portanto, foi esta reforma realizada com o intuito de melhorar a eficiência, reduzindo os custos para o país e consequentemente para a União Europeia (UE), ou foi, na verdade, um esquema político ordenado antecipadamente para favorecer certo(s) partido(s). Terá o processo de reorganização territorial sido realizado com uma estratégia de gerrymandering?

O distrito do Porto, os seus municípios e as respetivas freguesias foram escolhidos para analisar a existência de enviesamento político, de enviesamento partidário e de gerrymandering. Usando as eleições autárquicas de 2009, 2013 e 2017, e comparando-as através de uma análise de dados e de uma regressão linear, concluímos que o enviesamento partidário existe e é significativo no distrito do Porto. Podemos também afirmar que o gerrymandering ocorreu na sequência do aumento do enviesamento partidário no sentido do partido do governo, tendo este sido beneficiado nas eleições autárquicas de um terço dos municípios pertencentes ao distrito do Porto, em consequência da aplicação da RAFT em 2013.

Palavras-chave: gerrymandering; enviesamento partidário; enviesamento político; Portugal; RAFT; freguesias; eleições

Abstract

Gerrymandering is a common practice that prevails in politics. Emerged in the United States of America, it is now widespread. The present dissertation intends to clarify whether gerrymandering alike strategies are a reality in Portugal as they are frequent when there is a territory reform.

Reflecting at the year 2013, there was a major reorganization of the territory of the parishes in Portugal (RAFT) which led to changes in the parishes' composition, which, in turn, let to changes in the number of voters per parish. So, was RAFT a way to improve efficiency, reducing costs for the country and therefore for the European Union (EU), or was it, in fact, just a preordain political scheme to favour some party(ies). Was the process of territorial reorganization carried out with a gerrymandering strategy?

Porto's district, its counties and respective parishes were chosen for the analysis of political bias, partisan bias and gerrymandering. Using the local elections of 2009, 2013 and 2017, and comparing them through a data analysis and a linear regression, we were able to conclude that partisan bias exists and is significant in Porto's district. We can also say that gerrymandering occurred as a result of the increase in the partisan bias towards the government party, which benefited in the municipal elections of one third of the counties belonging to the district of Porto, as a result of the application of RAFT in 2013.

Keywords: gerrymandering; partisan bias; political bias; Portugal; RAFT; parishes; elections

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Introduction

Economics and Politics are crucial themes in the actual society and are reliant on one another. So, it seems right to study the relationship cause-effect between them, that is, the effects each provoke on the other. Therefore, this dissertation aims to understand an apparent causality relation amongst an administrative territory reform (economic view) and a reallocation of voters (political view). The focus of both economic and politics studies is not typical in Portugal, as it does not constitute one of the richest nor poorest countries in the world. As Portugal seems neglected internationally speaking, this creates a gap that this thesis proposes to bridge in part.

While most of the literature emphasizes on the effects of gerrymandering (which often arises from territory reforms) or the ways of avoiding it, this dissertation aims to verify if this method was executed in the Portuguese territory. Many researchers study this political strategy (gerrymandering) and its effects on the economy, however, those studies do not focus in Portugal and much less in Porto's district. Seizing this research gap and bearing in mind the words of Toni Morrison "If there's a book that you want to read, but it hasn't been written yet, then you must write it.", I decided to follow this breach and write this dissertation.

The main purpose of this dissertation is to understand the extent to which gerrymandering was a reality in Portugal, considering the before and after the 2013 administrative reorganization of the territory of the parishes (RAFT). Was

the administrative reorganization of the territory of the parishes in Portugal conducted in order to obtain advantage regarding certain parties? Was the administrative reorganization of the territory of the parishes in Portugal an occasion where certain parties used gerrymandering alike strategies? Was partisan bias a reality in the local elections of 2013?

In the well-known words of Charles Kettering “a problem well stated is a problem half-solved”. So, in order to answer to the research questions, it is necessary firstly to understand what gerrymandering, political bias and partisan bias refer to through a literature review (Chapter 1). It is also important to enlighten about how the electoral process is conducted in Portugal. Then, it is critical to acquaint the objectives, principles and alterations triggered by RAFT, qualitatively (Chapter 2).

A database with voting information regarding Porto’s district, and more important its parishes by county, was constructed in order to understand whether partisan bias and gerrymandering were held in Portugal, quantitatively, achieving the proposed objectives and answering the research questions. Afterwards, the electoral data that remotes to the elections of 2009, 2013 and 2017, was used to compare the proportions of votes a party had globally and the proportion of parish councils that the same party won, and to conclude whether gerrymandering was a reality in Porto’s district (Chapter 3).

Resorting to the potentialities of the statistical software *STATA*, it was defined a linear regression that allow the analysis of the partisan bias and also outline gerrymandering strategies (Chapter 4). In the end, using the information obtained both in Chapter 3 and Chapter 4, we were able to provide some answers

to the research questions, to find some limitations of the study (Chapter 5), and to suggest different paths for further researches (Conclusion).

The results give us a positive response to the research questions: partisan bias is a reality in Portugal not only in 2013 but also in 2009 and 2017; and RAFT resulted in an escalation of that phenomenon. Therefore, it seems that RAFT used a gerrymandering strategy to favour the government, as the party in the government saw its partisan bias increase, in some counties, after RAFT.

Chapter 1

Literature Review

1. Events on the political-economic atmosphere

This chapter intends to provide an organized overview and explanation of the most relevant terms related with our research question like political bias, partisan bias and gerrymandering.

1.1 Political and Partisan Bias

1.1.1 Definition of political and partisan bias

According to the Cambridge Dictionary, bias is “the action of supporting or opposing a particular person or thing in an unfair way, because of allowing personal opinions to influence your judgement”. Bias usually causes a sense of injustice by favouring or hindering one person, group or thing compared with another.

Bias may occur in different settings. When it occurs in politics, it is called political bias or partisan bias. Even though these two can be seen as analogous, and even partisan bias as a subgroup of political bias, actually they present

different denotations. While political bias is “the distance between the policy preferred by the median voter and the policy that actually emerges from the legislature” (Gillian & Matsusaka, 2006, p. 396), partisan bias “refers to an asymmetry in the way party vote share is translated into seats, that is, a situation where some parties are able to win a given share of seats with a lesser (share of the) votes than is true for other parties” (Grofman, Koetzle, & Brunell, 1997 p. 457), that may lead to a steady degradation of the electoral influence of a party group (Issacharoff, 2002).

Magar, Trelles, Altman, and McDonald (2017) in turn, state that one is in the presence of partisan bias when there is “undue advantage conferred to some party in the conversion of votes into legislative seats”. This constitutes exactly the underpinning subject-matter analysed in Porto’s district case (Chapter 3).

Moreover, Magar et al. (2017) in their study of the components of partisan bias applied to Mexico, state that the conversion of votes into seats (votes-seats curves) usually follows two technical features: responsiveness, which measures the difference in seats regarding the number of votes (the slope of votes-seats curves), being considered a symmetric distortion of the votes-seats curves in two party systems as one party wins seats at the costs of the other; and partisan bias, a characteristic where a party is able to win seats with fewer votes than the opposition due to a systematic bias, being thus an asymmetric distortion in the votes-seats relation. Likewise, for Sauger and Grofman (2016), partisan bias is “a measure of the degree of (hypothetical) symmetry of treatment of the votes share of different parties or party blocs as they are reflected in seat shares”.

It is important to retain that “A party with 20% of the vote that is evenly spread nationwide across districts may fail to win a single seat; while another,

geographically concentrated, party may win multiple seats with much less support” (Magar et al., 2017, p. 3). This means that the distribution of the voters can lead to partisan bias and that the different concentration of the voters across regions/districts exerts a big influence on the vote-share/seat-share conversion nationally.

This asymmetry leads to a situation where “A party favoured by systematic bias wins seats with fewer votes than their opposition, which can lead to counter majoritarian outcomes when the party winning the most votes fails to win a legislative majority” (Magar et al., 2017, p. 2). In other words, a party with less share of the votes can win a majority of seats in the parliament, because of the already existing bias and vice versa.

To summarise, partisan bias is an important driver of voting behaviour and not a mere product subsequent from experimentations (Robbett & Matthews, 2018).

A low level of partisan bias and electoral volatility is recommended in order to reach efficiency (Helland & Sørensen, 2015). Therefore, a country that presents a low level of partisan bias is going to be able to reveal the true personal preferences of its citizens.

1.1.2 Sources of partisan bias

All districted systems are, in theory, exposed to partisan biases (Grofman et al., 1997) thus, it becomes clear that the act of redistricting may have underneath the intention of creating a bias, increasing an existent bias or decreasing an

existent bias in the opposite way. This also reveals that the geographic distribution of party vote share (also known as partisan gerrymandering – see sections 1.2 and 1.3) is one of the causes of partisan bias.

Grofman et al. (1997) show that other causes of partisan bias are differences in turnout rates and in population across districts/regions (malapportionment) but state that both these two causes *per se* do not induce partisan bias, and that it only happens when these causes are connected with the distribution of party voting strength. Magar et al. (2017) argue that malapportionment is linked to human choices but that it is not clear if the same happens with turnout differences across districts or geographic distribution of party votes shares. For them, the turnout has obvious endogenous components and the geographic distribution distortion could be caused by features due to geographical specificities and not by intended partisan gerrymandering.

Despite some differences in their studies regarding the estimation of the components of partisan bias, both Grofman et al. (1997) and Magar et al. (2017) consider that the main components of partisan bias are malapportionment, difference in turnout across districts and geographic distribution of partisan support.

Regardless of having three main sources, the influence each one confers may differ in the process of partisan bias. Magar et al. (2017) indicate that “partisan bias sources may vary in importance and, to a fair extent, may run counter to or amplify each other”. In their analysis, Magar et al. (2017) demonstrate that mitigating one of the causes of bias (by compensations) could involuntarily generate an increase in the global bias.

Although all sources are important to understand the context of the overall bias, partisan gerrymandering is the one on which most studies lean, and, similarly, where this dissertation will focus.

1.1.3 Analytical calculation of partisan bias

The mere theoretical framework is not enough to understand the depth of partisan bias. More important than understanding the theory is comprehending how partisan bias is analytically calculated.

Despite presenting a research that is not directly focused on partisan bias (but instead on policy bias), Gilligan and Matsusaka (2006) reformulated their model to show how partisan bias could be calculated.

Considering that there are only two parties competing, party 0 and party 1, $x_i \in \{0,1\}$ represents the voters i 's party preferences. This way, the voters who prefer party 1 are represented by $V_1 = \frac{1}{N} \sum_{i=1}^N x_i$ and the ones who prefer party 0 are represented by $V_0 = 1 - V_1$. Analogously, $x_k^* \in \{0,1\}$ is representing the party correspondent to the legislature's representative. So, the seats each party has is calculated the following way: $L_1 = \frac{1}{K} \sum_{k=1}^K x_k^*$ and $L_0 = 1 - L_1$. Partisan bias is $\beta = L_1 - V_1$, i.e., the difference in the seats a party obtained (L) and the votes it received (V) (Gilligan & Matsusaka, 2006).

These calculations would be enough to draw conclusions to the case study of Porto's district if Portugal had only two competing parties, however, this is not the case. So, in this thesis, a new version of the problem will be defined to cover these particularities, which is presented in Chapters 3 and 4.

1.2 Gerrymandering

1.2.1 Definition of gerrymandering

In accordance with the Cambridge Dictionary, gerrymandering corresponds to “an occasion when someone in authority changes the borders of an area in order to increase the number of people within that area who will vote for a particular party or person”. In other words, gerrymandering is a strategy that aims to favouring a certain party in the elections. This strategy, correlated with taking political advantage, is usually conducted when one is in the presence of a reorganization of the voters/citizens, i.e., in the presence of a territory reform (act of redistricting).

Although gerrymandering is more of a problem as the population grows (Gillian & Matsusaka, 2006, p. 386), it can also be one of the secondary effects of these type of reforms in the territory organization (Ruley, 2017).

Even though most of the literature mentions examples of strategies such as gerrymandering and political bias occurring specially in the United States of America (USA), we can relate it to other countries such as Portugal.

Gerrymandering began to emerge in the USA when the Voting Right Act (VRA) of 1965 prohibited racial discrimination in voting. From this date on, every vote was equally weighted, so, the citizens whose votes lost power and influence, had to find other ways to undermine the votes of the minorities, especially the votes of the black citizens. Racial gerrymandering was the solution found. By aggregating all the black citizens and other minority groups in one region, they

were able to minimize their representation and influence in the elections, undermining the people's choice/will.

The 1965 VRA revolution "sought to eliminate practices that deprived members of racial and language minority groups of their basic electoral rights" (Gilligan & Matsusaka, 2006, p. 392) but new forms of "wasting" these minority groups votes emerged and racial discrimination prevailed in America (Weeden, 2019) through bolder ways such as the practice of gerrymandering.

Portugal follows a democratic rule of law (Estado de Direito Democrático), which presupposes, according to article 48 of the Constitution of the Portuguese Republic "(...) the right to take part in the political life and direction of the country's public affairs, directly or through freely elected representatives". Furthermore, "elections in a democratic order should permit the selection of "the free and uncorrupted choice of those who have the right to take part in that choice"" (Issacharoff, 2002, p. 605). However, in politics there are ways to circumvent the rules, take advantage and harm people with different opinions for example by applying gerrymandering alike strategies.

1.2.2 The harm triggered by gerrymandering

The outcomes in policy in a democratic country depend on rules that include, among others, how voters are clustered into districts (Gilligan & Matsusaka, 2006). It is for that reason, that Ruley (2017) considers gerrymandering one of the biggest abuses respecting voting rights.

The ills of gerrymandering are numerous, but it is mainly considered a problem because it translates to a sensation of non-fairness to the citizens. This leads to a situation where voters start to disenroll in the political atmosphere, “(...) if voters do not believe our democracy is working fairly, they will not participate” (Lowenthal, 2019, p. 2). Or as Robbett and Matthews (2018) put it, “Voters who believe that they are unlikely to be pivotal in deciding the outcome have little incentive to gather information in advance or to vote for the outcome they truly prefer”. In this line of thought, gerrymandering can be considered a practice that threatens the state of democracy in a country: “There is no greater threat to a democracy than when the voters lack confidence in their political system” (Lowenthal, 2019, p. 1). Further, Lowenthal (2019) considers that gerrymandering and its side effects are the factors that contributed the most to the pessimistic citizens perception regarding voting and elections.

Another problem is that gerrymandering does not arise in a specific scenario, it “(...) is widespread throughout all political maps” (Lowenthal, 2019, p. 2), and therefore decision makers need to be aware of its possibility when considering changes in territorial maps. It is also a strategy that is not exclusive to a single party (Lowenthal, 2019), especially in a multi-party political system, such as the Portuguese Republic.

In addition, gerrymandering causes group-based discrimination, such as racial discrimination and partisan bias. As gerrymandering represents misrepresentations of district borders and populations due to politics (Weeden, 2019), both racial and partisan gerrymandering (see section 1.3 of the present chapter) should also be prevented as they are perceived as unreasonable.

Succinctly, gerrymandering is a boundless practice that should be avoided as it presents negative outcomes to a part of the population.

1.2.3 Arrangements to prevent gerrymandering

Nevertheless, it is possible to avoid the practice of gerrymandering. Sherstyuk (1998) found that imposing certain constraints (distributional and geographical) on districting might help to prevent gerrymandering and sustain fairness, as it could restrict freedom of intervention of the decision-makers and thus turn gerrymandering harder to achieve. Additionally, Sherstyuk (1998) states that the practice of gerrymandering becomes even more difficult when equality constraints, like districts being obliged to have identical population size or identical ethnic composition, are put into practice. Summing up, the more restrictions applied to territory reforms, the less maneuvering margin left to the decision/policy makers to take advantage of the redistricting process, and so gerrymandering is less likely to occur.

Lowenthal (2019) suggests the creation of an independent redistricting commission to prevent gerrymandering. In his words “Independent redistricting commissions are currently the best tool that voters have to mitigate political influence and the negative effects of gerrymandering”. Raley (2017) in turn, in addition to the independent commissions, suggests legislative reforms to prevent the majority party from redistricting in its favour and supplemental commissions (advisory and backup commissions) to help legislature solve border problems.

1.3 Partisan gerrymandering: main cause of partisan bias

Partisan gerrymandering emerges when partisan bias is associated with the spatial distribution of the votes, thus constituting one of the sources of partisan bias, as already mentioned. We are in the presence of such a practice when the votes' share does not translate into seats due to how the voters are distributed.

According to Lowenthal (2019), partisan gerrymandering can be formed by the creation of districts of unequal population sizes or by the manipulation of the district borders using a "cracking and packing" method. This method consists in spreading the voting strength of disfavoured groups over multiple districts so its strength is diluted and their possibility of winning seats diminished and/or concentrating all the voting strength of disfavoured groups over a very few districts (Sauger & Grofman, 2016). It "involves wasting an opposition party's votes by either packing their supporters into a few districts they win by overwhelming majorities or spreading them thin across several districts that they cannot win" (Magar et al., 2017, p. 2).

Distributional distortions may occur in an unintentional way through rules regarding the drawing of the spatial boundaries (Magar et al., 2017). Unintentional gerrymandering occurs when "one party's voters are more geographically clustered than those of the opposing party due to residential patterns and human geography" (Chen & Rodden, 2013, p. 240). So, an extra effort may be required from the decision makers to avoid a sense of unfairness perceived by the citizens.

As it is possible that even random districting will not eliminate bias, a tradition districting principle should be adopted, as it is likely to decrease policy bias (Gilligan & Matsusaka, 2006).

One thing is certain, “redistricting plans are often providing opportunities for debates about the intentions of those who draw the new maps” (Sauger & Grofman, 2016, p. 388). Whomever has the responsibility of drawing the maps during the redistricting process (territory reform), will always be questioned about their intentions: “one concern with redistricting is that those in charge may draw the district lines in a way that gives disproportionate influence to the groups they favour” (Gilligan & Matsusaka, 2006, p. 382). So, when Portugal decided it was time to reorganize its parishes through the implementation of the territory reform (RAFT), the question remained if that it could be used as a political scheme.

By way of example, Sauger and Grofman (2016) demonstrate that in France redistricting was conducted by the right-wing in order to favour this party, and they provide evidence for the redistricting of 2009 and 2012. In the next chapters it will be studied whether this was also a reality in Portugal for the redistricting of 2013.

Chapter 2

Portugal's administrative organization

This section provides an extensive review of the electoral process in Portugal, its administrative territory organization and the most recent event regarding territory reform: the 2013 administrative reorganization of the territory of the parishes (RAFT¹ from now on) in Portugal. It is particularly important to have this knowledge consolidated *a priori* in order to fully understand this dissertation, the methods utilized, and the data collected.

1. Electoral process in Portugal

In accordance with the Constitution of the Portuguese Republic, the local elections occur every four years and the citizens vote for executive bodies (town hall [câmara municipal]) and deliberative bodies (municipal assembly [assembleia municipal] and parish assembly [assembleia de freguesia]). The president of the parish council [junta de freguesia] (also an executive body) is not elected by direct universal suffrage, in fact, the president is the citizen who heads the most voted list in the election for the parish assembly (Portal do Eleitor, 2019).

¹ Reorganização Administrativa do Território das Freguesias.

The Portuguese Republic elects the members for both executive and deliberative bodies according to the D'Hondt or Jefferson election method (Article 149 - Constitution of the Portuguese Republic), which consists in the proportionally allocation of seats (one of the proportional voting methods) (Niemeyer & Niemeyer, 2015). This means that if a party receives half of the votes, it should win about the same proportion in seats. However, a proportional allocation of seats does not guarantee a level of responsiveness equal to one (Magar et al., 2017).

Also characterized by a multi-party system, Portugal has several parties competing to win the national² and/or local elections. This type of political system is adopted by quite a few countries and has as groundwork the idea that all parties have a chance to form government and to own seats at the parliament and/or at the assemblies.

Although there are several parties in the Portuguese political system running for government, it is common to identify parties with different ideologies but belonging to either left or right wings. The Portuguese Republic main political parties³ such as the Socialist Party (PS⁴), the Left Block (BE⁵), the Unitarian Democratic Coalition [CDU (PCP-PEV)⁶], the Democratic Social Centre - Popular Party (CDS-PP⁷) and the Social-democratic Party (PSD⁸), are parties that follow, respectively, centre-left, far-left, far-left, far-right and centre-right politics. In recent decades, at the legislative level, however, the governing parties have been

² There are 24 registered parties in 2019 according to the Portuguese Constitutional Court.

³ It is considered as main political parties those who remain over time and present lists to the elections.

⁴ Partido Socialista - PS

⁵ Bloco de Esquerda - BE

⁶ Coligação democrática unitária – CDU, which is formed by the junction of Partido Comunista Português (PCP) and Partido Ecologista "Os Verdes" (PEV)

⁷ Centro Democrático Social – Partido Popular (CDS-PP)

⁸ Partido Social Democrata - PSD

PS, PSD (both centre parties), or CDS in coalition with PSD (both right-wing parties) (SGMAI, 2019).

In general, studies present a political system with only two parties competing (Grofman et al., 1997), or that can be simplified that way like Sauger and Grofman (2016) did when they studied partisan bias and redistricting in France. However, Magar et al. (2017) provided a study where they present a view of the partisan bias in a multiple parties' system which will be equated to Portugal.

2. Portugal's administrative territory organization

The Portuguese territory has a complex and unique administrative structure that consists in districts (distritos) that are sub-divided in counties (municípios), which in turn are sub-divided in parishes (freguesias). Prior to the 2013 administrative reorganization of the territory of the parishes in Portugal, there were 18 districts in the mainland, plus two autonomous regions (Madeira and Açores) (see Figure 1), sub-divided in 308 counties which, in turn, were sub-divided in 4260 parishes (INE, 2019).

In its totality, Portugal's territory has around 92 226 km² (INE, 2019), which makes it a small country. Presenting 4260 parishes in its territory means that the mean size of a parish would be approximately 21.6 km². By the aforementioned, we can have a better perception on how branched the Portuguese territory is and how small its parishes were. Before 2013, a debate started and the Portuguese parishes began to seem unnecessary and mostly inefficient, especially due to their small size. As Martins (2001) stated, the larger the dimension of the territory of the parishes, the higher the efficiency. Therefore, at that time, the Portuguese

government, enforced by international institutions, decided to reorganize the parishes in Portugal, by reducing its number (aggregating some of them). Due to the RAFT process, a profound restructuring of the territory was carried out, which resulted in a reduction in the number of parishes to 3092, and an increase in their mean size to around 30 km² (INE, 2019).



Figure 1: Portuguese Territory.
Source: Visit Portugal.

3. Administrative reorganization of the territory of the parishes (RAFT)

3.1 RAFT: contextualization

RAFT is an acronym used to reference the territory reform adopted in 2013 by the government, during the leadership of the right-wing Social-democratic Party (PSD) in coalition with the Democratic Social Centre – Popular Party (CDS-PP), that consisted in the aggregation and/or the merger of parishes and/or the change of its boundaries.

The main reasons to implement RAFT were the settlements with international entities like the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF) – *Troika* – that intervened in the country to help overcome the 2008 crisis (Monteiro, 2015). Portugal pledged to reduce its expenditures, so by implementing the territory reform, supposedly, the country would reduce expenses by increasing local efficiency. One of the incentives to forge ahead with the implementation of RAFT was that the counties in accordance with the government were able to reduce less parishes without governments intervention and were given an increase of 15% of the parish's funds input.

On the other hand, there were also several motives against RAFT's implementation: no other country in the European Union (EU) has this administrative territory organization/system (parishes) as Portugal, therefore other EU members cannot understand its functionality neither can they pronounce themselves about it. The arguments from the opposing side vary from

the government of the parishes being a small part of the overall budget (it represents only 0.13% of the country's expenses), to RAFT not contributing to the cohesion of the villages. However, and despite the critics, the territory reform was implemented in 2013.

According to the Article 2 from Law nº 22/2012 from 30 of May, the objectives of the 2013 RAFT were the “promotion of territorial cohesion and local development, extension of the responsibilities and competences of the parishes and the corresponding resources, deepening of the intervention capacity of the parish council, improvement and development of public proximity services provided by the parishes to the populations, promotion of gains in scale, efficiency and critical mass in local authorities and restructuring, by aggregation, of a significant number of parishes throughout the national territory, with special focus on urban areas”. To accomplish these goals, an independent unit called UTRAT⁹ (Article 13º Law nº 22/2012) was created.

The independent unit was created to accompany and support the Assembly of the Republic in the process of the administrative reorganization, to present to the Assembly of the Republic concrete proposals for RAFT, in case of absence of pronouncement of the municipal assemblies and to propose to the municipal assemblies, in case of non-conformity of their pronouncement, projects for administrative reorganization of the parish's territory (Article 14º Law nº 22/2012).

The table below exhibits the number of parishes prior and after RAFT, and the difference of parishes by district and globally, in number and in percentage.

⁹ Unidade Técnica para Reorganização Administrativa do Território – Technical Unit to the Administrative Reorganization of the Territory.

District / Autonomous Region	Number of parishes prior to RAFT	Number of parishes after RAFT	Difference in the number of parishes	Difference in the number of parishes (%)
Aveiro	208	147	61	-29.33%
Beja	100	75	25	-25.00%
Braga	515	347	168	-32.62%
Bragança	299	226	73	-24.41%
Castelo Branco	160	120	40	-25.00%
Coimbra	209	155	54	-25.84%
Évora	91	69	22	-24.18%
Faro	84	67	17	-20.24%
Guarda	336	242	94	-27.98%
Leiria	148	110	38	-25.68%
Lisboa	226	134	92	-40.71%
Portalegre	86	69	17	-19.77%
Porto	383	243	140	-36.55%
Santarém	193	141	52	-26.94%
Setúbal	82	55	27	-32.93%
Viana do Castelo	290	208	82	-28.28%
Vila Real	268	197	71	-26.49%
Viseu	372	277	95	-25.54%
Total Continent	4050	2882	1168	-28.84%
Autonomous Region of Madeira	54	54	0	0.00%
Autonomous Region of Açores	156	156	0	0.00%
Total Country	4260	3092	1168	-27.42%

Table 1: Effects of RAFT by district.

Source: Portal do Eleitor, 2019.

RAFT has altered most of the Portuguese territory organization, yet, the two autonomous regions of Madeira and Açores remained unaltered, both places were not intervened during the reform.

As shown in Table 1, Portugal had 4260 parishes in 2013 and has at the present date 3092, thus reducing a total of 1168 parishes. In Porto's district the changes were considerable, keeping only 243 parishes, which represented a reduction of 140 parishes (-36.55%). Porto's district had one of the largest reductions in its

parishes, only being surpassed in percentage by Lisboa that presented a reduction of 40% of its parishes.

Despite requiring the preservation of the historical, cultural and social identity of local communities (Article 3 Law nº 22/2012), the territory reform of 2013 was binding, and the adjustments in the territory are the ones exhibited in Figure 2. The figure shows the Portuguese territory, detailed at the district level (heavier black lines) and at the county level (less pronounced black lines). The counties that presented no alteration in its parishes, i.e., that had no consequences in the voter registration appear in yellow (76 counties where this occur). The counties that had their parish aggregated (219 counties) are depicted in green. Finally, the counties that had their parish aggregated and that suffered changes in their boundaries (13 counties) are represented in red.

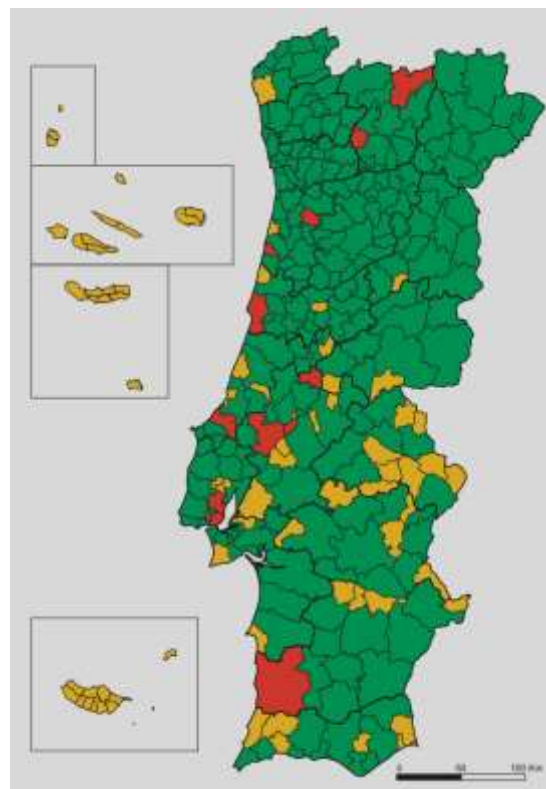


Figure 2: Counties affected by RAFT.

Source: Publication “Know what has changed with the administrative reorganization of the territory of the parishes” of Comissão Nacional de Eleições (CNE) and Direção Geral de Administração Interna (DGAI).

3.2 RAFT: Porto's district

Administratively, Porto's district has 18 counties, scattered like in Figure 3.



Figure 3: Porto's district and its counties.

Source: Espírito Viajante.

One particularity to consider is that the territory reform was implemented with certain constraints. The number of inhabitants and population density of each county were the most important constraints in this framework of RAFT.

In accordance with Article 4 of Law nº 22/2012, for the effect of restructuring, the counties were grouped in 3 levels. The counties in Level 1 were the ones who had a population density superior to 1000 inhabitants per km² and a population equal or superior to 40000 inhabitants. Counties in Level 2 had a population density superior to 1000 inhabitants per km² and a population inferior to 40000 inhabitants or population density between 100 and 1000 inhabitants per km² and a population equal or superior to 25000 inhabitants. Counties in Level 3 presented a population density between 100 and 1000 inhabitants per km² and a population inferior to 25000 inhabitants or a population density inferior to 100 inhabitants per km². Every level had a specific percentage reduction that the

counties should follow in order to reduce and aggregate its parishes. Also, after RAFT there could not exist a parish with less than 150 inhabitants.

Regarding Porto's district: Gondomar, Maia, Matosinhos, Porto, Valongo and Vila Nova de Gaia belonged to Level 1; Amarante, Felgueiras, Lousada, Marco de Canaveses, Paços de Ferreira, Paredes, Penafiel, Póvoa de Varzim, Santo Tirso, Trofa and Vila do Conde to Level 2; and Baião to Level 3. Table 2 presents all counties in the district of Porto, the number of parishes each one had prior to RAFT and has after RAFT, and the absolute and relative difference in the number of parishes.

County	Number of parishes prior to RAFT	Number of parishes after RAFT	Difference in the number of parishes	Difference in the number of parishes (%)
Amarante	40	26	14	-35.00%
Baião	20	14	6	-30.00%
Felgueiras	32	20	12	-37.50%
Gondomar	12	7	5	-41.67%
Lousada	25	15	10	-40.00%
Maia	17	10	7	-41.18%
Marco de Canaveses	31	16	15	-48.39%
Matosinhos	10	4	6	-60.00%
Paços de Ferreira	16	12	4	-25.00%
Paredes	24	18	6	-25.00%
Penafiel	38	28	10	-26.32%
Porto	15	7	8	-53.33%
Póvoa de Varzim	12	7	5	-41.67%
Santo Tirso	24	14	10	-41.67%
Trofa	8	5	3	-37.50%
Valongo	5	4	1	-20.00%
Vila do Conde	30	21	9	-30.00%
Vila Nova de Gaia	24	15	9	-37.50%
Total in Porto's district	383	243	140	-36.55%

Table 2: Effects of RAFT in Porto's district.

Source: Secretaria Geral do Ministério da Administração Interna (SGMAI).

The government implemented this territory reform. However, this does not mean that the counties supported this idea. In fact, some of the counties represented in Table 2 did not comply with this restructure due to multiple reasons. In case of absence of pronouncement (did not issue an opinion to the government), situation that occurred namely in Amarante, Baião, Felgueiras, Gondomar, Lousada, Matosinhos, Porto, Póvoa de Varzim, Santo Tirso, Trofa, Valongo and Vila do Conde,¹⁰ and in case of non-conformity of the pronouncement (issue a non-conforming opinion), which happened in counties such as Paços de Ferreira and Vila Nova de Gaia,¹¹ it was up to UTRAT to present the proposal for the new parish territory organization to the Assembly of the Republic. In the eventuality of accepting the terms of the government regarding RAFT (and therefore being able to reduce less parishes), like Maia, Marco de Canaveses, Paredes and Penafiel did,¹² it was up to themselves to create a proposal of reorganization of their own parishes.

Redistricting favours some groups, in one hand and, it harms others, on the other hand. The 2013 reorganization of the territory led to the reduction of the number of parishes, but most importantly, it led to a profound re-distribution of the voters and this is something that concerned the competing parties and the voters as they were obligated to readjust to the new parishes, to different local government and even to different public facilities (that led to less proximity to the citizens, and were caused by the mergers of the parishes).

Baldersheim and Rose (2010) said that the success of the implementation of a reform includes, among other factors, “the capability of policy entrepreneurs to form advocacy coalitions and of their opponents to form veto alliances (...)”.

¹⁰ Relatório Síntese UTRAT - Summary Report UTRAT.

¹¹ Summary Report UTRAT.

¹² Summary Report UTRAT.

However, an administrative territory reform can be adopted with the intent of favouriting a certain party, namely by adopting a partisan gerrymandering strategy. In this dissertation, we are mainly concerned with this secondary outcome, which is the topic analysed in the next chapters.

Chapter 3

Partisan bias and gerrymandering in Porto's district: a data analysis

The data analysis chapter presents the research strategy adopted and the data collected to answer the research questions. It comprises an explanation of the data used, the methodology and the data analysis.

1. Data

The data collected is used in a quantitative research, which offers a high level of thoroughness fundamental to this type of study.

The sample was gathered in Porto's district, in its 18 counties and respective parishes, in three local elections: 2009, 2013 and 2017, which represent the years before and after RAFT, and the most recent year of local elections. Porto was the district chosen due to its feasibility: despite the high quantity of data to be treated, it was feasible in the time planned for the study; we were familiar with the district and respective counties; and more important, it is the second largest Portuguese city economically speaking.

The main variable to consider in the analysis is *partisan bias*, a continuous variable that can be assessed as the value of the difference between the vote-share and the seat-share. This variable will be analysed in each county regarding the three local observed elections, and afterwards explored to comprehend whether a gerrymandering strategy was conducted in the second most important district of Portugal. In the database there are 202 observations of partisan bias.

We gathered the *vote-share* of each party per county - which translates in the sum of all the votes each party received in the parishes divided by the sum of all votes – and the *seat-share* of each party. The seat-share in this case is calculated as the number of local elections won by a party divided by the number of parishes in a county. Remembering that the winning party in each parish elects the president of the parish council, the seat-share is calculated as the sum of the number of presidents each party elected in its parishes divided by the total number of parishes in a county.

The information needed to construct the database to this dissertation can be found at Secretaria Geral do Ministério da Administração Interna (SGMAI), which is a website of the Portuguese department of Internal Affairs. It provided all the results of the local election by district, county and parish required.

The data regarding independent parties will be excluded from the analysis as it does not appear relevant to answer the research questions. All the parties that do not remain over the years in the local elections are not eligible for this study because they do not provide a comparison term, making it impossible to study gerrymandering strategies.

2. Data Analysis

Most of the counties in this study recognize a bias between the vote-share and the seat-share relation (partisan bias). In this section we aspire to highlight the partisan bias by county and to discuss the possibility of the existence of gerrymandering in each one of Porto's counties.

Regarding the methodology, it is important to remember that the core of the analysis is to show whether a political scheme was conducted mainly from the comparison of the local elections of 2009 and 2013, therefore, it is not worth to scrutinize the political parties that do not remain over time, such as the independent parties. Moreover, in the analytical chapters (Chapter 3 and Chapter 4), the PSD, the CDS-PP and the PSD with other coalitions of right-wing are considered as one and will be aggregated (in the case that they are not) to enable the comparative analysis. This measure is necessary to standardize the data because, in some counties, in 2009, those parties competed in separated and in the 2013 RAFT they competed together. By performing this aggregation, we are approaching the idea that a multi-party system can be equated to a bi-partisan system, where parties are clustered in two main groups: right and left wing, meeting the vision of Sauger and Grofman (2016) and (Sherstyuk, 1998).

Having that assumption in mind, we analysed the voting information (the vote-share, the seat-share and the difference between the two: partisan bias), based on tables and graphs,¹³ to determine important interactions. Solely by looking at this information per county and per party, during the three years in study it is possible to draw some conclusions.

¹³ The tables can be seen in the Appendices.

For all counties, despite the small percentage, the party B.E always received votes. However, they never translated into seats, meaning that B.E never won the local elections in any parish of any county in the years in study. Both party B.E and party PCP-PEV had residual results. Thus, they are not significant for this analysis.

As we can observe from Figure 4, that illustrates the partisan bias in Amarante in 2009, 2013 and 2017, Amarante had a favouriting partisan bias regarding the party PPD/PSD.CDS-PP in 2009. It had 41.59% of the total votes (sum of PPD/PSD.CDS-PP votes in all its parishes),¹⁴ but it managed to have 47.50% of the seats to the parish's councils, presenting a bias of 5.91 percentual points (pp) for this party. Moreover, the partisan bias between 2009 and 2013 decreases for PPD/PSD.CDS-PP and increases for PS. Sealing this, in Amarante it is not apparent that gerrymandering occurred, as it was up to PPD/PSD.CDS-PP, as government, to redistrict. In fact, it is more suggestive a gerrymandering strategy in favour of PS during RAFT.

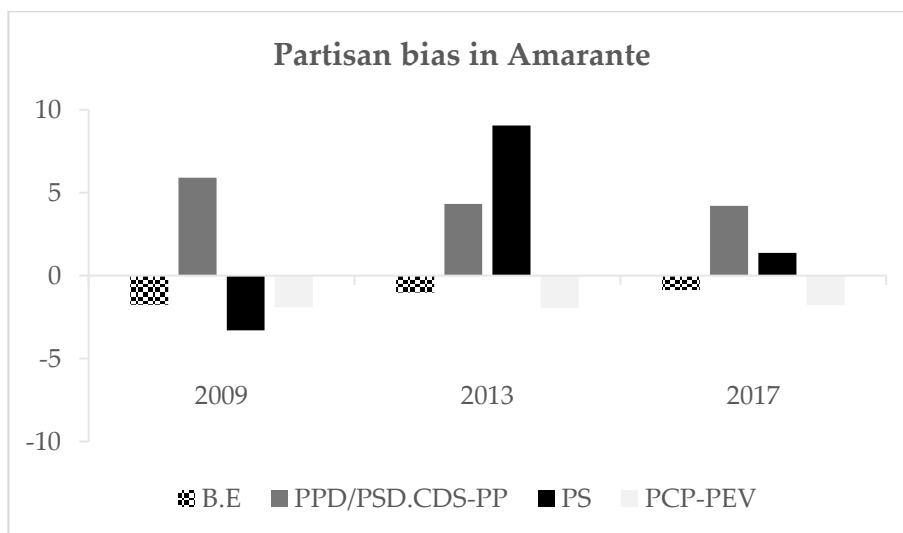


Figure 4: Partisan bias in Amarante, per party, in 2009, 2013 and 2017.

¹⁴ For the exact values of vote-share, seat-share and partisan bias referenced in this Chapter, consult the tables in the Appendices.

The county Baião presents a dichotomy: a continuously high positive partisan bias in favour of PS (22.78 pp in 2009, 22.27 pp in 2013 and 23.08 pp in 2017) that contrast with a continuously high negative partisan bias in detriment of PPD/PSD.CDS-PP (-18.56 pp in 2009, -16.32 pp in 2013 and -18.21 pp in 2017). The outcomes, beheld in Figure 5, hinder the assumption that a gerrymandering strategy in favour of PPD/PSD.CDS-PP was carried out in Baião.

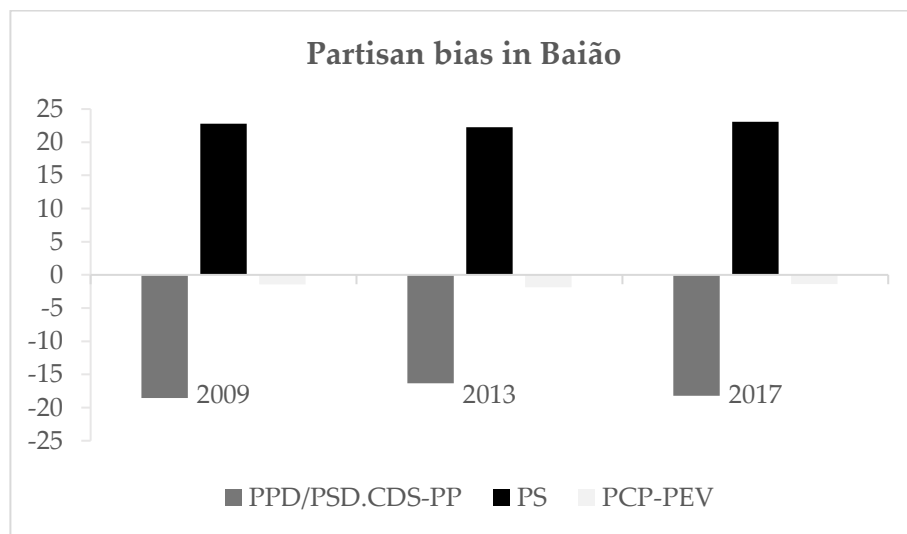


Figure 5: Partisan bias in Baião, per party, in 2009, 2013 and 2017.

In Felgueiras, where RAFT was conducted by the government, we observe, in Figure 6, a decrease in the positive partisan bias in favour of PPD/PSD.CDS-PP, which presumes the absence of gerrymandering strategies in this county as well.

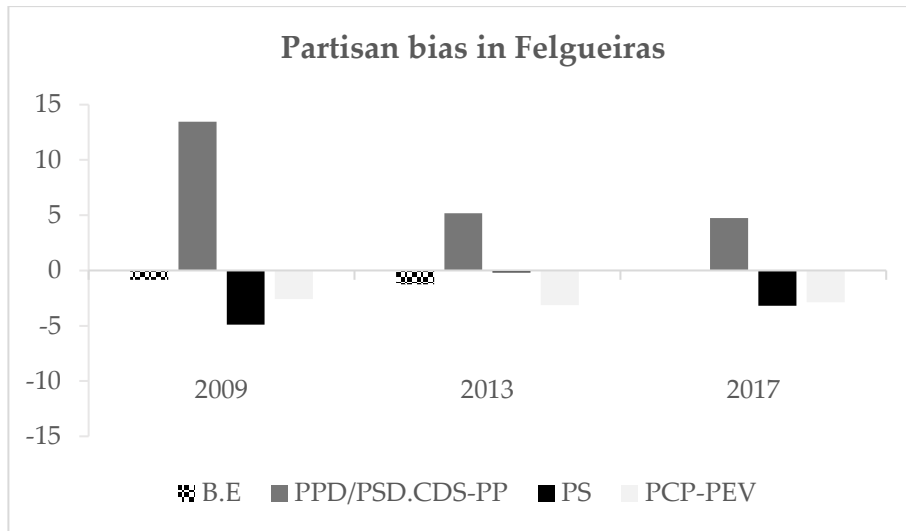


Figure 6: Partisan bias in Felgueiras, per party, in 2009, 2013 and 2017.

From 2009 to 2013, Gondomar increased a lot its partisan bias in favour of PS, going from 5.66 pp in 2009 to 45.42 pp in 2013. Even though partisan bias remained high for PS in 2017, as highlighted in Figure 7, this information suggests that a gerrymandering strategy could have been carried out in favour of PS in 2013 and not PPD/PSD.CDS-PP as expected, due to the fact that RAFT in this county was performed by the government.

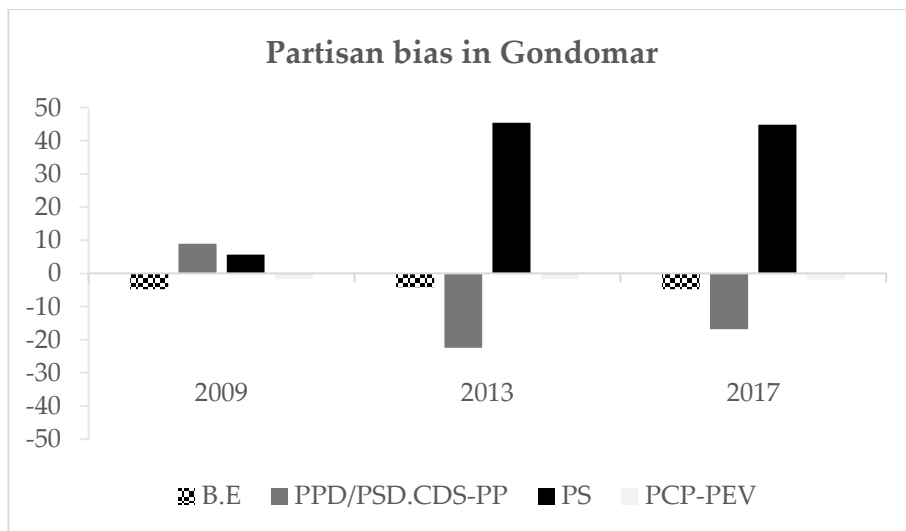


Figure 7: Partisan bias in Gondomar, per party, in 2009, 2013 and 2017.

Figure 8 shows that Lousada is a county that commutes its preferences, in a way, that the positive partisan bias existent in 2009 in favour of PS switches and, in 2013, it favours the direct competitor PPD/PSD.CDS-PP. Gerrymandering seems to occur in this county, as the party PPD/PSD.CDS-PP (the party of the government) is favoured after the aggregation of its parishes (executed by the government).

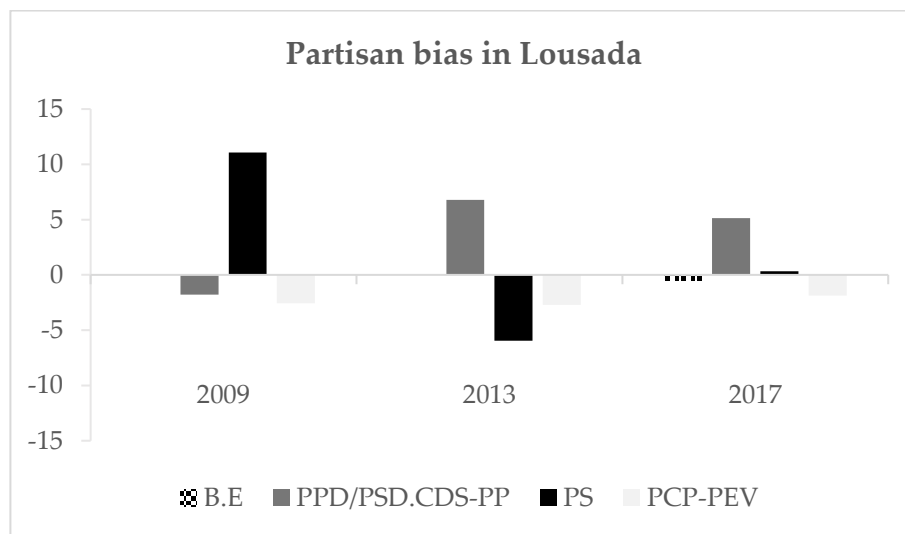


Figure 8: Partisan bias in Lousada, per party, in 2009, 2013 and 2017.

Maia is a county where PPD/PSD.CDS-PP's preferences prevailed, as observed in Figure 9. It is a county that appears to benefit from gerrymandering as well, as the continuously positive partisan bias increases in 2013, reaching 52.70 pp and where RAFT was handled by the government. Even though Maia had already a bias in favour of the right-wing party, it reaches a higher partisan bias in the year of the territory reform. With 37.30% of the votes, PPD/PSD.CDS-PP won 90% of the seats in the 2013 local elections.

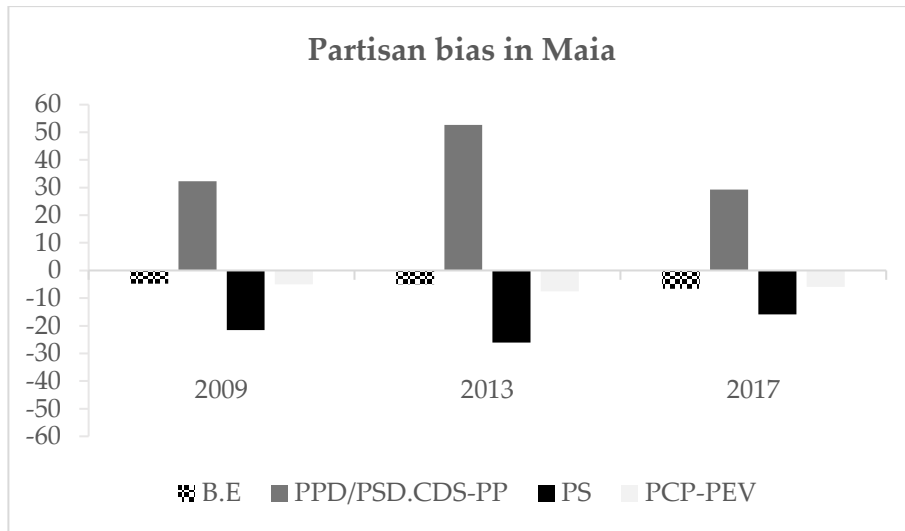


Figure 9: Partisan bias in Maia, per party, in 2009, 2013 and 2017.

In Marco de Canaveses (RAFT conducted by PPD/PSD.CDS-PP as government) and Paços de Ferreira (RAFT conducted by PPD/PSD.CDS-PP from Paços de Ferreira) we observe a decrease in partisan bias (see Figures 10 and 11), and in Marco de Canaveses there is a positive partisan bias for both PPD/PSD.CDS-PP and PS, which does not indicate that gerrymandering was a reality in both counties.

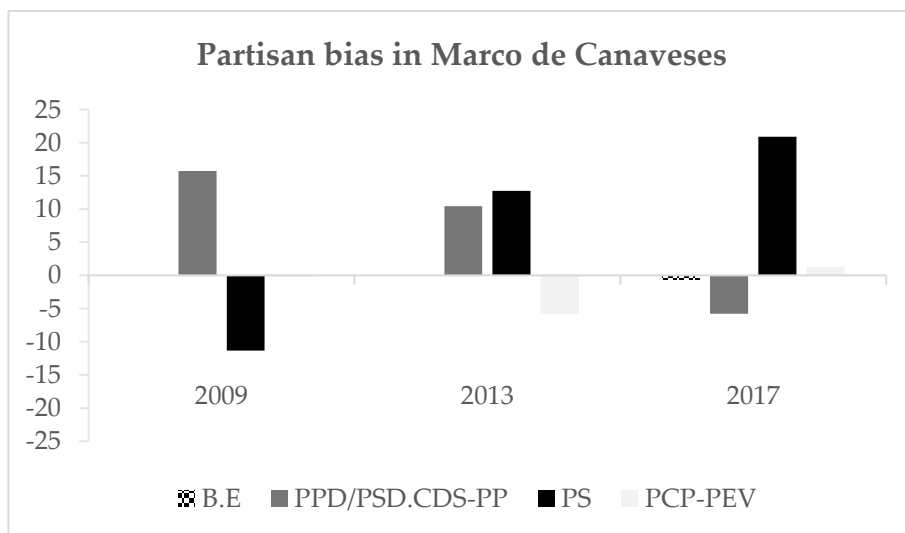


Figure 10: Partisan bias in Marco de Canaveses, per party, in 2009, 2013 and 2017.

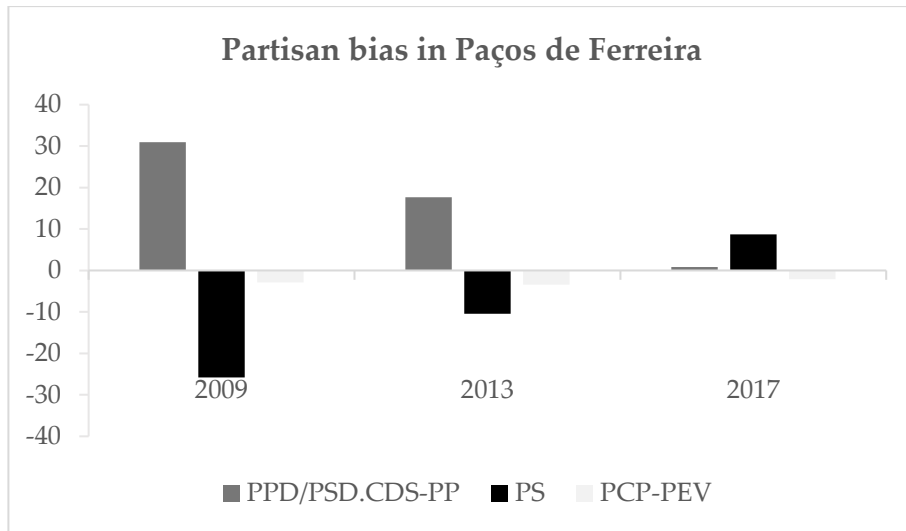


Figure 11: Partisan bias in Paços de Ferreira, per party, in 2009, 2013 and 2017.

Matosinhos shows a tremendous bias in favour of left-wing parties in the years studied, to the point of PS winning 100% of the seats in 2017, with only 35.72% of the votes. As Figure 12 demonstrates, an independent left-wing party was able to win the local elections of 2013. Matosinhos, which let the government conduct RAFT, does not show signs of gerrymandering (since the PPD/PSD.CDS-PP won zero seats in 2013 and in 2017).

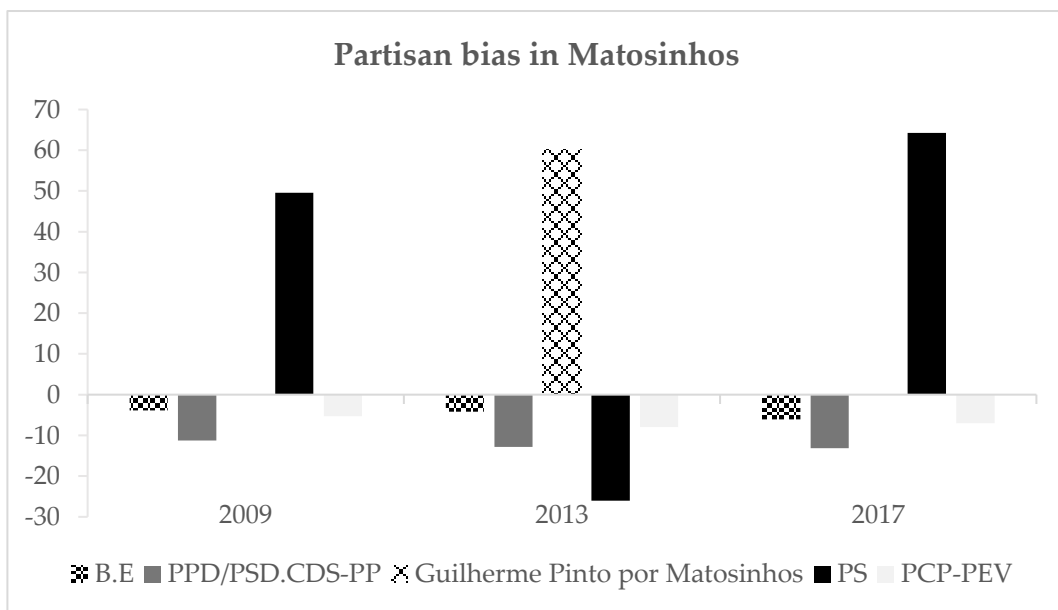


Figure 12: Partisan bias in Matosinhos, per party, in 2009, 2013 and 2017.

Both Paredes and Penafiel present a positive partisan bias in favour of PPD/PSD.CDS-PP and a negative partisan bias for PS. The difference is that the partisan bias is overall reducing in Paredes (Figure 13), specially in 2017 and increasing in Penafiel (Figure 14). In these municipalities, gerrymandering may have occurred, as RAFT was achieved by the government in both, and PPD/PSD.CDS-PP is the party favoured, mainly in 2013.

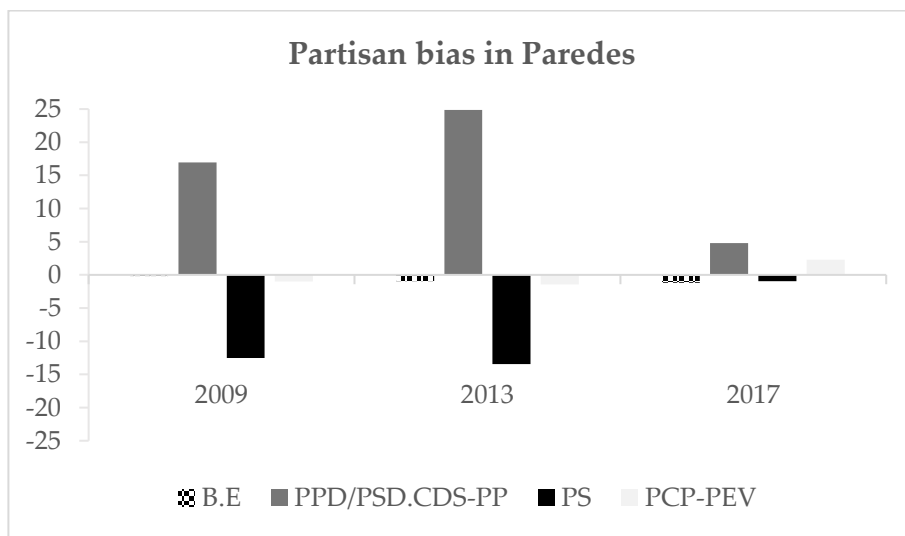


Figure 13: Partisan bias in Paredes, per party, in 2009, 2013 and 2017.

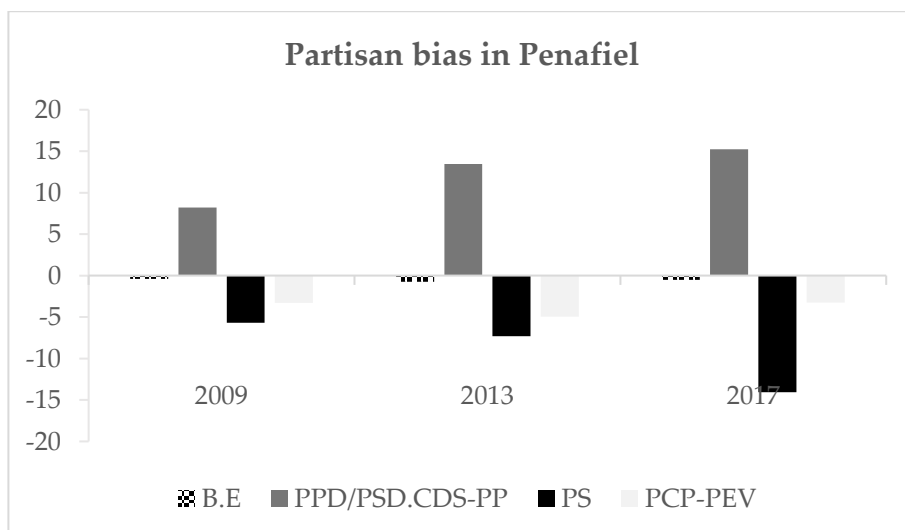


Figure 14: Partisan bias in Penafiel, per party, in 2009, 2013 and 2017.

In Porto, the independent party RM¹⁵ (a special case), was able to win the presidency in most of the parishes (about 71% of the seats) with less than 50% of the votes, both in 2013 and 2017. Apparently, gerrymandering did not occur in Porto as the government party PPD/PSD.CDS-PP is not being favoured after RAFT, as we see in Figure 15.

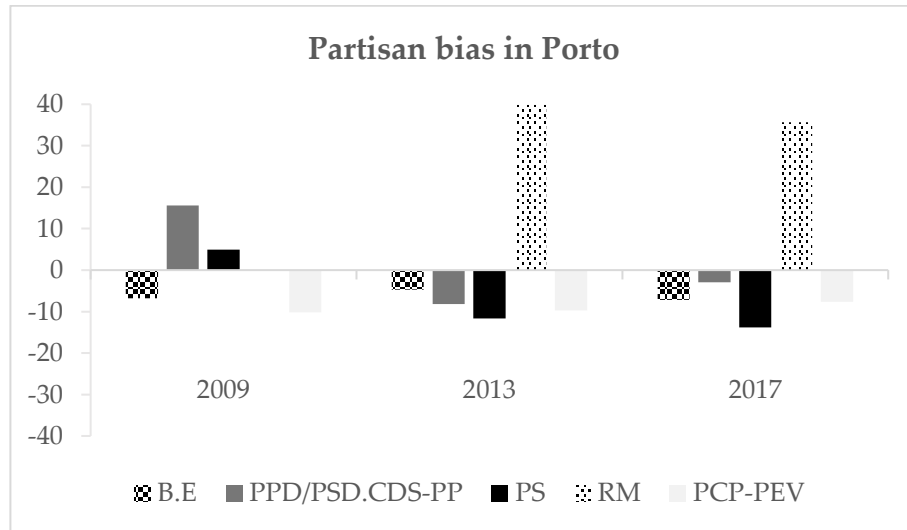


Figure 15: Partisan bias in Porto, per party, in 2009, 2013 and 2017.

Póvoa de Varzim and Trofa had a negative partisan bias for PS and a positive partisan bias for PPD/PSD.CDS-PP during the three elections in study. This disparity is increasing and may indicate the occurrence of gerrymandering in the territory reform of 2013, accomplished by the government, in both counties. The county Póvoa de Varzim, represented in Figure 16, however, seems to present higher values regarding partisan bias. In 2013 it presents a partisan bias as high as 36.11 pp for PPD/PSD.CDS-PP, whether the highest value for partisan bias in Trofa (Figure 17) is 23.63 pp and only occurs in 2017.

¹⁵ RM means Rui Moreira, the name of the president of this independent party.

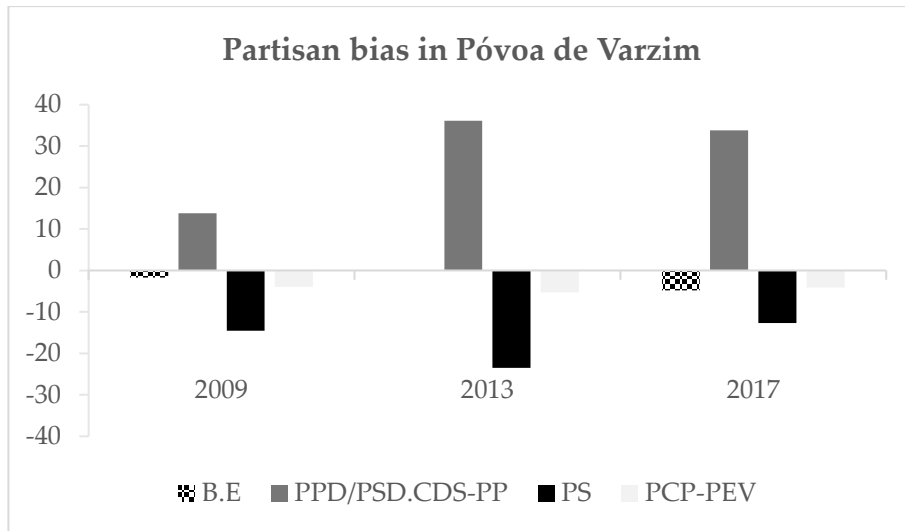


Figure 16: Partisan bias in Póvoa de Varzim, per party, in 2009, 2013 and 2017.

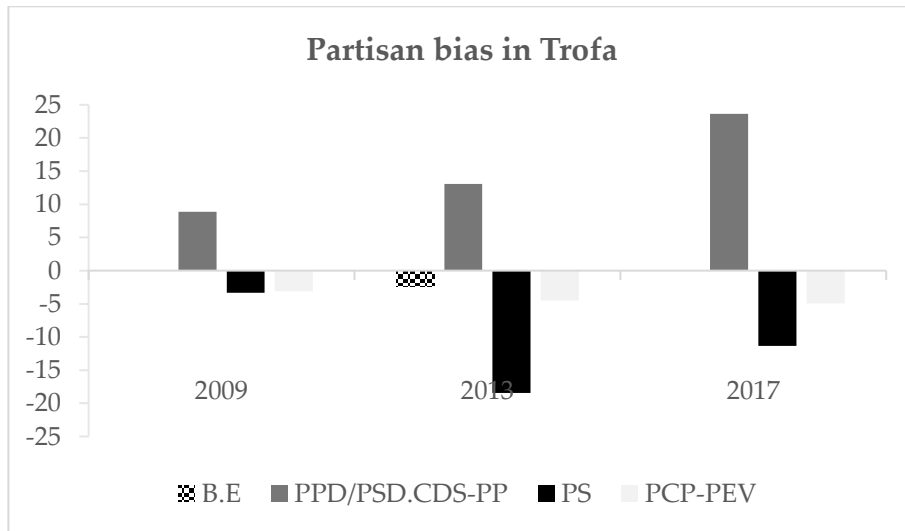


Figure 17: Partisan bias in Trofa, per party, in 2009, 2013 and 2017.

Some counties, such as Santo Tirso, Valongo and Vila do Conde, where the reform was executed by the government, had a positive partisan bias in favour of PS, contradicting the hypothesis of the practice of gerrymandering in the aggregational territory reform of 2013. In Santo Tirso, see Figure 18, and in Vila do Conde (Figure 20), the partisan bias improves for PPD/PSD.CDS-PP in 2013 but it is still negative, meaning that the vote-share is higher than the seat-share. Valongo (Figure 19) had a positive partisan bias for PPD/PSD.CDS-PP in 2009,

but for the same party, had a negative partisan bias in 2013 (-6.42 pp) and even more negative in 2017 (-24.13 pp).

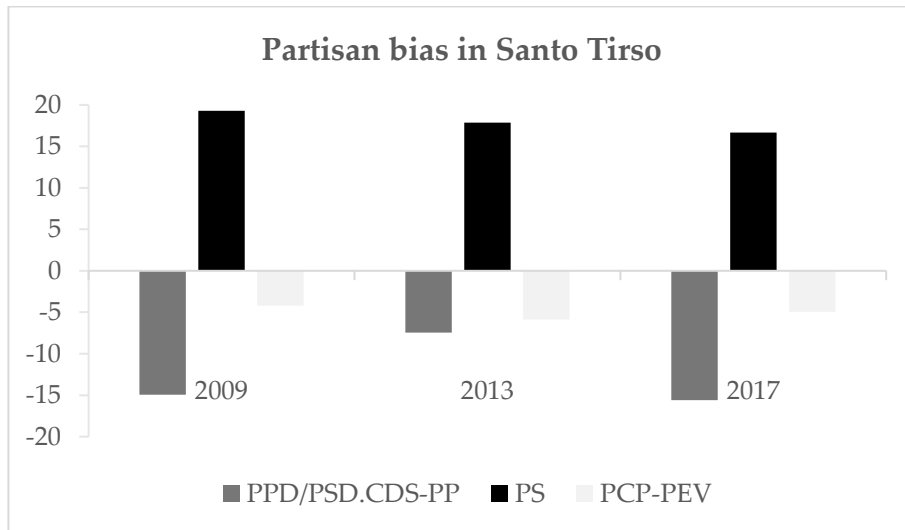


Figure 18: Partisan bias in Santo Tirso, per party, in 2009, 2013 and 2017.

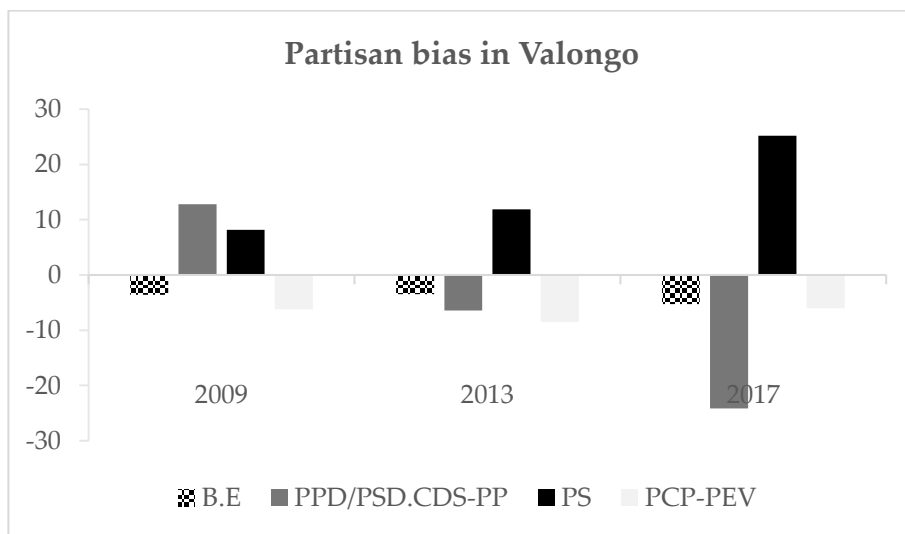


Figure 19: Partisan bias in Valongo, per party, in 2009, 2013 and 2017.

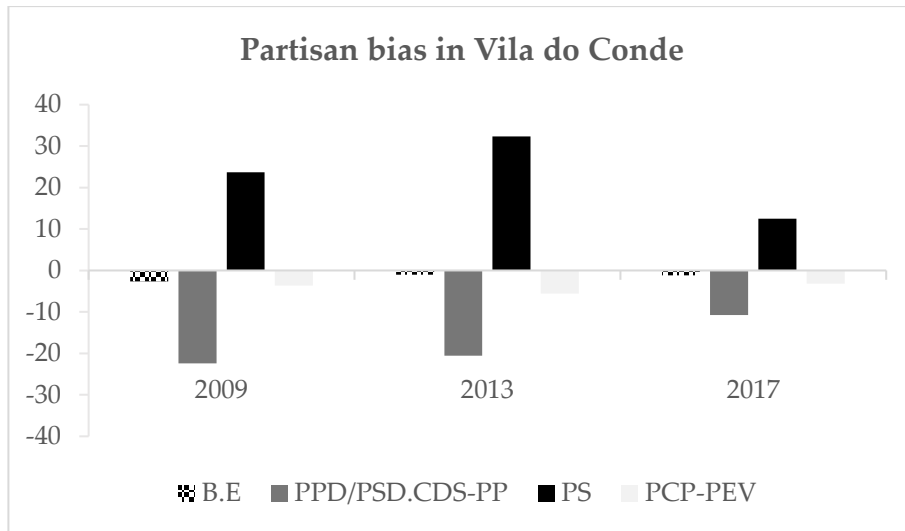


Figure 20: Partisan bias in Vila do Conde, per party, in 2009, 2013 and 2017.

In Vila Nova de Gaia, PPD/PSD.CDS-PP, the right-wing coalition had a partisan bias in its favour in 2009 but the roles switched and in 2013 and 2017 there was a high positive partisan bias in favour of the left-wing party PS, as we can observe in Figure 21. This could have been an effect of RAFT and an extreme measure to show the disagreement with the government, and therefore it does not seem that gerrymandering occurred in the county in question. Vila Nova de Gaia's PPD/PSD.CDS-PP was the one responsible to reorganize the counties' parishes.

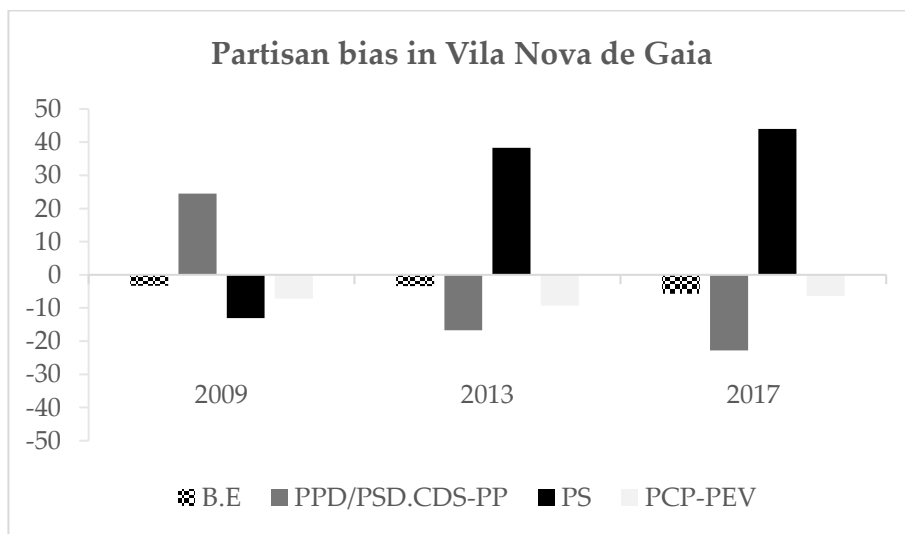


Figure 21: Partisan bias in Vila Nova de Gaia, per party, in 2009, 2013 and 2017.

Regardless of the partisan bias being seen in every county, the mean of the partisan bias is 1.32 (see Appendix)¹⁶. But if we consider the standard deviation (14.15), we can understand that partisan bias is in fact, significant. In some counties the standard deviation is such that we can say that during the years in study there was a clear bias regarding the different parties. There are counties such as Gondomar, Maia, Matosinhos and Vila Nova de Gaia, that present higher partisan bias and there are others like Amarante, Felgueiras, Lousada and Penafiel where the bias is not so evident.

Here, the existence of partisan bias is considered based only on the geographic distribution of partisan support or gerrymandering, so we can state that counties such as Lousada, Maia, Paredes, Penafiel, Póvoa de Varzim and Trofa present data more likely to be derived from gerrymandering practices.

Analysing partisan bias as having a unique cause (geographic distribution of partisan support) can translate into some limitations. For that reason, to complement the study, in the next chapter, and considering other variables that influence partisan bias, we test the hypothesis of partisan bias being caused by RAFT using regression methods.

¹⁶ This may be due to the fact that negative and positive values offset each other. If we take the average of the absolute value of partisan bias, one gets a mean of 10.89 and a standard deviation of 9.13.

Chapter 4

The influence of RAFT on partisan bias: a regression analysis

In this chapter we evaluate the connection between meaningful variables to partisan bias and gerrymandering, by using linear regression. The purpose of the regression is to understand how the partisan bias is influenced by the party who executed the RAFT, and the susceptibility of occurring gerrymandering.

1. Data

For the regression analysis we continue to use the variable partisan bias. Here, however, we use composite data (differences in the partisan bias through the years) that derived from the primary data (partisan bias per year), which was already used and explained in the previous chapter. We opt to use the differences in the partisan bias because we want to understand the changes in partisan bias, i.e., if the increases or decreases in the partisan bias were influenced by RAFT. Also, using the partisan bias per year instead of the differences in the partisan bias would not allow us to test the hypothesis we want conveniently.

Table 3 reveals the descriptive statistics of the variables used in the regression. Both $\Delta PB0913$ and $\Delta PB0917$ represent the partisan bias (PB) and are the

dependent variables of our regressions. While $\Delta PB0913$ symbolizes the difference in the partisan bias in the counties from the party that executed the RAFT between 2009 and 2013, $\Delta PB0917$ indicates the difference in the partisan bias between 2009 and 2017. We use $\Delta PB0913$ to test the short-term effects of RAFT on partisan bias and $\Delta PB0917$ to test if RAFT produced long-term effects on partisan bias. These two variables present a negative mean and a high standard deviation (SD), which reinforces the existence of high partisan bias during the years in study. The independent variable is *RAFT* that takes the value 1 if the territory reform was carried out by PPD/PSD.CDS-PP as the government and 0 otherwise. The other variables considered are the control variables of the model. In total, there are 18 observations, that represent the number of tested counties.

Being unique models, it is also important to explain and highlight the control variables considered and summarized in Table 3. We contemplate dummy variables such as *Counties* that reflects a dummy for each county of Porto's district, *Sameparty0913* and *Sameparty0917*, two dummies that take the value 1 if the town hall was governed by the same party in 2009 and 2013 and in 2009 and 2017, respectively, and 0 if not and along the same lines of thought *Samepresi0913* and *Samepresi0917*, that take the value 1 if the town hall was governed by the same president in 2009 and 2013 and in 2009 and 2017, and 0 else way. One curiosity is that *Samepresi0917* always takes the value 0, because there was no county with the same president of 2009 in 2017, and for that reason is left out of the model.

Variables	Mean	SD	Min	Max
$\Delta PB0913$	-3.624	16.829	-41.18	22.31
$\Delta PB0917$	-8.194	18.559	-47.26	19.98
RAFT	0.889	0.323	0	1
Sameparty0913	0.556	0.511	0	1
Sameparty0917	0.389	0.502	0	1
Samepresi0913	0.278	0.461	0	1
Unemp13	0.129	0.023	0.071	0.16
Unemp17	0.081	0.020	0.046	0.125
Counties	9.5	5.338	1	18

Each variable has 18 observation, one for each county tested.

Table 3: Descriptive statistics of the variables in the linear regression.

2. The influence of RAFT on the partisan bias

We selected the previously explained data in order to study the influence that RAFT exerts on the partisan bias. As mentioned in the preceding chapters, RAFT was a major territory reform in the parishes in Portugal. We want to understand the extent of RAFT's border alteration impact on the voting outcomes, because considering these results, we can afterwards discuss if a gerrymandering strategy was utilized. If RAFT was a mean to increase partisan bias in favour of the policy makers, in this case in favour of party PPD/PSD.CDS-PP as government, then the government may have resorted to a gerrymandering strategy. To the best of our knowledge, there is no literature exploring such relationship, which increases the relevance of this study.

The model, which aims to examine the influence of RAFT on the partisan bias, gives us two regressions, one regarding the short-term effects and one regarding the long-term effects. In the short-term regression, we considered the differences from 2009 to 2013, the year of RAFT application, and in the long-term regression we considered the differences from 2009 to 2017 to understand if RAFT had long-term effects in the partisan bias of the counties.

As some of the Porto's counties and their parishes were aggregated by the government and others by themselves during RAFT, it is important to distinguish both and to understand which ones produced a higher partisan bias. For this intent, we analysed the impact of the difference between the ones where the government decided and the ones where it was up to the county to decide (Paços de Ferreira and Vila Nova de Gaia). In the latter situation, by coincidence, the party that decided RAFT was the same (PPD/PSD.CDS-PP) across the counties, and the same as the party in government, which explains the few variables being considered.

The model constructed is given by:

$$\gamma_i = \alpha + \beta X_i + \Omega + \varepsilon_i ,$$

where γ_i represents the explained (dependent) variable; in this case, the differences in partisan bias from 2009 to 2013 and from 2009 to 2017, in PPD/PSD.CDS-PP party. X_i is the explanatory (independent) variable, the *RAFT* dummy, Ω represents a vector of control variables, and ε_i is the error term. The control variables aim to avoid problems of endogeneity, i.e., to prevent the estimate ($\hat{\beta}$) from being biased. The $\hat{\beta}$ is the mean estimated difference in the partisan bias between the case when there is the government deciding RAFT and the case when it is not, *ceteris paribus*.

2.1 Short-term effects

For the short-term effects we have the following model:

$$(1) \Delta PB0913_i = \beta_0 + \beta_1 RAFT_i + \beta_2 Sameparty0913_i + \beta_3 Samepresi0913_i + \beta_4 Unemp13_i + \beta_5 Counties_i + \varepsilon_i$$

Considering regression (1), we obtained the results shown in Table 4. Here, we found that keeping the same party in authority from 2009 to 2013 in the town hall influences significantly (5%) the difference in the partisan bias in those years. Counties that maintained the same party in government of the town hall had a 17.11 pp superior partisan bias than the ones who altered it. Both *RAFT* and *Sameparty0913* influence positively the partisan bias. The fact that *RAFT* occurred, increases in 14.38 pp the partisan bias, but *RAFT* is not a statistically significant variable in this regression.

VARIABLES	$\Delta PB0913$
RAFT	14.38 (13.34)
Sameparty0913	17.11** (6.476)
Samepresi0913	-0.845 (6.748)
Unemp13	-102.4 (176.3)
Counties	0.0667 (0.623)
Constant	-13.06 (30.70)
Observations	18
R-squared	0.540

The table presents the robust standard errors in parentheses and the asterisks denote the p-value (** denotes $p < 0.01$, * denotes $p < 0.05$, and . denotes $p < 0.1$).

Table 4: Linear regression: effects of *RAFT* on $\Delta PB0913$.

Since *Sameparty0913* has a higher coefficient level and is statistically significant, we decided to see if the variable *RAFT* and the variable *Sameparty0913* are correlated. After realizing this interaction, we calculated the coefficient of correlation between the two variables, in order to show this relation. The high level of correlation between them (0.3953) evidences the obvious interaction. *RAFT* was a major transformation in the administrative organization of the counties, that led to big changes in small villages, and therefore it is mirrored in the voter's choices in the elections. At the time, some parties lost their influence towards the citizens as a consequence of the disapproval with the territory reform. The voters blamed the party adjudicating for the changes in their daily lives and the way to show it was by voting in the opposite party.

Even though *RAFT* is not significant, it is important to keep both *RAFT* and *Sameparty0913*, or otherwise the model would be biased. Despite the influence *RAFT* has on the *Sameparty0913*, there are other factors in *Sameparty0913* that explain the difference in partisan bias but are not influenced by *RAFT*.

In regression (1), $\Delta PB0913$ is also negatively affected by the unemployment rate of 2013, which suggests that the unemployment rate tends to decrease the partisan bias in the counties.

The increases and decreases of the partisan bias from 2009 to 2013 appear to have other causes beyond *RAFT*, since it is not significant. In conclusion, in the short-term, the effects of *RAFT* on partisan bias appear to be narrow. However, although the effects of *RAFT* may have not been evident immediately after its implementation, they may have been pervasive over a longer time period. This is what we test next.

2.2 Long-term effects

The variables considered in the long-term are similar to the ones considered in the short-term. The difference relies on the fact that in regression (2) there is no *Samepresi0917* variable, as there was no president that governed in 2009 and 2017 in the counties in study.

$$(2) \Delta PB0917_i = \beta_0 + \beta_1 RAFT_i + \beta_2 Sameparty0917_i + \beta_3 Unemp17_i + \beta_4 Counties_i + \varepsilon_i$$

Observing Table 5 (based on the regression (2)) it appears that, in the long-term, *RAFT* being conducted by the government was very significant (at 1%). It increased the difference in the partisan bias from 2009 to 2017 in 25.98 pp, which shows that the effects of the territory reform are visible in the long-term, even more than in the short-term. These results may be a consequence of a strategically and intentional gerrymandering.

The *Sameparty0917* and the *Unemp17* are also significant (at 5%), affecting the dependent variable positively and negatively, respectively. From 2009 to 2017 we observe even more significant outcomes than the ones in the short-term, and *RAFT* and *Sameparty0917* present a lower correlation (0.2820).

VARIABLES	$\Delta PB0917$
RAFT	25.98*** (7.448)
Sameparty0917	13.03** (6.015)
Unemp17	-361.6** (128.7)
Counties	0.397 (0.724)
Constant	-10.78 (13.96)
Observations	18
R-squared	0.667

The table presents the robust standard errors in parentheses and the asterisks denote the p-value (***) denotes $p < 0.01$, ** denotes $p < 0.05$, and * denotes $p < 0.1$).

Table 5: Linear regression: effects of *RAFT* on $\Delta PB0917$.

The main conclusion that this model provides is that the counties where it is up to the government to decide about RAFT ($RAFT=1$), it is more likely to observe a higher partisan bias, which may indicate that the aggregation of the parishes was intentionally conducted in a way that favours the government. In the regions where $RAFT=1$, it became easier to win seats with less percentage of the votes, i.e., they had a higher positive partisan bias, and therefore the likelihood of our hypothesis increases, as it seem that gerrymandering was in fact embodied in the territory reform.

However, this analysis has some limitations, including the small number of observations (18) and the eventual problems of endogeneity due to the omission of variables that may be correlated with RAFT.

From this chapter, and despite the limitations, we can also conclude that RAFT has a very significant impact in the change of the governing party and has become more relevant in the long run, where it has a very significant impact in the difference of the partisan bias.

Chapter 5

Results and Discussion

Throughout this dissertation, a lot has been discussed about bias, so, and in order to complete this unbiased study, we present this section where we discuss the observed results and disclose some associated limitations.

In Chapter 3, we concluded that Lousada, Maia, Paredes, Penafiel, Póvoa de Varzim and Trofa were counties where gerrymandering was more likely to occur, based on the voting information of the local elections of 2009, 2013 and 2017, which are not necessarily the counties who present a higher partisan bias, but those who present a benefit towards PPD/PSD.CDS-PP party and whose parishes were mutated by that same governing party. The same is saying that one third of Porto's counties exhibits evidences of gerrymandering.

Chapter 4 provides us the measurement of the effects that RAFT had on partisan bias. The significant outcomes found gives us confidence to consider that RAFT was a major partisan bias increaser. The main inference the regression analysis provided was that in the counties where it was up to the government to lead RAFT's implementation, there is a higher positive partisan bias in the benefit of PPD/PSD.CDS-PP. By winning seats, or parishes assemblies in our case, with a less percentage of the votes, PPD/PSD.CDS-PP as government was benefited by

RAFT. It indicates that a gerrymandering may have occurred during RAFT and in favour of the government at the time.

The concerns of the findings of this study rely on the fact that the negative outcomes of gerrymandering go beyond the year of the implementation of RAFT and have even higher effects in the long run. It would be important to dwell further on the question of why RAFT's effects on partisan bias are more pronounced in the long-run, as the growing concern about a rotted benefit in favor of PPD/PSD.CDS-PP rises.

Even though RAFT's implementation met the requirements to prevent the practice of gerrymandering, it is likely to have occurred. At the time, the reform had equality and population constrains and an independent redistricting commission (UTRAT), as suggested by Sherstyuk (1998) and Lowenthal (2019) respectively, which should prevent gerrymandering and sustain fairness. But, as the results show, it was not enough to prevent it in the Portuguese territory, and maybe some additional constrains were required. Supplemental commissions alongside UTRAT should also have been implemented (Ruley, 2017).

Despite the outcomes of the two previous chapters, we cannot state that gerrymandering was a reality in Portugal undoubtedly, due to some crucial limitations. Firstly, as the research only considers Porto's district it is hard to extrapolate results to the entire country. Secondly there are assumptions that could, if not considered, provide different outcomes such as the junction of PSD, CDS-PP and PSD with other coalitions in one and the disregard of independent parties. Another aspect to consider is that people's preferences in politics may change due to several reasons that may not be considered in either of the control variables in the regression analysis. Also, the gerrymandering and the

favouritism evidenced in some counties could have been reached unintentionally.

Conclusion

Thinking about the standpoint of Kathryn D. Cramer and Hank Wasiak, “When you change the way you see things, the things you see change”, this dissertation was carried in an open minded and best practices way. It was written without taking sides, considering personal opinions or political affiliations.

Aiming to clarify the existence of gerrymandering in Portugal, this thesis contributes to an increase research on this topic, bringing it to the Portuguese reality. This gap, discovered during the literature review (Chapter 1), was the starting point of this dissertation. The definition of gerrymandering, political bias and partisan bias in the literature review made it possible to internalize the main concepts adopted and verified afterwards.

Bringing this global information, trying to apply it and having to transform it so it could fit the Portugal’s specific features was a challenge. In Chapter 2 we explain how the Portuguese territory was organized administratively, how is the electoral process conducted and what positive and negative effects has RAFT caused, and why that event was chosen to test for gerrymandering strategies.

The study incorporates a sample (Porto’s district), as an example of what can be done in this field of study. The data collected was explained and used in Chapter 3 and in Chapter 4. With the vote-share and the seat-share of each parish of each county we were able to calculate the partisan bias and conclude that some counties such as Lousada, Maia, Paredes, Penafiel, Póvoa de Varzim and Trofa

were more propitious to have suffered from intentional gerrymandering in their territory during RAFT. We also determine that RAFT significantly influenced the partisan bias due to the outcomes of our regressions. In fact, we are able to say that gerrymandering was a reality in Porto's district in the local elections of 2013, during RAFT, but we can only assume that it was intentional.

Being the sample size reduced, it would be risky to extrapolate the data obtained to the whole country, therefore, it could be interesting to increase the sample size and compile the data from the entire country. Despite the small sample size and what it implies, this dissertation is very useful as it provides a unique perspective in what concerns testing and processing the voting information.

One way to further explore the research would be to enlarge the data by considering other districts in Portugal and even other countries. Furthermore, the Portuguese government has announced, recently, that a reversion of the reorganization of the territory of the parishes could be a possibility in the future. It may also be interesting to analyse this potential reversal.

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Appendices

Appendix A: Tables regarding Data Analysis (Chapter 4)

County: Amarante									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	1.75%	0.00%	-1.75	1.03%	0.00%	-1.03	0.87%	0.00%	-0.87
PPD/PSD.CDS-PP*	41.59%	47.50%	5.91	37.98%	42.31%	4.33	45.80%	50.00%	4.20
PS	43.29%	40.00%	-3.29	40.94%	50.00%	9.06	44.79%	46.15%	1.37
PCP-PEV	1.92%	0.00%	-1.92	1.96%	0.00%	-1.96	1.78%	0.00%	-1.78

Table A1: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Amarante.

County: Baião									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
PPD/PSD.CDS-PP*	38.56%	20.00%	-18.56	30.60%	14.29%	-16.32	32.50%	14.29%	-18.21
PS	57.22%	80.00%	22.78	63.45%	85.71%	22.27	62.63%	85.71%	23.08
PCP-PEV	1.42%	0.00%	-1.42	1.85%	0.00%	-1.85	1.40%	0.00%	-1.40

Table A2: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Baião.

County: Felgueiras									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	0.85%	0.00%	-0.85	1.26%	0.00%	-1.26	n.a	n.a	n.a
PPD/PSD.CDS-PP*	42.80%	56.25%	13.45	54.82%	60.00%	5.18	50.27%	55.00%	4.73
PS*	33.02%	28.13%	-4.90	35.19%	35.00%	-0.19	38.19%	35.00%	-3.19
PCP-PEV	2.57%	0.00%	-2.57	3.12%	0.00%	-3.12	2.88%	0.00%	-2.88

Table A3: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Felgueiras.

County: Gondomar									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	4.75%	0.00%	-4.75	4.18%	0.00%	-4.18	4.73%	0.00%	-4.73
PPD/PSD.CDS-PP	32.78%	41.67%	8.89	22.47%	0.00%	-22.47	16.86%	0.00%	-16.86
PS	44.34%	50.00%	5.66	40.29%	85.71%	45.42	40.88%	85.71%	44.83
PCP-PEV	10.03%	8.33%	-1.70	15.93%	14.29%	-1.64	16.09%	14.29%	-1.80

Table A4: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Gondomar.

County: Lousada									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	n.a	n.a	n.a	n.a	n.a	n.a	0.50%	0.00%	-0.50
PPD/PSD.CDS-PP	41.79%	40.00%	-1.79	46.55%	53.33%	6.78	48.19%	53.33%	5.14
PS	44.92%	56.00%	11.08	45.96%	40.00%	-5.96	46.33%	46.67%	0.34
PCP-PEV	2.57%	0.00%	-2.57	2.71%	0.00%	-2.71	1.87%	0.00%	-1.87

Table A5: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Lousada.

County: Maia									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	4.71%	0.00%	-4.71	5.02%	0.00%	-5.02	6.65%	0.00%	-6.65
PPD/PSD.CDS-PP*	50.10%	82.35%	32.25	37.30%	90.00%	52.70	40.76%	70.00%	29.24
PS*	33.36%	11.76%	-21.59	26.12%	0.00%	-26.12	35.84%	20.00%	-15.84
PCP-PEV	5.03%	0.00%	-5.03	7.50%	0.00%	-7.50	5.92%	0.00%	-5.92

Table A6: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Maia.

County: Marco de Canaveses									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	n.a	n.a	n.a	n.a	n.a	n.a	0.65%	0.00%	-0.65
PPD/PSD.CDS-PP*	39.10%	54.84%	15.74	39.57%	50.00%	10.43	43.27%	37.50%	-5.77
PS	21.00%	9.68%	-11.32	31.01%	43.75%	12.74	35.34%	56.25%	20.91
PCP-PEV	3.42%	3.23%	-0.20	5.81%	0.00%	-5.81	4.99%	6.25%	1.26

Table A7: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Marco de Canaveses.

County: Matosinhos									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	3.86%	0.00%	-3.86	4.20%	0.00%	-4.20	6.05%	0.00%	-6.05
PPD/PSD.CDS-PP*	21.24%	10.00%	-11.24	12.82%	0.00%	-12.82	13.12%	0.00%	-13.12
Guilherme Pinto por Matosinhos	n.a	n.a	n.a	39.75%	100%	60.25	n.a	n.a	n.a
PS	40.47%	90.00%	49.53	26.03%	0.00%	-26.03	35.72%	100%	64.28
PCP-PEV	5.30%	0.00%	-5.30	7.94%	0.00%	-7.94	7.05%	0.00%	-7.05

Table A8: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Matosinhos.

County: Paços de Ferreira									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
PPD/PSD.CDS-PP*	56.55%	87.50%	30.95	48.97%	66.67%	17.70	40.83%	41.67%	0.84
PS	38.33%	12.50%	-25.83	43.78%	33.33%	-10.44	49.66%	58.33%	8.67
PCP-PEV	2.88%	0.00%	-2.88	3.42%	0.00%	-3.42	2.08%	0.00%	-2.08

Table A9: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Paços de Ferreira.

County: Paredes									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	0.15%	0.00%	-0.15	0.94%	0.00%	-0.94	1.17%	0.00%	-1.17
PPD/PSD.CDS-PP*	62.23%	79.17%	16.94	47.38%	72.22%	24.84	45.21%	50.00%	4.79
PS	29.20%	16.67%	-12.54	35.68%	22.22%	-13.46	45.38%	44.44%	-0.93
PCP-PEV	5.16%	4.17%	-1.00	6.97%	5.56%	-1.41	3.27%	5.56%	2.29

Table A10: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Paredes.

County: Penafiel									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	0.39%	0.00%	-0.39	0.74%	0.00%	-0.74	0.53%	0.00%	-0.53
PPD/PSD.CDS-PP	49.68%	57.89%	8.21	40.11%	53.57%	13.47	41.92%	57.14%	15.22
PS	37.28%	31.58%	-5.70	35.87%	28.57%	-7.30	35.49%	21.43%	-14.06
PCP-PEV	3.31%	0.00%	-3.31	4.97%	0.00%	-4.97	3.27%	0.00%	-3.27

Table A11: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Penafiel.

County: Porto									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	6.79%	0.00%	-6.79	4.73%	0.00%	-4.73	7.20%	0.00%	-7.20
PPD/PSD.CDS-PP*	44.42%	60.00%	15.58	22.46%	14.29%	-8.17	17.24%	14.29%	-2.96
PS	35.06%	40.00%	4.94	25.95%	14.29%	-11.66	28.08%	14.29%	-13.79
RM	n.a	n.a	n.a	31.57%	71.43%	39.85	35.73%	71.43%	35.69
PCP-PEV	10.18%	0.00%	-10.18	9.74%	0.00%	-9.74	7.61%	0.00%	-7.61

Table A12: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Porto.

County: Póvoa de Varzim									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	1.68%	0.00%	-1.68	n.a	n.a	n.a	4.78%	0.00%	-4.78
PPD/PSD.CDS-PP*	52.87%	66.67%	13.80	49.60%	85.71%	36.11	51.93%	85.71%	33.78
PS	31.23%	16.67%	-14.56	23.45%	0.00%	-23.45	12.70%	0.00%	-12.70
PCP-PEV	3.93%	0.00%	-3.93	5.30%	0.00%	-5.30	4.12%	0.00%	-4.12

Table A13: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Póvoa de Varzim.

County: Santo Tirso									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
PPD/PSD.CDS-PP*	39,94%	25,00%	-14,94	36,04%	28,57%	-7,47	29,90%	14,29%	-15,62
PS	47.36%	66.67%	19.30	46.42%	64.29%	17.87	54.75%	71.43%	16.68
PCP-PEV	4.20%	0.00%	-4.20	5.88%	0.00%	-5.88	4.96%	0.00%	-4.96

Table A14: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Santo Tirso.

County: Trofa									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	n.a	n.a	n.a	2.34%	0.00%	-2.34	n.a	n.a	n.a
PPD/PSD.CDS-PP*	53.65%	62.50%	8.85	46.94%	60.00%	13.06	56.37%	80.00%	23.63
PS	40.85%	37.50%	-3.35	38.42%	20.00%	-18.42	31.35%	20.00%	-11.35
PCP-PEV	3.11%	0.00%	-3.11	4.51%	0.00%	-4.51	4.91%	0.00%	-4.91

Table A15: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Trofa.

County: Valongo									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	3.60%	0.00%	-3.60	3.47%	0.00%	-3.47	5.29%	0.00%	-5.29
PPD/PSD.CDS-PP*	27.21%	40.00%	12.79	31.42%	25.00%	-6.42	24.13%	0.00%	-24.13
PS	31.85%	40.00%	8.15	38.11%	50.00%	11.89	49.82%	75.00%	25.18
PCP-PEV	6.22%	0.00%	-6.22	8.51%	0.00%	-8.51	6.01%	0.00%	-6.01

Table A16: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Valongo.

County: Vila do Conde									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	2.67%	0.00%	-2.67	0.99%	0.00%	-0.99	1.17%	0.00%	-1.17
PPD/PSD.CDS-PP*	29.10%	6.67%	-22.43	34.86%	14.29%	-20.57	15.49%	4.76%	-10.73
PS	56.34%	80.00%	23.66	43.83%	76.19%	32.36	35.15%	47.62%	12.47
PCP-PEV	3.64%	0.00%	-3.64	5.59%	0.00%	-5.59	3.20%	0.00%	-3.20

Table A17: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Vila do Conde.

County: Vila Nova de Gaia									
Parties	2009			2013			2017		
	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias	Vote-share	Seat-share	Partisan bias
B.E	3.31%	0.00%	-3.31	3.38%	0.00%	-3.38	5.74%	0.00%	-5.74
PPD/PSD.CDS-PP	46.34%	70.83%	24.49	30.02%	13.33%	-16.69	22.77%	0.00%	-22.77
PS	33.84%	20.83%	-13.01	41.68%	80.00%	38.32	56.01%	100.00%	43.99
PCP-PEV	7.20%	0.00%	-7.20	9.31%	0.00%	-9.31	6.34%	0.00%	-6.34

Table A18: Vote-share, seat-share and partisan bias in 2009, 2013 and 2017, per party, in Vila Nova de Gaia.

Mean and Standard Deviation (SD) of Partisan bias in Porto's district

Partisan Bias	Amarante	Baião	Felgueiras	Gondomar	Lousada	Maia	Marco de Canaveses	Matosinhos	Paços de Ferreira	Paredes	Penafiel	Porto	Póvoa de Varzim
Mean	1.02	1.15	0.40	3.89	0.80	1.32	3.73	5.88	1.50	1.44	-0.28	0.95	1.20
SD	3.75	16.62	5.13	20.13	4.95	22.84	10.07	29.24	15.37	10.21	8.22	16.68	18.16

Partisan Bias	Santo Tirso	Trofa	Valongo	Vila do Conde	Vila Nova de Gaia	Total of the Porto's district
Mean	0.09	-0.25	-0.47	-0.21	1.59	1.32
SD	13.21	11.60	12.34	15.46	20.76	14.15

Table A19: Mean and standard deviation of the partisan bias, by county and in total.