



The impact of political institutions on public spending – a functional analysis

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Dissertation

Master in Economics



Supervised by

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2022

Abstract

We investigate the impact of electoral systems and political regimes on fiscal policy outcomes, in particular public spending, and its composition. Economic theory predicts systematic effects of these political institutions on the size and composition of government spending. Some empirical results are consistent with theoretical expectations: proportional representation (in opposition to majoritarian representation) and parliamentary regimes (in opposition to presidential regimes) favour spending on goods with broader benefits, such as universalistic welfare programs, and lead to larger governments. However, other contributions question this prediction. We further discuss this subject, with an econometric application to the European Union countries, taking advantage of robust and comparable National Accounts data on government indicators. We found out that presidential regimes have a negative impact on total expenditure when compared to parliamentary regimes; however, there is no evidence that the political regime affects public spending composition. In contrast with the theory, there is weak evidence that total expenditure is enhanced by proportional representation. Nevertheless, our results suggest that electoral systems affect the public spending composition with proportional representation shifting government expenditure from more targeted to broader goods.

JEL Codes: C33, D72, E62, H50

Keywords: electoral system; political regime; fiscal policy; European Union

Resumo

Neste trabalho, investiga-se o impacto dos sistemas eleitorais e dos regimes políticos nos agregados orçamentais, mais especificamente, na despesa pública e na sua composição. A teoria económica prevê efeitos sistemáticos destas instituições políticas sobre a dimensão e a composição da despesa do governo. Alguns resultados empíricos são consistentes com as expectativas teóricas: a representação proporcional (em oposição à representação maioritária) e os regimes parlamentares (em oposição aos regimes presidenciais) favorecem a despesa em bens com benefícios mais amplos e geram governos maiores. No entanto, vários autores questionam esta previsão. Deste modo, procurou-se investigar mais o tema com uma aplicação econométrica aos países da União Europeia. Concluiu-se que os regimes presidenciais, quando comparados com os regimes parlamentares, têm menor despesa pública; no entanto, não se encontrou evidência de que o regime político afete a composição da despesa pública. Em contraste com a teoria, encontrou-se evidência mais fraca de uma diminuição da despesa pública nos sistemas com representação proporcional. Contudo e em linha com a teoria, os resultados sugerem que os sistemas eleitorais afetam a composição da despesa pública com a representação proporcional a favorecer a despesa em bens com benefícios mais amplos.

Códigos JEL: C33, D72, E62, H50

Palavras-chave: sistema eleitoral; regime político; política orçamental; União Europeia

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Introduction

The middle of the 20th century brought concerns with market failures, like the inefficient allocation of public goods, that required an overview of both the economic and the political spheres. Public choice emerged as an important multidisciplinary field to study these new issues, by applying the economic science to subjects that were traditionally studied in the political sphere such as interest groups, political parties, bureaucracy, and electoral systems.

According to this view, policymakers, responsible for the execution of the economic policy, are a focal point of the interaction between political and economic matters. Compared with the conventional normative perspective that sees the policymaker as a benevolent social planner that aims to maximize social welfare, public choice argues that policymakers can be motivated by other interests rather than the public interest. Besides, the behaviour of policymakers is shaped by the institutional sphere that surrounds the political system meaning that public policies are not designed independently of these institutions. Two important institutional constraints in the political sphere are the electoral system and the political regime.

Representative democracies' main feature is the assignment of decision-making power to policymakers through institutional constraints (Funk & Gathmann, 2013; Persson, 2002). These structures play an important role as they shape both electoral motivations and the political environment in which economic policies are constructed. The same preferences of an electorate can end in different economic policies and, therefore, distinct economic outcomes by being under different electoral systems or different political regimes (Aboal, 2020).

Hence, one of the most studied questions in the political-economic literature is whether the electoral system and the political regime affect fiscal policy outcomes. A central prediction in the literature is that proportional representation and parliamentary regimes favour spending on goods with broader benefits and lead to larger governments. Some empirical results are consistent with these theoretical expectations: in terms of the electoral system, some authors conclude that in systems with proportional representation government spending shifts away from targeted goods and services to broader programs like welfare benefits and that majoritarian representation leads to smaller governments; regarding the

political regime, some authors conclude that presidential regimes are associated with smaller governments. However, others result question this prediction by finding no evidence of this connection or by even concluding the opposite. Hence, there is little consensus over how political institutions affect total public spending and, specially, its composition.

Given the current framework, we intend to go further on this analysis and understand which spending functions are more affected by the political institutions by answering the following questions: Does the electoral system and the political regime have an influence on fiscal outcomes? Which types of government expenditure are more affected and how by these political institutions?

Our strategy is to organize the work as follows. Section 1 will framework the main concepts. Section 2 will contextualize the theme by doing an overview of the relevant literature on political institutions and their impact on fiscal aggregates. Section 3 proceeds with an empirical application to the European Union countries, taking advantage of robust and comparable National Accounts data on government indicators and, specially, on the functional composition of public spending. Finally, the main conclusions and road ahead are discussed.

1. An overview of the political institutions

In most countries, citizens elect representatives who propose and vote on political matters on their behalf (Besley & Coate, 1997). The electoral system and the political regime play an essential role as they establish the fundamental aspects of how political powers are obtained and how they can be implemented. Thus, voters determine which policymakers have the power to make policy decisions but their choices are contingent on these political constraints (Persson, 2002). Furthermore, the choice of both the electoral system and the political regime has a profound effect on the political life of a country since it has a deeply rooted impact in other constitutional structures such as the federal divisions of power that, once chosen, often remains stable (Persson & Tabellini, 2006).

Hence, to understand the impact of these institutions on fiscal outcomes, we need to understand the fundamentals of these subjects. In the next section, we will characterize the electoral system and its main features. Afterwards, we will briefly explain how political regimes are classified. Lastly, we will succinctly explain two important constitutional structures that are deeply associated with the previous political institutions: federalism and bicameralism.

1.1. Classifying the electoral system

Electoral systems are typically characterized in the literature by the ballot structure, the electoral formula and the district magnitude (Blais, 1988).

The ballot structure establishes how citizens cast their ballot by establishing whether voters select a party or a candidate and whether voters have a strict single choice, or they can express the intensity of their preferences (Persson & Tabellini, 2006). Ballots can be classified in terms of structure as categorical or ordinary ballots. The first require the voter to choose one candidate or party, while ordinal ballots allow the voter to rank its preferences. Inside party list ballots we can differentiate between: closed list, where the seat allocation for each party depends only on pre-electoral list rank (voters are not able to express their preferences for individual candidates); open list, that happens when voters can indicate their preferred party and also their preferred candidate within that party; and a free list, that provides more freedom of choice to the voters (Däubler & Hix, 2018). In free lists, cumulation allows voters to duplicate candidates from a selected list and *panachage* allows voters to include candidates

from other lists and parties in their chosen list (Gerber et al., 2016).

The electoral formula establishes what mathematical formula is used to calculate the seat allocation (Benoit, 2000; Persson & Tabellini, 2005). Under the majoritarian rule, the candidates are elected when they have the highest vote share. One example of this seat allocation is 'first past the post' (FPTP). FPTP utilizes single member constituencies for each district and establishes that the candidate with most votes in each district wins and that the party that wins most seats forms the government. In contrast, proportional rules grants legislative seats in proportion to votes obtained in each district (Persson & Tabellini, 2006). Normally countries use one of two formulas: List PR or the Single-Transferable Vote (STV). Under the first formula each party presents a list of candidates on a regional or national basis and, afterwards, citizens vote on the party list that they prefer. STV make use of multimember districts with voters ranking candidates in order of preference on the ballot paper (Peelish, 2016).

Finally, the district magnitude establishes how many representatives are elected in each district (Persson, 2002). Given the size of the legislature, it reflects the number of legislators acquiring a seat in a typical voting district. Literature distinguishes between single and multimember constituencies meaning that on one hand districts can be represented by one policymaker or, on another hand, represented by multiple policymakers. The United States of America house of representatives is an example of a government in which all districts have a single seat. On the other hand, in Israel all legislators are elected in a single district (Persson & Tabellini, 2006).

Majoritarian rule and small district magnitude produce fewer parties, meaning less representation, and a more skewed distribution of seats than proportional representation and large district magnitude (Persson & Tabellini, 2006).

Even though these characteristics are theoretically different, there is a pattern across countries. For example, in Anglo-Saxon countries a majoritarian rule is normally applied with voting for candidates in single member districts and 'first past the post' allocation rules. Other countries employ the proportional rule through a system of closed party lists in large districts or, in some cases, even in a single national district using some form of List PR. Considering this pattern, a simpler classification has been made by many observers, labelling electoral systems as either majoritarian representation (MR), also called in the literature as plurality

representation, and proportional representation (PR). However, this is not a rule and several countries, like Italy, employ a mixed electoral system (Persson & Tabellini, 2006).

Hence, in MR policymakers are elected in several voting districts and the seats are awarded to the candidate with the highest share of votes in each district while in PR policymakers are elected in a small number of voting districts and the seats are allocated based on the vote share for the party list (Funk & Gathmann, 2013).

Furthermore, MR encourages a two-party system since it discriminates against smaller parties. This generates a stable and stronger single party government (Lijphart & Grofman, 1984). PR seeks to represent all interests and viewpoints of voters by creating an inclusive parliament that reflects the vote shares of numerous parties (Funk & Gathmann, 2013; Norris, 2004). This means that the first electoral system rewards strong parties while the second one ensures representation to minority groups. Hence, there is a trade-off between political stability, favoured by MR, and political representation, better ensured by PR (Lijphart & Grofman, 1984).

Even though there are some common attributes of the electoral systems among different countries, one type of electoral system does not inevitably work out the same way in those countries since every system is influenced by the socio-political context in which it is used (Funk & Gathmann, 2013).

1.2. Classifying the political regime

We can distinguish between two main political regimes: the parliamentarism and the presidentialism. Both have as purpose managing the State in an efficient way within the framework of a democracy. However, these two forms of political regimes have distinct structure organizations and are based on different political philosophies (Puig, 2002).

Parliamentary systems split the powers between the head of government (the prime minister) and the head of State (the president or monarch). The prime minister is not elected but chosen by the parliament from the majority party/ coalition of parties (in these cases, citizens elect the members of the parliament). In parliamentary regimes there is an intersection between the executive and the legislative branches since the government has proposal powers over legislation. Moreover, the government depends on the permanent confidence and support of a majority in the assembly to keep such powers (Persson, 2002;

Persson & Tabellini, 1999). The head of the State in parliamentary regimes can be an elected president (for example, Germany) or a monarch (for example, Belgium) (Puig, 2002).

On the other hand, in presidential regimes the president is the chief executive, who is elected by citizens. The legislative power is held by the members of the legislature who are also directly elected (Puig, 2002). This separation of powers, between the executive and the legislative dimensions, aims to guarantee checks and balances to all branches of government. Hence, one central feature of presidential regimes is the separation of powers between different groups of policymakers who are independent and directly accountable to the voters. Moreover, in presidential systems, the executive branch does not depend on the support of a majority in the assembly to keep such powers (Persson, 2002; Persson & Tabellini, 1999).

Even though countries are normally classified as presidential or parliamentary regimes, we can see numerous mixed systems that vary both in the level of separation of powers and the rules for establishing and dissolving governments (Persson & Tabellini, 2004b).

1.3. Federalism and bicameralism

Two last important regime features in the design of fiscal policy are the degree of centralization and the distinction between bicameralism and unicameralism. Centralization can be from unitary to federal or even an intermediate form of “quasi-federalism”. Federal countries, like Belgium, have their sovereignty shared between a central government and subnational governments which have their own powers and responsibilities assigned by the constitution or by judicial clarification. Unitary systems, on the other side, besides the central government only have local governments. Local governments respond to the central government and have less autonomy (OECD, 2017).

Furthermore, in some countries like the United States of America and Italy the legislature is separated in two bodies (houses or chambers). In this case, we have a bicameral system. This dualism is justified as an application of the principle of checks and balances. In majoritarian representation, for example, a second chamber decreases the potential for tyranny and increases the adoption of inclusive voting rules, so minorities’ interests are less ignored with this structure. However, a bicameral system slows down the legislative process and makes abrupt but necessary changes more difficult to implement, especially when the

upper chamber can review all the decisions made by the lower chamber. Nowadays, equal bicameralism – where both chambers have the same power – is an exception. As such, this problem has become narrower since the upper chamber normally has a limited role compared to the lower chamber, making the impact of bicameralism on law creation almost zero (Bradbury & Crain, 2002).

2. The effects of political institutions on fiscal outcomes

In this section, we discuss the influence of the electoral system and the political regime on fiscal outcomes, with an application to public spending, and its functional composition. We first introduce the theoretical framework and then contrast the hypotheses with the current and relevant empirical evidence.

2.1. The electoral system

Building on the previous distinction between majoritarian representation (MR) and proportional representation (PR), economists have analysed the electoral incentives of policymakers when they choose two different policies: one policy benefits many citizens (broader goods like transfers) while the other one can be targeted to a specific group of citizens (like public goods) (Funk & Gathmann, 2013). The first are independent of the residence of the voters and typically all citizens who meet the specific criteria of the transfer are eligible to receive it (for example, old age pension or unemployment benefits). In contrast, spending on public goods is local in nature. For example, policymakers can decide to build a school or a hospital in a city and not in another and only citizens that live in that city or nearby will benefit from these goods and services (Milesi-Ferretti et al., 2002).

Policymakers elected under MR have greater motivations to target spending programmes to those voters that guarantee a majority of votes and to discard votes above the majority, while under PR, policymakers value all votes since all of them count for the party's seat share (Funk & Gathmann, 2013). Hence, it is expected that under PR policymakers spend more resources on broader goods (Funk & Gathmann, 2013; Milesi-Ferretti et al., 2002).

Moreover, in terms of competition, when the government is formed by a single-party majority, voters may not be able to make a distinction between different policymakers in government. Consequently, the central electoral conflict is between the government and the opposition. This creates incentives for the government to better behave and apply efficient policies, or at least employ policies that benefit the voters represented in office. If instead the government is supported by a coalition of parties, voters can discriminate between the parties in government and can penalize parties by not voting on them. This generates an electoral common pool problem inside the coalition by creating inefficiencies

in bargaining that can induce more public spending (Persson & Tabellini, 2006). But how can this be influenced by the electoral system? Empirical studies argue that MR is more likely to lead to a two-party system and produce a single-party majority government, whereas coalition and minority governments become more likely under PR. This happens because MR gives an electoral advantage to larger parties more likely to win in each district. Policymakers then have stronger incentives to merge into large parties than to run for elections alone as they have under PR. Hence, more fragmentation and consequently more coalitions are expected in PR, leading to more government spending (Persson et al., 2005).

Another condition that can explain the relation between electoral systems and public spending is the government ideology. PR is frequently associated with centre-left governments, while right-wing governments tends to dominate in MR (Iversen & Soskice, 2006). Iversen and Soskice (2006) build a model under the following assumptions: parties represent classes, or coalition of classes; and taxes and transfers differ across classes. Nothing prevents the class of more poor people from exploiting the middle class and, following the same assumption, the middle class taking from the richer. Since it is the middle class that have a propensity to decide who governs, they have motivations to ally with the poor class to take advantage of the richer. On the other hand, they also have incentives to support the richer to prevent being exploited by the poor class. They argue that in MR the median voter, normally the middle class, faces lower taxes if a centre-right party diverges to the right: On the other hand, they face higher taxes and more redistribution to low-income groups if a centre-left party in government diverges to the left. The middle-class party, in PR, has motivations to create a coalition with the left party because together they can exploit the richer (Iversen & Soskice, 2006). Hence, we can presume once more that PR, by being associate with left-wing parties, raises total spending, and particularly expenditure in education and welfare benefits (Funk & Gathmann, 2013).

2.1.1. The ballot structure

The ballot structure establishes whether voters select a party or a candidate, and whether voters have a strict single choice or they can express the intensity of their preferences (Persson & Tabellini, 2006).

In majoritarian representation policymakers are casted in single member district while in proportional representation policymakers are joined in a party list. Voters have control

over policymakers' actions in MR since they can associate each policymaker with his/her actions. This means that by knowing their efforts voters can penalize or reward policymakers in the next elections. This creates incentives for policymakers to please the voters in this electoral system (Persson & Tabellini, 2006). This leverage effect of MR creates incentives for policymakers to better behave in their functions which may lead to less political rents and less corruption. Moreover, since policymakers are more focussed on some specific groups of voters, this may increase the incentives for policymakers to target spending programmes to narrow constituencies at the cost of broader benefits to many voters (Persson & Tabellini, 2006). MR is constructed to promote government accountability since policymakers have stronger incentives to behave in accordance with the voters' will if they are held accountable individually.

In PR voters cannot associate the efforts of policymakers individually since policymakers are joined in a party list. This means that the potential for deviation from the voter's preference is greater since voters cannot as easily penalize policymakers.

2.1.2. The electoral formula

Majoritarian representation is normally associated with first past the post (FPTP) allocation rules. Under FPTP, the candidate elected is the one who simply earns most votes (Peelish, 2016).

In PR voters will vote for the party and/or candidate they prefer in multimember districts. Afterwards, the votes are translated into seats considering the share of votes achieved by the candidates of the party/party list. For instance, if one party earns 40% of the vote, then its candidates will have around 40% of the seats in parliament (Peelish, 2016).

How can the electoral formula affect fiscal outcomes? The literature explains that the minimal range of votes needed to win the election is smaller under MR. The winner-takes-all property of MR diminishes the number of votes needed to win since votes for a party not achieving plurality are lost. For instance, in a system with single-member districts and plurality, a party only needs 50% of the votes in 50% of the districts to win the elections, getting a total of only 25% of the national vote. Hence, policymakers in PR need to create policy advantages for a bigger segment of the population since they need more votes. This leads to broader spending programs (Persson & Tabellini, 2004a).

2.1.3. The district magnitude

The district magnitude has a strong influence in both electoral systems but in opposite directions. On one hand, increasing the district magnitude in majoritarian representation entails more disproportionality and gives advantages for bigger parties, whereas under PR it generates more proportionality and better conditions for small parties (Lijphart, 2012).

Let us assume that for example in a country with MR that the election run is between parties A and B and that party A is preferred in a particular region. If this region is, for example, a three-member district, party A can get all the seats. Nevertheless, if there are three single-member districts, party B can be able to win in one of the districts and consequently get one of the three seats. The idea is that when the district magnitude increases, disproportionality also increases. If we assume a national district and that all voters cast strictly partisan votes, the party winning the majority of the votes would get all of the three seats (Lijphart, 2012).

Under PR the number of members assigned to each district determines, in some way, how proportional the elections are. Let us assume that a party represents 10% of the population. In a five-member district it is improbable that it will win a seat but in a ten-member district it will probably be successful. Hence, we can conclude that small districts do not guarantee the principle of proportionality. On the other hand, a national district is ideal for a proportional conversion of votes into seats. The systems, which aim for a bigger degree of proportionality, will adopt very large districts, because this way they are able to ensure representation even too little parties in the legislature. Hence, this means we can ensure more proportionality in the results and also more chance for small parties to be elected (Lijphart, 2012).

So, PR is normally associated with large districts, sometimes national districts, and this increases parties' incentives to pursue support from broader coalitions in the population while MR is normally conducted in smaller districts, often in a single-member district like in FPTP rule, inducing policymakers to target smaller, but pivotal, geographical constituencies (Persson & Tabellini, 2004a). Furthermore, MR normally makes each party a sure winner in some of the districts, so policymakers can concentrate their efforts in swing districts.

2.1.4. The empirical evidence

According to the literature, it is expected that PR leads to more spending in broader programmes like welfare and social security and, as a result, more public spending. Moreover, if policymakers have stronger motivations to support broader spending programs, we might anticipate to see systematic variations around election periods in these systems (Persson & Tabellini, 2006).

In terms of total public spending, Persson and Tabellini (1999) studied 64 democracies from 1985 to 1990 and conclude that PR leads to higher expenditure. In the same line, Persson and Tabellini (2004a) considered 80 democracies in the 1990s and determine that PR raises total expenditures by 5% of GDP. Moreover, Persson et al. (2004) focused on 50 parliamentary democracies and found higher spending under PR but conclude that was due to a higher incidence of coalition governments in these systems.

However, Klomp and de Haan (2013), using a sample of 65 countries over the 1975-2005 period, concluded that governments with MR spend more when compared to proportional ones. These results are in line with Blume et al. (2009). The authors replicated Persson and Tabellini (2005)'s work but increased the sample size to 116 countries and found no significant result meaning that they conclude that the political regime has no impact on fiscal outcomes. Lastly, Funk and Gathmann (2013) did not find a positive association between PR and higher public spending for the Swiss cantons.

In terms of public spending composition, Persson et al. (2004) studied 80 democracies over the 1990-1998 period and found that legislatures elected under PR spend from 2 to 3% more of GDP in social security and welfare compared to MR. The effect is stronger in older and better democracies (Persson & Tabellini, 2004a). Kantorowicz (2017) demonstrated that in the Polish municipalities, in the period from 2002 to 2014, PR led to larger grants and subsidies as compared to the MR.

Moreover, Funk and Gathmann (2013) analysed the Swiss cantons from 1890 to 2000 and observed that in PR the composition of public spending shifts away from targeted transfers for roads toward broader programmes like education and welfare. They also conclude that the presence of PR raises the seat share of left-wing parties by 6.6 percentage points.

However, Aidt et al. (2006) analysed the change from a MR to PR system in Western European countries in the years 1830-1938 and found out that this change constrained spending on health, education and welfare. Furthermore, the empirical evidence shows a significant electoral expansion in welfare spending in election and post-election years in PR but not in MR (Persson et al., 2004).

Lastly, studies that tested the effects of a majoritarian dummy in both the government spending and its composition, do not all conclude for a clear effect of the electoral system on fiscal policy instruments (Table 1).

Table 1. Studies' synthesis: the effect of a majoritarian dummy on fiscal indicators

Authors	Period	Countries	Outcome variables	Result
Persson and Tabellini (1999)	Cross-country data for the average period of 1985 to 1990	64 democracies	Total expenditures of central government (% GDP)	Significant (-)
			Sum of expenditures on transportation, education and order and safety (% GDP)	Only significant when associated with the regime type
Kantorowicz (2016)	2003 to 2010	2478 Polish municipalities	Total expenditures	No significance
Persson and Tabellini (2004)	Cross-country data for the average period of 1990 to 1998	80 democracies	Central government spending (% GDP)	Significant (-)
			Social security and welfare spending (% of GDP)	Significant (-)
Funk and Gathmann (2013)	1980 to 2000	Swiss cantons	Spending for broad goods - annual expenditures per capita	No significance
			Real per capita spending on broader goods (education and welfare)	Significant (-)
Persson (2002)	Cross-country data for the average period of 1960 to 1998	61 democracies	Central spending (% GDP)	No significance
			Social security and welfare spending (% GDP or % spending on G&S)	Significant (-)
Blume et al. (2009)	Cross-country data for the average period of 1990 to 1998	116 democracies	Central government spending (% GDP)	Significant (-)
Persson and Tabellini (2004)	Cross-country data for the average period of 1990 to 1998	50 democracies	Overall government spending (% GDP)	Significant (-)

Source: Own elaboration.

2.2. The political regime

After exploring the influence of the electoral system on fiscal outcomes, in this section we will explain the influence of the political regime. We introduce the theoretical framework and then contrast the hypotheses with the current and relevant empirical evidence. However, not as extended as in the electoral system since those effects have been studied in less detail.

2.2.1. The literature

In democracies, elections are the more important instrument for disciplining policymakers. Indeed, the theory explains that accountability is expected to be stronger in presidential than in parliamentary democracies because the executive branch is directly accountable to the voters. The potential for deviation from the voter's preference is bigger under parliamentary government, where the executive branch is not directly elected so not directly accountable to the voters (Person & Tabellini, 2004).

Moreover, the separation between the executive and legislative powers also helps to avoid the abuse of power, but only with proper checks and balances. By creating a conflict of interest between these two bodies since it is required that both come to an agreement on public policy, the executive and legislative bodies discipline each other to the voters' benefit (Persson et al., 1997). In parliamentary regimes, there is more concentration of powers which facilitates the collusion of policymakers with each other at the voters' loss. This weaker accountability results in more rents and more taxes (Persson et al., 1997; Persson et al., 2000).

Furthermore, Persson et al. (2000) argue that in parliamentary regimes the parties supporting the executive have less bargaining power as they worry about the negative consequences of a government crisis because in a crisis they risk losing valuable agenda-setting powers. Therefore, those parties have incentives to preserve a steady majority when voting on policies in the legislature. This leads to more broader spending programmes that favour a majority of voters.

In contrast, in presidential regimes, legislative coalitions are less stable meaning that different minorities fight over different policies and spending programs. It usually results in the allocation of spending programmes to powerful minorities, normally the constituency of the influential policymakers. Hence, other minorities do not win with this revenue leading

them to oppose to higher spending, exploiting stronger checks and balances.

So, the theory predicts that presidential regimes are related with smaller governments and smaller spending on broader programs than parliamentary regimes (Persson et al., 2000).

2.2.2. The empirical evidence

Persson and Tabellini (1999) using a sample of 64 democracies in the 90's conclude that the size of government is about 10 percentage points smaller in presidential regimes.

Moreover, Persson (2002) considered 61 countries from 1960 to 1998 and found evidence that presidential regimes are associated with lower government expenditure and lower tax revenue than parliamentary ones. However, the author does not conclude that presidential regimes have a systematic effect on broader spending programmes as social and welfare programs. This results are in line with Blume et al. (2009) studies. They replicated Persson and Tabellini (2005)'s work but increased the sample size to 116 countries and found no significant result meaning that they conclude that the political regime has no impact on fiscal outcomes.

Persson and Tabellini (2004a) did not found evidence of broader programmes like welfare spending in parliamentary regimes as the theory predicted when they studied 80 democracies from 1990 to 1998.

Hence, as we can see in the Table 2, there is no consensus on which impact the political regime as on the composition of the government spending.

Table 2. Studies' synthesis: the effect of a presidential dummy on fiscal indicators

Authors	Period	Countries	Outcome variables	Result
Persson and Tabellini (1999)	Cross-country data for the average period of 1985 to 1990	64 democracies	Total expenditures of central government (% GDP)	Significant (-)
			Sum of expenditures on transportation, education and order and safety (% GDP)	Only significant when associated with the electoral system
Persson and Tabellini (2004)	Cross-country data for the average period of 1990 to 1998	80 democracies	Central government spending (% GDP)	Significant (-)
			Social security and welfare spending (% of GDP)	Significant (-)
Persson (2002)	Cross-country data for the average period of 1960 to 1998	61 democracies	Central spending (% GDP)	Significant (-)
			Social security and welfare spending (by central government) (% GDP or % spending on G&S)	No significance
Blume et al. (2009)	Cross-country data for the average period of 1990 to 1998	116 democracies	Central government spending (% GDP)	No significance
			Central government revenue (% GDP)	No significance
Persson et al. (2000)	Cross-country data for 90's decade	54 democracies	Total spending of central government (% GDP)	Significant (-)

Source: Own elaboration.

3. A functional analysis of public spending composition

The aim of this dissertation is to analyse and understand the impact of both electoral systems and political regimes on public spending and its composition. This subject has already been studied by many renowned authors. Nevertheless, to provide a more extensive and updated contribution to this debate, an econometric analysis will be developed for the current 27 European Union (EU) countries for the last two decades, trying to go further in explaining both the general impact of these two political institutions on public spending but also on public spending composition.

To do so, we will first present the strategy adopted in this empirical assessment – both in terms of time and space dimensions, but also regarding the quantitative technique to be used; then, section 3.2. briefly describes the variables; section 3.3. explains the strategy of estimation and introduces the model; lastly, the econometric results and the corresponding analysis are presented.

3.1. Empirical strategy

Our empirical analysis differs from most of the literature in two key points: we are only going to focus on the EU countries, and we aim to do an econometric analysis with panel data. We intend to study the 27 EU countries for two main reasons: first, while several studies focus on large samples of countries that differ in relevant aspects like economic and social conditions, we believe that it would be interesting to focus our research on a more homogeneous group of countries in terms of the institutional framework and the degree of development; second, by choosing EU countries as our sample we can take advantage of harmonized National Accounts data from a recognized institution like the European Commission, and in particular Eurostat, and use comparable and trustworthy information.

Moreover, we intend to use panel data estimates instead of cross-country data which is used in most studies (Table 1 and Table 2). Observations in panel data involve a cross-sectional dimension and a time dimension. With panel data estimates we can have more accurate and precise inference of model parameters since these estimates typically contain more degrees of freedom and more sample variability. Moreover, it provides lower collinearity among the variables and more efficiency. Lastly, panel data estimates have better capacity for catching the complexity of the section behaviour than other options, by building

and testing more complex behavioural hypotheses and by controlling for the impact of omitted variables (Hsiao, 2007). Hence, by using panel data we can control for relevant politics variability (across countries) and economic situation (over time).

Finally, our analysis covers the 1995-2019 period. The beginning year marks the implementation of the European System of Accounts (ESA 1995), which is an European compatible accounting framework providing a systematic and detailed description of the total economy, its composition, and its relations with other economies. Moreover, we delimited our period to 2019 since the data for the political variables comprised in the Comparative Political Data Set, which is our main political data source, is only available until 2019 (Armingeon et al., 2021). Additionally, the year 2020 was marked by the COVID-19 pandemic that had a considerable impact across all countries, both in sanitary and economic conditions. Countries attempted to restrain the spread of the virus by implementing measures such as lockdowns and travel restrictions that slowed down the economies and affected all economic indicators, including fiscal ones. Hence, the introduction of this year could disturb the results.

3.2. Description of the variables

As regards the construction of the model itself, we included different groups of variables that according to most of the literature might affect our dependent variables: some related to the political conditions and others related to the social and economic framework, but always considering that the electoral system and the political regime are the two variables to be highlighted.

Our dependent variables are both total central government expenditure as a percentage of GDP (*TotExp*) and, as variables to portrait the public spending composition, the first level (division) of the Classification of the Functions of Government (COFOG). This data is available for EU member states by classifying government expenditure data from the European System of Accounts meeting the purpose for which the funds are used. The COFOG divisions are:

1. *general public services (GenPubSer)*: includes public debt transactions, the functioning of the central executive and legislative bodies, and transfers between levels of government;

2. *defence (Defence)*: incorporates military and civil defence and foreign military aid;
3. *public order and safety (PubOrder)*: combines both police and fire-protection services, law courts and prisons;
4. *economic affairs (EconAff)*: includes subsidies to enterprises and economic sectors;
5. *environmental protection (Environ)*: incorporates waste management, water waste management, pollution abatement, protection of biodiversity and landscape;
6. *housing and community amenities (Housing)*: features housing and community development, water supply, street lighting;
7. *health (Health)*: comprises hospital services, outpatient services, appliances and equipment, and medical products, including vaccines and all forms of health care spending;
8. *recreation, culture, and religion (Culture)*: covers recreational and sporting services, cultural services, broadcasting and publishing services, religious and other community services;
9. *education (Educat)*: incorporates every educational stage from pre-primary to university; and,
10. *social protection (SocProt)*: includes old age pensions, sickness and disability benefits, and unemployment benefits.

Understanding the impact of both the electoral system and the political regime on public spending composition requires the COFOG breakdown in broader or targeted expenditure. Generally, broader expenditure is given in a form of transfer with some eligibility criteria and all citizens who meet the criteria are entitled to receive that transfer, despite their region of residence. In contrast, targeted expenditure is normally given as goods or services and are locally provided. Hence, the government can more easily decide to target those goods or services to some constituency implying that they are more easily subject to political manipulation (Milesi-Ferretti et al., 2002). The distinction is not always exact. Milesi-Ferretti et al. (2002) argue that the government can acquire goods or services accessible to the entire population, such as an airline company. However, the government is less likely to provide transfers that are clearly localized since legislation normally does not exclude citizens from a certain transfer only because of where they live. Hence, by taking into account the definition of Milesi-Ferretti et al. (2002), we classified the COFOG variables as:

- expenditure in broader goods and services: *defence, economic affairs* and *social*

protection;

- expenditure in targeted goods and services: *general public services; public order and safety; environmental protection; housing and community amenities; health, recreation, culture, and religion and education.*

Notwithstanding we classified the COFOG variables as broader or targeted goods and services, it is important to highlight that these divisions are not simple to categorize. For example, expenditures in education were classified as targeted goods and services since schools are normally locally provided. However, in this division we can have expenditure with broader benefits such as scholarships that are normally general transfers. Funk and Gathmann (2013) classified for Switzerland the expenditure in education as broader goods and services since education is mainly publicly provided. However, the cantons have the responsibility for secondary and primary education, in collaboration with local governments. Hence, even though these divisions help us to understand the distinct types of government expenditure, they are not accurate in terms of classification into broader or targeted benefits.

The deeper the breakdown on the composition of the expenditure, the more objective and detailed the analysis would be and it would also be easier to classify the expenditure divisions. Nevertheless, it would also be more complex to interpret the findings. We had this trade-off into consideration when we choose the first level of the COFOG variables to conduct our empirical analysis.

The political variables of interest rely on two dummies: *Prop*, a dummy that represents the electoral system' alternatives, and *Pres*, a dummy that classifies the political regime. *Prop* takes a value of 0 when there is a mixed electoral system like a parallel representation system (mixed system with proportional representation lists and 'winner-take-all' districts) or a majority-plurality/alternative vote and 1 when there is proportional representation. Our sample does not include countries with simple plurality representation. Armingeon et al. (2021) do not clarify which chamber is considered but typically databases assemble data relative to the elections for the first chamber. *Pres* takes a value of 0 when a country has a parliamentary system and goes up to 4 in countries that have a full presidential system. We also added a simplified version of this last variable: *Pres1* takes the value of 0 for both parliamentary systems and for semi presidential systems dominated by a parliament and the value of 1 for both semi presidential systems dominated by a president and presidential

systems.

As control variables, we use several social and economic indicators, found in previous empirical studies to be correlated with the size and/or the composition of government spending:

- a) GDP per capita, in PPS, in current prices (*GDP_pc*): the relationship between the level of development of a country and government spending is a common debate: Wagner's law suggests that public expenditure tends to grow as countries become more developed since there is the need for more regulation and protection, guaranteed by the government, but also because the request for public goods such education and cultural services increase in wealthier economies; on the other hand, Keynesian' theory invokes fiscal policies to support the economy during recessions meaning that public spending can be used as a mean to stabilize GDP (Magazzino, 2011);
- b) output gap, in percentage of potential GDP (*Out_gap*): measures the economic cycle and has an impact on government spending since this can act as an automatic stabilizer meaning that, normally, when the output gap increases, government spending tends to decrease (Szarowska, 2013);
- c) openness of the economy (*Trade*): measured as the sum of exports plus imports in percentage of GDP (in current prices), the openness of the economy indicates the strength of the economic integration of a country and has been found to be associated with a higher government size since public spending functions as a stabilizer against external shocks and GDP fluctuations (Sabra, 2016);
- d) share of the population above 65, in percentage of overall population (*Populat*), which determines spending on pensions and health (Milesi-Ferretti et al., 2002); we also included, as an alternative, the share of population under 15 and above 65 as an indicator of the economically dependent population which is expected to induce more public spending.

Finally, as control variables for the political environment we will use:

- e) the ideology (*Ideology*), a dummy variable that goes from 0 to 5 being 0 the hegemony of right-wing parties and 5 the hegemony of left-wing parties; this variable is included since government's ideology can influence economic policies: left-party

governments are normally associated with more expansionary policies than right-wing ones (Hibbs Jr, 1994);

- f) the electoral year (EL_year), a dummy variable that takes the value of 1 in years with elections for the national parliament (lower house) and 0 otherwise; we include this variable since the theory suggests that, before elections are held, there is a stimulation of the economy in order to help the incumbent government being re-elected (Dubois, 2016). We also included, as an alternative, EL_year1 that takes the value of 1 in the year of the election for the national parliament if elections are held after June (not included) or 1 in the year before the election year if elections were held before July and 0 otherwise.

The descriptive statistics of both the dependent and the explanatory variables that feature in the baseline specification are summarized in Table 3 and all sources and units are gathered in Annex 1.

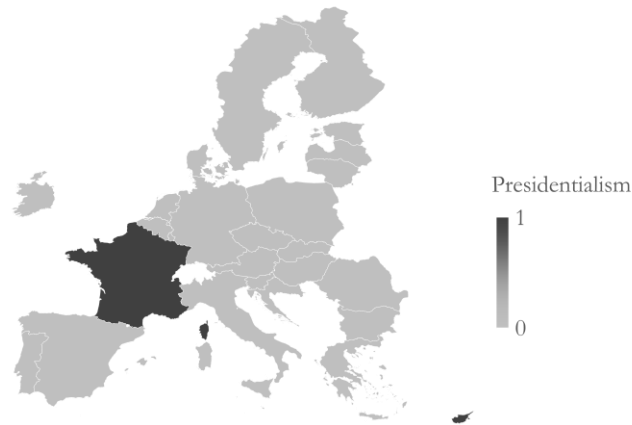
Table 3. Descriptive statistics of the variables

Type	Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
Political variables of interest	Prop	670	0.90	0.30	0	1
	Pres	670	0.65	0.92	0	1
	Pres1	670	0.07	0.25	0	1
Fiscal variables	TotExp	675	29.60	6.39	12.50 (Germany, 2016)	63.10 (Ireland, 2010)
	GenPubSer	675	9.15	4.44	2.50 (Romania, 2006)	23.00 (Greece, 2011)
	Defence	675	1.32	0.56	0.20 (Ireland, 2019)	3.60 (Greece, 2003)
	PubOrder	675	1.57	0.62	0.10 (Germany, 2015)	4.30 (Slovakia, 1997)
	EconAff	675	4.19	2.23	0.90 (Belgium, 2004)	24.70 (Ireland, 2010)
	Environ	670	0.28	0.27	-0.50 (Estonia, 2010)	1.70 (Malta, 2015)
	Housing	669	0.37	0.53	0.00 (Austria, 2016)	5.40 (Netherlands, 1995)
	Health	675	2.37	1.70	0.00 (Germany, 1997)	7.90 (Ireland, 2009)
	Culture	675	0.59	0.33	0.00 (Germany, 1998)	2.90 (Hungary, 2016)
	Educat	675	3.25	1.54	0.00 (Belgium, 2019)	8.50 (Poland, 1996)
	SocProt	675	6.52	4.00	0.50 (Bulgaria, 2001)	1.60 (Denmark, 1995)
Control variables	GDP_pc	675	22.42	11.75	4.50 (Romania, 1995)	80.00 (Luxembourg, 2019)
	Out_gap	662	-0.10	3.25	-16.7 (Greece, 2012)	13.10 (Bulgaria, 1996)
	Trade	670	114.25	62.79	37.11 (Greece, 1995)	408.36 (Luxembourg, 2015)
	Populat	668	16.30	2.66	10.62 (Cyprus, 1999)	22.91 (Italy, 2019)
	Populat1	643	33.07	1.76	28.09 (Sweden, 2011)	38.37 (Germany, 2003)
	Ideology	670	2.56	1.37	0	5
	El_year	670	0.26	0.44	0	1
	El_year1	645	0.26	0.44	0	1

Source: Own elaboration. The reporting of COFOG statistics follows ESA 2010 rules of gross recording, meaning that all transactions are necessarily recorded with positive values, except for gross capital formation and its breakdowns, acquisitions less disposals of non-financial non-produced assets and adjustments for the change in pension entitlements.

By exploring Table 3, we can conclude that parliamentarism is the system that prevails in the EU countries. As shown in Figure 1, only France and Cyprus are classified as semi presidential dominated by a president and presidential system, respectively.

Figure 1. Political regimes in EU countries



Source: Own elaboration, based on Armingeon et al. (2021)

There is also a dominant pattern in EU countries with respect to the electoral system: there is no electoral system with clear majoritarian representation and most countries have proportional representation (Figure 2).

Figure 2. Electoral system in EU countries



Source: Own elaboration, based on Armingeon et al. (2021)

However, French elections are held using a two-round system that is a voting method where voters cast a single vote for their favourite candidate. The election moves on to a second round only if in the first round no candidate has achieved a simple majority (Blais & Loewen, 2009). Furthermore, Hungary cast their ballots by using a mixed member majority

voting system that combines both majority and proportional representation (Huang et al., 2016). Lastly, Lithuania has a parallel voting system that also applies both majoritarian and proportional representation. In Lithuania's case, some parliament members are elected in single-member constituencies using the two-round system and others are elected in a single nationwide constituency using proportional representation. Table 4 shows the combinations of the electoral system and the political regime for the 27 countries analysed.

Table 4. Matrix of electoral systems and political regimes

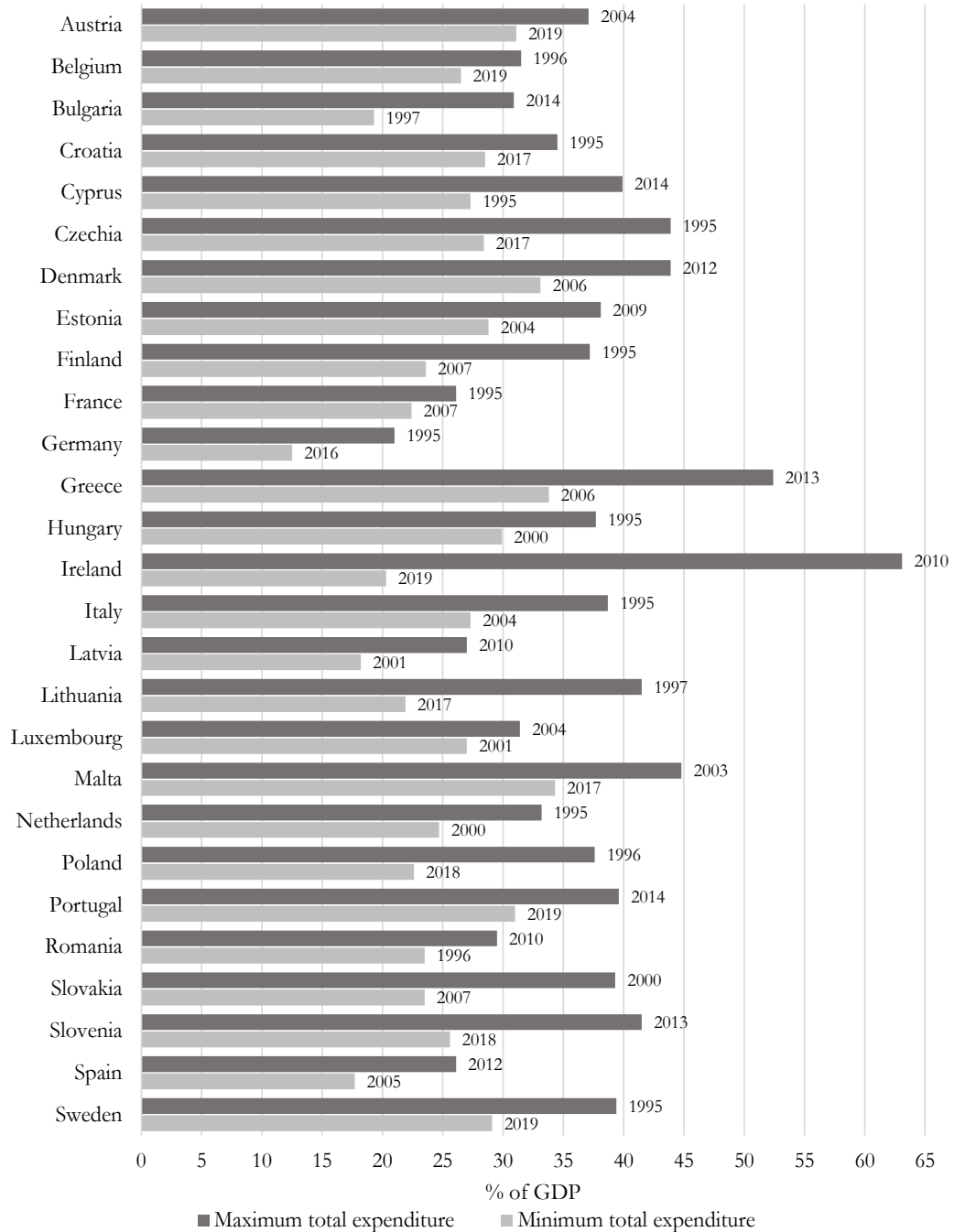
Electoral system Political regime	Mixed electoral system	Proportional representation
Parliamentary system or semi presidential dominated by a parliament	Hungary; Lithuania	Austria; Belgium; Bulgaria; Croatia; Czechia; Denmark; Estonia; Finland; Germany; Greece; Ireland; Italy; Latvia; Luxembourg; Malta; Netherlands; Poland; Portugal; Romania; Slovakia; Slovenia; Spain; Sweden
Presidential system or semi presidential dominated by a president	France	Cyprus

EU countries can be labelled as a homogenous group in terms of degree of development. However, as we can see in Figure 3, government expenditure and its components vary significantly as we explore individual countries. For example, total central government expenditure varies from 12.5% of GDP in 2016 in Germany to almost 5 times more in Ireland. Government expenditure reached 63% of GDP in Ireland in 2010, whereas it was among the countries with the lowest levels until 2008. This shift is mostly explained by the government financial support to banks during the financial crisis, in the form of capital injections (Szarowská, 2013). This type of support is classified as *economic affairs*, and as we can confirm in Table 3, this component reached its maximum in 2010 in Ireland.

As already mentioned, the data presented accounts for central government expenditure. We should recall that federal countries, such as Belgium, Spain, Germany, and Austria, are divided between two autonomous sets of governments with different responsibilities and different budgets. It is expected that these countries have less central government expenditure since the responsibility for the supply of public goods and services and for the redistribution of income is shared between the central and state/regional governments.

Moreover, the three biggest expenditure functions, on average, account for more than 19% of the GDP: *general public services*, *social protection* and *economic affairs*. On average, *general public services* is the division that has a higher weight on GDP. However, values shift from 2.5% in Romania, in 2006, to 23% of Greece's GDP in 2011. Greece's highest value can be explained by the sovereign debt crisis that increased public debt transactions.

Figure 3. Maximum and minimum of total expenditure by country



Source: Own elaboration based on Armingeon et al. (2021)

Environment appears with some negative values for some years in Czechia and in Estonia. This occurs since the reporting of COFOG statistics follows ESA 2010 rules of gross recording, meaning that all transactions are necessarily recorded with positive values, except for gross capital formation and its breakdowns, acquisitions less disposals of non-financial non-produced assets and adjustments for the change in pension entitlements. In these cases, negative values can be observed. Estonia's 2010 and 2011 negative values are explained by the sales made on environmental pollution permits (Kyoto Assigned Amount Units). These sales are considered non-financial non-produced assets and recorded as negative values (Pädam & Ehrlich, 2014).

By analysing the coefficients of the correlation matrix (Annex 2), we can conclude that there is no strong positive or negative correlation between the variables.

3.3. Model specification and estimation

Taking into consideration the previous literature and the analysis of the relevant variables in the former section, we defined the following baseline equation:

$$\begin{aligned} \text{TotExp}_{i,t} = & \beta_1 + \beta_2 \text{Prop}_{i,t} + \beta_3 \text{Pres}_{i,t} + \beta_4 \text{GDP_pc}_{i,t} + \beta_5 \text{Outgap}_{i,t} + \beta_6 \ln \text{Trade}_{i,t} \\ & + \beta_7 \text{Trade}_{i,t} + \beta_8 \text{Populat}_{i,t} + \beta_9 \text{Ideology}_{i,t} + \beta_9 \text{EL_year}_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where $i=1, \dots, 27$ and $t=1995, \dots, 2019$.

For each COFOG variable analysis, the dependent variable is adapted. We opt to go further in our analysis with the variable *Pres* instead of *Pres1*, as the first presented more strength in explaining our outcome variables.

The variable *Trade* was tested in the simple version and in a logarithmic version. We conclude that in most specifications this variable is more significant when the logarithm of the variable is applied. This can happen because the logarithmic transformation reduces the extremes in the data and restricts the effects of outliers. Moreover, the variables *EL_year* and *EL_year1* did not show significant impact in explaining our outcome variables. Hence, we exclude this variable of our specifications. Lastly, the variable *Populat* was able to better explain our outcome variables than *Populat1*. Hence, for the first specification we opted to use all control variables except *EL_year* for the reason mentioned above. The results of this specification are displayed in Table 7.

To ensure the robustness of the analysis, we then explored the capacity of our variables to explain the impact of both the electoral system and the political regime on public spending and its composition, by exploring combinations of the control variables. This culminated in a second specification with only two control variables: *Out_gap* and *Trade*. The results of this specification are displayed in Table 8

Regarding the estimation strategy, panel data models require crucial decisions concerning the proper specification of cross-sectional and temporal effects, namely when deciding between the fixed-effects (FE) and random-effects (RE) approaches. RE assumes that the unobserved effects result from random factors. Theoretically, the FE model is more appropriate than the RE model when the study is done for a specific set of entities belonging to a well delimited group and the inference has the goal of studying the behaviour of this set of entities (the population is the same as the sample). On the other hand, the RE model is more appropriate if we are studying a set of entities randomly chosen from a large population (Hsiao, 2007).

The Hausman test permits to validate the suitability of the application of RE versus FE for a given estimation model. Under the null hypothesis, the RE estimator is more efficient than the FE estimator, even though both estimators are consistent. Under the alternative option, the RE estimator is not consistent but the FE estimator continues to be consistent (Hsiao, 2007). Hence, the fixed effects estimator is more appropriate. The results of the Hausman test for the baseline specifications are displayed in Table 5. Hausman test and show that it is possible to reject the null hypothesis of this test, so that the fixed effects are more appropriated to these specifications.

Table 5. Hausman test

Model specification	Statistic	Probability
(1)	19.93	0.006
(2)	14.97	0.005

To test if time fixed effects are needed for our estimation, we performed a Wald test that test if dummies for all years are equal to 0. If we do not reject the null hypothesis, no time fixed effects are needed. The results are displayed in Table 6 and show that is possible to reject the null hypothesis of this test, therefore time fixed effects are needed.

Table 6. Wald test

Model specification	Statistic	Probability
(1)	3.78	0.000
(2)	3.05	0.000

Taking into consideration the previous tests, the model was estimated with the time and cross-sectional fixed effects. We also applied a robust estimator (White estimator) to correct any heteroscedasticity problem in the data. This helps to give consistency to the estimators of the coefficients. The estimation results are displayed in Table 7 and Table 8, followed by respective the analysis.

Table 7. Estimation results (specification 1)

	TotExp	GenPubSer	Defence	PubOrder	EconAff	Environ	Housing	Health	Culture	Educat	SocProt
Prop	-2.0345*	-0.8745	0.2226	-0.2080***	-0.5385	-0.1124***	-0.1232	-0.6928	-0.5216	-0.6436	1.4139
	(0.7367)	(1.2406)	(0.1106)	(0.0460)	(0.5776)	(0.0188)	(0.2308)	(0.5804)	(0.4230)	(0.5067)	(0.7713)
Pres	-1.4600*	-0.0343	-0.1184	-0.2482	-0.6042	-0.1116	-0.0223	-0.2777	-0.0597	0.0001	0.0101
	(0.6685)	(0.3676)	(0.0993)	(0.2353)	(0.5406)	(0.0722)	(0.0663)	(0.2006)	(0.0574)	(0.1109)	(0.2065)
GDP_pc	-0.1948	-0.0192	0.0165	-0.0184	-0.0726	-0.0087*	0.0013	-0.0244	0.0032	0.0053	-0.0775
	(0.1940)	(0.0395)	(0.0097)	(0.0142)	(0.0430)	(0.0042)	(0.0075)	(0.0272)	(0.0050)	(0.0208)	(0.0899)
Out_gap	-0.2276**	-0.0557	-0.0078	-0.0179	-0.0570	-0.0049	-0.0048	-0.0215	-0.0014	-0.0303*	-0.0268
	(0.0665)	(0.0484)	(0.0138)	(0.0093)	(0.0322)	(0.0087)	(0.0058)	(0.0242)	(0.0046)	(0.0122)	(0.0297)
lnTrade	-3.0612	0.0146	-0.3391	-0.0291	-0.6329	0.0234	0.0547	-1.0258	-0.2386*	-0.4729	-0.3748
	(2.3232)	(0.8930)	(0.3125)	(0.3876)	(1.0608)	(0.1408)	(0.2670)	(0.5702)	(0.1158)	(0.6789)	(0.8077)
Populat	-0.3382	0.0220	0.0751	-0.0482	-0.2132	-0.0057	0.0078	-0.1160	0.0344	0.0006	-0.0995
	(0.5572)	(0.1482)	(0.0412)	(0.0433)	(0.1821)	(0.0158)	(0.0426)	(0.1594)	(0.0242)	(0.0548)	(0.2226)
Ideology	0.0768	0.0021	-0.0005	-0.0170	-0.0592	-0.0066	0.0106	-0.0132	0.0017	0.0654*	0.0890
	(0.1605)	(0.0547)	(0.0131)	(0.0168)	(0.0581)	(0.0078)	(0.0148)	(0.0371)	(0.0085)	(0.0268)	(0.0667)
const	55.1152***	11.2628**	1.5717	2.8936	12.4899**	0.4988	0.4300	9.2254*	1.5781	5.8675*	9.2345
	(11.8114)	(3.8373)	(1.1896)	(1.4311)	(4.2854)	(0.5291)	(1.2858)	(3.8489)	(0.7711)	(2.8061)	(5.2823)
N	661	661	661	661	661	656	655	661	661	661	661
adj. R²	0.293	0.214	0.204	0.100	0.058	0.077	0.045	0.083	0.167	0.142	0.229

Note: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1. Robust standard errors in parentheses.

Table 8. Estimation results (specification 2)

	TotExp	GenPubSer	Defence	PubOrder	EconAff	Environ	Housing	Health	Culture	Educat	SocProt
Prop	-1.7397	-0.8376	0.2184**	-0.2174**	-0.5728	-0.1105***	-0.1090	-0.7066	-0.5147	-0.5608	1.6198*
	(0.8941)	(1.1960)	(0.0776)	(0.0765)	(0.7604)	(0.0289)	(0.2214)	(0.6413)	(0.4156)	(0.4514)	(0.6280)
Pres	-1.2907*	-0.0082	-0.1383	-0.2127	-0.4983	-0.0995	-0.0347	-0.2349	-0.0657	-0.0323	0.0309
	(0.6025)	(0.3491)	(0.0849)	(0.2331)	(0.5800)	(0.0725)	(0.0630)	(0.1904)	(0.0513)	(0.1335)	(0.2122)
Out_gap	-0.2774***	-0.0597	-0.0024	-0.0240*	-0.0815*	-0.0074	-0.0039	-0.0302	0.0001	-0.0259*	-0.0432
	(0.05388)	(0.0476)	(0.0125)	(0.0109)	(0.0318)	(0.0101)	(0.0055)	(0.0215)	(0.0050)	(0.0097)	(0.0217)
lnTrade	-3.8595	-0.0398	-0.2533	-0.1065	-0.9484	-0.0049	0.0560	-1.1522	-0.2140	-0.4692	-0.6893
	(2.0522)	(0.8476)	(0.3083)	(0.3664)	(1.0007)	(0.1320)	(0.2683)	(0.6088)	(0.1176)	(0.6905)	(0.8157)
const	51.1726***	11.5015**	2.4800	2.2433	9.6939*	0.3966	0.5806	7.7759**	1.9967**	6.0937	8.2928*
	(9.2348)	(3.5412)	(1.3318)	(1.6703)	(4.6020)	(0.5853)	(1.1258)	(2.6508)	(0.7151)	(3.1298)	(3.7238)
N	662	662	662	662	662	657	656	662	662	662	662
adj. R²	0.269	0.216	0.182	0.063	0.043	0.050	0.048	0.075	0.155	0.113	0.187

Note: ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1. Robust standard errors in parentheses.

3.4. Analysis and results

When analysing Table 7 and Table 8 from the previous section, we can see that the coefficients of estimation and significance levels are very similar for both specifications which reveals consistency of the results.

Moreover, the robustness of our model can also be verified in the capability of our control variables to explain the dependent variables. In the first estimation, for instance, we can see that at least one coefficient of each one of our control variables (except the share of the population above 65) is significant. Let's take as example the output gap: an increase of 1% in the output gap decreases total expenditure by 0,2% of GDP and decreases expenditures in education in 0,03% of GDP. Recall that the output gap tends to act as automatic stabilizer meaning that, usually, when the output gap increases, government spending tends to decrease so our results are in line with the prospects for this control variable. Our second estimation reinforces these results: output gap generates a significant and negative impact for both total expenditures and education but also for public order and economic affairs.

Looking at our variables of interest, the first estimation reveals that total expenditures are affected by both the political regime and the electoral system. The results indicate that proportional representation decreases total expenditure by approximately 2% of GDP when compared to majoritarian representation, *ceteris paribus*. In theory, proportional representation systems are associated with higher total spending. Therefore, our estimations contradict the theory by revealing that total expenditure decreased with PR. However, the second specification does not confirm the previous result since the electoral system has no significant impact in total expenditure.

Furthermore, the results suggest that presidential regimes decrease total expenditures by 1.5% of GDP when compared to parliamentary regimes, *ceteris paribus*. The second estimation reinforces these results that are in line with the theory that predicts that presidential regimes are related with smaller governments (Persson et al., 2000).

In relation to public spending composition, only 2 of the 10 divisions of public spending prove to be significant in the first baseline specification and only for the electoral system dummy. The results suggest that proportional representation decreases expenditures

in public order by nearly 0.2% of GDP when compared to majoritarian representation, *ceteris paribus*. The environment's expenditures also decrease with proportional representation by nearly 0.1% of GDP when compared to majoritarian representation. These results are reinforced by the second estimation that also demonstrates a significant and negative impact of proportional representation in public order and environment. These two categories of public spending were classified in section 3.2. as targeted goods and the theory predicts that proportional representation aims spending on more broader goods. Hence, these estimates are in line with theory as both public order and environment (targeted goods) decrease with proportional representation.

In the second specification, the results also suggest that proportional representation increases expenditures in defence by nearly 0.2% of GDP when compared to majoritarian representation, *ceteris paribus*. Finally, the results suggest that proportional representation increases expenditures in social protection by nearly 1.6% of GDP when compared to majoritarian representation. Social protection and defence were classified as broader goods. For these divisions, we expected an increase in countries with proportional representation. Hence, these estimates are in line with theory as expenditures in social protection and defence (broader goods) increase with proportional representation. In the second specification, we can confirm that proportional representation is associated with more expenditure in broader goods and less in targeted goods. However, these results cannot be confirmed by the first specification since PR does not show a significant and positive impact in social protection and defence.

In terms of the political regime type, none of the divisions of public spending are affected by this variable in both estimations. Therefore, we cannot conclude, as the theory predicts, that presidential regimes are related with smaller spending on broader programs than parliamentary regimes (Persson et al., 2000).

Overall, our results do not contradict the theory and reinforce some previous empirical evidence: bigger governments for parliamentary regimes (Persson, 2002; Persson & Tabellini, 1999), no impact of the political regime in public spending composition (Persson, 2002; Persson & Tabellini, 2004a) and a shift in public spending in proportional representation countries from more targeted to broader goods and services (Funk & Gathmann, 2013; Persson et al., 2004; Persson & Tabellini, 2004a).

Conclusion

In representative democracies', citizens elect policymakers who propose and vote on political matters on their behalf. The electoral system and the political regime play an essential role in this process as they establish the fundamental aspects of how political powers are obtained and how they can be implemented. Hence, one important question in the political-economic literature is whether and how the electoral system and the political regime affect fiscal policy outcomes. Literature predicts that proportional representation and parliamentary regimes favour spending on goods with broader benefits and lead to larger governments, in opposition to majoritarian electoral systems and presidential regimes.

Most studies are in line with these theoretical expectations: in terms of the electoral system, some authors conclude that in systems with proportional representation government spending shifts away from targeted goods and services to broader programs like welfare programs and that majoritarian representation leads to smaller governments (Blume et al., 2009; Persson & Tabellini, 2004b); regarding the political regime, some authors conclude that presidential regimes are associated with smaller governments (Persson et al., 2000; Persson & Tabellini, 2004a). However, other studies question this prediction by finding no evidence of this connection or by even concluding the opposite. Therefore, empirically, there is little consensus over how political institutions affect total public spending and, specially, its composition.

Hence, the aim of this dissertation was to do an updated analysis on the impact of both the electoral system and the political regime on public spending and, specially, to go further on studying the impact of both institutions on public spending composition. We use a more homogeneous group of countries, such as the European Union countries, so that we can control more easily for economic and social conditions.

Our results suggest that public spending is influenced by the political regime since presidential regimes have a negative impact on total expenditure, when compared to parliamentary regimes, in line with the dominant literature. However, there is no significant impact of the political regime in public spending composition, as suggested by the literature. Moreover, there is evidence of a negative impact on public spending in parliamentary systems. However, this was only significant in one specification so we cannot conclude that parliamentary systems decrease public spending. Furthermore, having as baseline the

COFOG divisions, we concluded that proportional systems decrease expenditures in public order and environment, classified as targeted goods, and increase expenditure in defence and social protection, classified as broader goods. Therefore, we can conclude that the electoral systems affect the public spending composition, since proportional representation shifts government expenditure from more targeted to broader goods.

Even though this dissertation has some contributions to the political-economic literature as it reinforces the empirical evidence and updates this topic, there are some features that can be further explored. First, due to simplification of the research, we only use the first level of COFOG, but it can be further disaggregated to a more extensive, sustained, and detailed analysis. This breakdown would also help to clarify some ambiguity in the classifications of the spending functions as broader or targeted goods and services. Additionally, the European Union countries are socially and economically very similar but also alike in their political institutions. With a more heterogeneous group in terms of the political institutions, we could probably find out more variability and resilient results. Lastly, our analysis only focusses on a more general definition of the electoral systems. It would be interesting to explore the different impacts of each electoral system feature (the ballot structure, the electoral formula, and the district magnitude) on public spending and its composition.

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Annexes

Annex 1. Variables and data sources

Code_variable	Variable	Unit	Source
Prop	Electoral system classification		Comparative Political Dataset
Pres	Political regime classification		Comparative Political Dataset
Pres1	Political regime classification		Comparative Political Dataset
TotExp	Total general government expenditure	% of GDP	Eurostat
GenPubSer	General public services	% of GDP	Eurostat
Defence	Defence	% of GDP	Eurostat
PubOrder	Public order and safety	% of GDP	Eurostat
EconAff	Economic affairs	% of GDP	Eurostat
Environ	Environmental protection	% of GDP	Eurostat
Housing	Housing and community amenities	% of GDP	Eurostat
Health	Health	% of GDP	Eurostat
Culture	Recreation, culture and religion	% of GDP	Eurostat
Educat	Education	% of GDP	Eurostat
SocProt	Social protection	% of GDP	Eurostat
GDP_pc	GDP per head	in PPS, at current prices	AMECO
Out_gap	Gap between actual GDP and potential GDP	% of potential GDP	AMECO
Trade	Openness of the economy	% of GDP, in current prices	Comparative Political Dataset
Populat	Share of population over 65	% of population	Comparative Political Dataset
Populat1	Share of population under 15 and over 65	% of population	Comparative Political Dataset
El_year	Election year	Years	Comparative Political Dataset
El_year1	Election year (adjusted)	Years	Comparative Political Dataset
Ideology	Ideology		Comparative Political Dataset

Source: Own elaboration.

Annex 2. Correlation matrix

	Prop	Pres	Pres1	TotExp	GenPubSer	Defence	PubOrder	EconAff	Environ	Housing	Health	Culture	Educat	SocProt	GDP_pc	Out_gap	Trade	Populat	Populat1	Ideology	El_year	El_year1	
Prop	1.0000																						
Pres	-0.2529	1.0000																					
Pres1	-0.3346	0.8394	1.0000																				
TotExp	0.1454	-0.0298	-0.0374	1.0000																			
GenPubSer	-0.0429	-0.1418	-0.0639	0.3232	1.0000																		
Defence	-0.1158	0.2313	0.2728	0.0439	0.2228	1.0000																	
PubOrder	0.0052	0.1768	0.0259	0.2102	-0.0533	0.2164	1.0000																
EconAff	0.0880	0.0915	-0.0301	0.3657	-0.2026	0.0261	0.4013	1.0000															
Environ	0.1138	-0.2296	-0.2124	0.3843	-0.1239	-0.1915	0.2375	0.3196	1.0000														
Housing	0.0804	0.5148	0.5248	0.2298	-0.1053	0.1232	0.1018	0.2097	0.0055	1.0000													
Health	0.0974	0.0398	-0.1129	0.5110	-0.1575	-0.1267	0.2897	0.2507	0.3518	0.0616	1.0000												
Culture	-0.0657	-0.0398	-0.0030	0.3829	-0.1622	-0.0285	0.3684	0.2627	0.2607	0.1085	0.2754	1.0000											
Educat	-0.0347	0.3083	0.2763	0.5319	-0.2667	0.0533	0.2358	0.1304	0.2504	0.2981	0.5213	0.3406	1.0000										
SocProt	0.2090	-0.1847	-0.1288	0.5071	-0.2946	-0.3314	-0.2748	-0.0190	0.2394	0.0598	0.1533	0.2402	0.3464	1.0000									
GDP_pc	0.0359	-0.0924	0.0396	-0.0020	-0.0659	-0.4423	-0.5478	-0.2391	-0.1064	-0.0016	-0.1455	-0.1345	0.0251	0.4167	1.0000								
Out_gap	-0.0411	0.0372	0.0057	-0.2092	-0.1987	-0.0519	-0.0318	-0.0935	-0.0432	0.0304	-0.0414	0.0478	-0.0365	-0.0280	0.0133	1.0000							
Trade	0.1398	-0.1385	-0.0904	0.2254	-0.2387	-0.5586	-0.0449	0.1325	0.4413	0.1183	0.1589	0.2240	0.2320	0.4206	0.5310	0.0690	1.0000						
Populat	-0.1358	-0.2393	-0.1408	-0.1615	0.2918	0.0840	-0.2010	-0.2041	-0.1221	-0.3249	-0.0663	-0.0294	-0.3870	-0.2229	0.1365	-0.1073	-0.2615	1.0000					
Populat1	-0.2435	0.0754	0.0889	-0.0392	0.1161	0.0237	-0.1721	0.0195	-0.0256	-0.0892	0.0113	-0.0498	-0.0224	-0.1595	0.0496	0.0496	0.0099	0.0690	1.0000				
Ideology	-0.0049	-0.0582	-0.0871	0.0372	0.0768	0.1614	-0.0917	-0.0118	-0.0715	-0.0403	-0.0372	-0.0691	0.0230	-0.0061	-0.0565	0.0009	-0.1098	0.0242	0.0974	1.0000			
El_year	0.0280	-0.0383	-0.0382	0.0007	0.0203	0.0020	0.0239	-0.0096	-0.0035	-0.0472	-0.0110	0.0060	0.0026	-0.0123	-0.0147	0.0028	-0.0231	0.0276	-0.0290	0.0166	1.0000		
El_year1	0.0100	-0.0215	-0.0435	-0.0010	0.0089	-0.0246	-0.0019	0.0087	-0.0300	-0.0149	-0.0125	0.0131	-0.0168	0.0020	0.0028	0.0009	-0.0009	0.0013	-0.0086	0.0232	0.0213	1.0000	