

**MASTER**  
**FINANCE**

**MASTER FINAL WORK**  
DISSERTATION

ESG PERFORMANCE, TAX AVOIDANCE AND EXTERNAL  
FINANCING DECISIONS IN EUROPE

ALEXANDRE DIOGO FIGUEIRA DA SILVA CORREIA

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**SUPERVISION:**

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## Resumo

Este estudo pretende analisar se a evasão fiscal afeta o custo de capital das empresas na Europa, tomando em consideração o nível de ESG das empresas.

Enquanto que as atividades de planeamento fiscal podem gerar um maior fluxo de caixa depois de impostos, como resultado de um menor pagamento de imposto para os governos, estas podem também levar a resultados futuros incertos e arriscados, o que pode impor vários riscos para as empresas. Particularmente, tomando em atenção a estrutura de capital das empresas, esses riscos podem afetar significativamente as decisões de financiamento por afetarem o custo de capital próprio e o custo de capital alheio.

No entanto, temos também que ter em consideração um tema cada vez mais relevante relacionado com a responsabilidade e impacto social das empresas, que pode também ter um papel importante nas decisões de financiamento. Para analisar, recorreremos aos ratings de ESG fornecidas pela Thomson Reuters.

Testámos se os ratings de ESG podem moldar a relação entre o planeamento fiscal e o custo de capital. Os resultados sugerem que os investidores reagem positivamente a elevadas pontuações de ESG quando investem em empresas que praticam atividades de planeamento fiscal. Esse efeito é especialmente capturado pelas componentes Social e Governança. Este estudo contribui para a literatura existente sobre planeamento fiscal e custo de capital, adicionando um tema não tem sido suficientemente explorado e que pode influenciar a relação dessas duas variáveis e, particularmente, a reação dos investidores.

**JEL:** G32; G38; H26; Q56; Q58; M14.

**Palavras-chave:** Estrutura de capital, Custo de capital, Evasão fiscal, Meio Ambiente; Governança corporativa; Responsabilidade social.

## **Abstract**

This paper aims to study whether tax avoidance affects company's cost of capital in Europe, taking into consideration company's level of ESG. While tax avoidance activities may generate a higher after-tax cash-flow as a result of lower cash tax payments to the governments, those outcomes can be uncertain, which could impose several risks. Specifically, looking at firm's capital structure, those risks could significantly affect the firm's financing decisions by affecting both the cost of equity and the cost of debt. However, we also need to take into consideration an increasingly topic related to firm's responsibility and social impact that may also play an important role in financing decisions. We take advantage of the ESG Scores from Thomson Reuters.

We test whether ESG performance scores shape the relationship between tax avoidance and cost of capital. Results suggest that investors perceive higher levels of ESG performance positively when investing in firms that engage in tax avoidance activities. The effect is mostly captured by the Social and Governance components. The study contributes to the literature on tax avoidance and cost of capital, adding a topic that is not sufficiently explored and could influence the final relationship between those two variables and, particularly, the investors' reaction.

**JEL:** G32; G38; H26; Q56; Q58; M14.

**Keywords:** Capital structure; Cost of capital; Tax avoidance; Environment; Corporate governance; Social responsibility.

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*For you Dad, I hope you are proud!*

## Glossary

<i>BETR</i>	Book effective tax rate
<i>CAPEX</i>	Capital Expenditures
<i>CETR</i>	Cash effective tax rate
<i>CSR</i>	Corporate Social Responsibility
<i>ESG</i>	Environment, Social and Governance
<i>E</i>	Environment
<i>S</i>	Social
<i>G</i>	Governance
<i>I/B/E/S</i>	Institutional Brokers' Estimate System
<i>Market Book</i>	Market-to-book ratio
<i>OLS</i>	Ordinary Least Squares
<i>PPE</i>	Property, Plant, and Equipment
<i>ROA</i>	Return on Assets
<i>SG&amp;A</i>	Selling, General and Administrative expenses

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# 1. Introduction

What is the impact of the company's ESG level on the relationship between the cost of capital and tax avoidance? Prior literature has been discussed the effect of tax avoidance on the cost of equity and cost of debt. However, the literature does not show evidence on how that relationship could or not change if we include the environmental, social and governance (ESG) profile of a firm.

Investors have always recognized that ESG factors are fundamental measures for risk management and company valuation. Therefore, it is understandable that nowadays a large number of managers are including those factors into their asset allocation process, using a more comprehensive approach that captures more emerging vehicles that attract investors with specific objectives. Due to that factor, more than 100 rating agencies are providing ESG data, including Bloomberg and Thomson Reuters.

Tax avoidance activities could be distinguished as a risky form of investment that generates incremental after-tax cash flows due to a decrease in cash tax payments. Those risks might influence the firm's external financing choices because they could offset the decrease in cash tax payments, resulting in uncertain future outcomes. Therefore, tax avoidance activities influence the firm's capital structures. In other words, tax avoidance activities influence what investors and lenders are willing to pay to have those firms in their portfolios.

Tax avoidance is characterized by a reduction in taxes paid to governments and thus, by an increase in after-tax cash flow for the firm. However, the expected future cash flows are uncertain since tax avoidance could impose some risk. For example, aggressive tax avoidance could lead to penalties and thus reputation costs (Shevlin et al. 2019), lower transparency and quality of financial statements (Scholes et al. 2014) and increase opportunities of managerial rent diversion (Desai and Dharmapala, 2009).

It is expected that that creditors react more negatively to tax avoidance than shareholders. Creditors do not benefit from the increase cash-flow after taxes because they are fixed claimants. Prior literature finds evidence that tax avoidance activities affect the cost of debt positively. For what regards the cost of equity, the conclusions are not consensual. Recently Lee, Shevlin and Venkat (2019), in a US study, find that managers issue more debt relative to debt because avoidance activities increase more the cost of

debt when compared to the cost of equity, meaning that shareholders suffer less from risky tax avoidance than creditors.

Prior literature shows little evidence on how firms perceive those financing costs effects, resulting from tax avoidance, in their capital structure, particularly if we take into consideration European firms. Therefore, it is important to understand the role that tax avoidance plays when managers seek financing, taking into consideration the firm's responsibility and social impact.

Our empirical analysis uses a dataset that comes from Thomson Reuters and comprises the listed firms in the EuroStoxx50 from 2006 to 2018. There were used control variables to monitor possible unobserved effects, in order to get a robust estimation. We use two measures of tax avoidance to measure the impact that tax avoidance has on the cost of capital. To evaluate firm's responsibility and social impact, we used Thomson Reuters' ESG Combined Score. Furthermore, to test our other hypothesis, we decompose that score into ESG Environmental Score, ESG Social Score and ESG Governance Score.

Our results suggest that investors perceive higher levels of ESG performance positively when investing in firms that engage in tax avoidance activities. We find that for companies with the same level of tax avoidance, shareholders react positively to higher scores of ESG performance. We also find that creditors require a lower cost of debt for firms that have the same level of tax avoidance but higher scores of ESG performance. Results suggest that although ESG performance has a significant effect on the relationship between tax avoidance and cost of capital, that effect is mostly captured by the Social and Governance components

Our findings make contributions to the literature in the sense that the results obtained regarding tax avoidance and cost of capital are based on European firms, whereas most of the prior literature focused on US firms. Moreover, we introduced the firm's social impact, governance and environmental responsibility to that topic and showed the impact that those societal and sustainable factors have on the relationship between tax avoidance and cost of capital. Also, this study contributes to practice since it shows evidence that investors are sensitive to ESG performance scores when looking for the relationship between tax avoidance and the cost of capital.

The study proceeds as follows. Section II presents the literature review. Section III describes the data, research hypothesis and empirical methods used to perform our analysis. Section IV presents our OLS main results, while Section V concludes.

## 2. Literature Review

There are several ways that literature uses to define tax avoidance and there are no universally accepted definitions. In general terms, tax avoidance could be interpreted as a way that firms could take advantage of legal tax planning opportunities in order to minimize income tax liabilities and could also be interpreted as a reduction of cash tax payments (Harrington et al. 2012). Some authors have a broad definition such as a “reduction of explicit taxes”, reflecting all activities that have any effect on the firm’s tax liabilities (Hanlon and Heitzman, 2010; Dyreng et al. 2008). Some explanations include both legal and illegal activities that reduce corporate tax liabilities. While others just include legal ways for that reduction (Slemrod, 2004).

The presumption in large literature is that if tax avoidance does not bring with it costs for shareholders, then tax avoidance activities will simply result in an allocation of wealth from the State to the shareholders. This is the traditional perspective and argues that tax avoidance activities should increase the value of the firm and thus, shareholders respond positively in firm’s engagement in tax avoidance activities (Rego and Wilson, 2012).

However, the idea that tax avoidance activities are costless to the shareholders might not be true. Tax avoidance could even penalize some shareholders. This is the idea supported by some literature and represents the agency perspective for what concerns tax avoidance. This view argues that shareholders could be affected depending on the quality of managers’ actions and their relationship with the shareholders. The literature relies on Desai and Dharmapala’s (2006) theory. It is a perspective that is related with firm’s governance and argues that managerial rent diversion and tax avoidance could be complementary if tax avoidance decreases firm’s transparency and hence, some managers could engage in tax avoidance activities in order to take advantage of firm’s resources for personal benefit (Desai and Dharmapala, 2009). Those opportunities could be mitigated in well-governed firms and with better monitoring mechanisms (Desai and Dharmapala, 2006). Armstrong et al. (2015) also find that board financial sophistication and independence can reduce agency problems.

Therefore, whereas the traditional perspective regarding tax avoidance suggests that the value for shareholders is positively related with tax avoidance because

shareholders expect that managers act on their behalf, the agency perspective presents different conclusions and refers firm' governance as a determinant for that valuation.

Prior literature perceives tax avoidance as a risky form of investment that generates incremental cash-flow (Armstrong et al. 2015) through a reduction of cash taxes remitted to governments. Tax avoidance activities have implications in the firm's financing choices because it affects financing costs, affecting both the cost of equity and cost of debt.

### **2.1. Cost of Equity**

Tax avoidance brings with it several risks such as reduction of the information disclosed in financial statements (Scholes et al. 2014), an increase of opportunities for managerial rent diversion (Desai and Dharmapala 2009) and could also generate penalties and reputational costs for the firm (Shevlin et al. 2019). In this sense, applying the traditional modes of cost of equity (Botosan et al. 2008) and debt it is easy to understand that tax avoidance should increase financing costs once tax avoidance brings with it some risks and hence, investors should require a higher return to engage in those tax avoidance' firms (Hasan et al. 2014). However, using those traditional models, cost of equity is just affected by expected returns, and thus risk, and not for expected future cash flows.

Nevertheless, Lambert et al. (2007) developed a model, demonstrating that the cost of equity could be affected not only by returns but also by expected cash flows. Moreover, the model concludes that the cost of equity could not just increase but also could increase less or even decrease when risk rises if these risks also increase expected cash flows. Furthermore, tax avoidance activities generate cash tax savings which increase expected future cash flows. Thus, if those cash tax savings reduce the variance of future cash flows<sup>1</sup>, then tax avoidance and cost of equity could have a negative relation (Goh et al. 2016). This model argues that tax avoidance does not necessarily have a positive impact on the cost of equity and that the cost of equity could be affected by future cash flows.

Therefore, results regarding the effect of tax avoidance in the cost of equity vary across studies. Some empirical studies reveal that tax avoidance increases the cost of equity. Hutchens and Rego (2013) demonstrated that the cost of equity is positively related to risky tax planning. In the same perspective, Cook et al. (2017) argue that

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<sup>1</sup> And the covariance with the market cash flows.

deviations in the expected levels of tax avoidance lead to an increase of *ex-ante* cost of capital. Also, in a paper entitled “Tax avoidance, uncertainty and firm risk”, Hutchens et al. (2019) demonstrated that tax avoidance increases the cost of equity in some firms, but in others firms that conclusion was not verified. Pulido and Barros (2017) find that if firms with high levels tax avoidance engage in more avoidance activities the *ex-ante* cost of equity increases.

On the other hand, other empirical studies present an inverse relationship between tax avoidance and cost of equity. Goh et al. (2016), taking into consideration the model developed by Lambert et al. (2007) find that an increase of tax avoidance leads to a reduction of cost of equity, arguing that tax avoidance gives firms a positive cash flow effect which is a reason for investors require a lower return. Pulido and Barros (2017) find that if firms with low levels tax avoidance engage in more avoidance activities the *ex-ante* cost of equity decreases. In the same way, Desai and Dharmapala (2009) find that well-governed firms that engage in tax avoidance activities have a higher firm value. Goh et al. (2016) find that investors perceive tax planning more positively for firms with outside monitoring.

Therefore, there is no consistency about the effect of tax avoidance on the cost of equity. Pulido et al. (2017), find evidence that investors perception of tax avoidance fluctuates depending on the level of tax avoidance. Moreover, they argue that there is a limit where investors no longer recognize the benefits of tax avoidance, supporting previous studies (Cook et al. 2017).

Importantly, these studies often use different proxies to estimate tax avoidance and use different equations to measure the cost of equity which leads to different results.

## **2.2. Cost of Debt**

However, the effects that tax avoidance has on the cost of debt and cost of equity are not equal because investors and lenders have different return expectations and risk preferences. Thus, firms financing decisions are not the same.

Unlike shareholders, creditors such as bondholders and banks do not benefit from the increase cash-flow after taxes as they generally receive fixed future income and face a downside risk (Hasan et al. 2014). Therefore, creditors should be more concern about the risks of tax avoidance since they face asymmetric payoff functions. Consequently, it

should be expected that creditors react more negatively to tax avoidance than shareholders.

Prior empirical studies regarding the effect of tax avoidance on the cost of debt are consensual arguing that tax avoidance increases the cost of debt. These studies rely on the fact that despite tax avoidance increases after-tax cash flows, creditors perceive that activities as risky forms of investment, leading to an increase in both loan spreads and bond yields. That risk could be a result of a lower and more volatile future cash-flow due to an increase of agency risks (Desai and Dharmapala, 2009) and could also be a result of a decrease in the transparency and quality of financial reports (Scholes et al. 2014).

However, the impact that tax avoidance has on the cost of debt does not necessarily be the same in both bank loans and bond yields. Firms with higher information risk perceive bank loans offering a lower incremental interest spread when compared to bond, meaning that firms with high levels of information risk would prefer a debt financing through bank loans rather than bonds (Bharath et al. 2008) and that borrower's accounting quality has an inverse relationship with loan spreads.

On another perspective, Shevlin et al. (2019) find empirical evidence of a positive relationship between tax avoidance and bond yields offering, but not for bank loans. In the same way, Hasan et al. (2014) find consistent results that a higher tax avoidance leads to a higher cost of debt. That study shows evidence that creditors, both public and private, perceive tax avoidance as a risky form of investment and hence demand a higher return to lend. Therefore, prior literature shows consensual results that tax avoidance increases the cost of debt.

The cost of capital is not dissociated with capital structure decisions. Lee et al. (2019), find that managers issue more equity relative to debt since tax avoidance increases the cost of debt more than the cost of equity since shareholders suffer less from risky tax avoidance than creditors. Chang et al. (2006) find that firms with more analyst coverage are more likely to issue equity than debt<sup>2</sup>. By its turn, Harrington and Smith (2012) find that firms focused on tax avoidance strategies are willing to maintain higher levels of debt because they value the interest deductions from debt. Results that are consistent with the trade-off theory. However, Gaud et al. (2007) find that the trade-off theory and the

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<sup>2</sup> In its turn, Allen et al. (2016) find that analyst pressure could intensify earnings management and thus, analyst coverage could have a positive relation with cost of equity.

pecking order theory are not a suitable description of capital structures in Europe, meaning that firms prefer to finance their self first with equity and in the last resort with debt. Therefore, is needed more empirical research in this area, particularly in Europe.

### **2.3. ESG Factors of sustainability performance**

In the early 1990s were less than 20 firms disclosing their ESG data. However, in the last twenty years, there has been a global exponential growth of companies that report and measure initiatives concerning environmental (i.e. technological innovation, water consumption, carbon emissions, resource management, etc.), social (i.e. product responsibility, labour force, human rights, community necessities, etc.), and governance (i.e. anticorruption, management diversity, shareholders' interests, political lobbying, etc.) data. That growth of disclosure translates into more than 7.000 companies with ratings and data available nowadays in more than 100 rating agencies.

Recent studies have recognized that ESG information is associated with several economic effects. Therefore, literature has increased its research on the relationship between ESG and financial performance in order to understand the link that associates cost of capital and several non-financial dimensions of sustainability performance (e.g. Ghoul et al. (2011); Hoepner et al. (2016); Richardson and Welker (2001); Mackey et al. (2007); Dhaliwal et al. (2011); Magnanelli and Izzo (2017); Sikacz and Wołczek (2018); Cooper and Uzun (2015); Suchard et al. 2012; Chen et al. (2009); Kleimeier and Viehs (2018); Ashbaugh et al. (2004); Hoepner et al. 2016; Chava (2016)). In a Canadian study, Richardson and Welker (2001) find that cost of equity capital is negatively related to financial and social disclosure. In the same way, Ghoul et al. (2011) report that firms with high CSR scores have lower levels of cost of equity capital. Hoepner et al. (2016) find an inverse relationship between corporate social responsibility<sup>3</sup> and the cost of debt.

Several studies find association between the Social pillar of ESG and both cost of equity and cost of debt. Mackey et al. (2007) show that companies that are involved in social responsible activities maximize their market value. Also, Dhaliwal et al. (2011) provide evidence that when companies start their process of ESG data disclosure typically exhibit reductions on their cost of equity due to the positive reactions of the shareholders. Other perspective, taking into consideration the idea thar firm risk increases the cost of

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<sup>3</sup> European Commission concept for companies that take into consideration their impact on society.

debt, Magnanelli and Izzo (2017) defend that firms with higher corporate social responsibility (CSR) exhibit lower cost of debt, arguing that CSR and firm risk have a negative correlation. By its turn, Cooper and Uzun (2015), also find a negative relationship between CSR and the cost of debt financing.

Regarding the governance component of the ESG score, there are also several empirical studies reporting an inverse relationship between governance quality and cost of capital. Suchard et al. (2012) find a negative relationship between companies with strong corporate governance and cost of capital, arguing that a higher governance quality lead to a reduction of information asymmetry and risk perception through a higher confidence that the governance gives to its shareholders. Also, Chen et al. (2009) document the same relationship by examining the effect of firm-level corporate governance. Moreover, Ashbaugh et al. (2004) document that higher board independence leads to a lower cost of equity capital.

Environmental sensitivity and sustainability are also highly related to cost of capital. Lenders and investors consider a firm's environmental profile in their lending and investing decisions. Several studies report find a relationship between firm's environmental issues and investors response. Hoepner et al. (2016) find that sustainability score is associated with a lower cost of debt. Firms with environmental problems exhibit higher cost of equity and higher cost of debt (Chava 2016). Additionally, Kleimeier and Viehs (2018) document a direct relationship between carbon emission levels and the cost of bank loans.

Concluding, prior literature is consistent that tax avoidance could be positively (e.g. Hutchens and Rego (2013); Cook et al. (2017); Hutchens et al. (2019); Pulido and Barros (2017)) or negatively (e.g. Goh et al. (2016); Cook et al. (2017); Pulido and Barros (2017); Desai and Dharmapala (2009)) related to the cost of equity and positively related to the cost of debt (e.g. Scholes et al. (2014); Bharath et al. (2008); Shevlin et al. (2019); Hasan et al. (2014); Lee et al. (2019)). Nevertheless, prior literature shows little evidence on how firms perceive those financing costs effects, as a result of avoidance activities, in their capital structure, particularly if we take into consideration European firms. Moreover, prior literature is consistent on how investors and lenders perceive firm's ESG scores into their cost of capital. A higher ESG score translates to lower cost of equity and cost of debt following Sikacz and Wołczek (2018). Also, companies that have their ESG data available for investors and adopt CSR practices, send a positive signal to their

investors. They recognize that companies with these practices have a higher capability to fill some institutional voids (Su et al. 2016).

Therefore, if both factors, tax avoidance and ESG ranking scores affect both cost of equity and cost of debt, and if ESG could play a signalling role in the association between tax avoidance and cost of capital one could find a channel through which the signaling effect of ESG could mitigate or even change the relationship between tax avoidance and cost of capital. This means that ESG performance could affect the relationship between tax avoidance and cost of capital. Therefore, in this research, we test the following hypotheses:

**Hypothesis 1:** Company's level of tax avoidance is associated with firm's cost of capital.

**Hypothesis 2:** The influence of tax avoidance on firm's cost of capital varies with the level of ESG performance.

### **3. Data and Empirical Design**

#### **3.1. Sample**

Our initial sample consists of listed firms in the EuroStoxx50 from 2006 to 2018, with an unbalanced dataset that comes from Thomson Reuters Eikon, including I/B/E/S. The initial sample of 50 firms was narrowed down after the exclusion of: financial firms<sup>4</sup>, firm-year observations with negative book pre-tax income and firm-year observations with insufficient data to calculate control variables. The final sample presents 361 firm-year observation of 49 firms<sup>5</sup>. All control variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles, to overcome the influence of outliers in the sample.

#### **3.2. Empirical Design**

This section describes our empirical design. To test the relationship between the cost of capital, tax avoidance and ESG scores and to test the accuracy of our hypothesis, we estimate the following OLS regression models with robust standard errors:

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<sup>4</sup> Following prior literature, because their capital structures are significantly different from the industrial companies in our sample

<sup>5</sup> Note that our final sample presents 361 firm-year observations, but our dependent variable *Cost of Equity* exhibits 115 firm-year observations.

$$Cost\ of\ Capital_{i,t+1} = b_0 + b_1 TaxAvoid_{i,t} + b_2 ESG_{i,t} + \sum b_{3k} Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Cost\ of\ Capital_{i,t+1} = b_0 + b_1 TaxAvoid_{i,t} + b_2 (TaxAvoid_{i,t} \times ESG_{i,t}) + \sum b_{3k} Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

The dependent variable, in both model (1) and (2), measures the *Cost of Equity* and the *Cost of Debt*. *Cost of Equity* is calculated following the Capital Asset Pricing Model (CAPM), considering the riskiness of the firm relative to the market, following Goh et al. (2016) that relies on the cost of equity derivation of Lambert et al. (2007). *Cost of Equity* was obtained from Thomson Reuters. We expect that this variable is affected by tax avoidance, measured as CETR3. The other measure of our dependent variable, *Cost of Debt*, is a proxy measure. In order to get more observations than those that we find on Thomson Reuters, we calculated *Cost of Debt* as a proxy measure dividing *Interest expense* by *Total Debt*.

*TaxAvoid* includes the measure of tax avoidance, either *CETR* or *BETR*. We calculate the cash effective tax rate (*CETR*) as the ratio of total taxes paid in cash scaled by total pre-tax income, following Dyreng et al. (2008). *CETR3* is the three-year long-run cash effective tax rate computed as the sum of total cash taxes paid over the three-year period  $t-2$  to  $t$  divided by the sum of pre-tax income over the three-year period  $t-2$  to  $t$ . Observations greater than 1 or lower than 0 are excluded. We multiply the measure by negative one in order to facilitate the interpretation. Consequently, tax avoidance is increasing in our *CETR* measure. In the same way, we calculate the book effective tax rate (*BETR*) as the ratio of total tax expenses scaled by total pre-tax income. *BETR3* represents the three-year long-run book effective tax rate computed as the sum of total tax expenses over the three-year period  $t-2$  to  $t$  divided by the sum of pre-tax income over the three-year period  $t-2$  to  $t$ . We use the same approach as in the *CETR* – observations greater than one or lower than 0 are excluded and the measure was multiplied by negative one in order that tax avoidance is increasing in *BETR*. Following Goh et al. (2016) and Shevlin et al. (2019), we rely on long-run measures to establish that tax avoidance affects firm's cost of capital because managers and firms might respond to cost of capital incentives with some delay and because long-run measures could capture tax avoidance activities that take more than one year to implement. Therefore, long-run measures are theoretically suitable.

We use four measures of Environmental, Social and Governance (*ESG* in equation 1). First, we use *ESG Combined Score*, which represents the overall ESG score of a firm and is calculated as the average of the *ESG Score* and the *ESC Controversies score*, where *ESG score* is calculated taking into consideration a total of 10 categories divided into three major categories, Environmental, Social and Governance, measuring the firm's ESG performance based on reported data in the public domain and *ESC Controversies score* is calculated taking into account 23 ESG controversy topics, measuring a firm's exposure to any environmental, social and governance controversies or negative events reflected in the global. Our second measure is *ESG Social Score* and shows how firms manage their relationships with the communities where operate, employers, suppliers, and customers. Is used the TRBC Industry Group benchmark to calculate category scores because some issues tend to be similar in companies within the same industries. Is divided in 4 categories: Workforce, Human Rights, Community and Product Responsibility. *ESG Governance Score* examines how firms manage their shareholders rights, internal controls, and executive leadership. To calculate category scores is used Country as the benchmark, because governance practices tend to be similar within countries. Is divided into 3 categories: Management, Shareholders and CSR Strategy. Finally, *ESG Environment Score* measure how firms manage their pollution prevention, protection of historical and cultural sites, environmental compliance, and conservation. To calculate category scores is used the TRBC Industry Group benchmark because some issues tend to be more relevant to firms within the same industries. Is divided into 3 categories: Resource Use, Emissions and Innovation.

### **3.3. Control Variables**

*Controls* are a set of predetermined control variables that prior literature found an association between tax avoidance and cost of equity. We provide a variable definition in Table 1.

- Return on Assets (*ROA*) because it is directly related to equity risk incentives, following Rego and Wilson (2012).
- *Size* because transaction costs and firm size are proportional (Fischer et al., 1989) and because large firms should issue less equity (Chang et al., 2006) and therefore is directly related with firm's capital structure.

- Capital expenditures (*CAPEX*) and selling, general and administrative expenses (*SG&A*) because firms could use external financing to fund such expenditures, following Lee et al. (2019).
- Property, plant and equipment (*PPE*) to control for tax avoidance due to depreciation deductions and because firms can decrease debt costs by offering *PPE* as collateral (Lee et al., 2019), meaning that firms with high levels of *PPE* should prefer debt instead of equity when financing (Chang et al., 2009).
- Leverage (*LEV*), which is calculated as long-term debt divided by total assets, following Dhaliwal et al. (2006).
- Market-to-book ratio (*Market Book*) because higher growth opportunities could be associated with lower leverage, due to higher loan contracting costs (Myers 1977 and Harrington and Smith 2012) and as a proxy of company risk (Peterkort and Nielsen 2005).
- Revenue growth. Following Chang et al. (2009), growth firms may need more external ways to finance themselves, choosing equity financing over debt, we control for revenue changes (*Revenue growth*).
- Analysts. Due to the important role that the number of analysts following a firm play on tax avoidance, pointed out by Allen et al. (2016) and Chang et al. (2006), we use the control variable *Analysts* to capture the number of analysts providing earnings forecast.

To detect for endogenous regressors in our models we perform the Hausman specification test and apply fixed effects<sup>6</sup> in our model. In order to test for homoscedasticity, we assess for differences in the variance of the residuals across observations. Nonetheless, our models are robust. We also test for multicollinearity in our models performing the Variance Inflation Factor (VIF) test. In all estimations of our study, there were not found evidence of multicollinearity amongst predictors, as the VIF values for all estimations fluctuates between 1.70 and 2.38. Moreover, there were performed statistical tests to assess for normality of the errors.

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<sup>6</sup> We apply year and firm effects.

## 4. Empirical Results

### 4.1. Descriptive Statistics and Correlations

Table 2 provides descriptive statistics for the variables used in our research model. We find that *Cost of Equity* have a mean and median of 7.9 percent and 7.5 percent respectively, with a standard deviation of 1.8 and fluctuates from 3.6 to 13.2 percent. For the *Cost of Debt*, we find a 3.9 percent (4.4 percent) for median (mean), respectively. *Cost of Debt* varies from 0 to 22.5 percent. Our mean (median) company has a long-run effective tax rate (*CETR3*) of -27.6<sup>7</sup> percent (-27.2 percent), while the mean (median) long-run book effective tax rate (*BETR3*) is -25.9 percent (-25.8 percent). Our mean company has an *ESG Combined Score*<sup>8</sup> of 0.634 in a spectrum of companies with a score that varies from 0.249 to 0.929. The maximum absolute value of *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score* in our sample is 0.99, where the mean firm scored 0.787, 0.707 and 0.764, respectively. *ESG Controversies Score* presents a 0.619 mean and a median of 0.711.

Table 3 reports the correlation matrix of our variables. Our results that *Cost of Equity* is negatively correlated with our tax avoidance measures. While *CETR* is not statistically significant, *BETR3* presents a negative correlation, statistically significant. On the other hand, *CETR3* presents a significant positive correlation with *Cost of Debt*. Interesting results show that *ESG Combined Score* although have a negative correlation with both *Cost of Equity* and *Cost of Debt*, those results are not statistically significant at conventional levels. Nevertheless, decomposing the ESG into its pillars we find that *ESG Controversies Score* (*ESG Social Score*) present a significant negative (positive) correlation with *Cost of Equity*. By its turn, *Cost of Debt* is significantly negative correlated with both *ESG Social Score* and *ESG Environmental Score*. Our findings suggest that *Size* present a significant positive correlation with *ESG Social Score* and *ESG Environment Score* and negative with *ESG Controversies Score*. Also, as expected, our study shows a significant positive correlation between *Market Book* and *ROA*, between *PPE* and *Size*, and between *PPE* and *CAPEX*.

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<sup>7</sup> Note that *CETR3* and *BETR3* are multiplied by negative one, such that tax avoidance is increasing in *CETR* and *BETR*.

<sup>8</sup> Note that ESG scores varies between 0 and 1.

## 4.2. Main Results

Table 4 and 5 report the results of our testing hypothesis. Specifically, reports the results of testing whether ESG factors and tax avoidance influences, both separately and jointly, the company's cost of capital. Therefore, to test our hypotheses, in Table 4 we test the influence of both tax avoidance and ESG factors, separately, on the cost of capital, and in Table 5 we computed their jointly influence on company's cost of capital. Moreover, to test that effect, Panel A and Panel B have *Cost of Equity* and *Cost of Debt*, respectively, as their dependent variable.

In both Tables we look at our sample considering different ESG components and examine the relationship between tax avoidance and cost of capital for the different ESG factors, namely, *ESG Combined Score*, *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score*, for columns (1), (2), (3) and (4) respectively.

Results in Table 4 are consistent with prior literature. In Panel A we find that the coefficient of *CETR3*<sup>9</sup> is positive, although is just significant in column (3) and (4), in line with the agency perspective of tax avoidance. In column (1) the coefficient of *ESG Combined Score* is negative and significant which suggests that *Cost of Equity* decreases as *ESG Combined Score* increases, meaning that shareholders are concern with company's ESG performance and respond positively to high ESG scores. However, if we examine in detail the different ESG factors, we find that only the *ESG Governance Score* coefficient, in column (3) is statistically significant and exhibit a negative relationship with *Cost of Equity*. Regarding the coefficients of our control variables, they are mostly consistent with prior literature and our predictions. As expected, the coefficient is *ROA* are negative, in line with Rego and Wilson (2012). We find that the coefficient on *Size* is negative and the coefficient on *PPE* is also negative and statistically significant in columns (2), (3) and (4), meaning that the cost for investors to invest in a company is lower for big companies since they are less likely to bankrupt, following Chang et al. (2006), *SG&A*, *CAPEX* and *Revenue Growth* all exhibit positive coefficients, in line with our predictions because growing companies should have a higher self-investment and therefore, may require more financing (Lee et al. 2019). The coefficient on *Lev* is positive, which suggest that higher leverage results in a higher cost of equity. As predicted, *Market Book* presents a negative statistically significant coefficient, meaning that investors react positively to growth potential, consistent with Harrington and Smith (2012). The

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<sup>9</sup> Note that the variable is multiplied by -1 in order to tax avoidance is increasing in *CETR*.

coefficient on *Analysts* is also negative and statistically significant, consistent with prior literature (Allen et al. 2016). For what concerns *Cost of Debt*, in Panel B, we find a positive relationship between *CERT3* and *Cost of Debt*, suggested by the positive coefficients on *CETR3*, in line with prior literature. Although not consistent we find a negative coefficient on *ESG Combined Score* - apparently, *Cost of Debt* is only significantly affected by *ESG Social Score*, as shown by its negative coefficient in column (2). As predicted, *SIZE* and *Market Book* exhibits a negative and statistically significant coefficients. Results in Table 4 suggest that cost of capital is positively associated with tax avoidance activities and negatively associated with ESG performance scores.

Results in Table 5 exhibit whether company's level of ESG shapes how tax avoidance affects the cost of capital, through interaction variables. Panel A exhibit positive statistically significant coefficients on *CETR3*, meaning that even taking into consideration the ESG performance scores, investors still are sensitive with to tax avoidance and react negatively to this risky form of investment. The coefficient of the interaction terms in column (2) and (3) show interesting results, exhibiting negative and significant coefficients which means that for a certain level of tax avoidance, shareholders perceive positively higher scores of ESG performance, suggesting more confidence in the company administration and thus, a lower market demand compensation for bearing the risk. This suggest that although investors perceive tax avoidance as a risky for of investment their negative reaction could be mitigated depending on the level ESG performance scores. *Market Book*, *Revenue growth* and *Analysts* present negative statistically significant coefficients, which is consistent with our previous results and in line with prior literature. *ROA* present a negative coefficient; however, it is not significant. The coefficient on *PPE* is also negative with statistically significance in columns (2) and (3), and the *LEV* exhibit a positive coefficient. Looking to the significance of our results we could suggest that investors are more sensitive to social responsibility and company's governance than with environmental concerns. Panel B show positive coefficients on tax avoidance measure. Once again, the coefficients on *SIZE* and *Market Book* are negative and statistically significant. The interaction term coefficient in column (2) is also negative and significant, suggesting that for a given level of tax avoidance, a higher score of the Social parameter of ESG score result in a lower *Cost of Debt*. The coefficient on *ROA* is negative, as expected. We find that the coefficient on *SG&A* and *LEV* is positive, consistent with our predictions. The coefficients on *Analysts* suggest no association

between *Cost of Debt* and the number of analysts providing earnings forecast for the company.

These results suggest that ESG performance score affect the relationship between tax avoidance and cost of capital and that each ESG factor affects differently and have a different impact on the association between tax avoidance and cost of capital. Consistent with our hypothesis, these findings evidence that the level of tax avoidance is associated with company's cost of capital and show that the investor's perception of how tax avoidance affect their cost of capital could change depending on the level of the ESG performance score. Nonetheless, as some coefficients do not have statistical significance it is not possible to undoubtedly isolate, in our sample, the effect of ESG performance on that relationship.

#### **4.3. Robustness Check**

Furthermore, in Table 6, we perform a robustness check of our model results. In our robustness test, we use the model in Table 5, replacing our tax measure (*CETR3*) to the long-run book effective tax rate (*BETR3*) and excluding some outliers as a result of the high cost of debt. Table 6 display both Panels A and B for *Cost of Equity* and *Cost of Debt*, respectively, exhibiting the OLS model estimation results. Our robustness testing model has robust coefficients and have similar results when compared to Table 5, supporting our original outcomes.

### **5. Conclusion**

Tax avoidance and company's cost of capital are directly related as tax avoidance activities generates incremental after-tax cash flows due to a decrease in cash tax payments. Therefore, tax avoidance affects company's capital structure by influencing both the cost of equity and the cost of debt.

There are several studies with significant contributions relating to those two topics. Nevertheless, this study examines the role that ESG performance plays in that relation and tries to shape the association between tax avoidance and cost of capital throughout the signalling effect that ESG has on the investors. Again, there are consistent literature contributions regarding the effect that ESG performance has on the cost of capital. Nonetheless, excluding the tax avoidance component. Therefore, the aim of this

study is to understand whether ESG performance influences the impact of tax avoidance on the cost of capital.

To test our hypothesis, we use a panel data set of the EuroStoxx50 covering 2006 to 2018. We rely on two measures as dependent variables to try to model that relationship, cost of equity and cost of debt. We find consistent results with our hypotheses. First, our findings show a positive relationship between tax avoidance and cost of equity, consistent with prior literature. Second, we find that ESG performance affects the relationship between tax avoidance and cost of capital. Third, we find that the three ESG pillars shape differently such relationship. Our results suggest that investors perceive higher levels of ESG performance positively when investing in firms that engage in tax avoidance activities. Also, we find a negative association between ESG performance and Cost of Equity. For what regards the Cost of Debt, we also find results consistent with prior literature: tax avoidance affecting positively and ESG performance affecting negatively. Therefore, towards these conclusions, if ESG performance and tax avoidance could affect in different ways company's Cost of Capital, then there may be a channel through which ESG performance affects that relationship between tax avoidance and Cost of Capital.

Finding consistent results for what concerns to Cost of Equity, we find that for companies with the same level of tax avoidance shareholders react positively to higher scores of ESG performance. Specially, we find significant results for what concerns the Social and Governance pillars of ESG. Regarding the Cost of Debt, we also find that creditors require a lower Cost of Debt for firms that have the same level of tax avoidance but higher scores of ESG performance. Nevertheless, we only find statistical significance in the Social component of ESG.

Our results suggest that although ESG performance appears to shape the relationship between tax avoidance and cost of capital, that effect is mostly captured by the Social and Governance components, suggesting that although the number of companies concerned with environmental issues is increasing, investors do not react significantly to those problems. We also perform a robustness check, and our findings corroborate our initial results.

Our study makes contributions to the literature on tax avoidance and cost of capital (e.g. Lee et al. (2019); Hutchens and Rego (2013); Harrington and Smith (2012)), adding a topic that is not sufficiently explored and could influence the final relationship between

those two measures.. Also, our study provides support that investors react positively to higher ESG performance scores even for companies that engage in avoidance activities.

This study also has managerial implications, showing the way that investors think about tax avoidance and cost of capital when taking into consideration environmental, social and governance issues. Therefore, companies should pay particular attention to the asset allocation process, using a comprehensive approach that attracts investors, particularly when companies are seeking financing.

## **6. Limitations and Further Research**

This study contributes to the relationship between tax avoidance and the cost of capital by shaping whether ESG performance levels affect that relationship. However, it is necessary to make a limitation regarding its interpretation. Our study works with an European data sample that includes all companies listed on the EuroStoxx50. Therefore, we have a limited number of observations, particularly regarding the Cost of Equity where we could just study a four-year time interval due to constraints of data availability. To overcome that issue, we use a proxy measure to calculate the Cost of Debt, which is also a limitation since we do not have an exact value for that measure. Also, as some coefficients are not statistically significant, we cannot undoubtedly isolate the effect of ESG performance.

We suggest that future researches, focused on this particular channel that shapes the relationship among tax avoidance and cost of capital, use a broader database - with more data and with greater time interval analysis – and perhaps another possible explanatory variable that could change or influence that association. Another interesting suggestion for future research, is to see if that influence that ESG performance scores has on the relationship between tax avoidance and cost of capital is the same, or have a different impact, in different levels of tax avoidance.

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## 8. Appendixes

### 8.1. Appendix A – Variable Definitions

**Table 1 - Variable Definitions**

<b>Variables</b>	<b>Definition</b>
<b><i>Cost of Capital measures</i></b>	
<i>Cost of Equity</i>	Calculated as of December 31 following the close of the fiscal year, obtained from Thomson Reuters
<i>Cost of Debt</i>	Calculated as interest expense scaled by Total Debt.
<b><i>Tax Avoidance measures</i></b>	
<i>CETR3</i>	Long-run cash effective tax rate as the sum of cash taxes paid over the three-year period $t-2$ to $t$ divided by the sum of pre-tax income over the three-year period $t-2$ to $t$ . Observations greater than 1 or lower than 0 are excluded. The variable is multiplied by -1 in order to tax avoidance is increasing in CETR.
<i>BETR3</i>	Long-run book effective tax rate as the sum of total tax expenses over the three-year period $t-2$ to $t$ divided by the sum of pre-tax income over the three-year period $t-2$ to $t$ . Observations greater than 1 or lower than 0 are excluded. The variable is multiplied by -1 in order to tax avoidance is increasing in BETR.
<b><i>Environment, Social and, Governance measures</i></b>	
<i>ESG Combined Score</i>	Is calculated as the average of the ESG score and the ESC controversies score, when there are some controversies during the fiscal year.
<i>ESG Controversies Score</i>	Is calculated taking into account 23 ESG controversy topics, measuring a firm's exposure to any environmental, social and governance controversies or negative events reflected in the global media
<i>ESG Social Score</i>	Examines how firms manage their relationships with the communities where operate, employers, suppliers, and customers. Is used the TRBC Industry Group benchmark to calculate category scores because some issues tend to be similar in companies within the same industries. Is divided in 4 categories: Workforce, Human Rights, Community and Product Responsibility.

<i>ESG Governance Score</i>	Examines how firms manage their shareholders rights, internal controls, and executive leadership. To calculate category scores is used Country as the benchmark, because governance practices tend to be similar within countries. Is divided in 3 categories: Management, Shareholders and CSR Strategy.
<i>ESG Environment Score</i>	Examines how firms manage their pollution prevention, protection of historical and cultural sites, environmental compliance and conservation. To calculate category scores is used the TRBC Industry Group benchmark because some issues tend to be more relevant to firms within the same industries. Is divided in 3 categories: Resource Use, Emissions and Innovation.
<b><i>Control variables</i></b>	
<i>ROA</i>	Net income scaled by Total Assets.
<i>SIZE</i>	Natural logarithm of total assets in year $t$ .
<i>SG&amp;A</i>	Selling, general and administrative expenses in year $t$ scales by total revenue in year $t$ .
<i>CAPEX</i>	Capital expenditures scaled by total assets in year $t$ .
<i>PPE</i>	Property, plant, and equipment scaled by total assets in year $t$ .
<i>LEV</i>	Long-term debt scaled by total assets in year $t$ .
<i>Market Book</i>	Market capitalization scaled by total book value
<i>Revenue growth</i>	Revenue in year $t$ minus revenue in year $t-1$ , scaled by total assets in year $t-1$ .
<i>Analysts</i>	Captures the number of analysts providing earnings forecast.

## 8.2. Appendix C - Tables

**Table 2 - Summary Statistics**

**Note:** Table 2 presents the summary descriptive statistics of our sample over the period from 2005 to 2019, excluding financial companies. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. For variable definitions see Appendix A.

	N	min	p25	Median	p75	max	Mean	Std. Dev.
Cost of Equity	115	0.036	0.068	0.075	0.092	0.132	0.079	0.018
Cost of Debt	361	0.001	0.028	0.039	0.051	0.225	0.044	0.031
CETR3	300	-0.678	-0.327	-0.272	-0.213	-0.068	-0.276	0.094
BETR3	361	-0.838	-0.298	-0.258	-0.213	-0.009	-0.259	0.097
ESG Combined	361	0.249	0.521	0.626	0.757	0.929	0.634	0.145
ESG Controversies	361	0.015	0.3	0.711	0.938	1	0.619	0.339
Social	361	0.149	0.719	0.835	0.906	0.983	0.787	0.169
Governance	361	0.113	0.615	0.758	0.848	0.993	0.707	0.194
Environment	361	0	0.649	0.804	0.884	0.985	0.764	0.159
ROA	361	-0.05	0.038	0.062	0.095	0.38	0.074	0.058
SIZE	361	22.097	24.005	24.665	25.298	26.373	24.614	0.835
SG&A	361	0.036	0.152	0.262	0.319	0.515	0.244	0.114
CAPEX	361	0.009	0.023	0.035	0.05	0.149	0.04	0.024
PPE	361	0.023	0.099	0.16	0.296	0.739	0.225	0.182
LEV	361	0	0.118	0.187	0.283	0.512	0.201	0.112
Market Book	361	0.604	1.826	2.885	4.773	17.561	3.927	3.194
Revenue growth	361	-0.475	-0.005	0.027	0.068	0.381	0.034	0.087
Analysts	361	0	24	29	32	43	27.64	7.264

**Table 3 - Pairwise Correlations**

**Note:** Table 3 presents the pairwise correlation matrix among our two dependent variables, tax avoidance measures and controls. We used a pairwise correlation so that each correlation is calculated for all cases that have no missing values for that specific pair of values. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively. For variable definitions see Appendix A. (5), (6), (7), (8) and (9) represent each ESG component score.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) Cost of Equity	1.000																	
(2) Cost of Debt	0.087	1.000																
(3) CETR3	-0.067	0.171*	1.000															
(4) BETR3	-0.160*	0.013	0.316*	1.000														
(5) ESG Combined	-0.049	-0.058	0.079	0.152*	1.000													
(6) ESG Controversies	-0.160*	-0.008	0.132*	0.198*	0.642*	1.000												
(7) Social	0.178*	-0.125*	-0.030	-0.035	0.294*	-0.386*	1.000											
(8) Governance	0.100	-0.083	-0.026	0.064	0.308*	-0.154*	0.193*	1.000										
(9) Environment	-0.016	-0.135*	-0.017	-0.125*	0.404*	-0.202*	0.597*	0.187*	1.000									
(10) ROA	0.059	0.196*	0.284*	0.202*	0.069	-0.026	0.143*	0.100*	-0.068	1.000								
(11) SIZE	0.226*	-0.121*	-0.125*	-0.200*	-0.090*	-0.375*	0.268*	0.042	0.272*	-0.156*	1.000							
(12) SG&A	-0.355*	-0.013	-0.137*	0.037	-0.026	-0.002	-0.033	-0.118*	-0.058	0.137*	-0.159*	1.000						
(13) CAPEX	0.040	0.020	-0.020	-0.237*	-0.189*	-0.206*	0.056	0.108*	-0.108*	0.203*	0.260*	-0.247*	1.000					
(14) PPE	0.116	0.014	0.018	-0.254*	-0.134*	-0.147*	0.008	0.159*	-0.094*	0.000	0.395*	-0.435*	0.732*	1.000				
(15) LEV	-0.088	-0.089*	0.050	-0.017	0.033	0.062	-0.177*	0.212*	-0.081	-0.296*	0.123*	-0.184*	0.080	0.285*	1.000			
(16) Market Book	-0.098	0.088*	0.159*	0.182*	0.171*	0.100*	0.095*	0.115*	-0.067	0.531*	-0.304*	0.226*	-0.058	-0.182*	0.131*	1.000		
(17) Revenue growth	0.125	0.124*	0.120*	-0.063	-0.064	0.000	-0.082	-0.024	-0.170*	0.218*	-0.111*	-0.007	0.052	0.017	-0.073	0.032	1.000	
(18) Analysts	-0.011	0.099*	-0.081	-0.022	-0.052	-0.168*	0.160*	-0.023	0.093*	0.006	0.157*	0.115*	0.019	-0.072	-0.184*	-0.149*	-0.031	1.000

**Table 4 - The effect of Tax Avoidance and ESG factors on the Cost of Capital**

**Panel A**

**Note:**  $Cost\ of\ Equity_{i,t+1} = b_0 + b_1TaxAvoid_{i,t} + b_2ESG_{i,t} + \sum b_{3k}Controls_{i,t} + \varepsilon_{i,t}$

Panel A presents regression outputs for the relationship between tax avoidance (expressed as *CERT3*) and ESG factors on the *Cost of Equity*. Column (1) report the results using the aggregate ESG score (*ESG Combined Score*) and column (2), (3) and (4) report results for *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score*, respectively. Robust t-statistic errors are in parenthesis and fixed effects were considered. The analysis period comprises the interval between 2015 until 2018. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Equity</i> )			
	(1)	(2)	(3)	(4)
CETR3	0.021 (0.014)	0.026* (0.014)	0.020 (0.013)	0.026* (0.014)
ESG Combined Score	-0.021** (0.010)			
ROA	-0.054 (0.066)	-0.031 (0.067)	-0.038 (0.063)	-0.027 (0.068)
SIZE	-0.015 (0.015)	-0.015 (0.017)	-0.004 (0.018)	-0.014 (0.017)
SG&A	0.063 (0.051)	0.074 (0.056)	0.154** (0.074)	0.070 (0.056)
CAPEX	0.115 (0.137)	0.157 (0.143)	0.187 (0.126)	0.161 (0.140)
PPE	-0.065 (0.054)	-0.093* (0.051)	-0.120** (0.051)	-0.092* (0.049)
LEV	0.054 (0.055)	0.053 (0.063)	0.059 (0.063)	0.057 (0.061)
Market Book	-0.001** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001** (0.000)
Revenue growth	0.026 (0.016)	0.028* (0.016)	0.022 (0.017)	0.026 (0.016)
Analysts	-0.001*** (0.001)	-0.001** (0.001)	-0.001** (0.000)	-0.001** (0.001)
Social Score		0.003 (0.020)		
Governance Score			-0.049** (0.020)	
Environment Score				-0.015 (0.024)
Constant	-0.250 (0.386)	-0.220 (0.418)	0.025 (0.437)	-0.197 (0.414)
Observations	103	103	103	103
Adjusted $R^2$	0.454	0.409	0.504	0.411

**Panel B**

**Note:**  $Cost\ of\ Debt_{i,t+1} = b_0 + b_1TaxAvoid_{i,t} + b_2ESG_{i,t} + \sum b_{3k}Controls_{i,t} + \varepsilon_{i,t}$

Panel B presents regression outputs for the relationship between tax avoidance (expressed as *CERT3*) and ESG factors on the *Cost of Debt*. Column (1) report the results using the aggregate ESG score (*ESG Combined Score*) and column (2), (3) and (4) report results for *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score*, respectively. Robust t-statistic errors are in parenthesis and fixed effects were considered. The analysis period comprises the interval between 2006 until 2018\*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Debt</i> )			
	(1)	(2)	(3)	(4)
CETR3	0.015*	0.019	0.014	0.015
	(0.013)	(0.014)	(0.013)	(0.013)
ESG Combined Score	-0.014			
	(0.014)			
ROA	-0.070	-0.071	-0.065	-0.068
	(0.064)	(0.066)	(0.063)	(0.065)
SIZE	-0.044***	-0.037***	-0.047***	-0.043***
	(0.007)	(0.006)	(0.007)	(0.007)
SG&A	0.012	0.025	0.004	0.010
	(0.055)	(0.058)	(0.057)	(0.060)
CAPEX	-0.028	-0.004	-0.024	-0.030
	(0.133)	(0.138)	(0.139)	(0.136)
PPE	-0.063	-0.047	-0.067	-0.063
	(0.050)	(0.043)	(0.048)	(0.048)
LEV	0.011	0.004	0.022	0.014
	(0.042)	(0.041)	(0.045)	(0.042)
Market Book	-0.003*	-0.003*	-0.003**	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)
Revenue growth	0.008	0.008	0.008	0.005
	(0.013)	(0.013)	(0.012)	(0.015)
Analysts	-0.001	0.000	-0.003	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Social Score		-0.047*		
		(0.027)		
Governance Score			0.012	
			(0.018)	
Environment Score				-0.021
				(0.028)
Constant	1.163***	1.017***	1.211***	1.152***
	(0.166)	(0.138)	(0.168)	(0.167)
Observations	327	327	327	327
Adjusted $R^2$	0.288	0.307	0.285	0.289

**Table 5 - The effect of ESG on the tax avoidance and Cost of Capital relationship****Panel A**

**Note:**  $Cost\ of\ Equity_{i,t+1} = b_0 + b_1TaxAvoid_{i,t} + b_2(TaxAvoid_{i,t} \times ESG_{i,t}) + \sum b_{3k}Controls_{i,t} + \varepsilon_{i,t}$

Panel A presents regression outputs for the effect that ESG factors has on the relationship between tax avoidance (expressed as *CETR3*) and *Cost of Equity*, through interaction terms. Column (1) report the results using the interaction of the aggregate ESG score (*ESG Combined Score*) with *CETR3* and column (2), (3) and (4) report results for the interaction of *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score* with *CETR3*, respectively. Robust t-statistic errors are in parenthesis and fixed effects were considered. The analysis period comprises the interval between 2015 until 2018. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Equity</i> )			
	(1)	(2)	(3)	(4)
CETR3	0.046*	0.096**	0.130***	0.118
	(0.026)	(0.038)	(0.039)	(0.074)
CETR3 × ESG Combined Score	-0.041			
	(0.040)			
ROA	-0.040	-0.042	0.029	-0.048
	(0.067)	(0.066)	(0.058)	(0.070)
SIZE	0.017	0.011	0.007	0.017
	(0.017)	(0.018)	(0.017)	(0.017)
SG&A	-0.051	-0.088	-0.156*	-0.091
	(0.053)	(0.060)	(0.080)	(0.062)
CAPEX	0.130	0.143	0.134	0.143
	(0.138)	(0.134)	(0.134)	(0.140)
PPE	-0.073	-0.090*	-0.112**	-0.083
	(0.055)	(0.052)	(0.047)	(0.052)
LEV	0.054	0.054	0.055	0.040
	(0.060)	(0.063)	(0.064)	(0.064)
Market Book	-0.001**	-0.001**	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Revenue growth	-0.028*	-0.029*	-0.018	-0.032*
	(0.016)	(0.015)	(0.017)	(0.016)
Analysts	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.000)	(0.001)
CETR3 × Social Score		-0.084*		
		(0.048)		
CETR3 × Governance Score			-0.130***	
			(0.046)	
CETR3 × Environment Score				-0.119
				(0.095)
Constant	-0.294	-0.122	-0.014	-0.279
	(0.411)	(0.439)	(0.409)	(0.426)
Observations	103	103	103	103
Adjusted R <sup>2</sup>	0.431	0.443	0.530	0.429

**Panel B**

**Note:**  $Cost\ of\ Debt_{i,t+1} = b_0 + b_1 TaxAvoid_{i,t} + b_2(TaxAvoid_{i,t} \times ESG_{i,t}) + \sum b_{3k} Controls_{i,t} + \varepsilon_{i,t}$

Panel A presents regression outputs for the effect that ESG factors has on the relationship between tax avoidance (expressed as *CETR3*) and *Cost of Debt*, through interaction terms. Column (1) report the results using the interaction of the aggregate ESG score (*ESG Combined Score*) with *CETR3* and column (2), (3) and (4) report results for the interaction of *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score* with *CETR3*, respectively. Robust t-statistic errors are in parenthesis and fixed effects were considered. The analysis period comprises the interval between 2006 until 2018. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Debt</i> )			
	(1)	(2)	(3)	(4)
CETR3	0.001 (0.016)	0.028 (0.022)	0.051 (0.039)	0.004 (0.026)
CETR3 × ESG Combined Score	0.030 (0.020)			
ROA	-0.068 (0.064)	-0.071 (0.065)	-0.060 (0.060)	-0.067 (0.064)
SIZE	-0.045*** (0.007)	-0.043*** (0.006)	-0.047*** (0.007)	-0.045*** (0.007)
SG&A	0.011 (0.056)	0.019 (0.058)	0.002 (0.057)	0.009 (0.057)
CAPEX	-0.030 (0.133)	-0.027 (0.135)	-0.017 (0.140)	-0.034 (0.135)
PPE	-0.061 (0.051)	-0.057 (0.047)	-0.068 (0.047)	-0.063 (0.049)
LEV	0.013 (0.040)	0.011 (0.040)	0.024 (0.042)	0.015 (0.041)
Market Book	-0.003* (0.002)	-0.003* (0.002)	-0.003* (0.002)	-0.003* (0.002)
Revenue growth	0.008 (0.013)	0.008 (0.013)	0.008 (0.012)	0.007 (0.013)
Analysts	0.000 (0.000)	-0.001 (0.000)	0.002 (0.000)	0.000 (0.000)
CETR3 × Social Score		-0.058* (0.031)		
CETR3 × Governance Score			-0.045 (0.037)	
CETR3 × Environment Score				0.019 (0.029)
Constant	1.174*** (0.172)	1.131*** (0.157)	1.230*** (0.177)	1.183*** (0.169)
Observations	327	327	327	327
Adjusted R <sup>2</sup>	0.264	0.268	0.266	0.262

**Table 6 - Robustness Check****Panel A**

**Note:**  $Cost\ of\ Equity_{i,t+1} = b_0 + b_1TaxAvoid_{i,t} + b_2(TaxAvoid_{i,t} \times ESG_{i,t}) + \sum b_{3k}Controls_{i,t} + \varepsilon_{i,t}$

Panel A presents regression outputs for the effect that ESG factors has on the relationship between tax avoidance (expressed as *BETR3*) and *Cost of Equity*, through interaction terms. Column (1) report the results using the interaction of the aggregate ESG score (*ESG Combined Score*) with *BETR3* and column (2), (3) and (4) report results for the interaction of *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score* with *BETR3*, respectively. Robust t-statistic errors are in parenthesis and fixed effects were considered. The analysis period comprises the interval between 2015 until 2018. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Equity</i> )			
	(1)	(2)	(3)	(4)
BETR3	0.052*	0.041	0.132**	0.029
	(0.026)	(0.040)	(0.058)	(0.038)
BETR3 × ESG Combined Score	-0.084*			
	(0.049)			
ROA	-0.095*	-0.079	-0.069	-0.082
	(0.054)	(0.056)	(0.054)	(0.055)
SIZE	0.018	0.017	0.008	0.020
	(0.014)	(0.017)	(0.017)	(0.016)
SG&A	-0.109*	-0.137**	-0.207**	-0.136**
	(0.055)	(0.064)	(0.080)	(0.064)
CAPEX	-0.015	0.052	0.097	0.047
	(0.117)	(0.114)	(0.100)	(0.119)
PPE	-0.047	-0.079*	-0.117**	-0.077*
	(0.046)	(0.046)	(0.048)	(0.044)
LEV	0.026	0.019	0.028	0.014
	(0.050)	(0.057)	(0.057)	(0.057)
Market Book	-0.001***	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Revenue growth	-0.024	-0.026	-0.020	-0.026
	(0.016)	(0.016)	(0.017)	(0.017)
Analysts	-0.002***	-0.001**	-0.001***	-0.001***
	(0.001)	(0.001)	(0.000)	(0.001)
BETR3 × Social Score		-0.030		
		(0.048)		
BETR3 × Governance Score			-0.151**	
			(0.073)	
BETR3 × Environment Score				-0.010
				(0.048)
Constant	-0.286	-0.254	-0.007	-0.310
	(0.349)	(0.415)	(0.419)	(0.393)
Observations	115	115	115	115
Adjusted R <sup>2</sup>	0.430	0.381	0.471	0.379

**Panel B**

**Note:**  $Cost\ of\ Debt_{i,t+1} = b_0 + b_1 TaxAvoid_{i,t} + b_2(TaxAvoid_{i,t} \times ESG_{i,t}) + \sum b_{3k} Controls_{i,t} + \varepsilon_{i,t}$

Panel A presents regression outputs for the effect that ESG factors has on the relationship between tax avoidance (expressed as *BETR3*) and *Cost of Debt*, through interaction terms. Column (1) report the results using the interaction of the aggregate ESG score (*ESG Combined Score*) with *BETR3* and column (2), (3) and (4) report results for the interaction of *ESG Social Score*, *ESG Governance Score* and *ESG Environment Score* with *BETR3*, respectively. Robust t-statistic errors are in parenthesis fixed effects were considered. The analysis period comprises the interval between 2006 until 2018. \*\*\*, \*\* and \* represent significance level at the 1%, 5% and 10%, respectively (one-tailed). For variable definitions see Appendix A.

	Dependent ( <i>Cost of Debt</i> )			
	(1)	(2)	(3)	(4)
BETR3	0.050 (0.035)	0.104 (0.064)	0.028 (0.042)	0.083 (0.069)
BETR3 × ESG Combined Score	0.052 (0.043)			
ROA	-0.032 (0.044)	-0.033 (0.045)	-0.031 (0.046)	-0.027 (0.045)
SIZE	-0.041*** (0.006)	-0.037*** (0.005)	-0.042*** (0.006)	-0.040*** (0.005)
SG&A	-0.001 (0.056)	-0.007 (0.057)	-0.004 (0.057)	-0.001 (0.059)
CAPEX	-0.071 (0.076)	-0.080 (0.081)	-0.079 (0.083)	-0.081 (0.080)
PPE	-0.061 (0.048)	-0.052 (0.041)	-0.064 (0.047)	-0.062 (0.045)
LEV	0.001 (0.038)	0.007 (0.039)	0.002 (0.041)	0.001 (0.039)
Market Book	-0.003** (0.002)	-0.003** (0.002)	-0.003** (0.001)	-0.003** (0.002)
Revenue growth	0.010 (0.013)	0.009 (0.013)	0.011 (0.013)	0.006 (0.015)
Analysts	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
BETR3 × Social Score		-0.110* (0.070)		
BETR3 × Governance Score			-0.009 (0.053)	
BETR3 × Environment Score				0.085 (0.082)
Constant	1.066*** (0.145)	0.979*** (0.119)	1.106*** (0.148)	1.049*** (0.134)
Observations	361	361	361	361
Adjusted R <sup>2</sup>	0.282	0.292	0.277	0.287

**Table 7 - Literature Review Summary: Theoretical Papers**

**Note:** Table 7 presents information regarding theoretical papers studied and presented in this thesis. The table is organized as follows: Author and the corresponding publishing year, the methodology used and the consequent main conclusions.

Author (year)	Methodology	Main Conclusions
Ashwin Kumar, N. C., Smith, C., Badis, L., Wang, N., Ambrosy, P., & Tavares, R. (2016)	<ul style="list-style-type: none"> <li>Development of a new quantitative model to establish the correlation between stock return volatility and ESG performance</li> </ul>	<ul style="list-style-type: none"> <li>ESG listed companies have lower stock return volatility when compared to non ESG listed companies</li> <li>Companies that perform better in ESG factors exhibits less risk than companies that don't perform so well</li> <li>When ESG factors are applied, the lower stock return volatility, that is translated in lower risk, could also achieve a higher return, in contrast to the conventional idea that lower risk means necessarily lower return</li> <li>Stock performance is closely lined with ESG factors</li> <li>Positive correlation between ESG factors and lower volatility</li> </ul>
Cappucci, M. (2018)	<ul style="list-style-type: none"> <li>Analysis of ESG integration in the investment process</li> </ul>	<ul style="list-style-type: none"> <li>There are some costs associated with ESG integration which include the costs associated with producing or acquiring relevant ESG data</li> <li>In some cases, the costs of ESG integration offset the gains from improved financial performance</li> <li>Convex relationship between investment performance and ESG intensity</li> <li>Some companies bear many of the costs of ESG integration but do not experience all the benefits</li> <li>Paradox: Although most of the managers are conscient about the benefits of ESG integration, results suggest that most of the investment managers have not implemented a strategy of full ESG integration. Possible explanations: 1) Misalignment of ESG's long-term benefits; 2) Lack of standards for measuring ESG performance; 3) Lack of ESG performance data reported by the companies; 4) Costs of full ESG integration</li> </ul>
DeAngelo, H., & Masulis, R. W. (1980)	<ul style="list-style-type: none"> <li>Development of the generalized Miller's personal tax model that includes the existence of corporate tax substitutes for debt such as book depreciation deductions and investment tax credits</li> </ul>	<ul style="list-style-type: none"> <li>Each firm has a single optimum leverage decision due solely to the interaction of personal and corporate tax treatment of debt and equity</li> </ul>

Desai, M. A., & Dharmapala, D. (2006)	<ul style="list-style-type: none"> <li>• Development of a model to assess how high-powered incentives influence tax avoidance decisions</li> </ul>	<ul style="list-style-type: none"> <li>• Incentive compensation is a significant determinant of tax avoidance</li> <li>• High-powered incentives are associated with lower levels of tax avoidance</li> <li>• For less well governed firms, interactions between tax avoidance and managerial diversion of rents are a significant issue</li> <li>• Evidence that book-tax gaps foresee negative abnormal returns in the presence of complementarities</li> <li>• Higher information risks could perceive tax avoidance activities as risky forms of investment</li> <li>• The theory suggests that reducing tax planning leads to a decrease in opportunities of managerial rent extraction</li> </ul>
Dyreg, S. D., Hanlon, M., & Maydew, E. L. (2008)	<ul style="list-style-type: none"> <li>• Development of a new measure of long-run tax avoidance</li> </ul>	<ul style="list-style-type: none"> <li>• The use of an annual rate to infer tax avoidance behaviour could lead to inference errors about the long-run tax avoidance behaviour</li> <li>• Lower cash effective tax rates have greater persistence than higher cash effective tax rates.</li> </ul>
Easton, P. D. (2004)	<ul style="list-style-type: none"> <li>• Development of a model of earnings that can be used to estimate the cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>• The model focuses on earnings instead of book values</li> <li>• Cost of capital is related to future earnings</li> </ul>
Hanlon, M., & Heitzman, S. (2010)	<ul style="list-style-type: none"> <li>• Development of a substantial research on the determinants of tax aggressiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Tax avoidance by itself cannot be considered as a reflexion of agency issues</li> <li>• Ownership patterns can have an important effect on tax avoidance</li> </ul>
Lambert, R., Leuz, C., & Verrecchia, R. E. (2007)	<ul style="list-style-type: none"> <li>• Development of a model that assess whether and how accounting information affect the cost of equity, that is consistent with CAPM but written in terms of cash flows rather than returns</li> </ul>	<ul style="list-style-type: none"> <li>• Expected cash flows may influence the cost of equity capital</li> <li>• Accounting information influences the firm's cost of equity, both directly and indirectly <ul style="list-style-type: none"> <li>○ Directly by varying market participants' perception of future cash flows</li> <li>○ Indirectly by affecting real decisions that change the distribution of future cash flows</li> </ul> </li> <li>• Cost of equity could increase or decrease, depending on the future cash flows</li> <li>• Higher quality of disclosures leads to a reduction of cost of capital</li> </ul>
Sikacz, H., & Wolczek, P. (2018)	<ul style="list-style-type: none"> <li>• ESG analysis of companies from the RESPECT index</li> </ul>	<ul style="list-style-type: none"> <li>• Negative correlation between ESG rating and cost of capital</li> <li>• Companies that manage ESG factors better are perceive less risky by the market</li> <li>• Positive correlation between ESG rating and financial results</li> <li>• ESG practices leads to lower risk and thus lower volatility of cash flows and profitability, with varies across different industries</li> </ul>

**Table 8 - Literature Review Summary: Empirical Papers**

**Note:** Table 8 presents information regarding empirical papers studied and presented in this thesis. The table is organized as follows: Author and the corresponding publishing year, the region or country analysed, the time interval of the analysis, the methodology used, both dependent and independent variables studied and the consequent main conclusions.

Author (year)	Country/Region	Period	Methodology	Dependent Variable	Independent Variables	Main Conclusions
Allen, A., Francis, B. B., Wu, Q., & Zhao, Y. (2016)	USA	1985-2011	<ul style="list-style-type: none"> <li>Examines the impact of analyst coverage on tax avoidance</li> </ul>	<ul style="list-style-type: none"> <li>Book-tax differences</li> </ul>	<ul style="list-style-type: none"> <li>Number of analysts</li> <li>Total assets</li> <li>Debt-to-Assets</li> <li>ROA</li> </ul>	<ul style="list-style-type: none"> <li>Firms with higher analyst coverage are more likely to limit tax avoidance.</li> <li>Negative association between analyst coverage and tax avoidance because investors perceive that higher coverage as safety.</li> <li>Pressure from analyst would intensify earnings management which could lead to a positive relationship between analyst coverage and tax avoidance.</li> </ul>
Armstrong, C. S., Blouin, J. L., Jagolinzer, A. D., & Larcker, D. F. (2015)	USA	2007-2011	<ul style="list-style-type: none"> <li>Examines the relation between tax avoidance, managerial incentives and corporate governance</li> </ul>	<ul style="list-style-type: none"> <li>Cash ETR</li> </ul>	<ul style="list-style-type: none"> <li>Number of financial experts on the board</li> <li>Proportion of independent directors</li> <li>Number of directors</li> <li>CEO's equity portfolio sensitivity</li> <li>Market-to-book</li> <li>Total Assets</li> </ul>	<ul style="list-style-type: none"> <li>Managers expect greater personal benefits from increase tax avoidance.</li> <li>Board financial sophistication and independence can reduce agency problems related to extreme levels of tax avoidance.</li> </ul>
Bharath, S. T., Sunder, J., &	USA	1998-2001	<ul style="list-style-type: none"> <li>Examines the impact of</li> </ul>	<ul style="list-style-type: none"> <li>Bank loan spread</li> </ul>	<ul style="list-style-type: none"> <li>Cash-flow volatility</li> <li>Total Assets</li> </ul>	<ul style="list-style-type: none"> <li>Borrowers accounting information quality have a significant impact on the loan terms.</li> </ul>

Sunder, S. V. (2008)			accounting quality on debt financing decisions		<ul style="list-style-type: none"> <li>• Interest coverage</li> <li>• Tangible Assets to Total Assets</li> <li>• Current ratio</li> <li>• ROA</li> <li>• Market-to-book</li> </ul>	<ul style="list-style-type: none"> <li>• Borrowers accounting quality have an inverse relationship with loan spreads.</li> <li>• Firms with higher levels of information risk prefer bank loans rather than bonds.</li> </ul>
Botosan, C. A., & Plumlee, M. A. (2002)	USA	1985-1996	<ul style="list-style-type: none"> <li>• Examines how cost of equity is affected by financial disclosure</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>• Market Beta</li> <li>• Market Value</li> <li>• Disclosure rank</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of equity is affected in terms of risk and return.</li> <li>• Total disclosure is not associated with a lower cost of equity.</li> </ul>
Chang, X., Dasgupta, S., & Hilary, G. (2006)	USA	1985-2000	<ul style="list-style-type: none"> <li>• Examines how analyst coverage affects financing decisions</li> </ul>	<ul style="list-style-type: none"> <li>• Net equity versus Net debt issuance (dummy)</li> <li>• Debt, small equity and large equity issue choices (multinomial logit)</li> <li>• Size of net equity issuance</li> </ul>	<ul style="list-style-type: none"> <li>• Number of analysts</li> <li>• Stock return (interaction variable)</li> </ul>	<ul style="list-style-type: none"> <li>• Firms that are covered by analyst are more likely to issue equity than debt</li> <li>• More analyst coverage decreases the probability of debt or a large issue (more than 10% of the book value of assets).</li> <li>• Large coverage analyst firms depend less on favourable market conditions for their equity issuance decisions.</li> </ul>
Cook, K. A., Moser, W. J., & Omer, T. C. (2017).	USA	1993-2014	<ul style="list-style-type: none"> <li>• Examines how <i>ex-ante</i> cost changes with investor expectations of tax avoidance</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>• Difference between reported and expected levels of tax avoidance</li> <li>• Tax avoidance measures (CETR, GAAPETR, UTB)</li> </ul>	<ul style="list-style-type: none"> <li>• The higher the difference between reported and expected levels of tax avoidance, the higher <i>ex-ante</i> cost of capital.</li> <li>• A negative association between the difference of expected and reported levels of tax avoidance in year t and in year t+1.</li> </ul>

						<ul style="list-style-type: none"> <li>Firms with tax avoidance below expectations increase tax avoidance to adjust toward their expectations.</li> </ul>
Desai, M. A., & Dharmapala, D. (2009)	USA	1993-2001	<ul style="list-style-type: none"> <li>Examines the degree to which tax avoidance activity is valued by investors</li> </ul>	<ul style="list-style-type: none"> <li>Firm value</li> </ul>	<ul style="list-style-type: none"> <li>Book-tax gap scaled by BV of Assets</li> <li>Total Accruals scaled by BV of Assets</li> <li>Institutional ownership</li> </ul>	<ul style="list-style-type: none"> <li>The idea that corporate tax avoidance represents a transfer of value from the State to shareholders has not been validated – agency perspective.</li> <li>Valuation of tax avoidance is a function of firms' governance</li> <li>The effect of tax avoidance on the firm value is positively related with higher-quality firm governance.</li> </ul>
Gaud, P., Hoesli, M., & Bender, A. (2007)	Europe	1988-2000	<ul style="list-style-type: none"> <li>Examines the debt-equity choice in Europe</li> </ul>	<ul style="list-style-type: none"> <li>Debt to Assets</li> </ul>	<ul style="list-style-type: none"> <li>Total Sales</li> <li>Tangible Assets to Total Assets</li> <li>ROA</li> <li>Cash</li> <li>Market-to-Book</li> <li>Amortization and Depreciation</li> </ul>	<ul style="list-style-type: none"> <li>Neither trade-off nor pecking order models are a suitable description of the capital structure policies in Europe.</li> <li>There is no evidence of a lower barrier to debt levels.</li> <li>When available, firms prefer internal financing over external financing</li> <li>Profitable firms prefer increase dividends rather than reduce debt levels.</li> <li>When there are few profitable projects, firms prefer to issue debt and increase dividends, whereas when there are profitable investments firms prefer to issue equity rather than debt.</li> </ul>
Goh, B. W., Lee, J., Lim, C. Y., & Shevlin, T. (2016)	USA	1993-2014	<ul style="list-style-type: none"> <li>Examines how investors perceive fewer extreme</li> </ul>	<ul style="list-style-type: none"> <li>Cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>Tax avoidance measures (BTD, PBTD, CETR)</li> <li>Number of analysts following a firm</li> </ul>	<ul style="list-style-type: none"> <li>Tax avoidance can be associated with a higher cost of equity both directly and indirectly.</li> <li>Directly when investors perceive tax avoidance negatively as tax planning involves complex transactions that lead</li> </ul>

			forms of tax avoidance		<ul style="list-style-type: none"> <li>• Total Debt-to-Assets ratio</li> <li>• Stock returns</li> <li>• Market capitalization</li> </ul>	<p>to opacity and this to a higher cost of equity.</p> <ul style="list-style-type: none"> <li>• The indirect effect relies upon when investors perceive that managers engage in an opportunistic rent-seeking and thus investors demand a higher cost of capital.</li> <li>• On the other hand, tax avoidance can be associated with a lower cost of equity given the fact that cash savings from taxes can lead to more productive uses.</li> <li>• Investors perceive tax planning more positively for firms with outside monitoring and for firms that likely realize higher marginal benefits from tax savings.</li> <li>• Tax avoidance generates cash tax saving that increase expected cash flows.</li> </ul>
Harrington, C., & Smith W. (2012)	USA	1989-2008	<ul style="list-style-type: none"> <li>• Examines how focus on general tax avoidance influences leverage choices</li> </ul>	<ul style="list-style-type: none"> <li>• Debt to Assets</li> </ul>	<ul style="list-style-type: none"> <li>• Cash ETR</li> <li>• EBITDA</li> <li>• Total Assets</li> <li>• Market-to-Book</li> <li>• Tangible Assets to Total Assets</li> <li>• Bond yield spread</li> </ul>	<ul style="list-style-type: none"> <li>• Tax avoiders have a higher average leverage prior to a refinancing, higher percentage of debt issuance at the refinancing point and higher average leverage after a refinancing event.</li> <li>• Firms focusing on a general tax avoidance strategy are willing to maintain higher levels of leverage.</li> </ul>
Hasan, I., Hoi, C. K. S., Wu, Q., & Zhang, H. (2014)	USA	1985-2009	<ul style="list-style-type: none"> <li>• Examines the overall effect of tax avoidance on the cost</li> </ul>	<ul style="list-style-type: none"> <li>• Bank loan spread</li> </ul>	<ul style="list-style-type: none"> <li>• Book-tax difference</li> <li>• Cash ETR</li> <li>• Debt-to-Assets</li> </ul>	<ul style="list-style-type: none"> <li>• A higher level of aggressive tax avoidance lead to a higher cost of debt.</li> <li>• Positive relation between tax avoidance and bank loans spread.</li> </ul>

			of bank loans		<ul style="list-style-type: none"> <li>• RA</li> <li>• Earnings volatility</li> <li>• Total Assets</li> <li>• Market-to-Book</li> </ul>	<ul style="list-style-type: none"> <li>• Positive relation between tax avoidance and bond yields spread.</li> <li>• Firms with high levels of tax avoidance prefer bank loan spreads over public bonds.</li> <li>• Positive relation between tax avoidance and loan spreads is mainly pronounced in firms with higher agency risk and higher information risk.</li> <li>• Debt holders perceive tax avoidance as an activity with significant risks.</li> </ul>
Hutchens, M., & Rego, S. (2013)	USA	2007-2011	<ul style="list-style-type: none"> <li>• Examines the relationship between tax risk and implied cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of capital</li> </ul>	<ul style="list-style-type: none"> <li>• Debt-to-Assets</li> <li>• ROA</li> <li>• Cash ETR</li> <li>• Capex</li> <li>• Earnings volatility</li> <li>• Analyst forecast errors</li> </ul>	<ul style="list-style-type: none"> <li>• The level of tax reserve is related with stock return and cash-flow volatility.</li> <li>• Tax risk is positively associated with the cost of equity.</li> </ul>
Hutchens, M., Rego, S., Williams, B. (2019)	USA	1987-2016	<ul style="list-style-type: none"> <li>• Examines the relationship between tax avoidance and firm risk</li> </ul>	<ul style="list-style-type: none"> <li>• Stock return volatility</li> </ul>	<ul style="list-style-type: none"> <li>• Cash ETR</li> <li>• Total Assets</li> <li>• ROA</li> <li>• Number of analysts</li> <li>• Cost of equity</li> <li>• Market-to-Book</li> <li>• Age</li> <li>• Bid-Ask spread</li> </ul>	<ul style="list-style-type: none"> <li>• The relationship between tax avoidance and firm risk changes for specific types of firms.</li> <li>• Tax avoidance is positively related to firm risk for mature firms.</li> <li>• Tax avoidance is positively related to the cost of debt and tax uncertainty, but negatively related to the cost of equity.</li> </ul>
Isin, A. A. (2018)	USA	2004-2018	<ul style="list-style-type: none"> <li>• Examines the contracting costs for tax avoidance</li> </ul>	<ul style="list-style-type: none"> <li>• Loan spread</li> </ul>	<ul style="list-style-type: none"> <li>• Cash ETR</li> <li>• Risk mitigation</li> <li>• Syndicate level</li> </ul>	<ul style="list-style-type: none"> <li>• Co-syndicated loans facilitate credit risk diversification and therefore could reduce the loan spread.</li> <li>• Loans with performance pricing provisions, which facilitates borrower</li> </ul>

					<ul style="list-style-type: none"> <li>• Performance pricing provisions (PPP)</li> <li>• Loan quality</li> <li>• Credit default swaps (CDS)</li> </ul>	<p>and lender alignment could also reduce the loan spread.</p> <ul style="list-style-type: none"> <li>• The ability to transfer loan specific risks bank into the financial system throughout credit default swaps can substantially reduce risks associated with tax avoidance.</li> <li>• The higher the link between both public and private debt financing, the lower contracting cost of tax avoidance.</li> <li>• Access to public debt financing helps to reduce potentially agency costs associated with tax avoidance.</li> <li>• Performance sensitive loan provisions are more effective, ex-ante, in mitigating tax-specific risks when compared with a maintenance-based structures.</li> <li>• Maintenance-based structures often result in loan renegotiations with the arrival of new information.</li> <li>• Institutional investors and investment banks do not price in additional risk premiums for aggressive levels of tax avoidance. They demand higher risk premiums to reimburse for their high-risk strategies which already accounts for tax-specific risks.</li> <li>• Depending on the role that financial intermediaries play in tax planning, some corporations can attain persistently low tax rates because of</li> </ul>
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						lower contracting costs for tax avoidance.
Lee, Y., Shevlin, T. J., & Venkat, A. (2019)	USA	1989-2016	<ul style="list-style-type: none"> <li>Examines the relationship between capital structure decisions and tax avoidance</li> </ul>	<ul style="list-style-type: none"> <li>Gross equity versus Debt issuance (dummy)</li> <li>Net equity versus Net debt issuance (dummy)</li> </ul>	<ul style="list-style-type: none"> <li>Long-run tax avoidance measures (Cash5 and Cash3)</li> <li>Cost of equity (Easton 2004)</li> <li>Cost of debt</li> <li>Total assets</li> </ul>	<ul style="list-style-type: none"> <li>Managers issue more equity relative to debt because tax avoidance increases the cost of debt more than the cost of equity.</li> <li>Risky tax avoidance induces greater switching towards equity and away from debt because shareholders suffer less from risky tax avoidance than creditors.</li> <li>When the marginal benefits of tax avoidance are high firms prefer equity than debt.</li> </ul>
Pulido, M. & Barros, V. (2017)	24 European countries	2005-2014	<ul style="list-style-type: none"> <li>Examines the relation between <i>ex-ante</i> cost of equity and deviations of tax avoidance' levels</li> </ul>	<ul style="list-style-type: none"> <li>Cost of equity</li> </ul>	<ul style="list-style-type: none"> <li>Cash ETR</li> <li>Book ETR</li> <li>Market-to-book</li> <li>Debt-to-assets</li> <li>Analyst forecast bias</li> <li>Number of analysts</li> </ul>	<ul style="list-style-type: none"> <li>Investors perception of tax avoidance fluctuates depending on the levels of tax avoidance.</li> <li>There is a limit where investors no longer recognize the benefits of tax avoidance.</li> <li>If low level tax avoidance firms engage in more avoidance activities, the <i>ex-ante</i> cost of equity decreases.</li> <li>If high level tax avoidance firms engage in more avoidance activities, the <i>ex-ante</i> cost of equity increases.</li> </ul>
Rego, S. O., & Wilson, R. (2012)	USA	1992-2009	<ul style="list-style-type: none"> <li>Examines equity risk incentives as a determinant of tax</li> </ul>	<ul style="list-style-type: none"> <li>Cash ETR</li> </ul>	<ul style="list-style-type: none"> <li>Volatility of stock returns</li> <li>CEO's salary and bonus compensations</li> <li>CEO age</li> </ul>	<ul style="list-style-type: none"> <li>Higher risk incentives are positively related to tax risk, but the reverse may not be true.</li> <li>Shareholders perceive tax avoidance activities as a potential value-</li> </ul>

			aggressiveness		<ul style="list-style-type: none"> <li>• Market-to-book</li> <li>• Capex</li> <li>• Debt-to-Assets</li> <li>• Total Assets</li> <li>• ROA</li> </ul>	<p>enhancing, but also as an activity that increases firm risk.</p> <ul style="list-style-type: none"> <li>• Tax avoidance is associated with greater levels of incentive compensation.</li> </ul>
Shevlin, T., Urcan, O., & Vasvari, F. P. (2019)	USA	1990-2007	<ul style="list-style-type: none"> <li>• How tax avoidance is priced in bond yields and bank loan spreads</li> </ul>	<ul style="list-style-type: none"> <li>• Offering bond yields</li> <li>• Bank loan spreads</li> </ul>	<ul style="list-style-type: none"> <li>• Tax avoidance</li> <li>• Bond specifics</li> <li>• Loan specifics</li> <li>• Firm specifics</li> <li>• Industry specifics</li> <li>• Year</li> </ul>	<ul style="list-style-type: none"> <li>• Tax avoidance activities reduce future pre-tax cash flows levels, increases future pre-tax cash flow volatility, and reduce information quality. These effects are less pronounced for bank loans spreads rather on bond yields.</li> <li>• The impact of tax avoidance on bond offering yields is related to concerns about future cash flows.</li> <li>• Tax avoidance only increases the cost of bonds, but not bank loans.</li> </ul>