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The Determinants of Effective Tax Rates: Firm Characteristics and Corporate Social Responsibility

Sofia Gomes Laranjo Valente

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Supervised by

António de Melo da Costa Cerqueira, PhD

Elísio Fernando Moreira Brandão, PhD

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Biographical Note

Sofia Valente was born in 1995 in Perre, Viana do Castelo, Portugal.

In 2013, she started a bachelor degree in Economics in the University of Porto, School of Economics and Management, which was concluded in 2016.

With the desire to know more and to extend her knowledge in the areas not only of Finance and Taxation, but also of Accounting and Auditing, she began, in the same year, to attend the Master in Finance and Taxation at the same school, following which presents this dissertation.

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Abstract

Effective corporate tax rates (ETRs) are often used by governments and other firm stakeholders as a tool for making inferences about corporate tax systems as they provide a summary statistic of the cumulative effect of various changes in fiscal policy. Thus, the objective of this investigation is to study the determinants of effective tax rate, namely the financial and operational characteristics and Corporate Social Responsibility determinants. In order to develop our research we use a sample of listed companies from 17 European countries included in the Standard & Poor's (S&P) 350 Europe index for the period 2005-2016 and estimate the model using the Generalized Least Squares method with cross-section weights and year fixed effects, in order to adjust econometric issues. Our estimated results show that larger firms have higher ETRs and more leveraged firms have lower ETRs. We, also, find the evidence that there is a negative relationship between capital intensity and ETR and a positive relation when we consider inventories. In addition, our results show that profitability is positive and significantly related to ETR. Moreover, we conclude that companies with higher Corporate Social Responsibility score have lower ETRs. When we analysed the four dimensions of CSR, we obtained a positive relation between social score dimension and ETRs and a negative relation when we consider the economic, environmental and corporate governance dimension. These results are important given the relevance of the effective tax rate in investment decisions.

Keywords: Corporate Social Responsibility, Effective Tax Rate

Resumo

As taxas efetivas de imposto das empresas (ETRs) são, com frequência, utilizadas pelos governos e demais grupos de interesse como ferramenta para fazer inferências sobre os sistemas tributários corporativos, dado que fornecem uma estatística resumida do efeito cumulativo de várias mudanças na política fiscal. Assim, o objetivo desta investigação é estudar os determinantes da taxa efetiva de imposto, nomeadamente as características financeiras e operacionais e os determinantes de *Corporate Social Responsibility*. Para efetuar esta análise utilizamos uma amostra relativa a empresas cotadas de 17 países europeus, incluídos no índice *Standard & Poor's (S&P) 350 Europe*, para o período entre 2005-2016, e estimamos o modelo utilizando o método *Generalized Least Squares cross-section weights*, com efeitos fixos temporais, para ajustar problemas econométricos. Os resultados estimados mostram que empresas de maior dimensão têm maiores ETRs e empresas mais endividadas têm menores ETRs. Obtivemos, também, evidência de uma relação negativa entre a intensidade capitalística e a ETR, bem como de uma relação positiva quando consideramos a intensidade de inventários. Para além disso, os resultados evidenciam que a rentabilidade está relacionada positiva e significativamente com a ETR.

Adicionalmente, conclui-se que as empresas com maior pontuação de *Corporate Social Responsibility* têm menores ETRs. Quando analisamos as quatro dimensões de CSR, obtivemos uma relação positiva entre a pontuação da dimensão social e a ETR e uma relação negativa quando consideramos a dimensão económica, ambiental e *corporate governance*. Estes resultados são importantes dada a relevância da taxa efetiva de imposto na tomada de decisões de investimento.

Palavras-Chave: *Corporate Social Responsibility*, Taxa Efetiva de Imposto

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1. Introduction

Investors, managers and shareholders, as well as financial analysts and legislators benefit from the study on the factors that influence and determine the effective tax rate (ETR), making the corporate tax rate an important instrument of fiscal policy. In addition, in recent years, we observe an increase in the number of studies focused on the theme of Corporate Social Responsibility (CSR), which could have an impact in the field of tax matters. So, this work focus on the determinants of ETRs, particularly, we study the impact of corporate financial and operational characteristics and Corporate Social Responsibility on ETRs.

Taxes are an important source of revenue for the states, which allow them to develop their public policies. Nevertheless, raising the tax rate can be a controversial measure, since it calls into question other issues, such as the attractiveness of foreign investment. Therefore, investigating the factors that can influence the taxes paid by the companies is useful for regulators and policy makers, contributing to the definition of the fiscal policy of each state.

Furthermore, corporate taxation has becoming increasingly relevant to corporate financial decisions, because it represent a cost to a firm and affect corporate decision making. Consequently, firms innately have the incentive to minimize corporate tax expenses, which is a cash outflow, considering that the main purpose of firms is creating value to shareholders (Kim & Im, 2017).

According to this perspective, one of the aims of this study is examine the determinants of ETR related with financial and operational characteristics. According to Richardson and Lanis (2007), ETR, which represent tax expense or tax income, is measured by two different ratios. The first measure is the ratio between tax expense and pre-tax income and the second is the quotient between tax expense and cash flow from operations.

To estimate the impact of firms specific characteristics on ETRs, we use a model similar to the one used by Richardson and Lanis (2007), Minnick and Noga (2010) and, more recently, by Kraft (2014) and Fernández-Rodríguez and Martínez-Arias (2014). Following the extant literature, we analyse how size, leverage, asset mix composition and profitably influence effective tax rate.

Furthermore, recent literature has started to study the link between ETR and Corporate Social Responsibility. However, the results of these studies are still not conclusive, so we analyse this question by investigating the relation between CSR global score and ETR as well

as between four CSR dimensions (economic, social, environmental, corporate governance) and ETR. Firms are held responsible not only to internal stakeholders, but also to external stakeholders as well as society in general, so taxation can be a potential conflict area between stakeholders. A firm's strategy to reduce or avoid taxes may benefit shareholders, but it has disadvantages for society given that taxes are used, in part, for governmental infrastructure and social programs (Holme & Watts, 2006).

Understanding the relationship between taxes and corporate social responsibility is important because of existing research (Davis, Guenther, Krull, & Williams, 2016; Hoi, Wu, & Zhang, 2013; Huseynov & Klamm, 2012; Kim & Im, 2017; Landry, Deslandes, & Fortin, 2013; Lanis & Richardson, 2012) suggest competing predictions about the relation between CSR and taxes. If firms consider tax payments in the same way they view CSR activities, the two actions act as complements, and we expect a positive relation between CSR and ETR. Corporate social responsibility practices can lead to cost reductions, encourage and attract employees with greater potential, retain customers and enhance the company brand, which will promote overall cost savings, creating increases in the tax burden. This result is consistent with the theory that companies have social obligations that extend beyond the maximization of shareholder gains promoting socially responsible activities (Davis et al., 2016). On the other hand, ETR and CSR also act as substitutes if companies increase their CSR activities to compensate for any negative observations arising from tax avoidance. Previous literature, like Davis et al. (2016), document that CSR activities can be used to moderate the effects of negative events such as fraud accusations or ecological catastrophes, or to compensate for negative public opinions about the company. Moreover, firms may view paying taxes as detracting from social welfare because tax payments reduce innovation, job growth, and economic development (Djankov, Ganser, McLiesh, Ramalho, & Shleifer, 2010). Other researchers suggest that decisions about CSR and tax avoidance are unrelated, which happen if firms engage in socially responsible activities only when such activities maximize shareholder wealth (Lev, Petrovits, & Radhakrishnan, 2009).

With the purpose of investigate the determinants of the effective tax rate, namely company-specific characteristics and Corporate Social Responsibility, we collect data from listed companies across 17 European countries included in Standard and Poor's (S&P) Europe 350 index, over the period between 2005 and 2016. In order to study the determinants of effective

tax rates, we estimate six different regressions, using Generalized Least Squares (GLS) cross-section weights with year fixed effects.

Our results prove that firms' financial and operational characteristics have impact on effective tax rates. The relation between size and ETR is positive, while the relation between leverage and ETR is negative. Moreover, there is a negative relationship between capital intensity and ETR and a positive relation when we consider inventories intensity or firms' profitability. Also, we conclude that more social responsible firms have lower ETR, which is consistent with corporate taxes and CSR acting as substitutes. When we analyse four CSR dimensions, we obtain a positive relation between social score and ETR and a negative relation when we consider economic, environmental and corporate governance score as independent variables.

The main contributions of our study to the existing literature on the determinants of the effective tax rate are both theoretical and empirical. First, our study examines a cross-country European listed company's sample, which has rarely been undertaken in the literature to date. Secondly, we use a larger and more recent period, because we consider a time period between 2005 and 2016, which cover the years before the beginning of the crisis. Third, we contribute to the extant literature on effective tax rates with the introduction of Corporate Social Responsibility variables, adding new empirical evidence in a research field that has controversial results. A fourth contribution of our study is related with Corporate Social Responsibility measurement. We use a CSR integrated score, which aggregates information on 250 key indicators, divided into four dimensions (economic, social, environment, corporate governance). The extensive amount of activities that is included in this score makes it a highly reliable measure. Furthermore, our CSR measure include responsible and irresponsible activities of companies, while most previous investigations only focus irresponsible activities. In sum, this study contributes to the existent literature by studying the simultaneous impact of company-specific and Corporate Social Responsibility characteristics on the effective tax rate.

The present dissertation is organized as follows. Section 2 provides an overview of the related literature and formulate the main research hypotheses. Section 3 presents the variables and sample selection process. Section 4 describes methodology and univariate results. Section 5 presents results regarding our hypotheses. Finally, section 6 concludes the dissertation.

2. Literature Review and Hypotheses Development

In recent years, there has been an increase in the number of studies that seek to investigate the effective tax rate. Assuming tax as an expense for the company, efforts have been made to find ways to reduce the tax burden by increasing the importance of taxes on companies' financial decisions.

Thus, the effective tax rate has as determinants some of the operational and financial characteristics of the companies like size, activity, investment and financing decisions. In addition, we will try to relate Corporate Social Responsibility to the effective tax rate, since the decisions that lead to the improvement of workers' quality of life and to the economic development of the local community have grown within the companies.

2.1. Firm's financial and operational specific characteristics

The analysis of the specific company's characteristics impact on the effective tax rate often use the firm's size indicator, however the results achieved are not consensual. Zimmerman (1983) suggests that larger firms face higher effective tax rates because they tend to have greater political prosperity and visibility and are exposed to regulatory action by governments. However, Porcano (1986) shows that larger companies have greater liquidity, which allows them to hire tax experts and, consequently, have a lower tax burden. Later, Wilkie and Limberg (1990) argue that the disparate results obtained in these two studies can be largely attributed to differences in the empirical procedures used by researchers, namely at the level of the definition of the effective tax rate and the variable used to represent the size, selection of the sample and method of data aggregation. Moreover, neither Zimmerman (1983) nor Porcano (1986) analyse the variations of ETR in a multivariate framework, based on various firm's characteristics, because they only take into account the companies size.

In recent years, Huseynov and Klamm (2012) and Davis et al. (2016) using a multivariate framework and different regressions, find that larger companies have a lower ETR. However, Laguir, Staglianò, and Elbaz (2015) conclude that firm's size is positively and significantly related with tax rates, showing that larger companies are likely to provide lower tax aggressiveness.

Therefore, previous literature has not reached a consensual opinion about the association between size and effective tax rates. Hence, we expect that firms' size influences ETRs, but we do not predict the direction of this relation.

H1_a. Firm's size is related to ETR.

Moreover, we study the influence of capital structure in firm's effective tax rate. The decision about firm's financing sources has different tax treatment, depending on whether the company opts for debt financing or equity financing. Gupta and Newberry (1997), in a context of multivariate analysis, show that leverage has an inverse relationship with the effective tax rate because debt financing expenses (for example, interest) are tax deductible, while the payment of dividends does not. This is in line with Davis et al. (2016), who show that companies with higher levels of leverage have a lower effective tax rate. Moreover, according to Kraft (2014), increasing a firm's leverage puts the interests of the management and shareholders into alignment through the inclusion of, for example, debt covenants. Then, managers are typically forced to negotiate future investments with their lenders and, therefore, it becomes more difficult to pursue negative net present value projects. Accordingly, the firm becomes more efficient and the alignment between otherwise contradicting interests increase which will, ultimately, result in lower ETR. Given these explanations and according to the extant literature, more leveraged firms are expected to exhibit lower effective tax rates.

H1_b. Higher leveraged firms have lower ETRs.

Gupta and Newberry (1997), besides explaining that the ETRs are associated with the capital structure, also study the impact of the asset composition in the ETR, which is evaluated by the introduction of three variables that estimate the volume of investment that each company makes in capital, R&D and in the acquisition of raw materials and inventories.

As Gupta and Newberry (1997), Richardson and Lanis (2007) argue that firms which are more capital intensive benefit more from depreciations deductibility, and this is even more important since an asset economic life is longer than the depreciation period. Due to the existence of different depreciation methods, more capital-intensive firms can easier manage taxes by accelerating or deferring depreciation expense and, consequently, they can take advantage from temporary book differences. So, according to these studies, capital intensity is supposed to have a negative impact on ETRs.

Moreover, to study the relation between ETR and assets, we should remember that the sector of activity is so important to determine the asset mix, so the possibility of obtaining lower ETRs will depend on the volume of current assets that firms need for their activity and, more specifically, on their inventory level. From this perspective, investment in inventories is an alternative investment to capital investment, so we have a higher ETR for companies with a higher inventory intensity.

H1_c. Capital intensity is negatively related to ETR.

H1_d. Inventories intensity is positively related to ETR.

Firms' profitability is also an indicator to be taken into account in the ETR determinants analysis, because the tax payments by companies depends on the firm profit. However, the results of the various studies are conflicting. Gupta and Newberry (1997), Richardson and Lanis (2007) show that more profitable companies perform better and, therefore, pay higher tax rates. Conversely, Rego (2003) and Kraft (2014) conclude that more profitable companies have more resources to invest in tax planning activities, which contributes to reducing effective tax rates.

Considering these conflicting perspectives, we do not forecast the expected relationship between profitability and ETR.

H1_e. Firms' profitability is related to ETR.

2.2. The impact of Corporate Social Responsibility

More recently, the analysis of effective tax rate determinants has been used to measure the impact of specific aspects. Therefore, assuming that, according to Lanis and Richardson (2015), the company is a "real world" entity, which establish connections with various entities and individuals, we can say that a large part of the activities of its value chain touch the communities in which it operates, creating positive or negative social consequence.

Corporate tax payments also have societal and community implications because they have the vital function of helping to finance the provision of public goods in society (education, national defence, public health, public transport and law enforcement), therefore when a company carries out tax avoidance activities, this behaviour can have a negative effect on society. In this way, it will be useful to study how Corporate Social Responsibility activities

affect ETR, because tax behaviour and CSR are corporate decisions that affect society in general.

The concept of CSR is not unanimous in previous literature and, according to van Marrewijk (2003), organizations and governments use the CSR definition that best fit their own interest. McWilliams and Siegel (2001) give a broad explanation to CSR, which define CSR as actions that seem to promote some social good, beyond the interests of the company and what is required by law. According to European Commission's (2011), CSR is "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis". Moreover, van Marrewijk (2003) propose a definition of CSR, which include three dimensions of sustainability, which are the economic, the environmental and social. For Hoi et al. (2013), CSR leads companies, in the course of their actions, to take into account the economic, social, environmental and other externalized impacts of the activities that they carry out, concept that are in line with van Marrewijk (2003). In addition to these three dimensions of CSR, in this analysis, which use a CSR comprehensive concept, we also study the corporate governance performance as a CSR pillar.

According to agency theory, a firm can be defined as a contract-agent between shareholders and managers and its only function is to maximize shareholder wealth. As environmental and social issues are tight constraints to integrate into the objective function of the company, a firm will only implement CSR actions if this allows maximizing profit (Friedman, 1970).

Later, Laguir et al. (2015) show that there is an implicit social contract between society and companies, based on agency theory and legitimacy theory. Therefore, in line with the agency theory, the balance between social goals and economic concerns is always stimulated by the idea of maximizing shareholder wealth. In this way, corporate taxes can only be associated with CSR if their payment has implications for society in general. In fact, tax aggressiveness can result in significant sanctions for companies because they are costly for the firm. Thus, CSR could increase shareholder value by allowing shareholders to be safe against the negative effects of tax aggressiveness. As tax avoidance is viewed as an event with negative consequences on corporate reputation, firms can engage in CSR activities to reduce such effects, making CSR acting like an insurance for companies. Moreover, the theory of legitimacy presupposes that companies must carry out activities appropriate to the socially accepted system of norms and values to build a relationship with their social and political

environment (Laguir et al., 2015). Therefore, as firms grow in size and influence, they no longer have to contribute to society only in economic terms, but also to manage the interests of the various stakeholders (Jamali, 2006). Consequently, companies should invest in CSR activities, even when this is a cost to shareholders.

Furthermore, Kotler (2005) suggests that companies participate in CSR in order to gain several benefits. When a company engage in CSR it affects the brand image and customers are likely to have positive feelings towards it. It can promote company's brand position and can help the company in branding exercise. The company can gain positive publications about their CSR activities in different reports and business magazines, which reduce marketing costs. Moreover, employers are opting for companies that have better social visibility and are actively involved towards the social welfare, so engaging in CSR can be a good way to attract, motivate and retain good employees. Additionally, there is evidence that when customers make decisions of which product to buy, they consider factors such as the company's participation in CSR activities, so engaging in CSR can increase sales and market share. Besides, CSR can be a way to reduce operation costs. A company can, for example, decrease costs when reduce water consumption in order to attend the sustainability goals or can reduce marketing campaigns costs because it is common that the company gains free publicity as a result of their CSR engagement.

Taking into account these facts, is important to find the relationship between CSR and ETR. A firm's strategy to reduce or avoid taxes may benefit shareholders, but it has disadvantages for society given that taxes are used, in part, for governmental infrastructure and social programs (Holme & Watts, 2006; Jones, Baker, & Lay, 2017). If firms consider tax payments in the same way they view CSR activities, the two actions act as complements, and we expect a positive relation between CSR and ETR. This result is consistent with the theory that companies have social obligations that extend beyond the maximization of shareholder gains. According to this, companies promote socially responsible activities that do not necessarily maximize economic performance. On the other hand, ETR and CSR also act as substitutes if companies increase their CSR activities to compensate for any negative observations arising from tax avoidance.

In order to study this link between CSR and ETR, Hoi et al. (2013) examine the association between irresponsible CSR activities and aggressive tax evasion. Irresponsible CSR activities include corporate actions that are usually considered as harmful to corporate governance,

employee relations, communities, public health, human rights, diversity and environment. Based on 11006 observations of 2620 companies between 2003 and 2009, and using a negative social classifications to measure CSR, they conclude that more socially irresponsible companies are more fiscally aggressive. Lanis and Richardson (2015) use 434 observations about listed Australian companies and find that companies with more social investment (support to charities and communities) are less disposed to tax avoidance, measured using the effective tax rate. In addition, Kim and Im (2017), using the book-tax differences as dependent variable, shows that companies involved in CSR are passive in tax avoidance, because companies are convicted of tax avoidance not only face a levy of the unpaid taxes and a fine, but also a negative impact on reputation, which can cause considerable damage to the company.

At the opposite side, some studies show that firms with higher levels of CSR are not paying higher amount of taxes. Sikka (2010) provides examples that show how companies that make promises of responsible conduct engage in tax avoidance and have a lower ETR, simultaneously. Landry et al. (2013) show that there is a misalignment between the talks and the actions of a company, so, the fiscal behaviour of a company is not necessarily aligned with the CSR. Renselaar (2016), analysing a group of 447 American listed companies, concludes that companies that are socially more responsible pay a significantly lower amount of taxes, indicating a higher level of tax avoidance. Davis et al. (2016) find that CSR is negatively related to the five-year cash ETRs. This evidence is consistent with corporate tax and CSR payments acting as substitutes because companies view taxes as damaging social welfare and/or because they engage in CSR, in part, to compensate for negative perceptions associated with low tax payments.

The literature is not consensual, however, we can observe that the studies that find a positive correlation between CSR and effective tax rate, like Kim and Im (2017), Lanis and Richardson (2015) and Hoi et al. (2013) use more extensive measures and larger samples than studies that find negative relations. In addition, the theory argues that the better the performance of CSR, the lower the general costs for the firm, because CSR can reduce the operational costs, attract employees with greater potential, retain customers and value the company's brand. Thereby, it is expected that the higher the CSR, the higher the ETR, which is consistent with the theory that firms have social obligations that extend beyond

maximizing shareholder gains by promoting socially responsible activities. Therefore, this thesis empirically tests the following hypothesis:

H2. The level of Corporate Social Responsibility is positively related to the effective tax rate.

As the concept of CSR is complex, covering different areas, the disaggregated impact of the four dimensions (economic, social, environmental, corporate governance) of CSR on the effective tax rate is also studied.

The CSR level in the economic dimension is measured by customer loyalty, economic performance and shareholders loyalty, showing whether the issues of economic responsibility are well integrated into the firm's organizational structure and decision-making process (Laguir et al., 2015). Friedman (1970) argues that company's only responsibility is to maximize profit by acting in accordance with the basic rules of society, which implies that managers acting as agents of the firm must fulfil the firm's interests. Laguir et al. (2015), based on a sample of French listed companies, find that a higher level of CSR on the economic dimension is related with a lower effective tax rate. This result is consistent with the idea that some companies claiming to be socially responsible are also involved in tax evasion mechanisms. When a company engages in CSR activities related to the economic dimension, it shows an ethical image to the public, sometimes hiding tax planning activities. Renselaar (2016) find that economic dimension of CSR is negatively related to ETR, which means that a company with high score on client loyalty and shareholder loyalty is more inclined to tax planning than a company with a lower score.

The social performance of a company is based on employment quality, health & safety, training & development, diversity, human rights, community, and product responsibility. Carroll and Jouffaian (2005) show that higher the charity giving, lower the ETR and higher the tax avoidance. However, Laguir et al. (2015) conclude that higher the level of CSR on social dimension, higher the effective tax rate. This finding suggest that firms that engage more in CSR activities of human resources, human rights in workplaces and community involvement pay their fair share of corporate taxes. This result is consistent with Lanis and Richardson (2015), who suggest that more disclosure on social investments is significantly related to lower tax aggressiveness. Renselaar (2016) find that CSR regarding social performance is related to ETR, although the results are inconclusive.

The environmental dimension of CSR is related with the company's resource reduction, emission reduction and product innovation. This dimension build a firm's credibility with the public and ensure that the principle of environmental integrity is embraced by the company. Lanis and Richardson (2015) and Laguir et al. (2015) study this relation but they do not find any significant result. Although, Renselaar (2016) show a negative and significant relation between environmental dimension of CSR and ETR. These result means that firms which have better environmental performance have lower ETRs.

Corporate governance is determined by the company's board structure, compensation policy, board functions, shareholder rights, and vision & strategy. Desai and Dharmapala (2006) find that stronger corporate governance, expressed by higher managerial incentive compensation, significantly reduces the level of tax sheltering. The investigation of Minnick and Noga (2010) shows that staggered board membership, which is seen as an element of strong corporate governance, is related with higher tax rates. Nevertheless, Minnick and Noga (2010) find too that performance based executive payments are related to lower tax rates. The results of Huseynov and Klamm (2012) are in line with this, as they show that strong corporate governance is related to a lower effective tax rate.

Taking into account the premise that the different dimensions of CSR have different effects on ETR and based on the existing literature, these study tests following hypotheses for the relation between effective tax rate and Corporate Social Responsibility dimensions:

H2_a. The CSR level on the economic dimension is related to the effective tax rate.

H2_b. The CSR level on the social dimension is related to the effective tax rate.

H2_c. The CSR level on the environmental dimension is related to the effective tax rate.

H2_d. The CSR level on the corporate governance dimension is related to the effective tax rate.

The theoretical model presented on *section 4* summarizes these hypotheses.

3. Variable Definition and Sample Selection

3.1. Variable Definition

3.1.1 Dependent Variables

Effective Tax Rates (ETRs) usually are measured as the ratio between a proxy of tax expense and another of the result obtained in each year. However, the definition of the specific measure to be placed in either the numerator or the denominator is not always consensual.

Given the information available in the database to be used, the total amount of the tax expense will be defined as the numerator. Taking into account the differences between financial balance sheet and tax balance sheet, tax expense aggregates not only current tax expense but also deferred tax expense, which includes all differences in the calculation of the financial and taxable profit that may result from temporary differences and from the use of tax losses or tax credits.

For the denominator, the most common measures are taxable profit, pre-tax accounting result and operational cash-flow. However, taxable income is only accessible to the tax administration, and, like the tax expense, considers tax corrections which could bias the results, not detecting variations resulting from these adjustments. For this reason, the model is estimated having two alternative variables for the denominator, the pre-tax accounting result and the operational cash-flow, that allows us to correct the differences resulting from the diverse accounting methods.

In order to obtain higher coefficients, we use ETR measures as a percentage.

- $ETR1: (\text{Tax expense} / \text{Pre-tax income}) * 100$
- $ETR2: (\text{Tax expense} / \text{Operational Cash-flow}) * 100$

3.1.2. Independent Variables

3.1.2.1. Firm's specific variables

The size of the company, *SIZE*, is calculated by the logarithm of total assets. The financial leverage, *LEV*, is determined by the ratio of non-current liabilities to total assets, seeking to represent the capital structure of the company and the financing decisions taken by them.

The variables related to the composition of the asset introduced in the model are the capital intensity, *CAPINT*, given by the quotient between tangible fixed assets and total assets, and intensity of inventories, *INVINT*, resulting from the division between total inventories and total assets.

To control the profitability of the companies under study, we consider the net profitability of the asset, *ROA* (Return On Assets), which is calculated by the division between the pre-tax income and the total assets.

Moreover, to control for firms' growth potential and according to many studies, we use market-to-book value, *MB*, as a firm-specific characteristic which may explain effective tax rate. We define *MB* as the market value of the ordinary (common) equity divided by the balance sheet value of the ordinary (common) equity.

Finally, as negative earnings may bias our analysis, we include *D_EARN*, a dummy variable which is equal to one if firm has positive earnings and equal to zero if not.

3.1.2.2. Corporate Social Responsibility variables

To measure Corporate Social Responsibility we use Datastream - Thomson Reuters database. Firstly, we use the CSR global index, which contains information on more than 750 individual points for each company that are combined into 250 key indicators. These scores are grouped into a structure of 18 categories, congregated into 4 pillars, integrated into a single global score. Companies receive a score of 0 to 100 for each dimension, where a higher score indicates a better performance. The overall index is the average score for each of the four dimensions and, in this thesis, it will be denoted as *CSR*.

We also do an analysis of the separate impact of each dimension of the overall index on the ETR, in order to know which areas of CSR has a significant influence on the effective tax rate. The economic dimension, *CSREC*, includes information on customer loyalty, economic performance and loyalty to shareholders. The environmental dimension, *CSREN*, is composed of indicators related to the innovation in products and reduction of resources and emissions. The social dimension, *CSRSO*, provides information on the quality of employment, health and safety, training and development, diversity, human rights, community and product responsibility issues. The Corporate Governance dimension,

CSRCG, consists of data related to the structure and composition of the board, the compensation policy, the rights of the shareholders and the company's vision and strategy.

Table 1. Variables: measurement, source and expected signs

Variable	Definition	Database	Predicted sign
Tax Variables			
ETR1	(Tax Expense / Pre-tax Income)*100	Datastream	
ETR2	(Tax Expense / Operational Cash-flow)*100	Datastream	
Financial and Operational Characteristics Variables			
SIZE	Log (Total Assets)	Datastream	?
LEV	Long Term Debt/ Total Assets	Datastream	-
CAPINT	Net property, plant and equipment/Total Assets	Datastream	-
INVINT	Total inventories / Total Assets	Datastream	+
ROA	Pre-tax income / Total Assets	Datastream	+
MB	Market value of the equity / Balance sheet value of the equity	Datastream	
D_EARN	Equals to 1 if earnings > 0, and 0 otherwise	Datastream	
Corporate Social Responsibility Variables			
CSR	CSR overall Score	Datastream	+
CSREC	Economic Score	Datastream	?
CSRSO	Social Score	Datastream	?
CSREN	Environmental Score	Datastream	?
CSRCG	Corporate Governance score	Datastream	?

This table summarizes all variables used in this paper, their definition, source and expected sign of estimated coefficients.

Source: author's elaboration

3.2. Sample selection

We collect data for the described variables from the Datastream - Thomson Reuters database for financial and CSR data (ASSET4). We use the ASSET4 database to collect CSR data, because it comes from one of the most complete and reliable sources of social responsibility data for listed companies.

We include information for the period between 2005 and 2016 for active listed companies from 17 European countries included in S&P 350 Europe index. The European sample was selected to guarantee a large enough sample to derive expressive interpretations.

Our initial sample has 5911 firms to analyse. However, we exclude all observations relating to banks, insurance companies and other financial companies¹, as in this type of studies. Furthermore, after examine data, we only keep observations regarding companies with CSR data for at least 6 of the 12 years of the sample, which corresponds to a final sample with 564 firms.

Finally, in order to correct model estimation problems, we replace negative ETRs by 0 and ETRs exceeding one by 1. The final sample has 6768 firm-year observations. Table 2 and 3 summarizes country and industry sample distribution.

Table 2. Sample constituents by country

Country	Number of firms	% of total firms
Austria	11	2%
Belgium	15	3%
Denmark	5	1%
France	49	9%
Germany	63	11%
Greece	11	2%
Hungary	3	1%
Ireland	19	3%
Italy	27	5%
Netherlands	24	4%
Poland	10	2%
Portugal	7	1%
Spain	29	5%
Sweden	34	6%
Switzerland	37	7%
UK	192	34%
Total	564	

Table 2 classifies our sample by 17 European countries included in S&P 350 Europe index.

Source: author's calculation

Table 3. Sample constituents by industry

Industry	Number of firms	% of total firms
Basic Materials	58	10%
Consumer Goods	77	14%
Consumer Services	112	20%
Healthcare	38	7%
Industrials	149	26%
Oil & Gas	43	8%
Technology	36	6%
Telecommunications	23	4%
Unquoted equities	1	0%
Utilities	27	5%
Total	564	

Table 3 categorizes our sample according to industry classification.

Source: author's calculation

¹ SIC Code between 6000 and 6999

4. Methodology and Univariate Analysis

4.1 Methodology

Firstly, we study operational and financial characteristics of the companies as determinants of the effective tax rate, considering the two defined explanatory variables.

$$\begin{aligned} ETR1_{i,t} = & \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 CAPINT_{i,t} + \beta_4 INVINT_{i,t} \\ & + \beta_5 ROA_{i,t} + \beta_6 MB_{i,t} + \beta_7 D_EARN_{i,t} + Year\ Indicators \\ & + \varepsilon_{i,t} \end{aligned} \quad (4.i)$$

$$\begin{aligned} ETR2_{i,t} = & \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 CAPINT_{i,t} + \beta_4 INVINT_{i,t} \\ & + \beta_5 ROA_{i,t} + \beta_6 MB_{i,t} + \beta_7 D_EARN_{i,t} + Year\ Indicators \\ & + \varepsilon_{i,t} \end{aligned} \quad (4.ii)$$

where $ETR_{i,t}$ is the effective tax rate of firm i at time t , $SIZE_{i,t}$ is the dimension of firm i at time t , $LEV_{i,t}$ is the leverage of firm i at time t , $CAPINT_{i,t}$ is the capital intensity of the firm i at time t , $INVINT_{i,t}$ is the intensity of inventories of firm i at time t , $ROA_{i,t}$ is the return on asset of firm i at time t , $MB_{i,t}$ is market-to-book ratio of firm i at time t , D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not, $\varepsilon_{i,t}$ is the error term. As previously explained, ETR1 is given by the ratio between tax expense and pre-tax income and ETR2 represents tax expense scaled by operational cash-flow.

Next, we estimate the initial model including the integrated CSR score variable.

$$\begin{aligned} ETR1_{i,t} = & \alpha_0 + \alpha_1 SIZE_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 CAPINT_{i,t} + \alpha_4 INVINT_{i,t} \\ & + \alpha_5 ROA_{i,t} + \alpha_6 MB_{i,t} + \alpha_7 D_EARN_{i,t} + \alpha_8 CSR_{i,t} \\ & + Year\ Indicators + \varepsilon_{i,t} \end{aligned} \quad (4.iii)$$

$$\begin{aligned} ETR2_{i,t} = & \alpha_0 + \alpha_1 SIZE_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 CAPINT_{i,t} + \alpha_4 INVINT_{i,t} \\ & + \alpha_5 ROA_{i,t} + \alpha_6 MB_{i,t} + \alpha_7 D_EARN_{i,t} + \alpha_8 CSR_{i,t} \\ & + Year\ Indicators + \varepsilon_{i,t} \end{aligned} \quad (4.iv)$$

where $CSR_{i,t}$ is the Corporate Social Responsibility global score of firm i at time t .

Finally, we study ETR determinants including the variables related to Corporate Social Responsibility dimensions.

$$\begin{aligned}
ETR1_{i,t} = & \gamma_0 + \gamma_1 SIZE_{i,t} + \gamma_2 LEV_{i,t} + \gamma_3 CAPINT_{i,t} + \gamma_4 INVINT_{i,t} \\
& + \gamma_5 ROA_{i,t} + \gamma_6 MB_{i,t} + \gamma_7 D_EARN_{i,t} + \gamma_8 CSREC_{i,t} \\
& + \gamma_9 CSRSO_{i,t} + \gamma_{10} CSREN_{i,t} + \gamma_{11} CSRCG_{i,t} \\
& + \text{Year Indicators} + \varepsilon_{i,t}
\end{aligned} \tag{4.v}$$

$$\begin{aligned}
ETR2_{i,t} = & \gamma_0 + \gamma_1 SIZE_{i,t} + \gamma_2 LEV_{i,t} + \gamma_3 CAPINT_{i,t} + \gamma_4 INVINT_{i,t} \\
& + \gamma_5 ROA_{i,t} + \gamma_6 MB_{i,t} + \gamma_7 D_EARN_{i,t} + \gamma_8 CSREC_{i,t} \\
& + \gamma_9 CSRSO_{i,t} + \gamma_{10} CSREN_{i,t} + \gamma_{11} CSRCG_{i,t} \\
& + \text{Year Indicators} + \varepsilon_{i,t}
\end{aligned} \tag{4.vi}$$

where $CSREC_{i,t}$ is the economic score of firm i at time t , $CSRSO_{i,t}$ is the social score of firm i at time t , $CSREN_{i,t}$ is the environmental score of firm i at time t and $CSRCG_{i,t}$ is the corporate governance score of firm i at time t .

As our data set is an unbalanced panel data we must use a panel data model. The most common models are fixed effects models and random effects models. In order to determine if we should consider fixed or random effects, we perform a Hausman test, and as we reject the null hypothesis of equal coefficients, we apply a fixed effects model.

Moreover, as we need to take into account the presence of heteroscedasticity, we perform a White test. With the test results, we detect the presence of heteroscedasticity in the residuals.

Given the firm individual heterogeneity, the ordinary least squares method, OLS, is not the most appropriate estimation method. Thus, we estimate the model using the Generalized Least Squares (GLS) method cross-section weights, which allow us to control for discrepant individual variance. To control time unexpected effects, we use a time fixed effect model, with the inclusion of year dummy variables.

Moreover, independent variables are winsorized at 1% and 99% to correct for possible problems with outliers.

4.2. Univariate Results

Table 4 presents the descriptive statistics of the variables included in this study. The aggregate average for ETR1 and ETR2 is, respectively, 25.45% and 22.29% which represent one quarter of the pre-tax earnings of the firms. According to SIZE variable statistics, we can see that, as expected, our sample consists mainly of large firms. Also, on average, long term debt represent 20.29% of the total assets of our sample firms. Non-current assets represent, on average, almost 30% of the total asset and the proportion of inventories on total assets is, on average, 11%. Pre-tax income is, on average, almost 7% of the total asset value, evidencing a good assets return. Furthermore, market value is, on average, more than two and half times the book value evidencing higher market capitalization of our sample firms. Nearly, 89% of the reported earnings before taxes were positive during our sample period.

Moreover, we can observe that ratings on the five Corporate Social Responsibility variables are between 3.17 and 98.13. The mean value is 70.30 for the overall CSR measure, 64.93 for the economic score (CSREC), 71.25 for the social score (CSRSO), 68.53 for the environmental score (CSREN), 59.57 for the corporate governance score (CSRCG).

In order to detect possible problems related with our variables, we compare our descriptive statistics with other studies. Despite the differences related to the sample and the period of analysis, we conclude that our results are in line with previous literature.

Additionally, Table 5 shows Pearson's correlations between all variables, which allow us study the relationship between the variables and detect potential multicollinearity problems. ETR1 have a positive correlation with SIZE consistent with the positive impact of firm size on effective tax rates, which supports the political cost theory. Similarly, CAPINT, INVINT, ROA and D_EARN are positively correlated with ETR1. On the other hand, LEV and MB are inversely correlated with ETR1. CSR scores, except corporate governance score, are positively related to ETR1, which means that a higher score on CSR correlates to a higher effective tax rate.

However, when we consider ETR2, we obtain different results. ETR2 have a positive correlation with INVINT, ROA, MB and D_EARN. Besides, SIZE, LEV and CAPINT have a negative correlation with ETR2. CSR scores, except economic score, are negatively related to ETR2, which means that a higher score on CSR correlates to a lower effective tax rate.

The integrated CSR score and the scores on the four sub dimensions are highly correlated with one another, varying from 0,279 (the corporate governance score and economic score) until 0,879 (the integrated CSR score and social score).

Generally, the correlation coefficients have low values suggesting that are no collinearity issues. The correlation between CSR global score and four dimension scores are strong, however this variables are not included in the same model.

Table 4. Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Standard Deviation
ETR1	25,4537	25,0326	1,0000	0,0000	17,6058
ETR2	22,2542	18,9898	1,0000	0,0000	18,9897
SIZE	6,6455	6,5983	8,2370	5,2007	0,6555
LEV	0,2029	0,1859	0,6668	0,0000	0,1499
CAPINT	0,2921	0,2440	0,8850	0,0052	0,2203
INVINT	0,1091	0,0830	0,7727	0,0000	0,1234
ROA	0,0763	0,0670	0,3639	-0,1941	0,0854
MB	2,8855	2,1800	19,7858	-4,6246	3,0165
D_EARN	0,8867	1,0000	1,0000	0,0000	0,3170
CSR	70,2991	80,9400	96,5100	5,0610	25,8289
CSREC	64,9265	72,7850	98,1290	3,1720	27,3510
CSRSO	71,2523	80,5650	97,4370	7,4400	24,8259
CSREN	68,5275	80,1600	96,0900	9,9520	27,1207
CSRCG	59,5700	64,6700	95,9290	4,4310	25,8297

Table 4 summarizes univariate statistics for both tax variables and explanatory variables. ETR1 is computed as the ratio between total tax expense and pre-tax income, multiplied by 100. ETR2 is defined as the ratio between total tax expense and cash flow from operations, multiplied by 100. SIZE is the natural logarithm of total assets, LEV is long term debt scaled by total assets, CAPINT is net property, plant and equipment divided by total assets, INV_INT is the ratio between total inventories and total assets, ROA is the return on asset, MB is market capitalization scaled by shareholders funds, D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not, CSR is Corporate Social Responsibility score, CSREC is the economic score of firm, CSRSO is the social score, CSREN is the environmental score and CSRCG is the corporate governance score of firm. The summary statistics presented are mean (mean values of the variables), median (median values of the variables), maximum, minimum and standard deviation (standard deviation of the variables). Sample comprises 564 firms for the period between 2005 and 2016 which represents 6768 firm-year observations.

Source: author's calculation

Table 5. Pearson's correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ETR1 (1)	1													
ETR2 (2)	0,282*** (23,234)	1												
SIZE (3)	0,086*** (6,845)	-0,026** (-2,029)	1											
LEV (4)	-0,019 (-1,463)	-0,1589*** (-12,679)	0,191*** (15,293)	1										
CAPINT (5)	0,021* (1,653)	-0,118*** (-9,367)	0,133*** (10,549)	0,317*** (26,331)	1									
INVINT (6)	0,006 (0,489)	0,126*** (10,009)	-0,145*** (-11,551)	-0,306*** (-25,313)	-0,260*** (-21,196)	1								
ROA (7)	0,085*** (6,757)	0,288*** (23,717)	-0,176*** (-14,148)	-0,269*** (-22,042)	-0,087*** (-6,852)	0,066*** (5,245)	1							
MB (8)	-0,013 (-1,174)	0,090*** (7,151)	-0,177*** (-14,185)	-0,021* (-1,655)	-0,142*** (-11,301)	-0,036*** (-2,814)	0,396*** (33,946)	1						
D_EARN (9)	0,104*** (8,240)	0,108*** (8,508)	0,047*** (3,766)	-0,089*** (-7,102)	-0,058*** (-4,613)	0,014 (1,121)	0,554*** (52,481)	0,131*** (10,388)	1					
CSR (10)	0,040*** (3,178)	-0,037*** (-2,876)	0,481*** (43,243)	0,027** (2,158)	0,019 (1,463)	0,016 (1,237)	0,001 (0,099)	-0,002 (-0,167)	0,109*** (8,634)	1				
CSREC (11)	0,040*** (3,150)	0,021 (1,599)	0,408*** (35,198)	-0,056*** (-4,454)	-0,046*** (-3,665)	-0,034*** (-2,682)	0,159*** (12,685)	-0,021* (1,654)	0,246*** (20,013)	0,751*** (89,510)	1			
CSRSO (12)	0,068*** (5,386)	-0,038*** (-2,904)	0,518*** (47,754)	0,0654*** (5,164)	0,061*** (4,834)	-0,013 (-1,043)	-0,058*** (-4,558)	-0,014 (-1,127)	0,049*** (3,890)	0,879*** (144,981)	0,582*** (56,244)	1		
CSREN (13)	0,040*** (3,186)	-0,036*** (-2,771)	0,516*** (47,477)	0,010 (0,759)	0,045*** (3,581)	0,103*** (8,159)	-0,082*** (-6,453)	-0,058*** (-4,598)	0,022* (1,761)	0,846*** (124,629)	0,511*** (46,673)	0,765*** (93,632)	1	
CSRCG (14)	-0,029** (-2,303)	-0,056*** (-4,391)	0,119*** (9,469)	0,077*** (6,105)	-0,001 (-0,011)	-0,039*** (-3,045)	-0,008 (-0,598)	0,050*** (3,936)	0,035*** (2,798)	0,612*** (60,799)	0,279*** (22,866)	0,389*** (33,154)	0,340*** (28,416)	1

This table presents the correlation matrix of our sample for the relevant variables: ETR1 is computed as the ratio between total tax expense and pre-tax income, multiplied by 100. ETR2 is defined as the ratio between total tax expense and cash flow from operations, multiplied by 100. SIZE is the natural logarithm of total assets, LEV is long term debt scaled by total assets, CAPINT is net property, plant and equipment divided by total assets, INV_INT is the ratio between total inventories and total assets, ROA is the return on asset, MB is market capitalization scaled by shareholders funds, D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not, CSR is Corporate Social Responsibility score, CSREC is the economic score of firm, CSRSO is the social score, CSREN is the environmental score and CSRCG is the corporate governance score of firm.

Source: author's calculation

5. Results

5.1. Multivariate analysis

5.1.1. Results for firm's specific characteristics

In this section, we analyse the results of equation (4.i) and (4.ii) which are estimated using Generalized Least Squares (GLS) cross-section weights with year fixed effects.

With these two equations, we aim to study how the financial and operational characteristics of companies affect their effective tax rates.

Column 1 of table 6 show regression results for ETR1, which is the ratio between tax expense and pre-tax income, multiplied by 100. Column 2, otherwise, show estimation results for ETR2, calculated using cash flow from operations as denominator, which allow us control for different accounting methods related to firm size, multiplied by 100.

Regression results for SIZE are similar in columns 1 and 2, so we can conclude that larger firms have higher corporate effective tax rate, because variable SIZE evidence a positive and significant association with ETR1 ($\beta=1.67680$, $t=10.80710$) and, as well, with ETR2 ($\beta=1.71920$, $t=8.89981$). These results are consistent with Zimmerman (1983), Minnick and Noga (2010) and Kraft (2014) who suggest that larger firms face higher effective tax rates because they tend to have greater political prosperity and visibility and are exposed to regulatory action by governments. These results are in line with hypothesis H1_a as there is a significant relationship between SIZE and ETR1 and between SIZE and ETR2.

Concerning to firm's leverage, LEV, we find a negative relation between effective tax rate and LEV. However, the relation between ETR1 and LEV is insignificant ($\beta=-0.66728$, $t=-0.86197$). Nevertheless, regression coefficient for the variable LEV evidence negative and significant association with ETR2 ($\beta=-2.71022$, $t=-2.85649$), which is consistent with hypothesis H1_b, proving that debt financing is associated to a debt tax shield that contributes to a lower effective tax rate, so firms prefer debt financing rather than equity financing due to the interest deductibility associated to the former (Richardson and Lanis, 2007).

In terms of investment decisions, we consider two different variables, one related to capital intensity and another related to inventory intensity. In line with Richardson and Lanis (2007), we find a substitution effect between capital intensity and inventory intensity, however, we only find significant relations when we use ETR2 as dependent variable. In the second

regression, we find a negative and significant relation between CAP_INT and ETR2 ($\beta=-8.88346$, $t=-16.10899$) and a positive and significant relation between INV_INT and ETR2 ($\beta=14.17560$, $t=8.95932$). These results are consistent with H1_c, supporting that more capital intensive firms have a lower effective tax rate as result of deductibility of depreciations and amortizations expense, and with H1_d.

Finally, we use the variable ROA in order to test the relation between effective tax rate and firms' profitability. Our results show a positive and significant relation between ROA and ETR1 ($\beta=10.21637$, $t=6.07386$) and ETR2 ($\beta=79.19276$, $t=35.06623$), which is in line with Minnick and Noga (2010), who show that more profitable firms have higher earnings and, therefore, pay more taxes. These results confirm our hypothesis H1_e because we find a significant relation between ROA and our two measures of effective tax rate.

Taking into account the influence of firms' growth potential, we find a negative and significant relation between MB and ETR1 ($\beta=-0.08731$, $t=-2.219296$) and ETR2 ($\beta=-0.25891$, $t=-5.79354$), which show that firms with more growth potential have lower effective taxes rates.

All results found for relations between ETR2 and firms' financial and operational characteristics are in line with our expectations, and we find significant relations for all explanatory variables. Furthermore, we obtain an adjusted R-squared of 32.92%, which means that ETR2 variation can be explained in almost 32.92% by our explanatory variables. Moreover, our estimation output presents a value for F-statistic of 0.00000, which means that our variables are globally significant. We conclude that regression (4.ii) is more elucidative about the influence of firms' financial and operational characteristics on ETRs.

In the next subsection, we will analyse the influence of Corporate Social Responsibility on effective tax rates.

Table 6. Impact of firm's financial characteristics on effective tax rate

Firm characteristics	ETR1	ETR2
C	3.64568*** (3.02228)	5.15260*** (3.34426)
SIZE	1.67680*** (10.80710)	1.71920*** (8.89981)
LEV	-0.66728 (-0.86197)	-2.71022*** (-2.85649)
CAPINT	-0.84569 (-1.57656)	-8.88346*** (-16.10899)
INVINT	0.92288 (1.31066)	14.17560*** (8.95932)
ROA	10.21637*** (6.07386)	79.19276*** (35.06623)
MB	-0.08731** (-2.19296)	-0.25891*** (-5.79354)
D_EARN	8.59097*** (14.84729)	-2.06727*** (-3.45151)
Year dummies	YES	YES
R-squared	0.10802	0.33105
Adjusted R-squared	0.10556	0.32920
F-statistic	43.90559	179.3625
Prob (F-statistic)	0.00000	0.00000
Total panel (unbalanced) observations	6545	6543

Table 6 presents the estimation of the equations (4.i) and (4.ii) where the dependent variables are ETR1 and ETR2, respectively, and independent variables are firm's financial and operational characteristics. ETR1 is computed as the ratio between total tax expense and pre-tax income, multiplied by 100. ETR2 is defined as the ratio between total tax expense and cash flow from operations, multiplied by 100. SIZE is the natural logarithm of total assets, LEV is long term debt scaled by total assets, CAPINT is net property, plant and equipment divided by total assets, INV_INT is the ratio between total inventories and total assets, ROA is the return on asset, MB is market capitalization scaled by shareholders funds, D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not. Both regressions were estimated using Generalized Least Squares (GLS) cross-section weights with year fixed effects. All independent variables was winsorized at 1% and 99%. * means 10% individual significance, ** means 5% individual significance and *** means 1% individual significance. In parenthesis are observed t-statistic values.

Source: author's calculation

5.1.2. Results for the influence of Corporate Social Responsibility

In addition to the financial and operational indicators of companies, this study aims to understand the relationship between effective tax rates and Corporate Social Responsibility, given that the literature is not consensual. Moreover, in recent years, we have observed the reconciliation between the organization and the environment where it operates, by an increase in decisions made that contribute to economic development and to the improvement of the quality of life of workers, the local community and society in general. Consequently, to study the effect of Corporate Social Responsibility on the effective tax rate, we estimate equation (4.iii) and (4.iv) using Generalized Least Squares (GLS) cross-section weights with year fixed effects.

Table 7 reports the regressions results for our tax variables, ETR1 and ETR2, including not only Corporate Social Responsibility measure but also financial and operational characteristics.

Taking into consideration firm's financial and operational characteristics, the results are in line with those reported in Table 6 and most of the coefficients show the expected signal. This is especially felt in the estimation of equation (4.iv), using ETR2 as a dependent variable, since all the hypotheses we had defined about this set of variables are corroborated and we obtain a significant result for each independent variable.

Regarding to Corporate Social Responsibility, we find a negative and significant coefficient for integrated CSR score in the first regression ($\beta=-0.00884$, $t=-2.02214$). Concerning to variable ETR2 we also find a negative and significant relation between ETR2 and integrated CSR ($\beta=-0.01511$, $t=-2.50549$). The results indicate that a higher CSR rating is related to a lower ETR. This evidence is consistent with corporate tax and CSR acting as substitutes, not only because companies view taxes as damaging social welfare but also they engage in CSR, in part, to compensate for negative perceptions associated with low tax payments, creating a misalignment between corporate talk and corporate actions (Landry et al., 2013; Sikka, 2010). This is consistent with the idea that companies use CSR activities as a risk management tool, because some firms strategically engage in CSR to create a more favourable reputation among various stakeholders which will protect them in case of a negative action. (Hoi et al., 2013).

Moreover, firms may view paying taxes as detracting from social welfare because tax payments reduce innovation, job growth, and economic development (Djankov et al., 2010). If firms pay less taxes, their after-tax profit increase, and its impact on social welfare may

growth, because they may raise infrastructure investment and job creation. This will probably increase the income level of the community (through employee salaries and payments to suppliers and contractors) and other sources of tax revenue, including payroll taxes and employee taxes on salaries (Davis et al., 2016). Firms can argue that although they contribute less to society in terms of paying taxes, they compensate for this being more social responsible (Huseynov & Klamm, 2012).

Taking into account this results, we have to reject our hypothesis *H2*, which states that Corporate Social Responsibility is positively related with ETR. Our results show the opposite of the empirical studies from Lanis and Richardson (2012), Hoi et al. (2013) and Kim and Im (2017), who all find that CSR performance is positively related to effective tax rate. These differences can be due to the measurements of CSR and sample that are used. Lanis and Richardson (2012) use information disclosed by companies at reports as a proxy of CSR. Hoi et al. (2013) have found that U.S. firms exhibit no relation between CSR strengths and tax rates, using a measure that only include irresponsible CSR activities, whereas we use the whole range of CSR scores, including extremely well performing companies and extremely irresponsible companies.

Table 7. Impact of firms's financial characteristics and global Corporate Social Responsibility score on effective tax rate

Firm characteristics	ETR1	ETR2
C	4.70891*** (3.81112)	4.93015*** (3.14140)
SIZE	1.70971*** (9.76612)	1.88995*** (8.09624)
LEV	-1.57264** (-1.97469)	-3.19575*** (-3.33468)
CAPINT	-0.53773 (-0.98869)	-8.52382*** (-15.07882)
INVINT	0.57979 (0.81887)	12.99691*** (8.08392)
ROA	9.86368*** (5.92424)	79.71079*** (34.85710)
MB	-0.11667*** (-2.98126)	-0.24096*** (-5.35698)
D_EARN	8.40715*** (14.32804)	-1.71081*** (-2.80901)
CSR	-0.00884** (-2.02214)	-0.01511** (-2.50549)
Year Dummies	YES	YES
R-squared	0.10822	0.33756
Adjusted R-squared	0.10548	0.33552
F-statistic	39.52414	165.9016
Prob (F-statistic)	0.00000	0.00000
Total panel (unbalanced) observations	6208	6206

Table 7 presents the estimation of the equations (4.iii) and (4.iv) where the dependent variables are ETR1 and ETR2, respectively, and independent variables are firm's financial characteristics and Corporate Social Responsibility characteristics. ETR1 is computed as the ratio between total tax expense and pre-tax income, multiplied by 100. ETR2 is defined as the ratio between total tax expense and cash flow from operations, multiplied by 100. SIZE is the natural logarithm of total assets, LEV is long term debt scaled by total assets, CAPINT is net property, plant and equipment divided by total assets, INV_INT is the ratio between total inventories and total assets, ROA is the return on asset, MB is market capitalization scaled by shareholders funds, D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not, CSR is Corporate Social Responsibility overall score. Both regressions were estimated using Generalized Least Squares (GLS) cross-section weights with year fixed effects. All independent variables was winsorized at 1% and 99%. * means 10% individual significance, ** means 5% individual significance and *** means 1% individual significance. In parenthesis are observed t-statistic values.

Source: author's calculation

5.1.3. Additional analysis

In the additional analysis, we test which of the four dimensions (economic, social, environmental, corporate governance) is significantly related with ETR. For this, we estimate equation (4.v) and (4.vi) using Generalized Least Squares (GLS) cross-section weights with year fixed effects.

Table 8 presents the regressions results for our tax variables, ETR1 and ETR2, including scores for four dimensions of Corporate Social Responsibility and financial and operational characteristics as independent variables.

According to firm's financial and operational characteristics, the results are similar with those reported in Table 6 and Table 7, and most of the coefficients show the expected signal.

When we analyse Corporate Social Responsibility variables, the table shows that the economic dimension of CSR (CSREC) is negatively and significantly related with ETR1 ($\beta=-0.02185$, $t=-5.18105$) and ETR2 ($\beta=-0.01267$, $t=-2.11344$). This indicate that high score in economic dimension is related to a lower effective tax rate, which corroborate hypothesis $H2_a$. Consequently, a company that scores high on client loyalty and shareholder loyalty have a lower effective tax rate than a company with lower score. This result is consistent with Laguir et al. (2015), who use a sample of French companies and show that a higher level of CSR on the economic dimension is related to a higher level of tax avoidance.

The relation between social dimension of CSR (CSRSO) and ETR is positive and significant, for both dependent variables, indicating that higher CSR regarding to social performance is related to higher effective tax rate, supporting our hypothesis $H2_b$. In fact, table 8 show a positive and significantly relation between firms social score and ETR1 ($\beta=0.05124$, $t=7.66806$) and ETR2 ($\beta=0.01676$, $t=2.00513$), which is consistent with Laguir et al. (2015). According to this result, the more the firms engage in human resources activities, human rights in workplaces, employment quality and community involvement the higher their ETRs will be.

For the environmental dimension of CSR (CSREN), we find contradictory results. However, we only find a negative and significant relation when we consider ETR1 as dependent variable ($\beta=-0.00980$, $t=-1.66335$), which is in line with Renselaar (2016). These results show that companies that are more involved into resource reduction, emission reduction and

product innovation have lower ETR. According to this results, our hypothesis $H2_c$ is corroborated.

The results for CSR with regard to corporate governance variable (CSR_{CG}) are negative and significant when we consider both ETR1 ($\beta=-0.03233$, $t=-8.33343$) and ETR2 ($\beta=-0.02341$, $t=-4.55757$), so we find evidence for the hypothesis $H2_d$. This indicate that board structure, compensation policy, board functions and shareholder rights score are negative related with effective tax rate. Our results are similar with Minnick and Noga (2010) and Huseynov and Klamm (2012) who show that strong corporate governance is related to a lower effective tax rate.

In summary, our results show that the relation between CSR and ETR is principally driven by the economic, environmental and corporate governance performance, because these dimensions of CSR have a negative relation with ETR. Social performance is, however, positive and significant related with ETR.

Table 8. Impact of firms's financial characteristics and four Corporate Social Responsibility pillars on effective tax rate

Firm characteristics	ETR1	ETR2
C	8.80341*** (6.61007)	6.77877*** (4.17766)
SIZE	1.04867*** (5.21725)	1.59347*** (6.34414)
LEV	-1.15340 (-1.40513)	-2.98421*** (-3.06996)
CAPINT	-0.78005 (-1.41531)	-8.91834*** (-15.65773)
INVINT	0.81103 (1.13599)	11.97348*** (7.29130)
ROA	11.54106*** (6.92303)	80.83350*** (34.80212)
MB	-0.12546 (-3.15534)	-0.24644*** (-5.50033)
D_EARN	8.45779*** (14.30548)	-1.75299*** (-2.87089)
CSREC	-0.02185*** (-5.18105)	-0.01267** (-2.11344)
CSRSO	0.05124*** (7.66806)	0.01676** (2.00513)
CSREN	-0.00980** (-1.66335)	0.00266 (0.35123)
CSRCG	-0.03233*** (-8.33343)	-0.02341*** (-4.55757)
Year Dummies	YES	YES
R-squared	0.12040	0.33937
Adjusted R-squared	0.11727	0.33699
F-statistic	38.48296	144.35972
Prob (F-statistic)	0.00000	0.00000
Total panel (unbalanced) observations	6208	6206

Table 8 presents the estimation of the equations (4.v) and (4.vi) where the dependent variables are ETR1 and ETR2, respectively, and independent variables are firm's financial characteristics and Corporate Social Responsibility characteristics. ETR1 is computed as the ratio between total tax expense and pre-tax income, multiplied by 100. ETR2 is defined as the ratio between total tax expense and cash flow from operations, multiplied by 100. SIZE is the natural logarithm of total assets, LEV is long term debt scaled by total assets, CAPINT is net property, plant and equipment divided by total assets, INV_INT is the ratio between total inventories and total assets, ROA is the return on asset, MB is market capitalization scaled by shareholders funds, D_EARN is a dummy variable equals to one if a firm has positive earnings and equals to zero if not, CSREC is the economic score of firm, CSRSO is the social score, CSREN is the environmental score and CSRCG is the corporate governance score of firm. Both regressions were estimated using Generalized Least Squares (GLS) cross-section weights with year fixed effects. All independent variables was winsorized at 1% and 99%. * means 10% individual significance, ** means 5% individual significance and *** means 1% individual significance. In parenthesis are observed t-statistic values.

Source: author's calculation

6. Conclusions

This dissertation focuses on the determinants of effective tax rates. The relationship between financial and operational firm characteristics has been widely studied by literature (Fernández-Rodríguez & Martínez-Arias, 2014; Kraft, 2014; Richardson & Lanis, 2007), however, the crescent importance of Corporate Social Responsibility (Davis et al., 2016; Hoi et al., 2013; Huseynov & Klamm, 2012; Laguir et al., 2015; Landry et al., 2013) has given a new highlight on this theme, therefore we also analysed the relationship between CSR and effective tax rates.

In order to investigate what affects ETRs, we use a sample of non-financial and listed companies from 17 European countries included in Standard and Poor's (S&P) Europe 350 index, over the period between 2005 and 2016. Our final sample has 564 firms, distributed by different sectors, and our data is organized in a panel data structure. In order to study the determinants of effective tax rates, we estimate six different regressions, using Generalized Least Squares (GLS) cross-section weights with year fixed effects. We use two different measures to ETR, one obtained as the ratio between tax expense and pre-tax income and another given by the quotient between tax expense and cash-flow from operations.

We start to study the impact of financial and operational indicators on ETRs, and we conclude that larger firms have higher ETRs, which is in line with Zimmerman (1983), Minnick and Noga (2010) and Kraft (2014) who suggest that large firms face higher effective tax rates because they are exposed to regulatory action by governments. Moreover, our results show that more leverage firms have lower ETRs because of tax shield associated to leverage. For ETR2, we find a negative and significant relation between ETR and capital intensity, which means that a more capital intensive asset structure evidence lower effective tax rates, due to effect of depreciations and amortizations. Also, we find a positive relation between ETR2 and inventory intensity, which is in line with the expected substitution effect between capital and inventory intensity. Finally, we conclude that the relation between ROA and ETR is positive and significant, which show that more profitability firms have higher effective tax rates.

In addition, we study the relation between Corporate Social Responsibility and effective tax rate, and we find that companies that are more social responsible pay a lower amount of taxes. Furthermore, we conclude that this relation between CSR and ETR is mainly driven

by the economic, environmental and corporate governance performance, because these dimensions of CSR have a negative relation with ETR. Social performance is positive and significant related with ETR, which show that more the firms engage in human resources activities, human rights in workplaces, employment quality, community involvement the higher their ETRs will be.

The results of this study can be useful for tax authorities in fiscal policy definition (Lanis & Richardson, 2012). As well, managers and investors are also interested in this study because tax rates influence firm's performance and, consequently, may influence their remuneration and wealth. Besides, the results show us that we should be cautious when observing a company's CSR activities, because companies that seem social responsible might pay lower taxes compared to less responsible companies. This is consistent with the idea that companies use CSR activities as a risk management tool, because engage in CSR will create a favourable reputation among various stakeholders which will protect them in case of a negative action. (Hoi et al., 2013). Moreover, firms can argue that although they contribute less to society in terms of paying taxes, they compensate for this being more social responsible and substituting the state in the promotion of social welfare (Huseynov & Klamm, 2012).

Our research adds new insights to the existing literature using an integrate CSR score, which take all companies into account, from highly responsible towards highly irresponsible activities. We find a negative relation between CSR and ETR which seems directly opposing toward the papers of Lanis and Richardson (2012), Hoi et al. (2013) and Kim and Im (2017), who use other CSR measures.

This investigation has some limitations. First, we focus our study on current effective tax rate, and it would be interesting use long-run ETRs. Second, we use economic dimension of CSR as an independent variable, however it is questionable to what extent activities that are covered by economic performance, such shareholder loyalty, are in the interest of society or just for self-interest of the company. Future research might consider disregarding the economic performance from the integrated CSR score. Moreover, it would be interesting in future research observe the further specify of CSR dimensions to investigate which particular CSR activities are related with ETR.

7. References

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