INSTITUTO
UNIVERSITÁRIO
DE LISBOA

The relation between the left-right political binomial and Tax Burden on European Union countries

Miguel Pedro Quitéria

Master in Accounting

Supervisor:
Prof. Paulo Jorge Varela Lopes Dias, Assistant Professor
ISCTE Business School
Department of Accounting

September, 2021

BUSINESS
SCHOOL

Department of Accounting

The relation between the left-right political binomial and Tax Burden on European Union countries

Miguel Pedro Quitéria

Master in Accounting

Supervisor:
Prof. Paulo Jorge Varela Lopes Dias, Assistant Professor
ISCTE Business School

September, 2021

Resumo

O principal objetivo deste estudo é entender o efeito da orientação política dos governos na carga fiscal dos respetivos países. Para isto testou-se se o binómio político esquerda-direita tem um efeito positivo ou negativo na variável anteriormente referida. Foi reunida informação relacionada com o tema, com período correspondente às últimas três décadas, e relativa aos países que compõem a União Europeia, recorrendo às bases de dados da OCDE e ParlGov.

Os resultados mostraram que, em média, para os países da União Europeia, os governos dominados por partidos de direita tendem a obter menores níveis de carga fiscal quando comparados a governos de esquerda. Uma das principais razões que pode justificar esta afirmação é o facto de os partidos de direita por norma incorrem em menores níveis de despesa pública, o que conduz a uma menor necessidade de maiores níveis de receita fiscal. Este mesmo estudo indica também que os partidos de direita tendem a preferir uma maior coleta de impostos diretos do que indiretos, preferindo taxar o lucro das pessoas e empresas em vez do consumo das mesmas.

Considera-se que este estudo poderá ser bastante útil para os sujeitos passivos individuais e coletivos, uma vez que permite que seja feita uma previsão do aumento/redução da carga fiscal a que estão sujeitos, apenas através da análise da orientação política do governo eleito.

Palavras-chave: Carga Fiscal, Estrutura Fiscal, Orientação Política

JEL Classification System: H71 – Impostos, Subsídios e Receitas de um país/estado; M48 – Políticas e Regulamentos Governamentais

Abstract

The main purpose of this study is to understand the effect of the government's political orientation on the countries' tax burden, testing if the left-right political binomial has a positive or negative effect on this variable. To do so, we collected information of the last three decades of the European Union countries using the OECD and ParlGov databases.

The results showed that on average, for the European Union countries, right-wing parties tend to obtain lower levels of tax burden when compared to left-wing parties. One of the main reasons that justify this statement is the fact that non-socialist parties usually have lower levels of public expenditure leading them to lower necessity of tax revenue and consequently to lower levels of tax burden. Yet, the same results indicate that the parties located to the right side of the political spectrum tend to collect more direct than indirect taxes, preferring to tax the income of the people and companies instead of their consumption.

This study can be useful for the companies and individual taxpayers, once it allows them to predict if their tax burden will increase or decrease, just by analyzing their government political orientation, creating the possibility of better tax planning.

Keywords: Tax Burden, Tax Structure, Political Orientation

JEL Classification System: H71 – State and Local Taxation, Subsides, and Revenue; M48 – Government Policy and Regulation

Index

Figures Index:

Tables Index:

List of Abbreviations

CPI: Consumer Price Index

CPR: Constitution of the Portuguese Republic

EU: European Union

GDP: Gross Domestic Product

GMM: Generalized Method of Moments

MLRM: Multiple Linear Regression Model

OECD: Organization for Economic Co-operation and Development

Chapter I - Introduction

The concept of democracy refers to a form of government in which the taxpayers have the possibility to choose their legislators. This is an important factor that influences the distribution of income generated by a certain economy among the taxpayers. The political system designed by the government will directly affect this distribution and can create greater inequality if the government concentrates the political power in a narrow segment of the country's population (Acemoglu et al., 2015).

European Union (EU) countries are considered very similar, once all of them are democratic countries, where taxpayers choose freely who they want to be part of the government and all of the member states have a similar legal structure with few political dispersions, using very similar political ideologies (Watrin et al., 2014).

Taxation can be defined as the determination, in a just and effective way, of the amount of taxes that the companies and people must pay in order to satisfy the state's financial needs. Taxes are essential to finance activities of the public sector like courts, police, the legal system, and the national defense. Besides that, this concept is fundamental for the development of social programs such as public health services, education, and welfare, being all of them crucial to any modern society and absolutely necessary to please the collective needs of a country population (Hanlon & Heitzeman, 2010; Carlos et al., 2015; Abatemarco & Dell'Anno, 2020). This economic tool is crucial to accomplish many economic and financial purposes, but it's also considered a redistributive tool in democratic societies preventing social inequality scenarios (Lierse, 2012).

The tax system designed by the government and the tax policies applied by them will conceptualize the Tax Burden. OECD (2021) defined tax burden as the portion of a country's production that is collected through taxes, allowing us to understand the level of control that the government has on the economy's resources. Theoretically, the tax burden surges when the increase in tax revenue is bigger than the increase in personal income (Mahdavi, 2008). This variable can measure the share of national income that is transferred from the private sector to the public sector through taxes (Frank, 1959; Celikay, 2020).

Often, lower levels of tax burden are associated with countries with a big growth of GDP or with a poor economic level resulting in greater levels of unemployment and inflation. Nevertheless, higher levels of tax burden are often observed in countries with a higher work efficiency, greater technological level, and with a culture of tax payment (the opposite of tax

avoidance or tax evasion). European Union countries have a stable GDP growth and high levels of employment, and this leads them to a high level of tax burden (Andrejoskvá & Puliková, 2018).

Tax systems are composed by two great clusters: direct and indirect taxes. The main criteria to distinguish direct from indirect taxes is based on whether their burden can be shifted from the initial taxpayer to others. In indirect taxes, the burden can be shifted to other taxpayers and in direct taxes the burden cannot be shifted and goes directly to the tax collectors. Scholars consider that taxes levied on personal income or corporate income are classified as direct taxes. Otherwise, taxes levied on goods and services are indirect (e.g., value-added tax, gambling taxes, stamp duties, taxes on beverage and tobacco, and all the others related to consumption) (Korkmaz et al., 2019). Machová and Kotlán (2013) created a new concept named World Tax Index (WTI) that allowed investigators to calculate the tax burden ratio separately for five categories of taxes: Corporate Income Tax, Personal Income Tax, Value Added Tax, Property Taxes and Other Taxes on Consumption, creating the possibility to analyze the tax burden of direct and indirect taxes and draw some conclusions about their weight on the country's tax system.

It's expected that there is a strong relation between tax burden and partisanship standings. Political ideologies and the goals that the government pretends to achieve will play an active role in the amount of direct/indirect taxes that will be collected, and which will have a higher burden on the amount of the tax revenues (Jaime-Castillo & Sáez-Lozano, 2014).

To better understand the partisanship standings, it's important to analyze its inception: The origin of the left-right binomial, in terms of political ideology, took place at the *Assemblée Nationale Constituante* that occurred in July 1789, during the beginning of the French Revolution. The ones who sat on the left side of the room represented the interests of the low classes, standing by equal rights and freedom for everyone. Those who sat on the right side represented the concerns of the aristocrats and church (middle-upper class). Since that, the ideology of freedom, equality, and fraternity has been associated with the left spectrum and authority, hierarchy, and obedience to the right-wing. The French Revolution is considered a mark to the definition of political ideologies that became very important concepts to politics around the world (Laponce, 1981; Freire, 2008; Meyer & Wagner, 2020).

The distinguish between left and right political alignment was created to give orientations to political leaders in a way that they can create alliances and colligation between other parties

that have identical ideas and to orientate citizens with the purpose of each one creates a personal electoral position (Freire, 2008).

The definition of the political spectrum is a subject that doesn't lead scholars to a generical definition. Some defend that the left dimension represents total control of the economy by the government and, in contrast, the right-wing stands by a completely free market, ruled by private institutions being this perceptualized as the economic dimension of partisan orientation. Although there are other authors who defined the political spectrum in a social dimension understanding that the left-wing is related to perfect social equality allied to communist and socialist ideas and right-wing doesn't believe that this equality is fair standing by religious, liberal, and more conservative ideas (Downs, 1957; Bartolini, 2000; White, 2011).

Different political ideologies lead the government to different approaches and strategies causing different economic outcomes, impacting the taxpayers in an unequal way. Left- and right-wing governments tend to pursue dissimilar economic outcomes and have the power to influence many economic variables, such as taxation, privatization, and market regulation (Poftrake, 2017).

This premise defines the general purpose of this dissertation, that is to analyze the impact of a country's government's political orientation on its total tax burden allowing us to verify is the left-right political ideologies have a positive or negative impact on the country's tax burden. Therefore, it will be tested if whether or not, there is a relation (positive or negative) between a government's political orientation and the tax burden of direct and indirect taxes (representing the country's tax structure). Finally, we will try to ascertain which types of taxes (personal income taxes, corporate income taxes, property taxes) are most affected by the left-right binomial.

To accomplish the purposes referred above it was collected information from 1990 to 2018 with a sample of 23 of the 28 European Union countries (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and United Kingdom). The five remaining countries (Bulgaria, Croatia, Cyprus, Malta, and Romania) that belong to the EU were excluded because of lack of data availability.

To analyze and draw some conclusions about the possible relation between the political orientation of the government and the country's tax burden, it was developed an empirical study whose presentation and framing follows the following orientation: in the first part, a literature

review will be presented in order to explain all the important themes, concepts, and definitions that support the research. In a second part, it will be presented the research model, together with the hypothesis, the methodology used to analyze the data, the results that were obtained, with the discussion of each hypothesis and the final conclusions and implicants of the study.

Chapter II – An Overview on Taxation and Political Orientation

An Introduction on Taxation

The great subject of this dissertation is taxation, so it becomes important to underline some concepts and definitions of what taxation is, what is its main purpose and, how a country's government can maximize the benefits and minimize the effects of this tool.

The Constitution of the Portuguese Republic (CPR) gives us the main objective of taxation: The taxation system intends to satisfy the financial needs of the State and other public entities and fair separation of the incomes and the wealth (article 103rd, number 1). Scholars understand taxation as the determination, in a just and effective way, of the amount of taxes that the companies and people must pay in order to satisfy the state's financial needs. These are essential to finance activities of the public sector like courts, police, the legal system, and the national defense. Besides that, this concept is fundamental for the development of social programs such as public health services, education, and welfare, being all of them crucial to any modern society and absolutely necessary to please the collective needs of a country population (Hanlon & Heitzeman, 2010; Abatemarco & Dell'Anno, 2020).

Taxation is crucial to accomplish the economic and financial purposes that were referred above, but it's also considered a redistributive tool in democratic societies. There are some distributional goals that must be achieved to make a fair separation of the income among the taxpayers (Lierse, 2012).

Basariya et al. (2020) consider that the economic purpose of taxes allows a macroeconomic stabilization of the country, and the social purpose is related with the diminishing of inequalities and influence the allocation of resources, through deductions, benefits, and exemptions.

According to Carlos et al. (2015), taxes are a patrimonial payment, that is definitive, unilateral, established by law, in favor of public entities, in order to satisfy public purposes and which does not constitute a sanction for an illegal act.

The author gives a more detailed explanation of each factor mentioned above: it's a patrimonial payment because it has to be paid with money or with a donation of goods; it's definitive since it doesn't give the right to refund; unilateral due to there isn't an individualized counterpart by the creditor (the Government or other related entity) to the debtor; it's established by law because the tax obligation result from the combination of tax legal assumptions; it's in favor of public entities like was referred above, these are the creditors of

taxes; to satisfy public purposes whether they are economic or social needs of a country's economy; and lastly, taxes could never be related to a consequence of juridic order (Carlos et al., 2015).

Taxation is the most relevant source of income of any government and the way that this topic is managed can be highly related to the political orientation of the government in power. This can lead to heaviest or lightest costs for individuals and companies depending on the political ideals that built the fiscal strategy. Despite that, scholars agree that taxes are fundamental to every nation once they allow the creation of optimal conditions for the country in terms of infrastructure and services (Osterloh & Debus, 2012; Wang et al., 2019).

Tax Systems

Tax systems are a relevant matter to study in this dissertation, once it's the government's responsibility to design them in order to fullfeed the country's economic needs referred above.

A country's tax system often reflects the political values of the party that leads the country. To create an efficient tax system, the government must choose who will pay the taxes, how much they will pay, how the tax burden will be distributed, and how the taxes that were collected will be spent. All these decisions can be highly influenced by the government's political ideologies (Donovan & Bowler, 2020).

A government can use different taxes for different purposes (e.g., the taxes on tobacco can be used to finance the health system in the treatment of tobacco-related diseases). Tax systems can be also used to influence the patterns of consumption, by making some commercial transactions less or more attractive avoiding competition distortions among companies from different countries (e.g., to avoid that people only buy cars abroad because they are cheaper, the government can apply a special tax in the imported cars to the final price can be similar to the one that is charged in the national territory) (Nisha, 2018).

A tax system should be capable of raising enough money to finance the essential public spending and avoiding the contraction of loans by the Government. It should also collect the revenue in ways that are fair and equitable and shouldn't deviate significantly from the international standards (Tanzi & Zee, 2000; Kato & Tanaka, 2018).

A country's tax system must be efficient and avoid corruption and tax evasion. To prevent that, the tax rates must be evaluated and studied in order to calculate and apply an optimal tax rate on the incomes. Laffer (2004) created a model that predicted that a higher tax rate

sometimes led to lower tax revenues and there is an optimal tax rate that maximizes the revenue that a State could collect. Arif and Rawat (2018) concluded that higher tax rates, are good for the government once it gives them more money to spend on the country's development but can be tricky because incentives people and companies in the evasion of tax payments and corruption, increasing corruption levels.

To evaluate and analyze the effectiveness of a country's tax system, Vasiliauskaite and Stankeviciys (2009) alleged that every government should examine the part of the tax that generated revenue for GDP and compare the results with other countries in similar economic situations, allowing them to anticipate some necessary reforms on the tax system in order to improve it.

Tax Burden

The tax system designed by the government and the tax policies applied by them will conceptualize the Tax Burden. This variable will allow taxpayers and scholars to draw some conclusions about the taxes that are being collected.

The Tax Burden indicator it's defined by most scholars as to the ratio between tax revenues and Gross Domestic Product and is frequently used to measure and draw some conclusions about a state's tax policy (Reed & Rogers, 2006).

Although, other scholars don't agree with the name given to this indicator and created other terminologies: Machová and Kotlán (2013) called tax quota to the indicator that compares tax revenues to GDP. Yet, the same authors created the World Tax Index (WTI) that has the same objective of tax burden but goes further by calculating the ratio separately for five categories of taxes: Corporate Income Tax, Personal Income Tax, Value Added Tax, Property Taxes and Other Taxes on Consumption.

Mahdavi (2008) refers to tax burden as the level of taxation and other authors like Leuthold (1991), Thornton (2013) and Dalamagas et al. (2020) named this ratio tax effort index. It's possible to conclude that this variable can be defined by several names, but the changing in the terminology doesn't affect its formula, being referred always as the tax-to-GDP ratio.

To better understand this indicator, the authors decomposed it and created definitions of the two variables that compose it: Tax revenue is defined as the revenue that was collected from taxes on personal income, corporate income, goods and services, social security contributions, property, and others. This revenue sustains economic development allowing the governments

to deliver public services, invest in the development of the country, build infrastructure, and dismiss poverty (Night & Bananuka, 2019; OECD, 2021). Gross Domestic Product (GDP) is understood as a standard measure of the value-added in a country's production of goods and services in a certain period (that normally corresponds to a year). This indicator is often used to evaluate the development of a country but fails to provide a measure of people's well-being (OECD, 2021).

Yet, OECD (2021) defines tax burden as the portion of a country's production that is collected through taxes and allows us to understand the level of control that the government has on the economy's resources. Theoretically, the tax burden surges when the increase in tax revenue is bigger than the increase in personal income (Mahdavi, 2008).

This ratio became very important because for most scholars it's the best measure of a state's tax policy and it's very easy to compute (mostly because of data availability) and since literature doesn't have better alternatives. Also, becomes imperative in the comparison of tax systems around the globe, once it's impossible to compare absolute values of taxes (Reed & Rogers, 2006; Celikay, 2020). It also allows to evaluate the importance in a country's economy of its public sector in contrast with the private sector i.e., the tax burden can measure the share of national income that is transferred from the private sector to the public sector through taxes (Frank, 1959; Celikay, 2020). Also, in most of the literature, tax indicators are measured by nominal tax rates and according to Wasylenko (1997), this is a wrong approach once nominal tax rates don't consider the definition of the tax base. Otherwise, the tax burden captures inputs from the nominal tax rate and the tax base, giving a more complete output to be studied.

Thereby, despite all these advantages, the scholars acknowledge some problems in this indicator. One of the most famous is that some of them don't agree with the use of tax revenue as the reflection of the tax burden because the line between these two variables may not be completely clear and a higher tax burden may not lead to greater tax revenues. This statement can be proved if we consider the elementary principles of Laffer's Curve that explains the existence of an optimal tax rate to maximize the tax revenues, higher taxes rates will diminish the country's tax revenue and by consequence the country's tax burden (Laffer, 2004; Machóva & Kotlán, 2013). Another critic for the tax burden indicator is that it doesn't consider the tax incentives, benefits, and subsidies offered to specific firms or specific people or groups of people (Wasylenko, 1997; Lee & Xu, 2019).

Several studies proved that a county's tax burden can be directly related to the political beliefs and values of the government in charge and the taxpayers tend to vote in the party that offers a more attractive tax rate in order to satisfy their personal financial needs. Different political ideologies can lead to different tax goals that can cause a higher or lower tax burden, depending on what the government intends to achieve (Jaime-Castillo & Sáez-Lozano, 2014).

Lower levels of tax burden are often associated with countries with a big growth of GDP or with a poor economic level resulting in greater levels of unemployment and inflation. It the other hand, higher levels of tax burden are often observed in countries with a higher work efficiency, greater technological level, and with a culture of tax payment (the opposite of tax avoidance or tax evasion). European Union countries have a stable GDP growth and high levels of employment, and this leads them to a high level of tax burden. Otherwise, underdeveloped countries have an unstable level of GDP and high levels of unemployment and inflation, so this leads them to small levels of tax burden. So, it's possible to create a relation between the tax burden ratio and the development of a country: developed countries have higher levels of tax burden and countries with lower levels of economic development have lower levels of tax burden. These underdeveloped countries need to spend more money on education, infrastructure, and health services and this obligates them to increase their tax burden if they want to grow and become less poor (Bird et al., 2008; Vasiliaukaite & Stankevicius, 2009; Andrejoskvá & Puliková, 2018).

The problem of creating an optimal tax burden becomes relevant when we associate this indicator to the possibilities of social development, business growing and common well-being (Vasiliaukaite & Stankevicius, 2009).

Tax Structure – Direct and Indirect Taxes

It's expected that there is a strong relation between tax burden and partisanship standings, and that also exists a similar relation with the tax structure. Political ideologies and the goals that the government pretends to achieve will play an active role in the amount of direct/indirect taxes that will be collected, and which will have a higher burden on the amount of the tax revenues. So, this became a relevant subject to scholars worldwide with the main goal of creating a relation between left-wing parties and their preference in giving more or less wight these two types of taxes on a country's tax burden (Jaime-Castillo & Sáez-Lozano, 2014).

The main criteria to distinguish direct from indirect taxes is based on whether their burden can be shifted from the initial taxpayer to others. In indirect taxes, the burden can be shifted to

other taxpayers and in direct taxes the burden cannot be shifted and goes directly to the tax collectors. Scholars consider that taxes levied on personal income or corporate income are classified as direct taxes. Otherwise, taxes levied on goods and services are indirect (e.g., value-added tax, gambling taxes, stamp duties, taxes on beverage and tobacco, and all the others related to consumption) (Korkmaz et al., 2019).

There are other criteria to differentiate these two types of taxes. The direct taxes are levied on direct manifestations of wealth and its tax base is usually constant. The indirect taxes are related to indirect manifestations of wealth and related to the act of consumption; therefore, its tax base is unstable. If the taxable event has a continuous nature, the taxes are classified as direct. If this taxable event occurs occasionally, leading to a discontinuous nature, the taxes are considered indirect (Carlos et al., 2015).

Direct taxes tend to be fairer and more equitable when compared with indirect taxes once the greater the income of the person or company, the greater are the taxes (principle of progressivity on taxation). Direct taxes are progressive and try to attenuate the social differences. Otherwise, indirect taxes aren't progressive once every person pays the same rate on goods and services and consumption. So, it's possible to conclude that the choice by the government on the weight of each type of tax is important to an efficient allocation of resources among the taxpayers (Ilaboya & Ohonda, 2013; Hakim, 2019).

Direct taxes are levied on income (personal or corporate). According to Carlos et al. (2015), there isn't a full agreement among scholars on how to define this concept. Some define income as the regular amount that a person or company receives in a given period of time. This theory fails because if a person invests in stocks, this will be a source of income that isn't regular yet is taxable by direct taxes. So, other academics believe that is more correct to understand income as a difference between the final and initial patrimony of a person or company and that difference is taxable by income taxes.

So, direct taxes include income taxes that are levied on the net profits and capital gains of enterprises, people, and property taxes that focus on the acquired wealth like the ownership and transfer of property (OECD, 2021).

In contrast, indirect taxes are levied on the wealth spent when purchasing goods and services. This type of tax focuses on the extraction, production, sale, delivery and transfer of goods, and services taxing the value-added in all these steps. Yet, this isn't a cumulative tax because the government only keeps the value added on the final sale, the previous ones are

refunded to the original payers once they sell the good or service (Carlos et al., 2015; OECD, 2021).

There isn't an agreement among scholars about whether direct or indirect taxes are the main source of government revenue. Peñalosa and Turnovsky (2005) concluded that in underdeveloped countries, indirect taxation is the main source of revenue but in OECD economies personal and corporate taxes provide most of the tax revenue. Therefore, there are some scholars who stand that the taxes applied on personal and corporate income, profits, and capital gain are more efficient in terms of maximizing a countries' tax revenue. The revenue from indirect taxes is inefficient in maximizing a government's tax revenue due to the existence of a large shadow and informal economy which relates to non-taxable sectors. Also, these types of taxes don't give stability to a country because if for some reason the consumption slows down, it will lead to a major breakdown in tax revenue. On the opposite side, direct taxes give a more stable and reliable source of revenue to a countries' government (Hakim, 2019).

Therefore, other academics agree that indirect taxes are the main source of revenue to a countries' economy because these are collected on an everyday basis and are present in almost all transactions of goods and services. Direct taxes are mostly collected once a year. This trade-off gives an advantage to indirect taxes in financing the state's financial needs (Vasiliauskaite & Stankevicius, 2009; Zipfel & Heinrichs, 2012; Ilaboya & Ohonba, 2013).

Political Ideologies – The Left-Right Binomial

In the sections above it was mentioned the relation between the partisan orientation of a country's government and its effect on taxation. But it's important to understand the concept of partisanship and political ideologies once there isn't an agreement among taxpayers and scholars in the definition of the left-right wing ideologies that compose de political spectrum and its effect on the way a tax system is designed.

To better understand the left-right political binomial it's important to analyze its inception: The origin of the left- and right-wing, in terms of political ideology, took place at the *Assemblée Nationale Constituante* that occurred in July 1789, during the beginning of the French Revolution. The ones who sat on the left side of the room represented the interests of the low classes, standing by equal rights and freedom for everyone. Those who sat on the right side represented the concerns of the aristocrats and church (middle-upper class). Since that, the ideology of freedom, equality, and fraternity has been associated to with the left spectrum and authority, hierarchy, and obedience to the right-wing. The French Revolution is considered a

mark to the definition of political ideologies that became very important concepts to politics around the world (Laponce, 1981; Freire, 2008; Meyer & Wagner, 2020).

The definition of the political spectrum is a subject that doesn't lead scholars to a generical definition. According to Downs (1957), the left dimension represents total control of the economy by the government and on the opposite hand, the right-wing stands by a completely free market, ruled by private institutions. This is perceptualized as the economic dimension of partisan orientation. Although there are other authors who defined the political spectrum in a social dimension like White (2011) and Bartolini (2000) that understands that the left-wing is related to perfect social equality allied to communist and socialist ideas and right-wing doesn't believe that this equality is fair standing by religious, liberal, and more conservative ideas.

Different sociologists connect the right-wing to the standards of private property, order, individualism, and lower public intervention, resulting in a greater defense of higher classes. The left-wing relates more to solidarity and a more important role of the governments and public institutions in the defense of the lower-middle classes. (Laponce, 1981; Freire 2008; Nasr, 2020).

Yet, some scholars don't agree with the ideas that connect capitalism to the right spectrum and communism to the left. That led them to the creation of a central position that is also known by "socialized capitalism" (Porrit, 1984). The center-wing emerged because some political parties based their ideologies on radicalism and extremism (i.e far right and left). Other parties that didn't agree with this approach, because of the several events in the world history that proved that radicalism could lead to catastrophic consequences, shaped their political ideas and standings to a new political reality (Castelli Gattinara & Bouron, 2019).

The distinguish between left and right orientations was created to give orientations to political leaders in a way that they can create alliances and colligation between other parties that have identical ideas. It's also important to orientate citizens with the purpose of each one creates a personal electoral position. Lastly, the existence of a left-right spectrum facilitates comparisons between different countries and years (Inglehart & Sidjanski 1976; Freire, 2008).

Most scholars agree that an individual political orientation depends mostly on three factors: social factors, value preferences, and partisan identity. The social factors refer to the people and social conditions that surround the individual (the political orientation is quite influenced by the political spectrum that is followed by the relatives). The value preference corresponds to the position and thoughts of one person about the conflicts of the world. Lastly, partisan identity

is related to the ideologies and orientation followed by the person (Fuchs & Klingemann, 1990; Rico, 2015; Nasr, 2020).

Although, there are some gaps in the previous model because some factors may weigh more than others. For example: to the upper-medium class, composed of individuals with a higher education level and more access to information, the social dimension surely weighs more than the others. On the opposite side, in the lower class, the most important factor is values. The people that belong to this social class, don't have the same opportunities as the previous in the education system and in the totally free and easy access to information, so the individual believes and ideas will be the most important variable on choosing his political orientation (Freire & Belchior, 2011; Rivero & Kotzè, 2019).

The attempt to attribute or to rank a person or a party into a specific partisan orientation will always generate conflicts because every person creates a personal definition of what is the left- and right-wing, and there is no agreement among voters and deputies about the meaning attribute to the spectrum orientation and this has been the main reason that explains the troubles and misunderstandings on political communication (Freire & Belchior, 2013).

Relation between Tax Burden and Political Orientation

Previously, it was mentioned a relation between the partisan orientation of a country's government and its effect on taxation, and this dissertation aims to find out if there is in fact this relation.

Many authors conducted similar investigations and reached some conclusions about this. In the previous section, it was explained that left- and right-wing governments tend to pursue dissimilar economic outcomes and have the power to influence many economic variables, such as taxation, privatization, and market regulation. Different political ideologies lead them to different approaches and strategies that will cause different economic outcomes and will impact the taxpayers in an unequal way (Poftrake, 2017).

Tax revenue must be budgeted in a way that satisfies the country's financial needs (being this the main purpose of taxation). However, the State's financial needs depend directly on the public expenditure that the government intends to incur. Historically, left-wing governments have a large public sector, and to maintain this structure they must collect a higher revenue than right-wing governments that encourage the private sector. This tax revenue can be analyzed by Tax Burden that is the portion of a country's production that is collected through taxes and is

possible to create a model that evaluates and analyzes the relation between Tax Burden and Political Orientation, and draw some conclusions (Bloom-Hansen et al., 2006; Angelopoulos et al., 2012; Ziogas & Panagiotidis, 2020).

Chapter III – The effect of political orientation on tax burden – an empirical study

Purpose and Model of Investigation

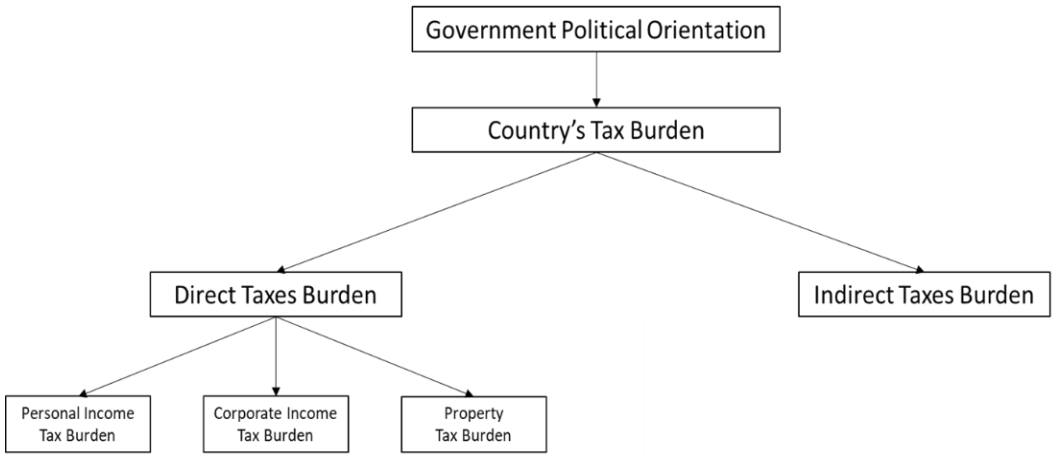
This dissertation has the general purpose of analyzing the impact of a country's government's political orientation on its total tax burden. This will allow us to verify if the left-right political ideologies affect positively or negatively the country's tax burden.

Therefore, it will be tested if whether or not, there is a relation (positive or negative) between a government's political orientation and the tax burden of direct and indirect taxes (representing the country's tax structure).

Finally, we will try to ascertain which types of taxes (personal income taxes, corporate income taxes, property taxes) are most affected by the left-right binomial.

Below, it's represented a model that illustrates the statements referred above.

Figure 3.1 - Model of Investigation



Hypothesis

As mentioned in the previous chapter, the main purpose of this investigation is to determine if political ideologies affect the country's tax burden. Some authors like Celikay (2020), have developed studies to verify if some variables have more weight than others on a country's tax burden but didn't test the partisan effect on it. Yet, Bloom-Hansen et al. (2006) and Poftrake (2017) created a similar model that predicted that the political ideology of the government has a significant relation with the total country's tax burden (H1).

Angelopoulos et al. (2012) conducted a more specific analysis and proved that there is a relation between the country's tax structure and its cabinet political orientation. Their study aimed to verify which side of the political spectrum collected more direct and indirect taxes (H2 and H3). Yet, a similar study was developed by Andrikopoulos et al. (2004) where they proved that political cycles from different cabinets with different political ideologies, lead the country to different fiscal outcomes. Left-wing parties tend to collect less direct taxes than right-wing parties, drawing a fiscal strategy that gives more focus to indirect taxes (Formanová, L & Mádr, M., 2016).

Lastly, there were some scholars that besides the tax structure verified a relation between some particular types of taxes and the political ideology of the government. Again, Bloom-Hansen et al. (2006) and Poftrake (2017) verified a relation between personal income tax burden and property tax burden with the country's government political orientation. They estimated that left-wing governments tend to have a higher public expense, so this forces them to draw a tax system that collects a higher tax burden when compared to right-wing governments, and this public expense-taxes relation was also studied by Magkonis et al. (2021), who verified a positive relation between public expense and taxation (the greater the public expenditure, greater the tax revenue that will be collected). Allers et al. (2001) led a similar investigation proving that in Netherlands, left-wing parties charges more property taxes than right-wing parties, resulting in a higher tax burden of property taxes for left-wing governments, and this study supported the study of Vallés-Giménez and Zarate-Marco (2017) that aimed to verify the relation between the variables referred above in a different country (Spain). Osterloh and Debus (2012) and Poftrake (2017) focused on corporate taxation and proved that there is a relation between corporate tax burden and political ideology, and left-wing governments tend to obtain a higher tax revenue for this type of taxes (H4, H5 and H6).

Bellow, it's possible to visualize a table (Table 2.1) that summarizes all the hypotheses of this study and the literature that supports each hypothesis.

Table 3.1 - Hypothesis in study

Hypothesis	Literature
H1: There is a relation between government political orientation and **total tax burden**.	Bloom-Hansen (2006); Poftrake (2017); Vallés-Giménez & Zarate-Marco (2017); Celikay (2020)
H2: There is a relation between government political orientation and **direct taxes burden**.	Andrikopoulos et al. (2004); Angelopoulos et al. (2012); Formanová & Mádr (2016)
H3: There is a relation between government political orientation and **indirect taxes burden**.	Andrikopoulos et al. (2004); Angelopoulos et al. (2012); Formanová & Mádr (2016)
H4: There is a relation between government political orientation and **personal income tax burden**.	Bloom-Hansen (2006); Poftrake (2017)
H5: There is a relation between government political orientation and **corporate tax burden**.	Osterloh & Debus (2012); Poftrake (2017)
H6: There is a relation between government political orientation and **property tax burden**.	Allers et al. (2001) ; Bloom-Hansen (2006) ; Vallés-Giménez & Zarate-Marco (2017)

With all these hypotheses we can fullfed and verify the three main premises of this dissertation: test if the total tax burden is affected by government political orientation, test if tax structure is affected by government political orientation, and finally verify which type of taxes are more affected by the left-right binomial of the government.

Methodology

Sample and Time Period of Analysis

Regarding the subject mentioned above, the fundamental purpose of this dissertation is to determine if whether or not there is a relation between a country's tax burden and its government's political orientation.

To do so, the information about the country's political orientation (on a year-by-year basis) was collected on the ParlGov Data Base. This database was also used by Strobl et al. (2019) and Ziogas and Panagiotidis (2020) in their studies that aimed to verify the relation between a country's cabinet political orientation and its fiscal and economic outcomes. This dataset offers

information about who was the cabinet of a certain country on year-by-year basis, and which was his/her political orientation.

The political orientation is defined by a scale from 0 to 10, where 0 is defined by "ultra-left" and 10 "ultra-right", the middle of the scale represents the center, often used to define cabinets that aren't associated with any specific party (non-partisans). This scale derivate from a survey led by Castles and Mair (1984), that asked experts on political science in Western Europe and the United States to rank their national parties on a ten-point left-right scale. This study has been updated over the years so this database can be a great source of data for this type of study once it gives easy access to accurate information.

The information about tax burden and the other control variables were collected on OECD Statistics similar to Machová and Kotlán (2013) and Celikay (2020) that studied the dimensions of tax burden and created a model that compared the tax burden of several countries. Their data source was the OECD Database because of its easy access and data availability and because this is a certified dataset, created by an organization with world recommission that discloses reliable data.

According to Hood and Wilson (2003), it's important to select a reliable dataset for any scientific study to create the best outcomes and to avoid distortion of the results. To avoid this distortion, in this dissertation we aimed to select databases that were used by other scholars in their studies and have worldwide recognition so we can work with data as accurately as possible.

The sample that composes this study includes 23 of the 28 countries of the European Union (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom). The five remaining countries (Bulgaria, Croatia, Cyprus, Malta, and Romania) that belong to the EU were excluded because of lack of data availability. The United Kingdom, despite since 2021 is no longer part of the EU, was included in the study due to the period of analysis include the years that this country was part of this organization. Also, in 1990 not all the 28 countries were part of this organization, so for the study, we considered the countries that belonged to the EU in 2018 (since was the deadline of the study's time period).

The selection of the EU countries is supported by Watrin et al. (2014) that conducted a study about the influence of one and two-book systems and earnings management on the EU

countries and to choose this cluster of countries for their analysis they justified with: all of that countries have a similar legal structure with few political dispersion (becoming easy to classify the parties with a left-right scale) composing a universe of different countries, with different costumes, but with a lot in common. Another important factor is that all of them are democratic countries, where the taxpayers choose freely who they want to be in charge of the country. All of these factors contribute to a sample that allows us to compare countries in a more effective and accurate way.

The period of analysis includes data from 1990 to 2018. This particular period of time depends directly on the data available on the databases. This was the largest period that the OECD Statistics database had information about all the countries above and all the variables that will be mentioned next. We choose the largest period so we can have the maximum amount of data to be analyzed, creating a more robust and reliable model. Celikay (2020) used a similar method by choosing for his study about the dimensions of the tax burden on OECD countries, a period of time that contained data for the majority of the countries.

Variables in Study

The variables chosen for the study can be divided in two different ways: firstly, we have a division between the dependent variables (the ones that will be explained, i.e., dimensions of tax burden) and independent variables (the ones that will explain the previous one). Therefore, we can rank the independent variables in two different groups: the main independent variable (the government political orientation is considered the main independent variable once it can lead us to the conclusions to answer the purpose of this dissertation: whether or not the political orientation of a countries' government affects tax burden levels) and control variables that will not be changed in the course of the investigation, in order to the relation between tax burden and political orientation can be better understand and the model can have more robustness (Nielsen & Raswant, 2018).

Dependent variables:

Total Tax Burden (TB_TOT): as was said before, the tax burden can be defined by the tax-to-GDP ratio, because this is the way that this variable is calculated, by dividing a country's total tax revenues by its GDP. This is an easy and accurate way to evaluate the effectiveness of a country's tax policy and can measure the portion of a country's production that is collected by the government through taxes, giving us the perception of the level of control in a country's economy by the government. Hypothetically, if a country has a 100% tax burden, that means

that the government has total control over the economy (Reed & Rogers, 2006; Saafi et al., 2017; Celikay, 2020; OECD, 2021). This is a quantitative variable that was already calculated in the OECD database and is measured as a percentage.

Tax Burden of Direct Taxes (TB_DIRECT) and *Tax Burden of Indirect Taxes* (TB_INDIRECT)*:* We can cluster the previous types of taxes in two groups: Direct Taxes such as the tax on personal income, tax on corporate income, and tax on property that are considered direct manifestations of wealth with its tax base usually constant and Indirect Taxes that includes value-added taxes and other indirect taxes (like gambling taxes, beverage taxes, tobacco taxes, and others) that are related to indirect manifestations of wealth and to the act of consumption having an unstable tax base. The tax burden of these types of taxes is calculated with the same way that was referred to in the previous variable, by dividing the tax revenue (from each type of tax) by the country's GDP (Machová & Kotlán, 2013; Carlos et al., 2015; Saafi et al., 2017; Kromaz et al., 2019; Hakim, 2019). This is a quantitative variable that was already calculated in the OECD database and is measured as a percentage.

Tax Burden on Personal Income (TB_PI)*; Tax Burden on Corporate Income* (TB_CI)*; Tax Burden on Property Income* (TB_PROP): these variables were computed with the same logic as the one referred to above. Although, the numerator of the tax-to-GDP ratio just includes the tax revenues of each type of tax (personal income taxes, corporate income taxes, and property taxes) in order to evaluate the weight that each one of them has (Saafi et al., 2017). The dimensions of tax burden became a hot subject in tax literature when Machová and Kotlán (2013) created the World Tax Index that aimed to calculate the tax burden for each type of tax as we describe above. This is a quantitative variable that was already calculated in the OECD database and is measured as a percentage.

This dissertation will compare the dimensions of the tax burden from 1990 to 2018 analyzing 23 different EU countries. Along this period, there were some events that affected the tax burden and didn't affect the same countries in the same years. This can create a gap that leads to miss interpretation of the results. In order to contain this time effect dynamics, we can use a method called System GMM (Generalized Method of Moments). This approach was created by Arellano and Bond (1991) and tells us that if we calculate de logarithm of some variables, we can eliminate these time effect differences and attenuate the heterogeneity on our sample compose by different countries (since each county has its own fiscal laws and fiscal system and we can't compare them in a completely even way). This will reduce some

collinearity between the variables, providing a more consistent and accurate estimate of the tax burden. This method was used by Angelopoulos et al. (2007) and Celikay (2020) in their comparative studies of taxation in the OECD countries.

Therefore, all the dependent variables of tax burden were calculated with the logarithm of the tax-to GDP ratio of each type of tax.

Independent variables:

Political Orientation (ORIENT)*:* This variable will be a dummy: the value of 0 will be attributed to the left-wing parties and the value of 1 to right-wing parties. All the cases in a certain year a non-partisan cabinet was elected in a certain country were eliminated from the database, once the main purpose of the study is evaluating the relation between political orientation and tax burden dimensions, the center wing was not considered. Initially, this was a quantitative variable where the political orientation was ranked on a scale from 0 to 10 created by Castles and Mair (1984) but creating a dummy simplified the analysis so it became a better alternative. This decision was made in line with the study of Allers et al. (2001), Timmons (2008), Osterloh and Debus (2012), and Ziogas and Panagiotidis (2020) that used a similar approach to evaluate the relation between left-right ideology and taxation.

The following variables that belong to the independent variables' category but will be ranked as control variables, once they aim to create a better understanding of the model and give robustness (like was previously referred).

Unemployment rate (UNEMP): OECD (2021) defined the unemployment rate as the percentage of people that belong to the working-age (active population and available for work) and that aren't currently working. This indicator is calculated by dividing the number of people that are unemployed by the total number of a country's labor force (this last one is calculated by adding to the number of unemployed people the ones that are employed) (Lisý & Muchová, 2014; Celikay, 2020). This is a sociodemographic quantitative variable that was already calculated in the OECD database and is measured as a percentage.

Inflation (INF)*:* This variable is measured by the Consumer Price Index (CPI) that can be defined as the change or fluctuation on the prices of a specific basket of goods and services that is typically acquired by a certain group of people and can be used to measure the "erosion" of the living standards of each country/region (Timmons, 2008; Tenzin, 2019; OECD, 2021). This

is an economic quantitative variable that was already calculated in the OECD database and is measured as a percentage.

Public Expenditure per capita (PUBLIC_EXP)*:* Public expenditure can be defined as the spending that was made by a government of a certain country in order to satisfy its collective needs. This will finance the core activities of a country such as education, healthcare, infrastructure, and security (Deverajan et al., 1996; OECD, 2021). To calculate this variable, we created a ratio between a country's total public expenditure and the population of that country and that can give us an estimate of the spending per taxpayer (Andrikopoulos et al., 2004; Timmons, 2008; Celikay, 2020)). This is an economic quantitative variable that was calculated by the investigator using other variables from the OECD database.

Active Population (ACTIVE_POP): This indicator shows us the number of national people that live in a certain country and that contribute actively to the country's economy by working and consequently being taxed. This ratio can be calculated by dividing the number of people that are employed by the total number of people that live (and have a nationality) in that country (Bloom-Hansen, 2006; Timmons, 2008; Celikay, 2020; OECD, 2021). This is a sociodemographic quantitative variable that was already calculated in the OECD database and is measured as a percentage.

Gross Domestic Product Per Capita (GDP_PC): This variable can be defined as the standard measure of the value-added created by a country/region, in a certain period of time, with the manufacturing, production, and delivering of goods and services. It measures the income that resulted from that production. If we divide the total GDP by the population, we can obtain the GDP *per capita* that is the indicator that is often used to measure the living standards of a certain country/region (Timmons, 2008; Osterloh & Debus, 2012; Saafi et al. (2017); Tenzin, 2019; OECD, 2021). This is an economic quantitative variable that was calculated by the investigator using other variables from the OECD database such as GDP and population. Yet, to calculate this variable it was calculated the logarithm of the ratio referred to before in order to eliminate time effect dynamics and country heterogeneity (Angelopoulos, 2007; Celikay, 2020).

Gross Domestic Product Growth (GDP_GROWTH): This variable follows the same initial definition of the above mentioned, but this time we measured the variation of the GDP in a year-by-year basis in order to evaluate if there was an increase or decrease in it. Some authors consider the GDP as an optimal indicator of a country's economic growth (Timmons, 2008;

Osterloh & Debus, 2012, Saafi et al., 2017; Tenzin, 2019; Celikay, 2020). This is an economic quantitative variable that was calculated by the investigator using other variables from the OECD database.

It's possible to find a summary of all the information related to the variables in Attachment A where it's indicated the name of the variable, the type of each variable (dependent, independent, and control), its calculation formula, and the literature that supported its choosing.

Chapter IV – Results

Descriptive Statistics

To analyze the data, we used the software SPSS Statistics, version 27. The table below presents the descriptive statistics, such as the number of cases considered for each variable, the minimum, and maximum value observed, the mean, and the standard deviation.

Table 4.1 - Descriptive Statistics (with the logarithm effect)

Variable	Minimum	Maximum	Mean	Standard Deviation
TB_TOT	-0,6400	-0,3100	-0,4415	0,06784
TB_DIRECT	-1,3400	-0,5100	-0,9257	0,1649
TB_INDIRECT	-1,1700	-0,7700	-0,928	0,0638
TB_PI	-2,0600	-0,5800	-1,1180	0,2100
TB_CI	-2,5900	-1,1100	-1,6154	0,1806
TI_PROP	-2,6600	-1,3600	-1,9123	0,3095
ORIENT	0	1	0,63	0,483
UNEMP	0,0166	0,2611	0,0871	0,0417
INF	-0,04478	10,206	0,0888	0,5893
PUBLIC_EXP	0,0002	0,8215	0,0327	0,10566
ACTIVE_POP	0,3777	0,5636	0,4764	0,0004
GDP_PC	0,2200	3,6500	1,5800	0,6166
GDP_GROWTH	-0,2260	0,4450	0,0608	0,0651

N = 630

TB_TOTAL (Tax Burden Total), TB_DIRECT (Direct Taxes Burden), TB_INDIRECT (Indirect Taxes Burden), TB_PI (Personal Income Tax Burden), TB_CI (Corporate Income Tax Burden), TB_PROP (Property Tax Burden), ORIENT (Political Orientation), UNEMP (Unemployment), INF (Inflation), PUBLIC_EXP (Public Expenditure), ACTIVE_POP (Active Population), GDP_PC (GDP *per capita*), GDP_GROWTH (Growth of GDP)

As previously mentioned, some variables like the various types of Tax Burden and the Gross Domestic Product *per capita* were calculated using the logarithm. So, its descriptive statistics also reflect this calculation, making it difficult to draw some conclusions and analyze the values. Because of that, next, it will be presented a new table, with the same descriptive statistics but without the effect of the logarithm so it can be easier to construe the variables.

Table 4.2 - Descriptive Statistics (without the logarithm effect)

Variable	Minimum	Maximum	Mean	Standard Deviation
TB_TOT	0,2267	0,4898	0,3662	0,0566
TB_DIRECT	0,0462	0,3094	0,1277	0,0518
TB_INDIRECT	0,0680	0,1715	0,1193	0,0176
TB_PI	0,0087	0,2635	0,0860	0,0467
TB_CI	0,0026	0,0768	0,0263	0,0108
TI_PROP	0,0022	0,0439	0,0154	0,0100
ORIENT	0	1	0,63	0,483
UNEMP	0,0166	0,2611	0,0871	0,0417
INF	-0,04478	10,206	0,0888	0,05893
PUBLIC_EXP	0,2342	821,5644	32,7277	100,6607
ACTIVE_POP	0,3777	0,5636	0,4764	0,0004
GDP_PC	1,6499	4437,8394	149,0536	488,108
GDP_GROWTH	-0,2260	0,4450	0,0608	0,0651

N=630

TB_TOTAL (Tax Burden Total), TB_DIRECT (Direct Taxes Burden), TB_INDIRECT (Indirect Taxes Burden), TB_PI (Personal Income Tax Burden), TB_CI (Corporate Income Tax Burden), TB_PROP (Property Tax Burden), ORIENT (Political Orientation), UNEMP (Unemployment), INF (Inflation), PUBLIC_EXP (Public Expenditure), ACTIVE_POP (Active Population), GDP_PC (GDP *per capita*), GDP_GROWTH (Growth of GDP)

Firstly, it's important to explain that the number of cases isn't the same to all variables once the OECD database didn't have information for all the years of the time period of analysis for some countries, creating a gap in the number of cases. All the cases that didn't have information were treated as miss values.

It's possible to divide the analysis into two different groups: the dependent variables and the independent variables (that includes the control variables):

Descriptive Statistics of Dependent Variables

The minimum value of the TB_TOT was observed in Ireland, 2018, with a right-wing government (0,2267) and on the maximum value happened in Sweden, 1990, with a left-wing government (0,4898). The average Tax Burden rate of the European Union is about 0,3662 (this means that the tax revenues collected by the government represent a share of 36,62% of the country's GDP).

Regarding the TB_DIRECT, the minimum value took place in Lithuania, 2011, with a right-wing government (0,0462), and the maximum value in Denmark, 2014, with left-wing (0,3094). The average Direct Taxes Burden on European Union is 0,1277.

As to TB_INDIRECT, the minimum occurred in Spain, 2009, with a left-wing cabinet (0,068) and the maximum in Hungary, 2012, with left-wing (0,1715). The average Indirect Taxes Burden percentage is 0,1193.

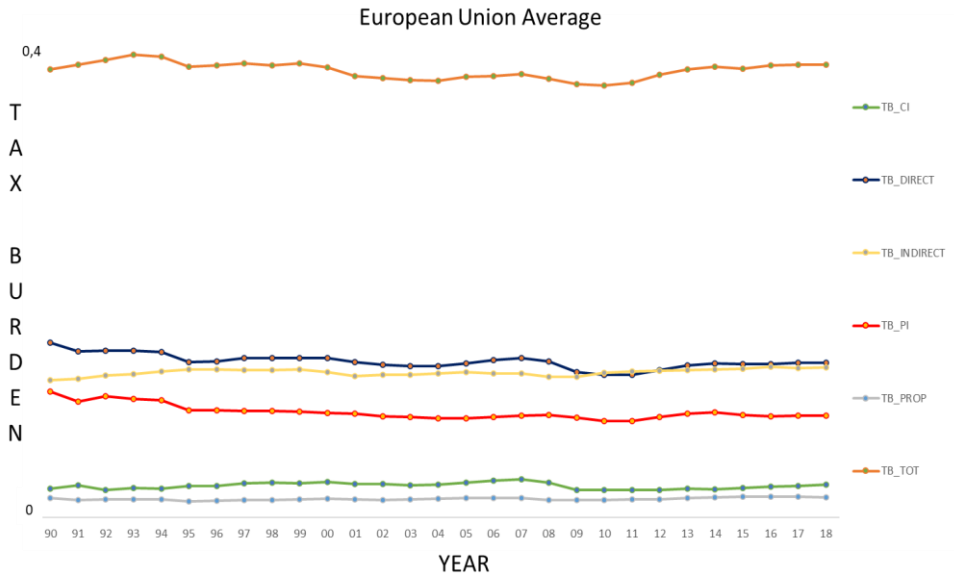
TB_PI has the minimum value in Poland, 1991, with a right-wing dominated parliament (0,0087), and the maximum in Denmark, 2014, with left-wing (0,2635). The European Union average for this variable is 0,0860.

TB_CI minimum value succeeded in Finland, 1993, with right-wing cabinet (0,0026) and the maximum in Luxemburg, 2002, with right-wing (0,0768). The Corporate Income Tax Burden average for the European Union is 0,0263.

Lastly, TB_PROP minimum value was observed in Estonia, 2017, with right-wing government (0,0022) and the maximum value in France, 2017, with right-wing (0,0439). The European Union average for this variable is 0,0154.

To better analyze the mean of these variables, below, it's represented a chart with the evolution of the various dimensions of Tax Burden, among the years. The values considered represent the European Union average.

Figure 4.1 – Evolution of Tax Burden Dimensions – EU average



TB_TOTAL (Tax Burden Total), TB_DIRECT (Direct Taxes Burden), TB_INDIRECT (Indirect Taxes Burden), TB_PI (Personal Income Tax Burden), TB_CI (Corporate Income Tax Burden), TB_PROP (Property Tax Burden)

It's possible to observe that the values of all dimensions of tax burden are very stable through time, not having large fluctuations. The dimensions are ranked by its order of greatness, in the graph: first, we have TB_TOT (representing all dimensions of tax burden), next we have

TB_DIRECT and TB_INDIRECT and lastly, we have TB_PI, TB_CI, and TB_PROP, representing the three types of direct taxes burden.

If we sum the mean of TB_DIRECT with the mean of TB_INDIRECT, the value will not match with the mean of the TB_TOT because, in the OECD database, the total value of tax revenues contemplates the revenues from Social Security Contributions (paid by the companies and persons) and for this analysis we exclude its effect once this category of tax can't be ranked as direct or indirect taxes. These are considered parafiscal taxes once their legal regime contains some particularities that don't fullfeed all the assumptions referred on chapter one: taxes are a patrimonial payment, that is definitive, unilateral, established by law, in favor of public entities, to satisfy public purposes and which does not constitute a sanction for an illegal act (Carlos et al., 2015).

The standard deviation of the dependent variables shows that they have little dispersion around the mean.

Descriptive Statistics of Independent Variables

Now, we will analyze the descriptive statistics of the independent variables. Once again, it's important to remind that this study has one main independent variable (ORIENT), and the other independent variables (UNEMP, INF, PUBLIC_EXP, ACTIVE_POP, GDP_PC, and GDP_GROWTH) are control variables that were included to give robustness to the model.

ORIENT is a dummy variable, so it was already expected that its minimum value was 0 (representing left-wing parties) and maximum value 1 (associated with right-wing parties). But in this variable, it's very important to analyze the mean once it gives us information about what is the dominant political orientation in the European Union (between 1990 and 2018). Once the mean is equal to 0,63, it means that 63% of our sample is composed of right-wing governments. Although, this is a very central value meaning that the European Union has a great balance in governments' political orientation.

The minimum value of the UNEMP was observed in Luxemburg, 1990, with a right-wing government (0,0166) and on the maximum value happened in Spain, 2013, with a right-wing government (0,2611). The average unemployment rate in the European Union countries is 8,71%.

Regarding the INF, the minimum value took place in Ireland, 2009, with a right-wing government (-0,0448, meaning deflation), and the maximum value in Lithuania, 1992, with left-

wing (10,26, meaning hyperinflation). The average inflation rate in the European Union is 8,88%.

As to PUBLIC_EXP, the minimum occurred in Poland, 1990, with a right-wing cabinet (0,2342) and the maximum in Hungary, 2018, with right-wing (821,5644). The average value of spending is about 32,7277 euros per person.

ACTIVE_POP has the minimum value in Ireland, 1990, with a right-wing dominated parliament (0,3777), and the maximum in Denmark, 1990, with left-wing (0,5636). The average active population rate of the European Union is about 47,64%.

GDP_PC minimum value succeeded in Poland, 1990, with right-wing cabinet (1,6499) and the maximum in Hungary, 2018, with right-wing (4437,05). The average Gross Domestic Product *per capita* is 149,05 euros per person.

Lastly, GDP_GROWTH minimum value was observed in Lithuania, 2009, with right-wing government (decreasing rate in GDP of 22,60%) and the maximum value in Poland, 1994, with left-wing (increasing rate of 44,50%). The average GDP Growth rate in the European Union is 6,08% per year.

The standard deviation of the independent variables shows that they have weak/moderate dispersion around the mean.

Correlations

To complete the analysis of the variables assuring that they have an adequate internal consistency value and ensure that our models will not have multicollinearity issues, in Attachment B, there is a table that presents the Pearson Correlation between variables.

It's possible to verify that most of the variables have a weak/moderate correlation, some in a negative way (meaning that when one of them increases the other one decreases) and others in the positive way (meaning that when one of them increases the other increases too). It's good that most of them have a weak/moderate correlation because that means that the variables have weak multicollinearity.

The correlations between the various dimensions of the tax burden can be ignored once these variables will not be analyzed simultaneously in any model. It was expected high levels of collinearity between these variables because they are calculated with the same variables (with similar but different values). The Total Tax Burden includes the values of all the variables

below it and so it goes it the other variables, and this causes significant values of the correlation coefficient.

The strongest correlations that the model has, are between GDP_GROWTH and INF (inflation) with a Pearson Correlation coefficient of 0,715 and between GDP_PC and PUBLIC_EXP showing a coefficient of 0,717.

On the opposite side, the weakest correlations are between PUBLIC_EXP and GDP_GROWTH (-0,008), UNEMP and TB_PROP (0,007), ORIENT and TB_CI (-0,005) and GDP_GROWTH and ORIENT (0,001).

Approximately 45% of the correlations are in the negative way and the other 55% on the positive way, meaning that there aren't any variables with Pearson Correlation equal to zero.

Results

To analyze the hypothesis, we used Multiple Linear Regressions (MLR) with the Enter method. This had the main purpose of measuring the impact of political orientation on the various types of tax burden.

In the Multiple Linear Regression, the software excluded 4 of the 23 countries of the initial sample because in the period of analysis the political orientation of these governments never shifted (the cabinet and party in charge changed but the political orientation remained the same). These countries are:

- Estonia: From 1992 (the first year that there are data available) to 2018 the government was always dominated by right-wing cabinets.
- Ireland: From 1990 to 2018 the government was always dominated by right-wing cabinets.
- Latvia: From 1993 (the first year that there are data available) to 2018 the government was always dominated by right-wing cabinets.
- Luxemburg: From 1990 to 2018 the government was always dominated by right-wing cabinets.

Because of that, the software excluded these countries once they didn't condemn value to the analysis.

Next, we will show the outputs of each regression in order to draw some conclusions about each statement/hypothesis.

H1: There is a relation between government political orientation and total tax burden

$$TB\_TOT = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

Table 4.3 - Output MRLM - H1 - TB_Total

	H1		
	β	t	sig
Constant	-0,258	-7,237	0,000**
ORIENT	-0,012	-2,497	0,013*
GDP_GROWTH	-0,316	-5,808	0,000**
ACTIVE_POP	-0,467	-6,876	0,000**
PUBLIC_EXP	-0,202	-5,884	0,000**
GDP_PC	0,067	9,794	0,000**
INF	-0,109	-0,989	0,323
UNEMP	-0,321	-4,872	0,000**

Ajust. R square	0,332
sig (ANOVA)	0,000**

** sig < ,1; ** sig < ,01*

TB_TOTAL (Tax Burden Total), ORIENT (Political Orientation), GDP_GROWTH (Growth of GDP), ACTIVE_PO (Active Population), PUBLIC_EXP (Public Expenditure), GDP_PC (GDP *per capita*), INF (Inflation), UNEMP (Unemployment)

With the output above it's possible to draw some conclusions about H1. The β of the variable ORIENT is equal to -0,012 and that means that right-wing parties tend to obtain lower levels of Total Tax Burden. This negative relation is statistically significant (0,013*), so the first hypothesis is verified.

This conclusion agrees with the studies of Bloom-Hansen (2006) and Poftrake (2017) who concluded that socialist governments (left-wing) tend to obtain a higher tax revenue when compared to right-wing governments due to their higher levels of public expenditure. If we analyze the coefficient of the variable PUBLIC_EXP (-0,202), it's possible to support the previous statement, concluding that right-wing governments tend to have a less public expense, leading them to a lower need of tax revenue.

Regarding the control variables, it's possible to observe a negative relation between all of them, except GDP *per capita*, and the Total Tax Burden, and all of them, except inflation, are statistically significant (sig<,1).

The Adjusted R^2 is 0,332, meaning that 33,2% of the model is explained by these variables, being the quality of the model assure. The sig of ANOVA test is 0,000**, so this model is considered adequate.

Yet, in the same hypothesis, we can test in which countries there is a positive/negative relation between Total Tax Burden and Political Orientation.

Table 4.4 - Output MRLM - H1 - Split by Country - TB_Total

	H1		
	β	sig	R square
AUT	0,003	0,660	0,031
BEL	0,004	0,605	0,367
CZE	0,004	0,487	0,390
DEU	0,007	0,172	0,682
DNK	-0,014	0,002**	0,666
ESP	0,000	0,953	0,550
FIN	-0,017	0,006**	0,678
FRA	-0,003	0,223	0,819
GBR	0,000	0,972	0,593
GRC	-0,002	0,913	0,804
HUN	0,004	0,772	0,114
ITA	-0,009	0,026*	0,832
LTU	0,014	0,272	0,889
NLD	0,004	0,741	0,606
POL	0,006	0,615	0,590
PRT	0,013	0,010**	0,872
SVK	-0,008	0,602	0,721
SVN	0,005	0,074*	0,458
SWE	-0,006	0,393	0,682

** sig < ,1; ** sig < ,01*

AUT (Austria), BEL (Belgium), CZE (Czech Republic), DEU (Germany), DNK (Denmark), ESP (Spain), FIN (Finland), FRAU (France), GBR (United Kingdom), GRC (Greece), HUN (Hungary), ITA (Italy), LTU (Lithuania), NLD (Nederland), POL (Polonia), PRT (Portugal), SVK (Slovakia), SVN (Slovenia), SWE (Sweden)

It's possible to observe that in Denmark (0,002**), Finland (0,006**) and Italy (0,026*) there is a negative relation between Total Tax Burden and political orientation, meaning that right-wing parties tend to obtain lower levels of this variable. So, these countries follow the European Union tendency, referred above. On the opposite side, countries like Portugal (0,010**) and Slovenia (0,074*) present a positive relation between Total Tax Burden and political orientation (right-wing parties provoke a higher level of tax burden).

The remaining countries also present positive and negative relations between these two variables, but these relations aren't statistically significant (sig > ,1).

H2: There is a relation between government political orientation and direct taxes burden

$$TB\_DIRECT = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

Table 4.5 - Output MRLM - H2 - TB_Direct

	H2		
	β	t	sig
Constant	-2,375	-8,839	0,000**
ORIENT	0,079	2,150	0,032*
GDP_GROWTH	-0,725	-1,769	0,078*
ACTIVE_POP	-5,607	-10,95	0,000**
PUBLIC_EXP	-2,619	-10,11	0,000**
GDP_PC	0,511	9,873	0,000**
INF	-4,006	-4,827	0,000**
UNEMP	-1,956	-3,938	0,000**

Ajust. R square	0,335
sig (ANOVA)	0,000**

** sig < ,1; ** sig < ,01*

TB_DIRECT (Direct Taxes Burden), ORIENT (Political Orientation), GDP_GROWTH (Growth of GDP), ACTIVE_PO (Active Population), PUBLIC_EXP (Public Expenditure), GDP_PC (GDP *per capita*), INF (Inflation), UNEMP (Unemployment)

With the output above it's possible to draw some conclusions about H2. The β of the variable ORIENT is equal to 0,079 and that means that right-wing parties tend to obtain higher levels of Direct Taxes Burden. This positive relation is statistically significant (0,032*), so the second hypothesis is confirmed.

Andrikopoulos et al. (2004), Angeloupolos et al. (2012), and Formanová and Mádr (2016) in their studies concluded that right-wing governments tend to give more weight to direct taxes (in their total tax revenue) than left-wing governments. This statement is in line with the output above where we concluded that there is a positive statistically significant relation between Political Orientation and Direct Taxes Burden, where non-socialist (right-wing) governments tend to obtain a higher tax revenue of this type of taxes.

As for the control variables, all of them have a negative relation with Direct Taxes Burden, except GDP *per capita* (that has a positive relation), all being statistically significant (sig<,1).

It's also possible to conclude that the active population has the strongest relation with TB_DIRECT (having the highest β) and on the opposite side, ORIENT has the weakest relation with our dependent variable.

The Adjusted R^2 is 0,335, meaning that 33,5% of the model is explained by these variables, and assuring the quality of the model. The sig of ANOVA test is 0,000**, so this model is considered adequate.

Yet, in the same hypothesis, we can test in which countries there is a positive/negative relation between Direct Taxes Burden and Political Orientation.

Table 4.6 - Output MRLM - H2 - Split by Country - TB_Direct

	H2		
	β	sig	R square
AUT	-0,043	0,401	0,135
BEL	-0,072	0,305	0,875
CZE	-0,048	0,167	0,499
DEU	0,032	0,693	0,412
DNK	-0,026	0,314	0,818
ESP	-0,017	0,732	0,788
FIN	-0,341	0,000**	0,857
FRA	-0,076	0,003**	0,927
GBR	-0,058	0,274	0,813
GRC	0,101	0,243	0,678
HUN	-0,028	0,808	0,308
ITA	-0,105	0,005**	0,580
LTU	0,069	0,569	0,935
NLD	0,012	0,814	0,727
POL	-0,002	0,964	0,809
PRT	0,026	0,528	0,771
SVK	-0,067	0,229	0,802
SVN	0,035	0,171	0,910
SWE	-0,014	0,809	0,649

** sig < ,1; ** sig < ,01*

AUT (Austria), BEL (Belgium), CZE (Czech Republic), DEU (Germany), DNK (Denmark), ESP (Spain), FIN (Finland), FRAU (France), GBR (United Kingdom), GRC (Greece), HUN (Hungary), ITA (Italy), LTU (Lithuania), NLD (Nederland), POL (Polonia), PRT (Portugal), SVK (Slovakia), SVN (Slovenia), SWE (Sweden)

It's possible to observe that in Finland (0,000**) and France (0,003**) and Italy (0,0056**) there is a negative relation between Total Tax Burden and political orientation, meaning that right-wing parties tend to obtain lower levels of this variable. These countries don't follow the European Union tendency, referred above.

The remaining countries also present positive and negative relations between these two variables, but these relations aren't statistically significant (sig > ,1).

Once we proved that there is a relation between Direct Taxes Burden and political orientation, for the European Union countries, in H4, H5, and H6 it will be tested the possible existence of a relation between the political orientation of the government and the three main types of direct taxation (personal income taxation, corporate income taxation, and property income taxation).

H3: There is a relation between government political orientation and indirect taxes burden.

$$TB\_INDIRECT = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

Table 4.7 - Output MLRM - H3 - TB_Indirect

	H3		
	β	t	sig
Constant	-1,114	-32,11	0,000**
ORIENT	-0,004	-0,831	0,406
GDP_GROWTH	-0,029	-0,546	0,586
ACTIVE_POP	0,410	6,208	0,000**
PUBLIC_EXP	0,297	8,877	0,000**
GDP_PC	-0,011	-1,588	0,113
INF	0,119	1,106	0,269
UNEMP	-0,043	-0,672	0,502

Ajust. R square	0,240
sig (ANOVA)	0,000**

** sig < ,1; ** sig < ,01*

TB_INDIRECT (Indirect Taxes Burden), ORIENT (Political Orientation), GDP_GROWTH (Growth of GDP), ACTIVE_PO (Active Population), PUBLIC_EXP (Public Expenditure), GDP_PC (GDP *per capita*), INF (Inflation), UNEMP (Unemployment)

With the output above it's possible to draw some conclusions about H3. The β of the variable ORIENT is equal to -0,004 and that means that right-wing parties tend to obtain lower levels of Indirect Taxes Burden when compared to left-wing parties. This negative relation isn't statistically significant (sig>,1), so the second hypothesis is denied.

In H2 we concluded that scholars believe that left-wing governments tend to give more weight to indirect taxes in their total tax revenue and with our data we proved this same relation,

concluding that right-wing governments have a negative relation with the indirect taxes burden (although, isn't statistically significative), so our study drives us to the same conclusions that Andrikopoulos et al. (2004), Angeloupolos et al. (2012) and Formanová and Mádr (2016).

GDP Growth, GDP *per capita*, and Unemployment have a negative and non-statistically significant relation with the indirect taxes burden. Active Population, Public Expenditure and Inflation have a positive relation with the dependent variable, but only the first two have been statistically significant.

The Adjusted R^2 is 0,240, meaning that 24,0% of the model is explained by these variables, and assuring the quality of the model. The sig of ANOVA test is 0,000**, so this model is considered adequate.

Yet, in the same hypothesis, we can test in which countries there is a positive/negative relation between Indirect Taxes Burden and Political Orientation.

Table 4.8 - Output MLRM - H3 - Split by Country - TB_Indirect

	H3		
	β	sig	R square
AUT	0,011	0,054*	0,550
BEL	0,012	0,096*	0,296
CZE	0,012	0,134	0,702
DEU	0,013	0,130	0,575
DNK	-0,012	0,040*	0,717
ESP	0,023	0,068*	0,740
FIN	-0,002	0,766	0,728
FRA	0,002	0,506	0,848
GBR	0,034	0,014*	0,439
GRC	-0,005	0,747	0,932
HUN	0,018	0,307	0,817
ITA	-0,003	0,665	0,755
LTU	0,010	0,309	0,761
NLD	0,000	0,942	0,790
POL	0,008	0,507	0,560
PRT	0,010	0,147	0,561
SVK	0,005	0,817	0,029
SVN	-0,006	0,230	0,767
SWE	-0,004	0,604	0,187

** sig < ,1; ** sig < ,01*

AUT (Austria), BEL (Belgium), CZE (Czech Republic), DEU (Germany), DNK (Denmark), ESP (Spain), FIN (Finland), FRAU (France), GBR (United Kingdom), GRC (Greece), HUN (Hungary), ITA (Italy), LTU (Lithuania), NLD (Nederland), POL (Polonia), PRT (Portugal), SVK (Slovakia), SVN (Slovenia), SWE (Sweden)

It's possible to observe that in Denmark (0,040*) there is a negative relation between Indirect Taxes Burden and political orientation, meaning that right-wing parties tend to obtain lower levels of this variable. So, this country follows the European Union tendency, referred above. On the opposite side, countries like Austria (0,054*), Belgium (0,096*), Spain (0,068*) and the United Kingdom (0,014*) present a positive relation between total tax burden and political orientation (right-wing parties provoke a higher level of tax burden).

The remaining countries also present positive and negative relations between these two variables, but these relations aren't statistically significant (sig > ,1).

Once we proved that there isn't a relation between Indirect Taxes Burden and political orientation, for the European Union countries we won't analyze and desegregate the indirect taxes in a similar way to the indirect taxes. If there isn't a relation between these types of taxes and political orientation, it doesn't make sense to go further with the analysis.

H4: There is a relation between government political orientation and personal income tax burden.

$$TB\_PI = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

H5: There is a relation between government political orientation and corporate income tax burden.

$$TB\_CI = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

H6: There is a relation between government political orientation and property tax burden.

$$TB\_PROP = \beta_0 + \beta_1 ORIENT + \Sigma \beta_i CONTROL + \varepsilon_i$$

Table 4.9 - Output MLRM - H4, H5, H6 - TB_PI; TB_CI; TB_PROP

	H4			H5			H6		
	β	t	sig	β	t	sig	β	t	sig
Constant	-1,072	-8,948	0,000**	-1,206	-12,70	0,000**	-0,097	-0,578	0,563
ORIENT	0,033	1,998	0,046*	-0,009	-0,655	0,513	0,055	2,381	0,018*
GDP_GROWTH	-0,336	-1,839	0,066	0,305	2,105	0,036*	-0,694	-2,703	0,007**
ACTIVE_POP	-0,409	-1,791	0,074	-1,196	-6,612	0,000**	-4,002	-12,489	0,000**
PUBLIC_EXP	-0,74	-6,403	0,000**	-0,902	-9,849	0,000**	-0,977	-6,025	0,000**
GDP_PC	0,181	7,845	0,000**	0,17	9,292	0,000**	0,16	4,94	0,000**
INF	-1,324	-3,577	0,000**	-0,117	-0,399	0,690	-2,565	-4,938	0,000**
UNEMP	-0,748	-3,378	0,001**	-0,849	-4,839	0,000**	-0,359	-1,154	0,249

Ajust. R square	0,217	0,251	0,285
sig (ANOVA)	0,000**	0,000**	0,000**

** sig < ,1; ** sig < ,01*

TB_PI (Personal Income Tax Burden), TB_CI (Corporate Income Tax Burden), TB_PROP (Property Tax Burden), ORIENT (Political Orientation), GDP_GROWTH (Growth of GDP), ACTIVE_PO (Active Population), PUBLIC_EXP (Public Expenditure), GDP_PC (GDP *per capita*), INF (Inflation), UNEMP (Unemployment)

With the output above it's possible to draw some conclusions about these three hypotheses. The β of the variable ORIENT is equal to 0,033 for TB_PI (H4) meaning a positive relation between Personal Income Tax Burden and political orientation (statistically significant with a sig equal to 0,046*, confirming this hypothesis). This conclusion isn't in accordance with Bloom-Hansen et al. (2006) and Poftrake (2017) who advocated that left-wing governments tend to charge more personal income taxes than right-wing governments, leading them to a higher Personal Income Tax Burden. With our data, we concluded the opposite: right-wing governments collect a higher level of personal income tax.

For the TB_CI (H5) the β presents a negative relation between these two main variables (-0,009) provoking the opposite effect than the previously mentioned (this relation isn't statistically significant, so we denied this hypothesis). Osterloh and Debus (2012) drove a comparative study between political orientation and corporate taxation in the Euro-Zone countries and concluded that left-wing governments tend to obtain higher levels of Corporate tax burden, and this follows our previous conclusion of H5.

Lastly, regarding TB_PROP (H6) the β reveals a positive value showing that there is a positive relation between political orientation and this dimension of the tax burden (statistically significant with a sig equal to 0,018*, confirming this hypothesis). Allers et al. (2001) conducted a study that proved that in the Netherlands, left-wing parties tend to obtain lower

levels of Property Tax burden than right-wing parties. Later, Vallés-Giménez and Zarate-Marco (2017) reached similar conclusions analyzing this variable in the Spanish government. Although, with our data we concluded that there is a positive statistically significant relation between Political Orientation and Property Tax Burden, meaning that non-socialist parties tend to collect a higher level of property taxes, leading them to a higher tax burden (of this dimension). One of the reasons that can lead to this contradiction among conclusions is that: in our study, the sample is composed by the European Union Countries and these authors only analyze one country, and this gap may justify the distortion between these two different statements.

Active Population, Public Expenditure, Inflation, and Unemployment have a negative relation with the dependent variable in all three hypotheses, being statically significant only in some of them. Contrary, GDP *per capita* has a positive and statistically significant relation with all dimensions of the tax burden. Lastly, GDP Growth has a negative relation with Personal Income Tax Burden (H4) and Property Tax Burden (H6) and a positive relation with Corporate Income Tax Burden (H5), being statistically significant only for H5 (0,036*) e H6 (0,007**).

All the adjusted R^2 are greater than 0,20, so with this, we can assure the quality of the three models. The ANOVA tests' sig is 0,000**, so these models are considered adequate.

Yet, in the same hypotheses, we can test in which countries there is a positive/negative relation between these three dimensions of Tax Burden and Political Orientation.

Table 4.10 - Output MLRL - H4, H5, H6 - Split by Country - TB_PI; TB_CI; TB_PROP

	H4			H5			H6		
	β	sig	R square	β	sig	R square	β	sig	R square
AUT	-0,002	0,894	0,189	0,018	0,621	0,457	-0,059	0,034*	0,558
BEL	0,008	0,553	0,715	-0,062	0,247	0,707	-0,019	0,492	0,959
CZE	-0,021	0,088*	0,763	0,023	0,490	0,245	-0,050	0,060*	0,051
DEU	0,010	0,455	0,686	-0,038	0,594	0,391	0,060	0,013*	0,480
DNK	-0,001	0,803	0,677	-0,032	0,194	0,827	0,007	0,557	0,357
ESP	-0,004	0,697	0,554	0,023	0,391	0,858	-0,035	0,051*	0,884
FIN	-0,011	0,284	0,710	-0,326	0,000**	0,865	-0,004	0,831	0,710
FRA	-0,023	0,120	0,892	-0,043	0,035*	0,749	-0,011	0,152	0,934
GBR	-0,020	0,273	0,350	-0,025	0,575	0,587	-0,013	0,526	0,898
GRC	0,034	0,228	0,845	0,007	0,897	0,647	0,060	0,066*	0,909
HUN	0,003	0,939	0,825	-0,052	0,569	0,678	0,022	0,610	0,911
ITA	-0,009	0,143	0,739	-0,048	0,033*	0,806	-0,047	0,177	0,650
LTU	0,056	0,121	0,978	-0,032	0,702	0,911	0,045	0,138	0,863
NLD	0,061	0,049*	0,771	-0,042	0,216	0,766	-0,007	0,812	0,668
POL	-0,002	0,940	0,805	0,031	0,311	0,793	-0,031	0,045*	0,755
PRT	0,032	0,050*	0,708	-0,005	0,844	0,543	0,000	0,977	0,890
SVK	-0,012	0,511	0,856	-0,047	0,163	0,596	-0,008	0,651	0,931
SVN	0,011	0,079*	0,705	0,061	0,042*	0,906	-0,037	0,115	0,075
SWE	-0,002	0,896	0,827	0,028	0,445	0,739	-0,040	0,191	0,800

** sig < ,1; ** sig < ,01*

AUT (Austria), BEL (Belgium), CZE (Czech Republic), DEU (Germany), DNK (Denmark), ESP (Spain), FIN (Finland), FRAU (France), GBR (United Kingdom), GRC (Greece), HUN (Hungary), ITA (Italy), LTU (Lithuania), NLD (Nederland), POL (Polonia), PRT (Portugal), SVK (Slovakia), SVN (Slovenia), SWE (Sweden)

Regarding TB_PI (H4), there is a significant relation between this variable and ORIENT in the Czech Republic (0,088*) with a negative relation between these two variables and in Netherland (0,049*), Portugal (0,050*) and Slovenia (0,079*) presenting a positive relation between the personal income tax burden and the government political orientation, following the European Union tendency.

As for TB_CI (H5) despite there isn't a relation between this variable and political orientation for the European Union, it's possible to observe a statistically significant negative relation in Finland (0,000**), France (0,035*) and Italy (0,033*), and a positive relation in Slovenia (0,042*).

Lastly, there is a positive relation in Austria (0,034*), Czech Republic (0,060*), Germany (0,013*), Spain (0,051*), Greece (0,066*) and Poland (0,045*) between the two variables (TB_PROP and ORIENT), meeting the European Union previous observation (H6).

The remaining countries, for the three variables, also present positive and negative relations between these two variables, but these relations aren't statistically significant (sig > ,1).

Chapter V - Discussion and Conclusions

The main purpose of this dissertation was to analyze and understand the impact of a country's government political orientation on its total tax burden. This allowed us to draw some conclusions about whether right- or left-wing ideologies affect positive or negatively this fiscal variable (in its various dimensions).

To accomplish the purpose referred above it was collected information within a 29 years' time-period (1990 to 2018) with a sample of 23 of the 28 European Union countries (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom). The five remaining countries (Bulgaria, Croatia, Cyprus, Malta, and Romania) that belong to the EU were excluded because of lack of data availability.

This particular time period depends directly on the data available on the databases. This was the largest period that the OECD Statistics database had information about all the countries referred to above and all the variables that composed the study.

The political orientation was defined by a scale from 0 to 10, where 0 is defined by "ultra-left" and 10 "ultra-right", the middle of the scale represents the center, often used to define cabinets who aren't associated with any specific party (non-partisans). This scale derivate from a survey led by Castles and Mair (1984) and was collected on the ParlGov Data Base. To simplify the analysis, this scale was transformed in a dummy variable. The information about tax burden and the other control variables were collected on OECD Statistics. To analyze all the data, it was created a Multiple Linear Regression Model (MLRM).

Left and right-wing governments tend to pursue different economic and fiscal goals and influence the economic variables in their power to achieve them. The governments will create a strategy that will aim to satisfy their financial needs to accomplish the goals that were proposed. So, this influence depended directly on the government´s political ideology once this ideology has a strong influence on their objectives. The level of public expenditure that is needed to reach the economic goals will affect the tax revenue that must be collected and consequently the tax burden. The greater the expenditure, the greater will be the level of the tax burden to finance it (Bloom-Hansen, 2006; Poftrake, 2017).

Also, governments have an active role in creating redistributive policies that aim in reducing inequality among taxpayers and level the country's life standards (Angelopoulos et al., 2006; Ziogas & Panagiotidis, 2020).

Often, left-wing parties tend to have higher levels of government expenditure creating the need to collect more money through taxes and leading them to a higher amount of tax revenue and a consequently higher level of tax burden. This was proven by the first hypothesis of this dissertation who demonstrated that right-wing parties tend to obtain lower tax burden levels (being this hypothesis statistically significant). Looking at the coefficient of the control variable PUBLIC_EXP, was also possible to verify the premise who says that left-wing parties tend to spend more money on their term (Bloom-Hansen et al., 2006; Poftrake, 2017).

With the main premise of the dissertation proved, it became important to investigate which type of taxes are more influenced by the government's political orientation. The second hypothesis explained that right-wing governments obtain higher levels of Direct Taxes Burden (showing a statistically significant relation). This means that the right-wing ideologies choose to collect a higher tax burden of taxes like personal income taxes, corporate income taxes, and other direct taxes. They choose to give focus to the income taxes rather than the consumption taxation (Andrikopoulos et al., 2004; Angeloupolos et al., 2012; Formanová & Mádre, 2016).

Regarding the Indirect Tax Burden, the third hypothesis showed that there isn't a statistically significant relation between this variable and the political spectrum. The coefficient that we obtained was very close to zero (-0,004) which means that despite right-wing parties in average collect less indirect taxes (in the Euro-Zone), the two sides of the spectrum are very balanced in this type of taxes. Once that the Indirect Taxes Burden doesn't have a significant relation with the main variable of the study, didn't make sense to investigate much more about this side of the tax structure.

Within Direct Tax Burden, it was possible to divide it into three big categories of taxes: Personal Income Taxes, Corporate Income Taxes, and Property Taxes. In the first category, the model predicted a statistically significant relation with political orientation, proving that right-wing parties obtain higher levels of Personal Income Tax Burden, that is the type of tax that the taxpayers get more directly affected (Bloom-Hansen et al., 2006).

Regarding Corporate Income Tax Burden, there wasn't a statistically significant relation, but the model showed that the left-wing governments collect more of this type of taxes. Despite the general taxpayers doesn't feel the direct effect of corporate taxation, this is a very important

subject once the government must create fiscal attractive solutions to retain companies in its jurisdiction to boost the countries' economy and to decrease the probability of tax evasion (Osterloh & Debus, 2012; Arif & Rawat, 2018).

Lastly, there was proven a statistically significant relation between the government's political orientation and the property tax burden, with non-socialist parties charging higher levels of this type of tax. This is an important tax once it promotes and streamlines the real estate investment that can boost the economy (Allers et al., 2001; Vallés-Giménez & Zarate-Marco, 2017).

Limitations of the Study

The sample that supported the study was only composed by 23 of the 28 countries of the European Union. This was a convenience sample, chosen mainly because of lack of time availability to analyze the data, which doesn't represent the whole population, that in this case would be analyzing all the countries in the world.

To rank the parties in the left-right binomial, we used the 0-10 scale developed by Castles and Mair (1984) but transformed the outputs of the ParlGov database into a dummy variable to simplify the analysis. This method was based on the studies of Osterloh and Debus (2012) and Ziogas and Panagiotidis (2020), which created their model with a political dummy variable. The use of the 0-10 scale possibly gives more robust results once it separates the ultra-left/right parties from the more central parties and turns possible to draw some conclusions about the fiscal policies of extremist parties.

Lastly, the main limitation that affected this dissertation is the time. A study that is conducted over a longer period of time can be more complete, and the 1-year time period didn't allow the investigator to delve into certain issues that could have been relevant and mitigate the limitations referred to above.

Suggestions for Future Research

To future research, it could be advised to analyze if the percentage of the members of the parliament that belong to the election's winner party have an influence on the political decision that create the fiscal laws and therefore their influence on a countries' tax burden.

Yet, it could be important to insert a variable in the study that evaluates the cultural differences between countries. Despite the left-right spectrum is a common subject in the whole world, the ideologies of each side of the spectrum are not the same for all countries. These

cultural differences could be inserted in the model as an independent variable or a control variable and test its effect on the countries' tax burden.

Lastly, it would be a more complete investigation if the sample was representative of the whole population, which in this case would be analyzing all the countries in the world. This would turn possible to analyze the political dispersion between countries, or continents, and understand the main fiscal disparities. Also, it would test if the models that were created in this dissertation would work for other continents with different culture.

Bibliography

Abatemarco, A., Dell'Anno, R. (2020). Fiscal illusion and progressive taxation with retrospective voting. *Economic and Political Studies*, 8(2), 246–273. https://doi.org/10.1080/20954816.2020.1728831

Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2015). Democracy, redistribution, and inequality. *Handbook of Income Distribution*, 2(2), 1885–1966. https://doi.org/10.1016/b978-0-444-59429-7.00022-4

Allers, M., de Haan, J., Sterks, C. (2001). Partisan influence on the local tax burden in netherlands. *Public Choice*, 106(4), 351–363. https://doi.org/10.1023/a:1005123208352

Andrejoskvá, A. Puliková, V. (2018). Tax revenues in the context of economic determinants. *Montenegrin Journal of Economics*, 14(1), 133-141. https://doi.org/10.14254/1800-5845/2018.14-1.10

Andrikopoulos, A., Loizides, I., Prodromidis, K. (2004). Fiscal policy and political business cycles in the EU. *European Journal of Political Economy*, 20(1), 125–152. https://doi.org/10.1016/j.ejpoleco.2003.02.001

Angelopoulos, K., Economides, G., Kammas, P. (2007). Tax-spending policies and economic growth: Theoretical predictions and evidence from de OECD. *European Journal of Political Economy*, 23(4), 885-902. https://doi.org/10.1016/j.ejpoleco.2006.10.001

Angelopoulos, K., Economides, G., Kammas, P. (2012). Does cabinet ideology matter for the structure of tax policies? *European Journal of Political Economy*, 28(4), 620-635. https://doi.org/10.1016/j.ejpoleco.2012.06.002

Assembleia Constituinte. Constituição da República Portuguesa (1976).

Arif, I., Rawat, A. S. (2018). Corruption, governance, and tax revenue: Evidence from EAGLE countries. *Journal of Transnational Management*, 23(1), 1–15. https://doi.org/10.1080/15475778.2018.1469912

Arellano, M., Bond, S. (1991). Some tests of specification for panel data: Monte carlo evidence and an application to employment equations. *The review of economic studies*, 58(2), 277-297. https://doi.org/10.2307/2297968

Basariya, S., Arab, H., Ahmed, R. (2020). A study on the uses of taxation in developing countries. *Journal of Critical Reviews*, 7(1), 457-463. https://doi.org/10.31838/jcr.07.01.90

Bartolini, S. (2000). The political mobilization of the european left, 1860-1980: The class cleavage. *American Political Science Review*, 95(03), 745-747. https://doi.org/ 10.1017/S0003055400500331

Bird, R. M., Martinez-Vazquez, J., Torgler, B. (2008). Tax effort in developing countries and high-income countries: The impact of corruption, voice, and accountability. *Economic Analysis and Policy*, 38(1), 55–71. https://doi.org/doi:10.1016/s0313-5926(08)50006-3

Bloom-Hansen, J., Monkerud, L. C., Sorensen, R. (2006). Do parties matter for local revenue policies? A comparison of Denmark and Norway. *European Journal of Political Research*, 45(3), 445–465. https://doi.org/doi:10.1111/j.1475-6765.2006.00305.x

Carlos, A., Abreu, I., Durão, J., Pimenta, M. (2015). Guia dos impostos em Portugal (1st ed.). Quid Juris Sociedade Editora

Castelli Gattinara, P., Bouron, S. (2019). Extreme-right communication in Italy and France: Political culture and media practices in CasaPound Italia and Les Identitaires. *Information, Communication & Society*, 1(15), 1805-1819. https://doi.org/doi:10.1080/1369118x.2019.1631370

Castles, F. and Mair, P. (1984). Left-right political scales: Some 'expert' judgments. *European Journal of Political Research*, 12(1), 73-88. https://doi.org/10.1111/j.1475-6765.1984.tb00080.x

Celikay, F. (2020). Dimensions of tax burden: A review on OECD countries. *Journal of Economics, Finance and Administrative Science*, 25(49), 27-43. https://doi.org/10.1108/JEFAS-12-2018-0138

Dalamagas, B., Leventides, J., Palaios, P., Tantos, S. (2019). Revising the conventional tax-effort principle. *Scottish Journal of Political Economy*, 66(1), 1-28. https://doi.org/10.1111/sjpe.12239

Deverajan, S., Zou, H., Swaroop, V. (1996). The composition of public expenditure and economic growth. *Journal of Monetary Economics*, 37(2), 313-344. https://doi.org/10.1016/S0304-3932(96)90039-2

Donovan, T., Bowler, S. (2020). Who wants to raise taxes? *Political Research Quarterly*, 11(15), 1-12 https://doi.org/10.1177/1065912920977911

Downs, A. (1957). An economic theory of political action in a democracy. *Journal of Political Economy*, 65(2), 135-150. https://doi.org/10.1086/257897

Frank, H. J. (1959). Measuring state tax burdens. *National Tax Journal*, 12 (2): 179-185.

Formanová, L., Mádr, M. (2017). Elections and the tax structure in the post-socialist EU member states. *Papers of the University of Pardubice, Series D: Faculty of Economics and Administration*, 23(37), 5- 13.

Freire, A. (2008). Party polarization and citizens' left-right orientations. *Party Politics*, 14(2), 189-209. https://doi.org/0.1177/1354068807085889

Freire, A., Belchior, A. (2011). What left and right means to Portuguese citizens. *Comparative European Politics*, 9(2), 145-167. https://doi.org/10.1057/cep.2009.14

Freire, A. Belchior, A. (2013). Ideological representation in Portugal: Mp's – Elector's linkages in terms of left-right placement and substantive meaning. *The Journal of Legislative Studies*, 19(1), 1-21. https://doi.org/10.1080/13572334.2013.736784

Hakim, T. (2019). Direct versus indirect taxes: Impact on economic growth and total tax revenue. *International Journal of Financial Research*, 11(2), 146-153. https://doi.org/10.5430/ijfr.v11n2p146

Hanlon, M., Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(3), 127– 178. http://doi.org/10.1016/j.jacceco.2010.09.002

Hood, W. W., Wilson, C. S. (2003). Informetric studies using databases: Opportunities and challenges. *Scientometrics*, 58(3), 587–608. http://doi.org/doi:10.1023/b:scie.0000006882.47115.c6

Ilaboya, O. J., Ohonba, N. (2013). Direct versus indirect taxation and income inequality. *European Journal of Accounting & Finance Research*, 1(1), 1-15.

Inglehart, R. & Sidjanski, D. (1976). Values and partisanship in left-Right orientations: Measuring ideology. *European Journal of Political Research,* 17(5), 599-621. https://doi.org/10.1111/j.1475-6765.1989.tb00209.x

Jaime-Castillo, A. M., Sáez-Lozano, J. L. (2014). Preferences for tax schemes in OECD countries, self-interest, and ideology. *International Political Science Review*, 37(1), 81–98. https://doi.org/10.1177/0192512114539716

Kato, J., Tanaka, S. (2018). Does taxation lose its role in contemporary democratization? State revenue production revisited in the third wave of democratization. *European Journal of Political Research,* 58(1), 184-208. https://doi.org/doi:10.1111/1475-6765.12276

Korkmaz, S., Yilgor, M., Aksoy, F. (2019). The impact of direct and indirect taxes on the growth of the Turkish economy. *Public Sector Economics*, 43(3), 311–323. https://doi.org/10.3326/pse.43.3.5

Laffer, A. B. (2004). The Laffer Curve: Past, Present, and Future. *Heritage Foundation Backgrounder*, 1765(1), 1-16.

Laponce, J. (1981), Left and right. The topography of political perceptions. *Canadian Journal of Sociology*, 9(1), 106-109. https://doi.org/10.2307/3340474

Lee, J., Xu, J. (2019). Tax uncertainty and business activity. *Journal of Economic Dynamics and Control*, 103(1), 158–184, https://doi.org/10.1016/j.jedc.2018.09.013

Lierse, H. (2012). European taxation during the crisis: Does politics matter? *Journal of Public Policy*, 32(03), 207–230. https://doi.org/10.1017/s0143814x12000116

Lisý, J., Muchová, E. (2014). Inflation vs unemployment - Some polemic issues. *European Scientific Journal*, 10(10), 379–384. https://doi.org/10.1177/1391561418822204

Leuthold, J. H. (1991). Tax shares in developing economies A panel study. *Journal of Development Economics*, 35(1), 173–185. https://doi.org/10.1016/0304-3878(91)90072-4

Machová, Z., Kotlán, I. (2013). World tax index: New methodology for OECD countries, 2000–2012. *Danube*, 4(2), 165-179. https://doi.org/10.2478/danb-2013-0008

Magkonis, G., Zekente, K., Logethetis, V. (2021). Does the left spend more? An econometric survey of partisan politics. *Oxford Bulletin of Economics and Statistics*, 1(1), 1-23. https://doi.org/10.1111/obes.12426

Mahdavi, S. (2008). The level and composition of tax revenue in developing countries: Evidence from unbalanced panel data. *International Review of Economics & Finance*, 17(4), 607–617. https://doi.org/10.1016/j.iref.2008.01.001

Meyer, T. M., Wagner, M. (2018). Perceptions of parties' left-right positions. *Party Politics*, 26(5), 664-674. https://doi.org/10.1177/1354068818806679

Nasr, M. (2020). Voter perceptions of parties' left-right positions: The role of party strategies. *Electoral Studies*, 68(1), 1-11. https://doi.org/10.1016/j.electstud.2020.102239

Nielsen, B., Raswant, A. (2018). The selection, use, and reporting of control variables in international business research: A review and recommendations. *Jornal of World Business*, 53(6), 958-968. https://doi.org/10.1016/j.jwb.2018.05.003

Night, S., Bananuka, J. (2019). The mediating role of adoption of an electronic tax system in the relationship between attitude towards electronic tax system and tax compliance. *Journal of Economics, Finance and Administrative Science*, 1(1), 1-17. https://doi.org/10.1108/jefas-07-2018-0066

Nisha, R. (2018). Technical analysis of tax revenue and non-tax revenue of India. *International Journal of Pure and Applied Mathematics*, 199 (12): 14957-14970.

OECD (2021), Gross domestic product (GDP) (indicator). https://doi.org/10.1787/dc2f7aec-en (Accessed on 07 January 2020)

OECD (2021), Tax on corporate profits (indicator). https://doi.org/10.1787/d30cc412-en (Accessed on 08 January 2020)

OECD (2021), Tax on goods and services (indicator). https://doi.org/10.1787/40b85101-en (Accessed on 08 January 2020)

OECD (2021), Tax on personal income (indicator). https://doi.org/10.1787/94af18d7-en (Accessed on 12 January 2020)

OECD (2021), Tax on property (indicator). https://doi.org/10.1787/213673fa-en (Accessed on 12 January 2020)

OECD (2021), Tax revenue (indicator). https://doi.org/10.1787/d98b8cf5-en (Accessed on 07 January 2020)

Osterloh, S., Debus, M. (2012). Partisan politics in corporate taxation. *European Journal of Political Economy*, 28(2), 192-207. https://doi.org/10.1016/j.ejpoleco.2011.11.002

Peñalosa, G., Turnovsky, J. (2005). Second-best optimal taxation of capital and labor in a developing economy. *Journal of Public Economics*, 89(1), 1045-1074. https://doi.org/10.1016/j.jpubeco.2004.06.002

Poftrake, N. (2017). Partisan politics: The empirical evidence from OECD panel studies. *Journal of Comparative Economics*, 45(4), 712-750. https://doi.org/10.1016/j.jce.2016.12.004

Porrit, J. (1984). Seeing green: The politics of ecology explained (6th edition). Blackwell.

Reed, W. R., Rogers, C. L. (2006). Tax Burden and the Mismeasurement of State Tax Policy. *Public Finance Review*, 34(4), 404–426. https://doi.org/10.1177/1091142106288406

Rico, G., Jennings, M. K. (2015). The formation of left-right identification: Pathways and correlates of parental influence. *Political Psychology*, 37(2), 237–252. https://doi.org/10.1111/pops.12243

Rivero, C., Kotzè, H. (2019) The value and partisanship basis of left-right placement after the financial crisis: A comparative mas-elite analysis of five selected democracies. *Comparative sociology*, 18(6), 567-594. https://doi.org/10.1163/15691330-12341511

Saafi, S., Farhat, A., Mohamed, M. (2017). Untangling the casual relationship between tax burden distribution and economic growth in 23 OECD countries: fresh evidence from linear and non-linear granger causality. *The European Journal of Comparative Economics*, 14(2), 265-301. https://doi.org/10.25428/1824-2979/201702-265-301

Strobl, D., Bäck, H., Müller, W. C., Angelova, M. (2019). Electoral cycles in government policy making: Strategic timing of austerity reform measures in western Europe. *British Journal of Political Science*, 51(1), 331-352. https://doi.org/10.1017/s0007123419000073

Tanzi, V., Zee, H., (2000). Tax policy for emerging markets: Developing countries. *National Tax Journal*, 53(2), 299-322. https://doi.org/10.17310/ntj.2000.2.07

Tenzin, U. (2019). The nexus among economic growth, inflation, and unemployment in Bhutan. *South Asia Economic Journal*, 20(1), 94-105. https://doi.org/10.1177/1391561418822204

Timmons, J. (2008). Taxation and credible commitment: Left, right and partisan turnover. *Comparative Politics*, 42(2), 207-227. https://doi.org/10.2307/27822304

Thornton, J. (2013). Does foreign aid reduce tax revenue? Further evidence. *Applied Economics,* 46(4), 359–373. https://doi.org/10.1080/00036846.2013.829207

Vasiliauskaite, A., Stankevicius, E. (2009). Tax burden management and GDP growth: Case of EU countries. *Economics and Management*, 14(2), 202-209.

Wang, F., Xu, S., Sun, J., Cullinan, C. P. (2019). Corporate tax avoidance: A literature review and research agenda. *Journal of Economic Surveys*, 0(0), 1-19. https://doi.org/10.1111/joes.12347

Wasylenko, M. (1997). Taxation and economic development: The state of the economic literature. *New England Economic Review*, 5(4), 36-52.

Watrin, C., Nadine, E., Thomsen, M. (2014). Book-Tax conformity and earnings management: Insights from Europe one and two-book systems. *Journal of the American Taxation Association*, 36(2), 55-89. https://doi.org/10.2308/ATAX-50769

White, J. (2011). Left and right as political resources. *Journal of Political Ideologies*, 16(2), 123-144. https://doi.org/10.1080/13569317.2011.575681

Vallés-Giménez. J, Zárate-Marco, A. (2017). Tax effort of local governments and its determinants: The Spanish case. *Annals of Economics and Finance*. 18(2): 323-348

Ziogas, T., & Panagiotidis, T. (2020). Revisiting the Political Economy of Fiscal Adjustments. *Journal of International Money and Finance*, 111(1): 1-43. https://doi.org/10.1016/j.jimonfin.2020.102312

Attachments

Attachment A

Variable	Name	Type	Formula	Literature
Total Tax Burden	TB_TOT	Dependent	$\ln\left(\frac{\text{Total Tax Revenue}}{\text{GDP}}\right)$	Reed & Rogers (2006); Saafi et al. (2017); Celikay (2020); OECD (2021)
Direct Taxes Burden	TB_DIRECT	Dependent	$\ln\left(\frac{\text{Direct Taxes Revenue}}{\text{GDP}}\right)$	Carlos et al. (2015); Saafi et al. (2017); Kromaz et al. (2019); Hakim (2019)
Indirect Taxes Burden	TB_INDIRECT	Dependent	$\ln\left(\frac{\text{Indirect Taxes Revenue}}{\text{GDP}}\right)$	Carlos et al. (2015); Saafi et al. (2017); Kromaz et al. (2019); Hakim (2019)
Personal Income Tax Burden	TB_PI	Dependent	$\ln\left(\frac{\text{Personal Inc Tax Rev.}}{\text{GDP}}\right)$	Machová & Kotlán (2013); Saafi et al. (2017)
Corporate Income Tax Burden	TB_CI	Dependent	$\ln\left(\frac{\text{Corporate Inc Tax Rev}}{\text{GDP}}\right)$	Machová & Kotlán (2013); Saafi et al. (2017)
Property Income Tax Burden	TI_PROP	Dependent	$\ln\left(\frac{\text{Property Inc Tax Rev}}{\text{GDP}}\right)$	Machová & Kotlán (2013); Saafi et al. (2017)
Political Orientation	ORIENT	Independent	0 = Left wing; 1 = Right wing	Allers et al. (2011); Timmons (2008); Osterloh & Debus (2012); Ziogas & Panagiotidis (2020)
Unemployment Rate	UNEMP	Control	$\frac{\text{Unemployed People}}{\text{Total Labour Force}}$	Lisý & Muchová (2014); Celikay (2020); OECD (2021)
Inflation	INF	Control	$\frac{\text{Cost of market basket N}}{\text{Cost of market basket N} + 1}$	Timmons (2008); Tenzin (2019); OECD (2021)
Public Expenditure *per capita*	PUBLIC_EXP	Control	$\frac{\text{Total Public Expenditure}}{\text{Total Population}}$	Andrikopoulos (2014); Bloom-Hansen (2006); Timmons (2008); Celikay (2020); OECD (2021)
Active Population	ACTIVE_POP	Control	$\frac{\text{Employed People}}{\text{Total Population}}$	Bloom-Hansen (2006); Timmons (2008); Celikay (2020)
Gross Domestic Product *per capita*	GDP_PC	Control	$\ln\left(\frac{\text{GDP}}{\text{Total Population}}\right)$	Timmons (2008); Osterloh & Debus (2012); Saafi et al. (2017); Tenzin (2019)
Gross Domestic Product Growth	GDP_GROWTH	Control	$\frac{\text{GDP N} + 1 - \text{GDP N}}{\text{GDP N}}$	Timmons (2008); Osterloh & Debus (2012); Saafi et al. (2017); Tenzin (2019)

Attachment B

Pearson Correlation	1	2	3	4	5	6	7	8	9	10	11	12	13
1 - TB_TOT	1	-	-	-	-	-	-	-	-	-	-	-	-
2 - TB_DIRECT	,471**	1	-	-	-	-	-	-	-	-	-	-	-
3 - TB_INDIRECT	,371**	-,206**	1	-	-	-	-	-	-	-	-	-	-
4 - TB_PI	,661**	,653**	,165**	1	-	-	-	-	-	-	-	-	-
5 - TB_CI	,128**	,587**	-,280**	0,042	1	-	-	-	-	-	-	-	-
6 - TB_PROP	,264**	,885**	-,294**	,387**	,368**	1	-	-	-	-	-	-	-
7 - ORIENT	-,110**	0,073	-,089*	0,071	-0,005	0,076	1	-	-	-	-	-	-
8 - INF	-,110**	-,212**	,083*	-,251**	0,020	-,195**	-0,027	1	-	-	-	-	-
9 - UNEMP	-,252**	-,205**	-0,054	-,230**	-,340**	0,007	-0,016	-0,063	1	-	-	-	-
10 - GDP_GROWTH	-,220**	-,199**	0,054	-,223**	0,060	-,216**	-0,001	,715**	-,158**	1	-	-	-
11 - GDP_PC	,438**	,234**	,299**	,301**	,202**	0,069	-0,021	-,107**	-,355**	-,141**	1	-	-
12 - ACTIVE_POP	-0,014	-,129**	,117**	,149**	-0,029	-,301**	0,006	-0,055	-,265**	-,205**	,106**	1	-
13 - PUBLIC_EXP	,158**	-0,060	,413**	0,013	-0,076	-0,065	-0,013	-0,014	-,114**	-0,008	,717**	-,102*	1