



Kaunas University of Technology
School of Economics and Business

Impact of Corporate Social Responsibility on Tax Avoidance

Master's Final Degree Project

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Kaunas, 2020



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Declaration of Academic Integrity

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Summary

Currently, in order to stay competitive in the market and be socially responsible, companies have to claim new goals and implement new projects and social programs. This is mainly because of the increase in demand for Corporate Social Responsibility (later – CSR) activities coming not only from stakeholders but also from local government as well as the international environment. Moreover, tax planning is another key activity in the corporation. Most of the companies are planning their profits in such a way that the taxes would be minimum and the shareholder value would be as high as possible. Although, it is not illegal by law, it might lead to tax avoidance or even tax evasion which might also ruin the reputation of a company. Therefore, the question arises – does corporate social responsibility correlates with tax avoidance? Various studies find completely different results regarding the relationship between tax avoidance and CSR in the U.S. and Asian countries while there are only a few studies performed on European countries. Therefore, the scientific gap of the topic related to Baltic countries confirms the relevance and importance of this problem.

Subject matter of research: The impact of CSR on tax avoidance.

Aim: to assess the impact that CSR has on tax avoidance.

Results of the research: Research methodology was prepared based on different theoretical studies in order to find what impact corporate social responsibility has on tax avoidance. This study analyses 23 Lithuanian listed companies in the period of 2015-2018. Theoretical background showed that the most appropriate method for evaluation of relationship between CSR and tax avoidance is to perform regression analysis. Effective tax rate and book-to-tax difference of pre-tax income were selected as dependent variables in the regression while CSR rating was chosen as an explanatory variable. CSR rating was given to each company separately based on developed rating model. Pooled OLS, Fixed Effects, Weighted Least Squares and Between-group models for panel data were tested and it was found that corporate social responsibility does not have an impact on tax avoidance as all of the explanatory variables were found to be statistically insignificant. Empirical study also revealed that CSR has a negative effect on tax avoidance meaning that firms with higher CSR score tend to be more tax responsible than those who have lower score. It is recommended to take into account limitations before further research. First of all, if official CSR Indexes are not available, CSR rating model might be improved by including more or substituting some of the key issues. Second of all, further research should be conducted on how to treat such issues as non-deductible expenses or non-taxable income in order to improve the quality of tax avoidance measures.

Augustė Vinogradnaitė. Socialinės atsakomybės įtaka mokesčių vengimui. Magistro baigiamasis projektas / vadovė doc. dr. Kristina Kundelienė; Kauno technologijos universitetas, Ekonomikos ir Verslo fakultetas.

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Santrauka

Norėdamos išlikti konkurencingos rinkoje ir būti socialiai atsakingos, įmonės turi reikalauti naujų tikslų ir įgyvendinti naujus projektus bei socialines programas. Taip yra todėl, kad išaugo ne tik suinteresuotųjų šalių, bet ir vietos valdžios institucijų, taip pat tarptautinės aplinkos poreikis įmonių socialinės atsakomybės (toliau – ĮSA) veiklai. Be to, mokesčių planavimas yra dar viena pagrindinė įmonių veikla. Kompanijos planuoja savo pelną taip, kad kiek įmanoma sumažintų mokesčių našta, o akcininkų vertė būtų kuo didesnė. Nors mokesčių planavimo veikla nėra neteisėta pagal įstatymą, tai gali paskatinti įmones vengti mokesčių ir taip pakenkti įmonės reputacijai. Todėl kyla klausimas – koks ryšys yra tarp mokesčių vengimo ir įmonių socialinės atsakomybės? Mokslinė literatūra pateikia įvairių tyrimų, susijusių su mokesčių vengimu ir ĮSA santykiu, tačiau didžioji dalis analizuotų tyrimų nagrinėja JAV ir Azijos šalių įmones, tuo tarpu tik keli analizuoti tyrimai yra atlikti nagrinėjant Europos šalių įmones, tačiau nebuvo rasta tyrimų, kurie analizuotų Baltijos šalių įmones. Šią problemą siekiama išspręsti nagrinėjant Baltijos šalių listinguojamas įmones.

Tyrimo objektas: Įmonių socialinės atsakomybės įtaka mokesčių vengimui.

Tikslas: įvertinti, kokią įtaką įmonių socialinė atsakomybė turi mokesčių vengimui.

Pagrindiniai tyrimo rezultatai: Tyrimo metodika buvo parengta remiantis skirtingais mokslinės literatūros šaltiniais, siekiant išsiaiškinti, kokią įtaką įmonių socialinė atsakomybė turi mokesčių vengimui. Šiame tyrime yra analizuojamos 23 lietuviško kapitalo įmonės, listinguojamos Nasdaq Baltic akcijų bei obligacijų sąrašuose. Išanalizavus mokslinėje literatūroje pateiktus tyrimus, buvo parinktas tinkamiausias metodas tyrimui atlikti – regresinė analizė. Efektyvus mokesčių tarifas bei finansinės ir mokestinės vertės skirtumas buvo pasirinkti kaip priklausomi kintamieji, o ĮSA vertinimo reitingas – aiškinamasis kintamasis. Buvo išbandyti bendrieji mažiausių kvadratų, fiksuotų efektų, svertinių mažiausių kvadratų ir grupės tarp grupių modeliai ir nustatyta, kad įmonių socialinė atsakomybė neturi įtakos mokesčių vengimui, nes visi aiškinamieji kintamieji buvo statistiškai nereikšmingi. Empirinis tyrimas taip pat atskleidė, kad ĮSA daro neigiamą poveikį mokesčių vengimui, t.y. įmonės, turinčios aukštesnį ĮSA balą, yra labiau atsakingo mokesčių klausimu nei tos, kurių balas mažesnis. Tyrimo metu buvo nustatyti apribojimai, todėl atliekant tolesnius tyrimus, pirmiausia rekomenduojama atsižvelgti į juos. Visų pirma, jei nėra oficialių ĮSA indeksų, reikėtų patobulinti ĮSA modelį, pateiktą šiame tyrime, įtraukiant daugiau ar pakeičiant kai kurias pagrindines problemas. Antra, siekiant pagerinti mokesčių vengimo matavimo priemones, reikėtų ištirti, kaip traktuoti tokias problemas kaip neatskaitomas sąnaudas ar neapmokestinamas pajamas.

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Introduction

Currently, in order to stay competitive in the market and be socially responsible, companies have to claim new goals and implement new projects and social programs. This is mainly because of the increase in demand for Corporate Social Responsibility (later –CSR) activities coming not only from stakeholders but also from local government as well as the international environment. Moreover, tax planning is another key activity in the corporation. Most of the companies are planning their profits in such a way that the taxes would be minimum and the shareholder value would be as high as possible. Although it is not illegal by law, it might lead to tax avoidance or even tax evasion which might also ruin the reputation of a company. Therefore, the question arises – does corporate social responsibility correlates with tax avoidance? Few studies show that a company that is less committed to CSR activities, would probably be more engaged in such activities as tax avoidance in order to maximize the shareholders' value (Kim & Im, 2017). However, scientists argue that companies started to use CSR initiatives as a way to conceal their tax avoidance related actions. The scientific literature does not provide a unanimous conclusion regarding the above-mentioned issue, therefore, this research will try to fill the gap by analyzing tax avoidance and CSR concepts and finding the relationship between them by comparing different Baltic listed companies.

Problem: social initiatives are becoming one of the most important processes in businesses because of the benefits it can gain through the trust of their stakeholders including not only financial gains but also non-material benefits such as reputation. On the other hand, in order to have better financial performance firms are engaging in tax planning activities which eventually leads to tax avoidance or even tax evasion. Various studies find completely different results regarding the relationship between tax avoidance and CSR in the U.S. and Asian countries while there are only a few studies performed on European countries. Therefore, the scientific gap of the topic related to Baltic countries confirms the relevance and importance of this problem.

Subject matter of research: The impact of CSR on tax avoidance.

Aim: to assess the impact that CSR has on tax avoidance.

Objectives:

1. To analyze the concepts of corporate social responsibility and tax avoidance and determine the relationship between these concepts;
2. To investigate previous studies and find the most suitable measures and methods for empirical research;
3. To develop a methodology for the empirical research of the impact of corporate social responsibility on tax avoidance;
4. Conduct empirical research to determine whether corporate social responsibility has an impact on tax avoidance;
5. To analyse the results of empirical study and provide recommendations for further research into the impact of corporate social responsibility on their financial performance.

Methods of research: analysis and systematization of scientific literature, statistical data analysis, financial data analysis and regression model.

1. Problem analysis of the relationship between CSR and tax avoidance

Corporate social responsibility activities have always been considered as a voluntary option for companies. However, it is believed that to some extent it is also becoming a mandatory action pressured by governments (Albareda, Lozano & Ysa, 2007). Moreover, in order to stay more attractive to the stakeholders, companies are usually engaging in tax planning activities which might lead to tax avoidance or even tax evasion. Thus, it is being questioned whether CSR and tax avoidance are related. Evidentially, government involvement in the private sector regarding CSR policies might mean that more companies have an aggressive tax avoidance approach which leads to a lower contribution to local government, therefore, more legislation is being created in order to reduce tax avoidance. Consequentially, it can be stated that government bodies in the country believe that it can be reduced by encouraging companies to be more socially responsible and that tax planning and tax avoidance activities should be considered to be one part of being socially responsible (Col & Patel, 2016).

Unfortunately, studies cannot find a unanimous answer to the question of what influences do CSR and tax avoidance have to each other. High number of studies are done in order to explain the concepts of corporate social responsibility and tax avoidance separately, however, studies performed in order to explain the relationship between these two concepts do not have a clear answer. Therefore, this section analyses not only separate before-mentioned concepts but also investigates previous studies on the relationship between them which helps to find the potential evidence on the literature gap in this field.

1.1. The concept of tax avoidance

Despite the legislation available nowadays, tax avoidance remains a problem to different governments (The Organisation for Economic Co-operation and Development (later – OECD), 2019). Baltic countries are suffering from the schemes of tax avoidance not only from foreign businesses but also from resident taxpayers. Although, OECD is helping to develop proper anti-tax avoidance legislation to prevent Baltics from becoming tax havens, all three countries still have a long road to reach the efficient tax system with strong management of tax avoidance and tax evasion. It is important to note that in the media, tax avoidance is usually seen as an illegal activity, nonetheless, scientific literature explains it as a legal action in order to reduce tax liability.

Tax avoidance might appear when a company is not planning its taxes properly. Tax planning is one of the most important and legitimate processes that companies are adopting in order to not only reduce the tax burden but also to gain some benefits. Despite that tax planning processes are different across the countries because of its legislations, the concepts remain the same. Scientific literature provides similar definitions of tax avoidance which are provided in Table 1 below.

Table 1. Definitions of tax avoidance (prepared by author)

Authors	Definition of Tax Avoidance
<i>Kim & Im (2017)</i>	“Tax avoidance is where a firm can either explicitly or implicitly reduce its tax burden without incurring additional expenses from tax investigations”
<i>Hanlon & Heitzman (2010)</i>	Tax avoidance is “the reduction of explicit taxes”, which “reflects all transactions that have any effect on the firm’s explicit tax liability.”
<i>West (2017)</i>	Tax avoidance is “an umbrella term that includes all efforts to reduce tax (whether legal or illegal).”
<i>Alduneibat, Altawalbeh & Hashem (2017)</i>	“When the funder uses legitimate methods for reducing the tax rates that are due to be paid by him without resorting to any planned processes.”
<i>Bayar, Huseynov & Sardarli (2018)</i>	Tax avoidance is described as “all actions to taken by managers to reduce the cash tax liabilities of their firm”.

It could be said that tax avoidance lies between tax planning which is a legitimate way to use tax exemptions or tax reduction in order to gain benefits and tax evasion which is an illegal way to reduce the tax burden and it certainly does not comply with the laws. Companies that engage in tax avoidance usually benefit from the loopholes that appear in the laws which enable managers to create procedures and policies to reduce the tax burden to a minimum possible amount. Hence, a firm’s management which uses tax avoidance in such a way should always review the laws in order to keep the procedures related to reducing tax legal. Thus, it can be said that tax avoidance is closely related to tax planning. Albduneibat et al (2017) suggest four strategies related to tax planning:

- “Strategies for obtaining tax cuts”;
- “Strategies for obtaining tax credits”;
- “Strategies for posting the records of the real value of income, profits, and losses to the following fiscal years to protect company’s money from the high tax rates”;
- “Strategies for reducing the burden of being subjected to capital profits.”

Such strategies might improve businesses’ financial performance because it allows increasing shareholders’ value by saving money. Thus, managers become responsible for selecting accounting policies, estimating the right time for various purchases of equipment in order to postpone payable taxes. Moreover, stakeholders often considers proper tax planning as a value-increasing process (Bayar et al, 2018). Regardless, tax avoidance could be a risky and costly activity for a firm if it is done with the purpose of self-interest and not complying with the law. Especially when a firm performs such activities as revenues shifting to tax haven countries due to high tax rates in resident country or other reasons. In order to avoid high tax burden firms that operates in multiple jurisdictions choose debt shifting as its strategy to benefit from tax-deductible interest (Moen, Schindler, Schjelderup & Bakke, 2019).

Tax avoidance could also be recognized as a transfer from governments’ wealth to a private business. Current studies show that firms engage in tax avoidance activities because of managers’ self-interest (Zeng, 2018; Hanloan & Heitzman, 2010). As a result, managers endeavor to conceal these activities through corporate social responsibility. Therefore, the question here is to what extent companies engage in tax avoidance activities given the fact that society respects these companies because of their social initiatives?

1.2. The concept of Corporate Social Responsibility

Corporate social responsibility is becoming one of the essential parts of behavioral practices of companies and business processes since CSR activities help to connect and maintain a better relationship between the company and its stakeholders (Grover, Kar & Ilavarasan, 2019). Additionally, CSR not only contributes to the responsibility to society or environment for creating a better world but also it is becoming a way for companies to achieve their strategic objectives. Therefore, more and more companies engage proactively in CSR initiatives by minimizing their negative impact on the environment, improving public health or participating in charity events through actively analyzing the public demand. These actions also contribute largely to the company's ability to have a higher competitive advantage over its competitors and even improve the financial performance of the firm (Du, Bhattacharya & Sen, 2011; Godfrey, Merrill & Hansen, 2009).

Different scientific literature emphasizes that it is important to understand the level that the company responds to social and ethical issues as well as society demand. Some authors propose a four stance framework of CSR strategies which helps to understand the variety of corporate responses to different external factors and stakeholder pressures (Carroll, 1979; Lee, 2011):

- **Obstructionist strategy:** companies deny anything related to social responsibility that is beyond their economic and organizational interest. Thus, firms which have obstructionist CSR strategy tend to ignore societal demands for higher responsibility.
- **Defensive strategy:** companies deny ethical and social responsibility, however, they comply with legal requirements in order to protect their well-being.
- **Accommodative strategy:** companies accept some form of social responsibility. Nevertheless, accommodative firms tend to remain minimalistic and passive towards their stakeholders needs by responding to the higher pressure but not taking any actions voluntarily regarding ethical responsibility.
- **Proactive strategy:** firms engage in socially responsible activities by actively responding to the demand of stakeholders in order to improve their well-being and minimize negative impacts that they create on environment or a broad society.

Scientific literature provides numerous definitions of corporate social responsibility which separate such approaches as commitment and obligation to act responsibly from a voluntary option to do so, however, the main concept remains similar. Definitions given by different authors are provided in Table 2 below.

Table 2. Definitions of Corporate Social Responsibility (prepared by author)

Authors	Definition of Corporate Social Responsibility
<i>Du et al (2011)</i>	“Firm’s commitment to maximize long-term economic, societal and environmental well being through business practices, policies and resources, is a strategic imperative. “
<i>Grover et al (2019)</i>	“CSR is an obligation for the firms towards stakeholder constituent groups in society. Dominant stakeholders for the firms are customers, employees, investors and communities.”
<i>Huseynov & Klamm (2012)</i>	“Corporate social responsibility (CSR) should be viewed in a managerial context given that it is businesses' commitment to act ethically, contribute to economic development, and improve the quality of life of workers, local communities, and society at large.”
<i>Wood (1991)</i>	Connection between business and society (i.e. “business and society are more intertwined than distinct entities). Therefore, society expects a certain appropriate behavior from business.
<i>Albareda et al (2007)</i>	“CSR is a process through which companies manage their social and environmental impacts taking into account their relationship with stakeholders. “
<i>Carroll (1979)</i>	“The social responsibility of business encompasses the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time.

Scientists argue that governments are now engaging in a more aggressive way to promote corporate social responsibility for companies (Fox, Ward & Howard, 2002; Albareda et al, 2007). It is found that governments are acting under four different roles: mandating (setting minimum legal requirements for businesses), facilitating (encouraging businesses by providing guidelines or training), partnering (creating partnerships with the private sector to address environmental and societal issues) and endorsing (public political support to take social initiatives). The main purpose of governments to promote CSR in such a way is to prevent the shadow economy as much as possible and incentivize firms to be transparent regarding tax payments, employment practices, or prevent lobbying and corruption. Thereby, this government interference in private businesses regarding CSR policies should also reduce the problem of tax avoidance and tax evasion due to more strict policies.

1.3. The relationship between CSR and tax avoidance

Since CSR is becoming more important for companies in order to gain societal stakeholders’ trust, there are a lot of ongoing researches in order to find what effects CSR has on various elements. One of the recent topics is related to CSR and tax avoidance because since tax avoidance is not illegal, it still raises a question if it is appropriate to lower the taxes as much as possible and still have a trust from societal stakeholders as they are expecting a certain appropriate behavior from a business. Despite that, reducing payable taxes is becoming a common process for businesses, it is believed that these activities bring a negative impact on a broad society (Lanis & Richardson, 2014). Authors propose that paying corporate taxes is considered to be a direct contribution to the whole society because it helps to fund public services and goods.

Scientific literature proposes that businesses are allowed to reduce tax liability within the compliance of the law, however, it is believed that if a company is initiating CSR activities as a part of its strategy, the firm should pay a fair share of taxes which rightfully and legally should be collected by the government (Lanis & Richardson, 2014; Zeng, 2018). As a result, according to this approach, tax avoidance contradicts being ethical, contributing to a society’s welfare, and having CSR. Bird and

Nozemack (2016) state that because of such actions related to tax avoidance governments suffer not only because of financial issues but also because it loses its regulatory power over the private sector. Thus, tax avoidance questions the company's reputation, societal trust, and sustainability.

The relationship between corporate social responsibility and tax avoidance is becoming a more popular research topic across the globe. Kim and Im (2017) investigate the relationship between CSR and tax avoidance in Korean firms. The study shows that not only tax avoidance affects the financial performance of a company but it also affects such non-financial measures as societal trust or reputation. It is believed that even though a company has CSR initiatives, society is less likely to trust the company's actions because of tax avoidance activities. Additionally, it was found that higher participation in CSR activities leads to less tax avoidance processes. Finally, the company's decision to be a passive player regarding CSR does not affect tax avoidance in any form.

Another important factor that may influence tax avoidance is a country in which a company is operating as well as the government power over the private sector in that country. T. Zeng (2018) examines the relationship between CSR and tax avoidance across different countries including the level of government power across the examined countries. The author states that different countries adopt different beliefs and values towards CSR, and for this reason, the interpretation of the relationship between CSR and tax avoidance might differ across the countries. It was found that higher government power in the country leads to private businesses being more transparent as well as less engaged in tax aggressive activities. On the other hand, the company which operates in a less regulated country but has higher CSR index is found to be more involved in tax avoidance activities. Hence, it is important to note that tax avoidance activities are not only based on the self-interest of a company but also on the legal environment.

Kiesewetter and Manthey (2017) analyzed companies operating in European countries regarding value creation and tax avoidance. Authors contradict to beforementioned studies by saying that government strengths do not have any impact on value creation to the stakeholders of a company, at least for European countries. Instead, this study shows that inappropriate behavior of a company depends mostly on corporate governance structure and their decisions. Additionally, firms with stronger management boards tend to minimize their effective tax rates regardless of value creation or being socially responsible (Kiesewetter & Manthey, 2017). Lastly, social characteristics strongly define the company's behavior regarding different issues. It can be stated that firms with stronger social characteristics (i.e. stronger reputation, higher society trust) are paying higher taxes compared with companies with weaker social characteristics.

Some studies have also argued that using CSR as a risk management system should increase such behavior as avoiding taxes (Mao, 2018; Godfrey, Merrill & Hansen, 2009). If a company has CSR as its risk management system, it improves its reputation at some point which helps companies to avoid harsh penalties and sanctions from a government because of their reputation. Mao (2018) studied Chinese listed companies and found that if the firm is contributing to society by managing both CSR and tax planning activities then it shows the negative relationship between these two concepts. In addition, it was found that CSR companies are actively involved in tax avoidance and that these companies use CSR only as a risk management tool.

Scientific literature that analyses cases regarding the relationship between CSR and tax avoidance considers CSR activities as a contribution to society by paying taxes (Goerke, 2018; Sikka, 2010).

Goerke (2018) states that tax avoidance highly depends on CSR if one of the main objectives for a firm is to contribute more to society. Meaning that a company that spends more on social activities will reach a lower tax base leading to reduced tax liability. On one side, if properly communicated, the company's stakeholders could believe that these actions are not tax avoidance since the objective is to contribute more to the welfare of society. On the other side, it could be interpreted as misleading actions with the objective to reduce taxes as much as possible. Moreover, it was stated that some particular events might reverse the correlation between the two concepts in such a way that more strict regulations regarding CSR initiatives and its reporting, as well as stronger government support related to these activities, could bring more revenues for a company which leads to a higher tax base lowering the possibility of tax avoidance.

Disclosing corporate social responsibility activities is becoming one of the mandatory reports. The main reason is to show that a company makes its efforts to minimize the negative impact on the environment and society. Sikka (2010) analyzed selected companies' CSR reports and found that all of the firms explain their transparency and integrity policies, however, none of the firms disclose any information regarding tax avoidance practices or the social and financial consequences that could arise from such activities. It could be stated that tax avoidance remains a choice for companies to choose and it completely relies on managers' decisions in order to pursue higher profits. (Sikka, 2010). Lastly, companies should take into consideration that their talk and action are always being compared by its stakeholders, therefore, if a firm decides to engage in tax avoidance practices there is always a possibility to be exposed which would cost much more than to pay taxes.

Col and Patel (2016) investigated U.S. firms in order to find the effects of tax avoidance on CSR ratings. The main finding was that companies that are using aggressive tax planning and avoidance by going to tax havens (i.e. establishing offshore companies) have considerably higher corporate social responsibility ratings. In addition, it was found that the more legislation regarding social policies the government release the more responsive the firms become by engaging in more CSR initiatives. Consequentially, this study shows the opposite results compared to previously analyzed studies which lead to the conclusion that companies tend to use CSR initiatives to conceal their improper actions related to reducing the tax burden. Nonetheless, other studies argue with the result by stating that reducing tax liability is laying a conflicting role (Huseynov & Klamm, 2012). Reducing tax base could be economically important for the welfare of the business and its shareholders and it should not necessarily be considered as tax avoidance, however, it is usually interpreted as an irresponsible action regarding its broader stakeholders because of not paying enough taxes. Which leads to a conclusion that even so tax avoidance is a legal way to reduce a tax burden, society sees it as a wrong behavior of a company, thus, it may be the reason why firms are creating more CSR initiatives in order to hide their improper actions of tax avoidance.

Most of the studies mentioned above analyzed cases in U.S. and Asian countries, unfortunately, only a few of them reviewed European countries. Additionally, there are no studies that would analyze Baltic countries which, according to OECD (2019), are suffering from tax avoidance issues while all of them are promoting more CSR initiatives. Furthermore, all of the studies use completely different methods in order to measure tax avoidance or corporate social responsibility which means that there is an open question regarding the right methods that should be used in order to find the most accurate measures. Therefore, this gap in the literature creates a problem for this research – what is the relationship between corporate social responsibility and tax avoidance in Baltic listed companies?

2. Theoretical substantial of variables determining the relationship between tax avoidance and corporate social responsibility

2.1. The role of Corporate Social Responsibility in the context of a firm

As it was mentioned earlier, corporate social responsibility is becoming an important part of a company's strategy in order to meet stakeholders' expectations. It is widely believed that proactive investments into socially responsible activities increase such indicators as companies' brand image, reputation, market share, leverage, or financial performance. Moreover, some theories state that CSR builds the relationship between the company and society and might even change customers' behavior. Scientific literature provides a wide range of theories in order to understand the value of CSR and ways of measuring the rating of CSR. Consequently, the purpose of this section is to analyze scientific literature and provide the most important insights related to the importance of CSR and commonly used methods of evaluating and measuring it.

Scientific literature suggests many kinds of researches related to the relationship between CSR and financial performance of the company and some theories state that CSR is related to agency theory (Jensen & Meckling, 1976). According to Barnea and Rubin's (2010) hypothesis, managers of the company (which are considered to be agents according to agency theory) tend to overinvest in socially responsible activities for their own purpose. This creates a conflict between the company's stakeholders. For example, managers can increase CSR expenditures in order to increase their own reputation because of the high CSR rating of the company. However, shareholders of a firm might not approve this approach since high expenditures decrease the balance value of a firm. To conclude, researchers find that, in fact, high expenditures to CSR lead to a decrease of shareholders' value financially. Though, they believe that overinvesting in CSR activities might also be considered as a positive contribution to overall social welfare (Barnea & Rubin, 2010).

On the other side, some researches suggest that CSR, in fact, is more related to stakeholder theory (Mitchell, Agle & Wood, 1997; Freeman & Mcvea, 2001). Bechaus, Heiner and Stone (2002) explore that CSR activities increase the value of a firm if such activities focus on the interests of all company's stakeholders (i.e. shareholders, employees, or society). It was found that corporate social performance is not only related to social welfare but also to the well-being of employees in the organization. Thus, the company's CSR rating might also increase by taking effective social management among employers and employees which was found to have a positive impact on financial performance (Berman, Kotha, Wicks & Jones, 1999). In addition, human relations theories suggest that employees' satisfaction is a valuable intangible asset which should be included in calculations of firm value. Edmans (2011) found that employee satisfaction rate is positively correlated to long-run stock returns. According to these findings, it can be concluded that CSR helps to increase shareholder value. On the other way, it might also indicate that more profitable firms are more likely to proactively engage in CSR activities.

As it was mentioned before, stakeholder theory suggests that firms should focus on stakeholders' interests and expectations by implementing CSR activities in company strategy. Therefore, it is important to understand what kind of impact CSR has on stakeholders. It is widely believed that consumers tend to stay loyal to those companies which are actively taking responsible actions towards the welfare of society and the environment (Marin, Ruiz & Rubio, 2009; Park, Lee & Kim, 2014). Additionally, increased trust and loyalty in the company can change consumer behavior towards the

prices since loyal customers are willing to pay a premium price for the products or services (Castaldo, Misani & Perrini, 2009). Lastly, maintaining customer–company relationship builds the identity of the firm, its attractiveness, and overall reputation (Marin & Ruiz, 2006).

Investing in CSR can also benefit the internal resources of the company. Branco and Rodriguez (2006) claim that socially responsible actions of employment such as fair wages, safety in the work environment, social benefits provide a positive attitude and increase motivation for employees to stay loyal to the firm and work in a more efficient way. Actions related to employment involve the creation of a code of conduct, promoting employee ethics, or providing the opportunity for whistle-blowing. These actions also benefit the company because it helps to have strong control over the turnover of employees, creates a stronger company–employee relationship and helps to maintain it as well as reduces costs of training of new employees and recruitment (Kim, Lee, Lee & Kim, 2010; Valentine & Fleischman, 2007). Lastly, increased job satisfaction increases the reputation of a company as an attractive employer which allows finding more qualified staff more easily (Valentine & Fleischman, 2007).

Nowadays, CSR is being promoted by various government bodies worldwide. For instance, the European Commission (later – EC) created a strategy towards CSR which encourages firms in the European Union (later – EU) to follow guidelines and principles of implementing CSR. The principles include reporting standards as well which provide an opportunity for companies to become more transparent. Luo and Bhattacharya (2009) believe that disclosure of CSR activities provides risk reduction potential towards the market as well as influences effective communication with the company’s shareholders. Moreover, it was found that companies with a high cost of equity (i.e. low leveraged firms) tend to disclose more information related to CSR which eventually leads to the reduction of cost of equity (Dhaliwal, Zhen, Tsang & Yang, 2010). Finally, Dhaliwal et al. (2010) state that proactive CSR initiation and full reporting attract more institutional investors.

It has come to attention that sustainability reporting is a relatively new term. Sustainability reporting is becoming widely used to expose the company’s effects on important issues such as environment, economy and society. Sustainability reports are also used to express firms’ CSR activities. Many large corporations are now publishing such reports, especially those which are relatively sensitive towards environmental issues, for instance, manufacturing companies. Sustainability reports, as well as involvement to CSR activities, are considered to be voluntary action. Usually, such reports provide information related to the company’s effects on employees’ well-being, job satisfaction, motivation systems, equal rights and diversity, and many other social perspectives. Also, such reports show the effects that products or services have on air or water as well as gas emission. Hubbard (2008) states that “the purpose of sustainability reporting is to provide information to holistically assess organizational performance in a multi-stakeholder environment”.

Table 3. CSR activities impact on different stakeholders (prepared by author)

Stakeholder	CSR impact	Authors
Customers	<ul style="list-style-type: none"> - Loyalty; - Trust in the company; - Positive attitude; - Increased willingness to pay premium; - Building identity of a company. 	Marin et al. (2009); Park et al. (2014); Castaldo et al. (2009); Marin & Ruiz (2006)
Employees	<ul style="list-style-type: none"> - Loyalty and commitment; - Motivation; - Increased productivity; - Job satisfaction and positive attitude; - Attracts highly skilled staff. 	Branco & Rodriguez (2006); Kim et al. (2010); Valentine & Fleischman (2007)
Shareholders	<ul style="list-style-type: none"> - Better communication with investors; - Attracting new investors 	Luo & Bhattacharya (2009); Dhaliwal et. Al (2010)

It can be said that proactive involvement in socially responsible activities builds the company's brand image and reputation which is an important strategic way to attract new customers, investors (either private or institutional) or highly qualified staff. It helps to maintain the relationship between different stakeholders as well as increases the financial performance of a firm due to high efficiency and productivity throughout the company. It can be stated that sustainability reporting is used as a major tool in promoting such activities.

2.2. Measures of Corporate Social Responsibility

Global statistical analysis organizations provide several possible CSR indexes, for example, Morgan Stanley Capital Investment (later - MSCI) provides one of the first Socially Responsible Investment (later – SRI) index called MSCI KLD 400 Social Index as well as such measures as MSCI ACWI Sustainable Impact Index, MSCI ACWI SRI index, Johannesburg Stock Exchange (later – JSE) provides JSE SRI index, Dow Jones also provides Dow Jones Sustainability Indices (later – DJSI), etc. Most of the indices expose companies which have outstanding ratings in Environmental, Social, and Governance (later – ESG) perspective.

It is important to mention that many indexes rely on ESG methodology (see Table 4). ESG methodology consists of three key factors assessing corporate sustainability and ethics. Environmental criteria focus on the ability of companies to manage the risks of their operations, their reputation, and to take into account the creation of a more sustainable economy. Moreover, the environmental factor strongly focuses on climate change, resource management, and sustainability. There is a focus on issues such as air and water pollution, recycling, waste reduction, etc., which are related to environmental impacts. Social indicators are linked to diversity, human rights, and consumer protection. This factor indicates that firms should drive innovation, manage their reputation, and recruit talented staff. Governance criteria focus on companies' ability to reconcile management and shareholder interests, transparency, and accountability policies in areas such as

board structure, executive competencies, shareholder rights, misconduct such as bribery and fraud, etc.

Table 4. ESG methodology and 37 key issues (prepared by author based on MSCI ESG methodology)

Pillars	Themes	Key issues
Environmental	Climate change	<ul style="list-style-type: none"> - Carbon emissions; - Product carbon footprint; - Financing environmental impact; - Climate change vulnerability.
	Pollution and waste	<ul style="list-style-type: none"> - Toxic emissions and waste; - Packaging material and waste; - Electronic waste.
	Natural resources	<ul style="list-style-type: none"> - Water stress; - Biodiversity and land use; - Raw material sourcing.
	Environmental opportunities	<ul style="list-style-type: none"> - Opportunities in clean tech; - Opportunities in green building; - Opportunities in renewable energy.
Social	Human capital	<ul style="list-style-type: none"> - Labor management; - Human capital development; - Health and safety; - Supply chain labour standards.
	Product liability	<ul style="list-style-type: none"> - Product safety and quality; - Chemical safety; - Financial product safety; - Privacy and data security; - Responsible investment; - Health and demographic risk.
	Stakeholder opposition	<ul style="list-style-type: none"> - Controversial sourcing.
	Social opportunities	<ul style="list-style-type: none"> - Access to communications; - Access to finance; - Access to healthcare; - Opportunities in health and nutrition.
Governance	Corporate governance	<ul style="list-style-type: none"> - Board diversity; - Executive pay; - Ownership and control; - Accounting.
	Corporate behavior	<ul style="list-style-type: none"> - Business ethics; - Anti competitive practices; - Tax transparency; - Corruption and instability; - Financial system instability.

As it was mentioned above, many CSR indexes are based on ESG methodology and ratings. For example, MSCI SRI indexes select the top 25 percent of companies in each sector according to their ESG ratings. MSCI has created a rules-based methodology to identify leaders and laggards of the

industry and rating them from ‘AAA’ to ‘CCC’ based on their exposure of ESG related risks and ability to manage those risks compared to their peers. It helps to provide necessary insights of ESG risks to the investors so they can make better investment decisions. It is important to mention that ESG rating is solely based on content analysis with the help of machine learning techniques and artificial intelligence.

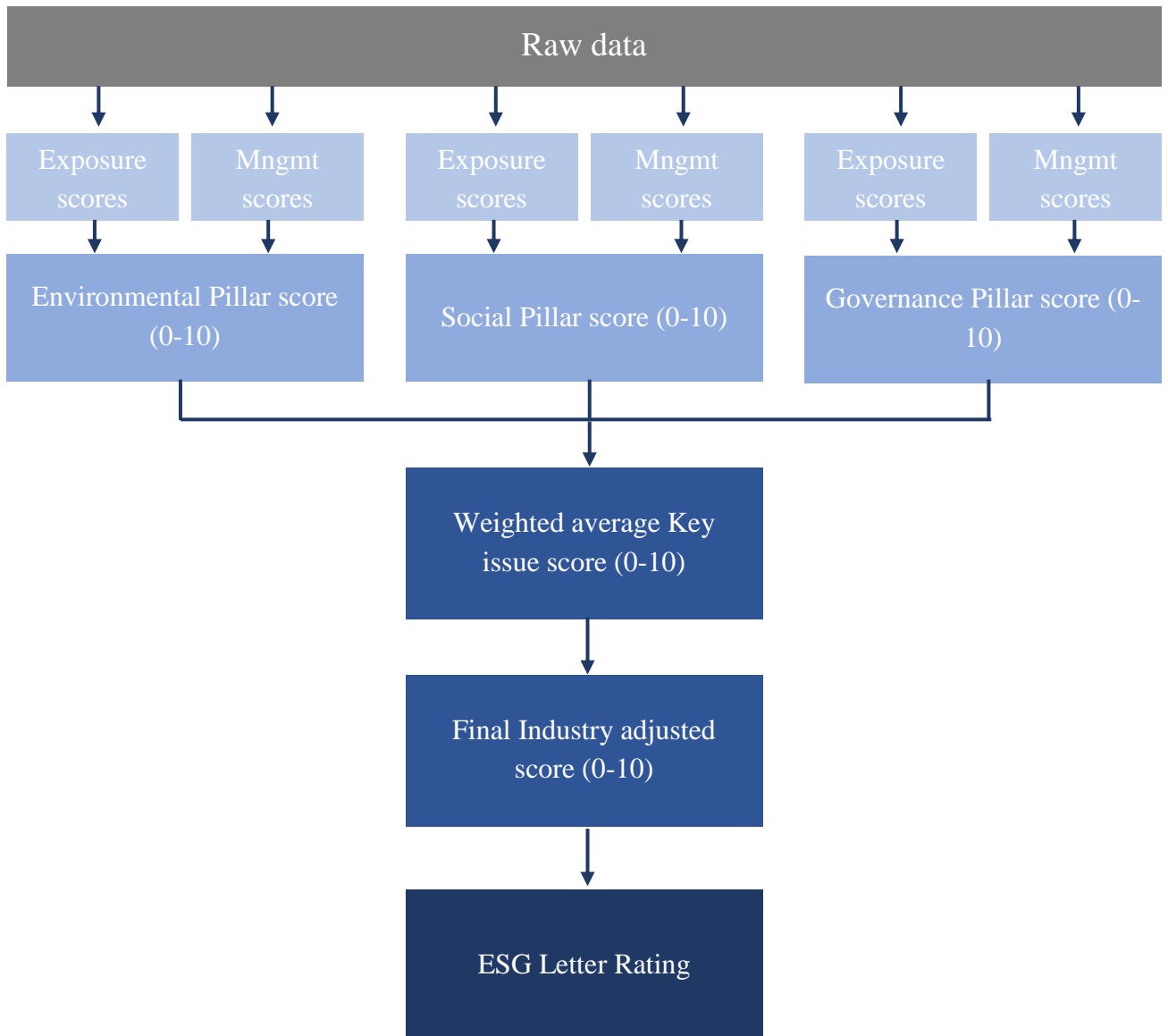


Figure 1. ESG Rating Model (prepared by author based on MSCI ESG Rating Methodology)

ESG rating evaluates data of 7500 companies globally by collecting standardize publicly available data, applying different standardized metrics, evaluating results, and providing ratings together with important insights. Typically all above mentioned key issues (see Table 4) are set to have its’ weight to total ESG rate which is usually 5-30%. There are two factors which set the weighting of key issues – the level of contribution to environmental or social impact and expected time frame of risk and opportunity (Figure 1 below). The main idea of this methodology is that the issue which has a rating of high positive impact within a short time should be weighted three times higher than an issue with a rating of low (i.e. low positive or negative) impact within the long term.

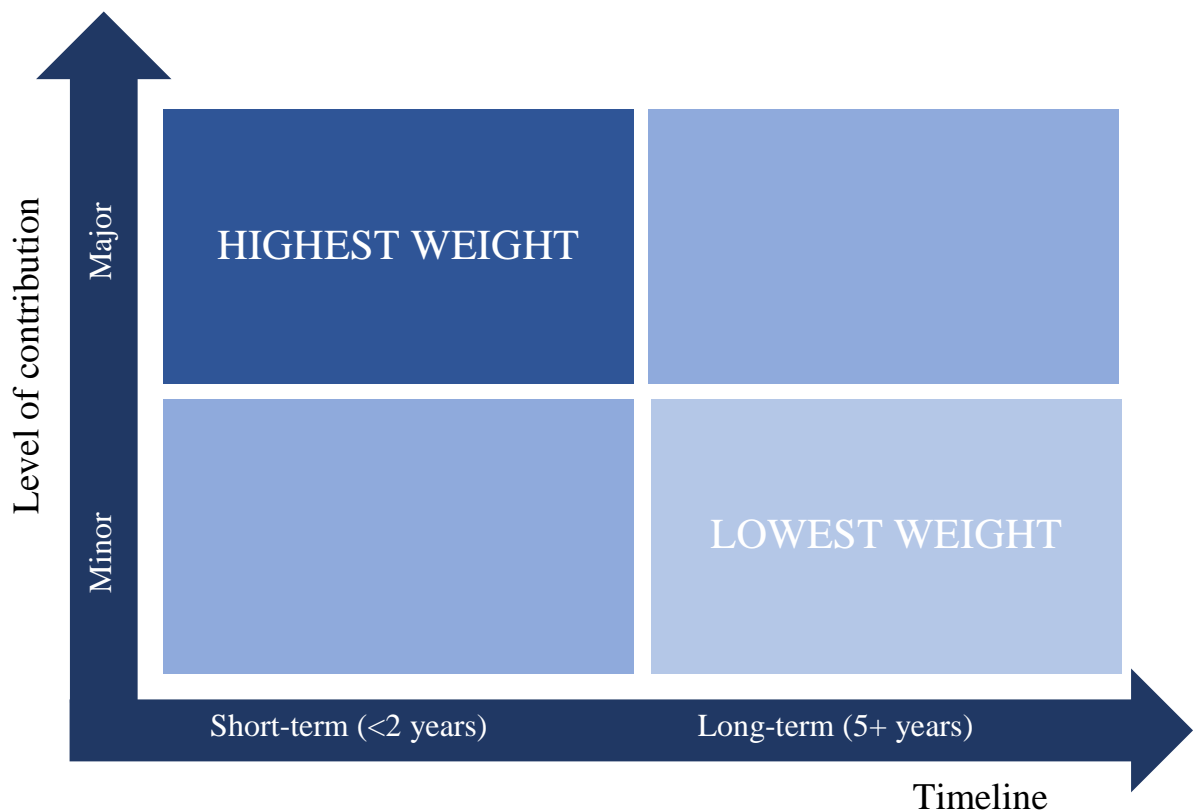


Figure 2. Weighting of Key Issues (prepared by author based on MSCI ESG Rating methodology)

The MSCI ESG Rating assessment model consists of key issues assessment from three perspectives – risks, opportunities, and controversies. In order to understand how efficiently the company can manage key ESG issue, it is important to know what management strategies are employed by the company and how exposed they are to the ESG risk. This model evaluates two factors – risk exposure and risk management and states that in order to score well, a company with high exposure must also have very strong management and vice versa. Opportunities factor is assessed in a similar way to risk assessment. The model also evaluates the same two factors – exposure and management, although, in this case, exposure means the importance of the opportunity given to the company while management indicates the company’s ability to use the opportunity.

Controversies should also be evaluated in order to understand the company’s structural problems of risk management. Controversial event is usually considered to be a one-time or ongoing case where the products or services of a company have a negative impact on environmental, social, and governance factors. An example of such an event could be an accident, change in regulations, anti-competitive actions, community protests, etc. ESG rating model assesses each event based on the severity of impact on the environment or society (see Table 5). The idea of assessment is that the company can reach the highest score if its evaluation is “minor severity” (i.e. if the nature of the impact of the event is minimal and low spread).

Table 5. Assessment of controversial cases (prepared by author based on MSCI ESG Rating methodology)

		Nature of impact			
		Egregious	Serious	Medium	Minimal
Scale of impact	Extremely Widespread	Very Severe	Very Severe	Severe	Moderate
	Extensive	Very Severe	Severe	Moderate	Moderate
	Limited	Severe	Moderate	Minor	Minor
	Low	Moderate	Moderate	Minor	Minor

All of the key issues must be evaluated through risks, opportunities, and controversies perspectives based on exposure and management of the particular issue on a scale from 0 to 10. In order to arrive at a final point of rating, weighted averages of all key issues scores are aggregated, adjusted by industry (industry scores are calculated annually based on MSCI ACWI Index), and assigned to the rating letter.

Table 6. Final industry adjusted score mapping to rating letter (prepared by author based on MSCI ESG Rating methodology)

Letter rating	Final Industry-Adjusted Company Score
AAA	8.6 – 10.0
AA	7.1 – 8.6
A	5.7 - 7.1
BBB	4.3 – 5.7
BB	2.9 – 4.3
B	1.4 – 2.9
CCC	0.0 – 1.4

Another popular method of analyzing CSR has been found to be the Global Reporting Initiative (later – GRI) which was founded in 1997 by U.S. non-profit organization called Coalition for Environmentally Responsible Economies (CERES), Tellus Institute and The United Nations Environment Programme (UNEP). GRI provides detailed guidelines and principles related to reporting of economic, social, and environmental performance. The scientific literature reveals that many kinds of research use GRI as a tool of measuring CSR rating (Karagiorgos, 2010; Laskar, Maji & Chakrabarty, 2017; Clarkson, Li, Richardson & Vasvari, 2008; Sutantoputra, 2009; Santos, Rezende & Basso, 2019; Park, Shin & Kim, 2019). Some researches use content analysis based on GRI guidelines while others create qualitative measures developed according to GRI. Summary of main indicators evaluating firms' CSR performance is provided in Figure 2 below.

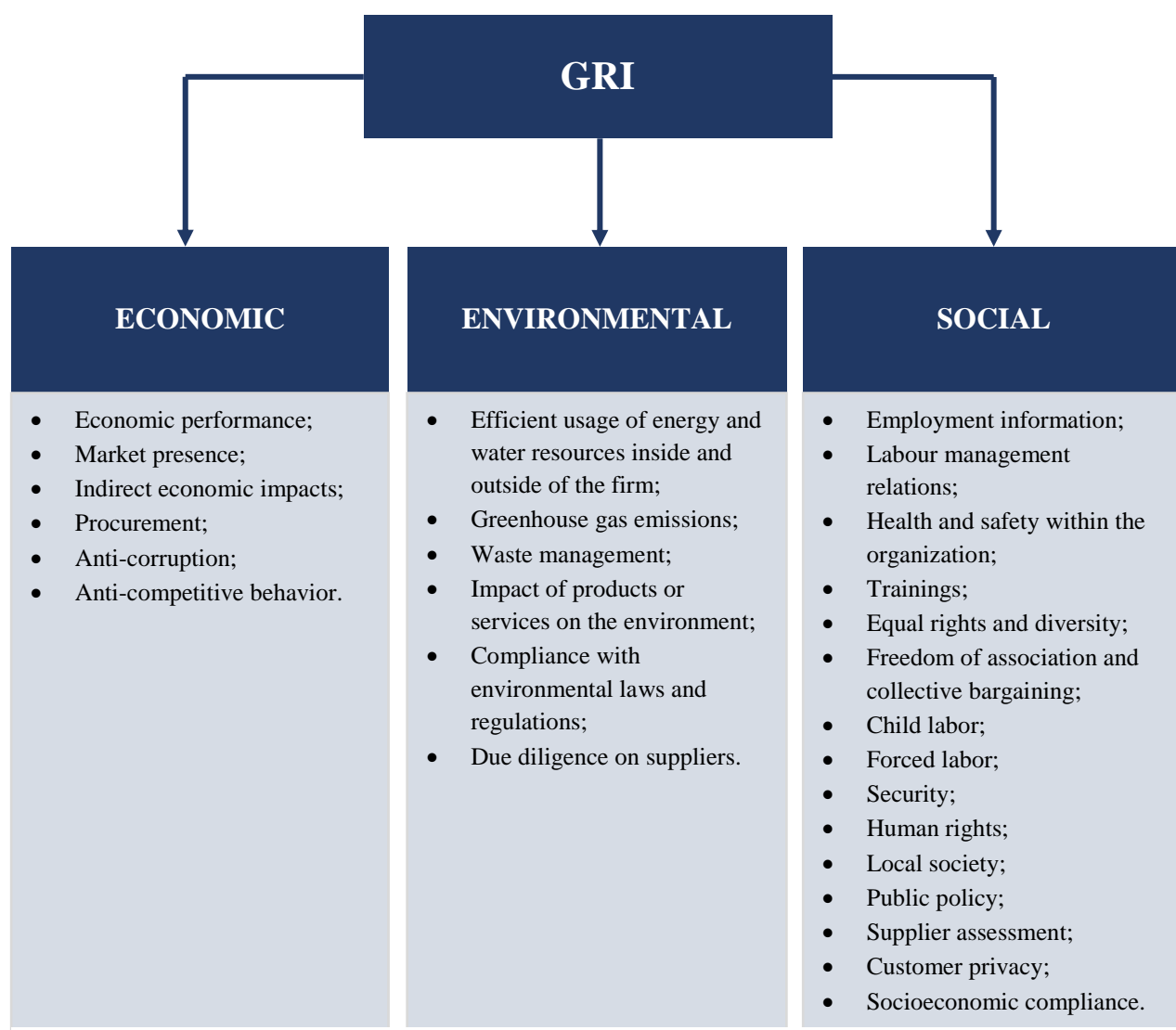


Figure 3. GRI indicators (prepared by author based on GRI standards)

Sustainability report prepared based on GRI standards must include such information as organizational profile, strategy (risks, opportunities, etc.), discussion related to ethics and integrity, an overview of organizational structure and governance, engagement of stakeholders, and practice of reporting. After general disclosures are provided, topic-specific issues must be disclosed. To some extent, it is similar to ESG methodology because of the three main pillars that both approaches have. GRI standards separate economic, environmental, and social pillars. Economic pillar includes information that is related to the analysis of the external environment. It includes financial analysis of a company, comparison with peers in the same industry, overviewing the market, and other similar topics. Environmental factor concentrates solely on efficient resource usage, waste and pollution, and climate change issues. Social pillar must consist of information related to the labor management, employment, privacy and security, human rights, legal rights, and other issues related to overall society. Finally, GRI standards require to provide the GRI Content Index summary which must consist of the list of all disclosures included in a sustainability report and the number of each disclosure must be specified. The list should also provide page numbers of the report where the information related to that disclosure can be found and the reasons for omissions must also be provided when a mandatory disclosure cannot be prepared.

GRI standards are widely used around the world and many companies choose to adapt it to their sustainability reporting. The set of standards helps unify the reports and extracts the main topics that are relevant and important. It also creates a possibility to compare the approach towards sustainability between different companies around the globe. Since GRI provides structured reports, scientific literature suggests mostly content analysis instead of quantitative measures (Karagiorgos, 2010; Laskar, Maji & Chakrabarty, 2017). Content analysis mostly includes counting disclosures used in the report which are listed in the GRI Content Index part.

The analysis of different measures of CSR revealed that the ESG method provides more specific and detailed measures that are used to create worldwide socially responsible investing indexes. These indexes were created and are widely used in the world because it allows investors to evaluate the ethical performance of the firms or, in other words, provide a CSR rating. Additionally, many studies use GRI standards as a base for CSR evaluation, however, it does not provide an eligible evaluation as it may differ significantly between sectors and it might not be comparable between different companies.

2.3. Analysis on firms behavior towards tax avoidance

Taxes are considered to be one of the most important aspects of corporate decisions (Lanis & Richardson, 2014). From the corporate financial perspective, it is known that firms tend to minimize its' operating expenses as much as possible in order to increase profits and since taxes are accounted as operating, it is not a surprise that companies will attempt to reduce the tax burden to a minimum. However, from the societal point of view, corporate taxes should be considered as a strong contribution to the overall society because it increases the funds of public services such as education, healthcare, or pensions (Lanis & Richardson, 2014; Freedman, 2006). On the other hand, some believe that funds collected by taxpayers are also used for unethical behaviors such as military equipment (i.e. guns, missiles) or wars. Other than that, tax avoidance activities might have a negative impact on the community and its welfare.

In order to minimize tax burden companies should have a tax planning process which is usually linked to tax avoidance. Tax planning process involves the process of minimizing tax burden legally which is a primary motivation for firms to do that. Cooper and Nguyen (2019) suggest that one of the main motivations for companies to use tax planning is internationalization. In other words, companies are pretending to have a strong desire to internationalize while in reality firms are avoiding taxes in their domestic country which leads to opening affiliates in tax havens and allows profit and debt shifting. From the government point of view, the purpose is to gather as much taxes as possible in order to fund public products, thus, theoretically, the government of a country is able to increase tax tariffs. On the contrary, an irrational increase in tariffs might lead companies to go under the shadow economy which eventually impacts government funds. Hence, it can be concluded that tax planning heavily depends on government policies towards tax regulations and aggressive tax optimization processes might have a negative impact on the formation of the public treasury and facilitates the emergence of the shadow economy and hence of illegal activities.

The process of tax planning allows to implement various strategies and schemes in order to reduce tax burden to a minimum in a legitimate way. Alduneibat et al. (2017) provide a list of elements which might be included in tax planning strategy:

1. “Planning to eliminate the tax, if that was legally permitted through tax exemptions”;
2. “Benefitting from the costs that are subjected to tax deduction and using cost items that are subjected to deduction instead of using non-cost items, such as using funding by loans instead of self-funding”;
3. “Postponing the date on which the tax shall be due to be paid as much as possible. That is done through acknowledging all the costs and expenses that have been incurred during the first few years of implementation the project, especially in the cases of exempting the project from taxes for certain periods of time through using methods of evaluating inventory or pricing it”;
4. “Benefitting from all the tax exemptions that are stated in the tax law and the relevant laws”;
5. “Choosing the appropriate legal form for the relevant enterprise”.

Successful implementation of the tax planning process in the company’s strategy might lead to better financial performance and provide positive value to shareholders (Alduneibat et al, 2017; Bayar et al. 2018). Although tax planning is entirely legal process of tax optimization, it might eventually lead to tax avoidance which, for the purpose of simplicity, in this report will be defined as an ‘umbrella’ term for all tax minimization activities either legal or illegal.

West (2017) analyses tax avoidance concept through a virtue ethics perspective, specifically through the modern philosophical point of views such as utilitarianism and deontological ethics. The author also provides a different view on tax avoidance based on the famous fraud triangle established by Donald Cressey. The triangle focuses on three factors that can influence fraud – opportunity, pressure, and rationale. The opportunity factor refers to a clear ability to commit fraud, for instance, access to bank accounts. The pressure factor is related to the motivation behind the fraud, for example, high debts or low financial performance of the company. Lastly, the rationale factor refers to the ability to justify committed fraud in such a way that it seems acceptable through fraudster’s morale, for example, the perpetrator could justify its fraud activities by stating that everybody does this. It is important to note that all three factors are relevant to defining fraud and that fraud could be prevented if one of the factors would be removed.



Figure 4. Fraud triangle applied to tax avoidance (prepared by author based on West, 2017)

Pressure for companies to take tax avoidance actions usually comes from the need to increase shareholders' value, i.e. to increase net profit after taxes. West (2017) points that firms are working under the standard of excellence which is required to keep the investors and increase not only the financial performance of a company but also its reputation, brand image or create better communication within the organization and outside of it.

West (2017) explains that such techniques as transfer pricing and thin capitalization rules might provide an opportunity for a firm to avoid taxes. For instance, if a company receives a product or service from its affiliate or subsidiary, it can structure the transaction in such a way that the price of a product would be relatively high or low depending on which tax jurisdiction the receiving country is. This action might be done in a legal way and it provides a possibility to reduce the tax burden. In addition, thin capitalization can also be an opportunity to optimize taxes. The purpose of thin capitalization rules is to limit tax-deductible expenses of a company (specifically debt interest payments). The rule was created in order to reduce debt-shifting between company's subsidiaries which are located in low-tax jurisdictions. It is known that companies can open affiliates in low-tax jurisdictions which would also be low leveraged and would lend money back to related companies located in high-tax jurisdictions (Merlo, Riedel & Wamser, 2019). Thus, West (2017) states that firms leverage might come as an opportunity to avoid taxes. In particular, if the company is only financed by the equity the cost of equity is relatively high and not tax-deductible, it could change the leverage and have debt capital to the extent that does not exceed thin capitalization rule. In such a way, the company is now able to deduct interest payments for tax purposes and reduce the tax burden for a company.

Lastly, the rationale for tax avoidance might be a belief that by maximizing shareholder value firms will positively contribute to the community inside and outside of the organization. Managers of the company might believe that having clear goals to maximize the value of the company might increase efficiency and productivity of a company which would lead to job satisfaction of employees inside the organization or bring more investors outside the organization for new projects in order to contribute to the welfare of overall society (i.e. new projects would create more job opportunities or projects that would contribute to the environment, for example, technologies which help to reduce harmful emissions).

2.4. Measures of tax avoidance

Many studies examine tax avoidance through philosophical perspective, however, it is important to find quantitative measures for further empirical research. After careful examination of scientific literature it was found that there are several methods of measuring tax avoidance. The summary of methods is provided in Table 7 below.

Table 7. Commonly used methods of measuring tax avoidance (prepared by author)

Method	Formula	Authors
Effective tax rate (later – ETR)	1) (Tax expenses – deffered tax expenses) / EBIT or 2) Total tax / pre-tax income or 3) (Tax expenses – deffered tax expenses) / operating cash flows	Adhikari, Derashid & Zhang (2006); Robinson, Weaver & Sikes (2009); Gupta & Newberry (1997); Karthikeyan & Jain (2017); Chen, Chen, Cheng & Shevlin (2010); (Dias & Reis, 2018).
Cash ETR	Cash taxes paid / pre-tax income	Karthikeyan & Jain (2017); Dyreng, Hanlon & Maydew (2010); Chen, Chen, Cheng & Shevlin (2010) Bayar, Huseynov & Sardarli (2018)
Long run cash ETR	\sum cash taxes paid / \sum (pre-tax income – one-offs)	Karthikeyan & Jain (2017); Dyreng, Hanlon & Maydew (2010); Henry & Sansing (2013); Bayar, Huseynov & Sardarli (2018)
Book-tax difference	Pre-tax income – (current tax expense / statutory tax rate)	Kim & Im (2017); Zeng (2018); Mao (2019); Lanis & Richardson (2014)

The effective tax rate is an average tax rate paid by a corporation. It is usually being compared to the statutory tax rate which is a legal rate defined by the law of a country (Gebhart, 2017). Moreover, ETR can also show the efficiency of tax planning activities (Dias & Reis, 2018). Adhikari et al (2006) state that since ETR involves pre-tax income there are issues of reliability of the indicator. First of all, pre-tax income should be recalculated by eliminating any deferred income in order to show the income received on the examined period. Second of all, income before taxes disclosed in financial reports usually does not reflect real taxable income. It is mainly because of different accounting standards and law regulations of the country which causes the difference between booked income in accounting and real taxable income. Accounting standards require that all revenues and expenses would be accounted properly, however, income for tax purposes allows firms to minimize taxable income by deducting allowable expenses. Therefore, the issue of comparability between different companies arises because of different tax-deductibility scope. Gupta and Newberry (1997) suggest that the issue can be eliminated by using operating cash flows instead of income before taxes and use a formula (1) developed by J. L. Zimmerman in his publication at 1983:

$$\text{ETR} = (\text{Tax expenses} - \text{deferred expenses}) / \text{Operating cash flows} \quad (1)$$

Gebhart (2017) in his study provided a different measure of taxable income which could be used in order to find reliable effective tax rate. The author provided the following formula (2) based on Hanlon's work published in 2003:

$$\text{Taxable income} = \text{Current tax expenses} / \text{statutory tax rate} \quad (2)$$

Though, the second approach of a calculation of taxable income has several issues. First of all, current tax expenses reflected in the income statement might not show the real tax liability and include a portion of last year or deferred tax. Second of all, using the statutory tax rate would not reflect the actual pre-tax income of multinational corporations that have affiliates and subsidiaries in different

countries which, as a result, are facing different tax rates. Thus, in order to have a reliable measure of taxable income, some additional disclosures should be provided. Despite that, most of the time the figures are not disclosed in a detailed manner in financial reporting, hence, this proxy is widely used by other studies (Hanlon, 2003).

A cash effective tax rate is another alternative to measuring tax avoidance. Taking cash taxes paid instead of total tax expenses eliminates the issue of estimates of tax expenses (Gebhart, 2017). Cash ETR might be a great option for measuring tax avoidance because cash taxes paid reflects the current portion of the tax paid which avoids over- or understatement showed in the income statement. Nonetheless, the problem is that tax paid in cash might include taxes paid for previous periods (Hanlon, 2003; Gebhart, 2017, Chen et al., 2010). In order to eliminate this factor, Dyreng et al. (2010) provided a measure called long-run cash effective tax rate which calculates ETR a similar way as cash ETR. The difference between the two measures is that cash ETR calculates ETR for one year while long-run cash ETR takes a sum of cash taxes paid in a relatively long period, for example, 10 years which allows to minimize the impact of ETR volatility in the current period (Hanlon & Heitzman, 2010).

The third most used approach in calculating tax avoidance is the book-tax differences method. The method uses differences between income from financial statements and income reflected in tax returns. Some studies state that BTD difference method is related to earnings management because it can be used in order to boost financial earnings or to reduce taxable income (Gebhart, 2017; Chen et al., 2010). In order to eliminate the impact of earnings management, Desai (2003) proposed a new tax avoidance measure – discretionary BTD which is defined in the following formula (3):

$$BTD_t / \text{lagged total assets}_t = \beta_0 + \beta_1 * (\text{total accruals}_t / \text{lagged total assets}_t) + \varepsilon_t \quad (3)$$

Residuals of the formula $\beta_0 + \varepsilon_t$ are interpreted as the part of BTD which is not related in any ways to earnings management, as a result, this approach is a more reliable way to measure corporate tax avoidance (Desai, 2003).

2.5. The impact of Corporate Social Responsibility on tax avoidance

The relationship between corporate social responsibility and tax avoidance is a relatively new topic nowadays. Though CSR and tax avoidance are popular topics among researchers separately, there are few studies which analyze the relationship between the two concepts deeply. During the analysis, it was found that most of the researches use regression analysis, although, the variables used in the regression models vary. Thus, this section will analyze some of the methods used to measure the beforementioned relationship as well as other factors that might have an impact on CSR or tax avoidance activities.

Kim and Im (2017) attempt to find what impact does CSR and tax avoidance drivers have on the company's financial ratios. The sample of the research is 491 Korean listed companies in the period from 2005 to 2007. The authors examine what influence do CSR activities, as well as financial ratios, have on book-tax difference (later – BTD) which is used as a measure for tax avoidance. The study uses the Korean Economic Justice Institute (KEJI) Index as a guideline to measure CSR activities. Each firm of the sample was examined according to different CSR related categories such as societal contribution, employee, customer satisfaction, and environmental contribution and given the scores of CSR rating which was later used for regression analysis. In addition, authors believe that

companies with higher profitability will more likely to engage in tax avoidance activities, therefore, authors added over 35 different financial ratios that were classified to such categories as profitability, liquidity, growth, and productivity ratios. Correlation analysis showed that there is no significant relation between CSR and tax avoidance. After a successful run of regression analysis, it was found that companies that proactively engage in CSR activities are more passive regarding tax avoidance. It is important to point out that the size of a firm has a positive significant relation to tax avoidance which indicated that larger companies tend to conduct tax avoidance activities more aggressively. Additionally, the authors found that financial ratios strongly influence BTD variable which leads to a conclusion that higher the profitability, activity, and liquidity lead to higher tax avoidance. To conclude, the research states that encouraging firms to act in a socially responsible way deters tax avoidance.

Zeng (2018) examines the relationship between CSR and tax avoidance adding a factor of level of country's governance. The author believes that governance of a country has a major impact on company's behavior towards CSR activities as well as tax responsibility since usually strong country governance requires more transparency from the firms. On the other hand, Zeng (2018) states that weak governance might also influence firms for more transparency and disclosure because in that way companies can differentiate itself from others. Thus, one of the hypothesis of the research is that country governance does not have an effect on tax avoidance behavior. The study analyses firms from 36 countries in a period from 2011 to 2015. The author uses regression analysis where dependent variable is book-tax difference (i.e. measure of tax avoidance) and independent variables includes indicator of the quality of country governance and CSR activities. Quality of country's governance is measured based on few criteria such as political stability, level of control of the law, absence of corruption and violence and other. CSR rating is based on four categories – environmental, governance, economic and social category. In order for regression to be more reliable the study uses such control variables as the size of a firm, statutory tax rate, profitability, leverage, application of global accounting standards. The regression analysis showed that apart from the level of country governance CSR activities have a significant positive effect on tax avoidance, although, further research showed that firms that operate in countries with weak governance level and have higher CSR rating are more likely to be tax responsible. Moreover, it was found that firms which apply international financial reporting standards (i.e. IFRS) also avoid wrong behavior towards tax avoidance because these standards require more disclosure and transparency. Hence, it can be concluded that the examined relationship relies strongly not only on the financial performance of the company but also on such factors as the level of regulations in the country or even application of accounting standards.

Karthikeyan and Jain (2017) perform regression analysis as well. This study examines 79 firms listed in Bombay Stock Exchange in a period from 2004 to 2017. Authors of the study attempt to find whether the relationship between CSR and tax avoidance is significant. The regression analysis consists of three different dependent variables which measure tax avoidance – effective tax rate (used to measure tax avoidance incurred in the period of time), cash effective tax rate (tax expenses expressed through paid cash) and long term cash effective tax rate (explains year to year deviations). This study evaluates CSR rating based on CSRHub ratings and divides scores in four different categories – community, employees, environment and governance which are all used as separate independent variables. Finally, authors use few financial ratios as control variables such as profitability ratio, size, sales and operating cash flows. Analysing regression results on effective tax

rate it was found that companies which focus more on environmental contribution are less tax avoidant while companies which invest more in employees and governance are more tax aggressive. Noteworthy, while running regression analysis on long term cash effective tax rate it was found that none of the four independent variables which represent CSR rating are statistically significant. Also, since analysis uses non-current tangible assets as long term investment measure, it was found that companies which invest more to the long run are more likely to conduct tax avoidance activities. To conclude, it can be stated that different CSR strategies have different impact on tax avoidance behavior as well as it has diverse impact on different measures of tax avoidance.

Mao (2018) suggests more complex regression analysis compared to previous studies. This research analyses Chinese A-share listed companies in a period from 2009 to 2016. The aim of this research is to develop a new method in order to evaluate how tax avoidance changes between two separate groups - companies which take CSR initiatives and those who do not. First of all, the study use CSR as a dummy variable, where 1 is given if the company engage in CSR activities, 0 – otherwise. Second of all, author uses three different book-to-tax difference measures for the main model and in the robustness check, long-run effective tax rate is used. Some control variables are also used in this empirical study such as profitability, firm size, leverage, fixed asset intensity, inventory density, dummy variable if the company has carried loss, intangible assets intensity and growth rate. Empirical analysis contains few different methods for evaluating the relationship between CSR and tax avoidance. First, three different matching algorithms are used in order to estimate the average effect of CSR on tax avoidance. These algorithms adjust control variables (i.e. characteristics of a company) for the two groups so data would be comparable. This test showed that firms which engage in CSR activities have higher tax avoidance than those who do not when characteristics of all firms are similar. It also means that dissimilarity of tax avoidance between the two groups is mostly relied on the decision to promote CSR initiatives rather than other attributes of the firms. Using already adjusted data to increase comparability, OLS regression model was performed which showed similar results – engagement in CSR activities cause higher tax avoidance level. On the other hand, if data is not transformed so that characteristics of firms would be similar, regression model shows that CSR is not statistically significant meaning that there is no relation between CSR and tax avoidance.

Preuss (2010) provides a relatively different approach on explaining the relationship between tax avoidance and CSR activities. The study aims to find whether firms that are located in Offshore Finance Centers (later – OFC) or, in other words, in tax haven, make any claims towards their engagement in socially responsible actions. The research method contains a deep analysis of the content of codes of conduct of the companies based in tax havens (i.e. Bermuda or Cayman Islands) and comparing the results with a sample of companies which are based in United States. The sample of firms based in OFCs was selected according to Forbes Global 2000 list which consist of firms based on its' profits, assets, revenues and market share in 2008. The author was analysing the code of conducts by counting the frequency that one particular item was mentioned in the code instead of analysing the quality of the discussion of an item. Thus, the research showed that firms located in OFCs are more likely to promote its socially responsible acts. It was found that such companies have a well developed codes of conducts which in most cases are not comparable to those of U.S. firms. Lastly, it was found that OFC companies especially promotes legal compliance, harassment free environment for employees and transparency to its stakeholders. All in all, it can be stated that companies which engage in tax avoidance activities (i.e. in this case are located in OFCs) are

promoting their CSR activities in a way that it might seem they are attempting to conceal their behavior towards tax avoidance.

Col and Patel (2016) provide a similar approach to Preuss (2010) by aiming to examine firms which have opened affiliates in offshore countries. The study contains an analysis of 341 firms that have affiliates in tax havens in the period from 1995 to 2012. Previous research only examined firms that are located in Bermuda and Cayman Islands, thus, authors expand the research by adding such countries as Switzerland, Ireland, Luxembourg, Hong Kong and few other countries which match the criteria to be considered as tax haven. The research used publicly available data of CSR ratings which separates it into categories such as human rights, employee satisfaction, governance, benefits to society and environment. It is important to mention that before further analysis it was found that firms that have affiliates in tax havens have higher CSR scores than those firms that do not. Furthermore, for higher reliability of the study control variables such as firms size, leverage, cash, research and development and advertising expenses. Authors believe that larger firms are well-known firms by the society, thus, those firms have higher pressure to be socially responsible. Additionally, it is believed that firms with high leverage ratio tend to invest less in CSR activities. Lastly, advertising is used as a control variable because it is believed that promotions positively affect company's involvement in socially responsible activities. The study uses difference-in-difference method for the analysis which compares the rating before and after a company opens the affiliate in offshore country. Empirical research found that firms tend to increase its CSR scores right after the opening affiliates in tax havens. Furthermore, it was concluded that many firms do not find any conflict between proactive involvements in socially responsible activities while at the same time reducing its tax burden to a minimum amount which is considered to be unethical. Hence, this research supports the idea that either companies attempt to conceal their wrong behavior towards tax responsibility by promoting CSR or that the problem is really the misunderstanding of what is ethical behavior towards society.

It can be said that most popular methods used in researches for evaluating the relationship between CSR and tax avoidance are regression analysis or content analysis. However, this research will focus on the impact that CSR has on tax avoidance, therefore, regression analysis is more appropriate since content analysis does not provide exact measures and the results might be too subjective. Thus, it is important to take a deeper analysis on researches that provide regression models in order to develop control variables which might have an impact on tax avoidance.

As it was mentioned earlier, Kim and Im (2017) added a wide range of different financial performance ratios which might have an impact on tax avoidance. Firstly, authors believe that profitable companies might engage in tax avoidance activities in order to increase their profits more, therefore, authors include return-on-assets ratio as a main profitability measure. It is important to mention that profitability might also indicate that the company has more resources to implement socially responsible initiatives (Mao, 2018). Furthermore, authors believe that firms with higher leverage might benefit from tax shields, i.e. interest expenses are often tax-deductible, therefore, firms might want to increase their borrowed capital in order to use lower tax burden. Hence, debt to assets ratio was used as a control variable.

It is worth mention that such tax exemptions highly depends on transfer pricing and thin capitalization rules. For instance, if the company finances its operations with a loan from related parties or subsidiaries, it is important that the loan would be provided under arm's length principle. It means that the loan must be provided at the same interest rate as if the loan would be taken from external

sources. For example, if a company would apply for a loan from a related party, naturally it would be better to have higher interest payments in order to avoid higher tax payments because of interest deductibility. As a result, thin capitalisation rules were developed in order to avoid such situations. This particular rule sets limits of internal loan interest payments tax deductibility. Because of interest tax deductibility, firms might choose debt financing over equity and it also might be a reason for profit-shifting activities to low-tax countries which leads to a minimisation of tax payments or even tax avoidance. Hence, thin capitalisation rules set a threshold by providing so called 'safe' debt to equity ratios and interest payments which exceed that threshold can no longer be deducted from tax payments. For instance, in Lithuania, safe debt to equity ratio is 4:1, which means that the firm might have four times higher debt than equity, though, interest expenses of a loan which exceed safe debt to equity ratio can no longer be deducted from tax liabilities.

Another control variable used by abovementioned authors was growth ratio. Authors believe that growth rates positively affect tax avoidance in such a way that firms would want to minimise cash outflows. Moreover, activity and productivity measures are considered to have a correlation with tax avoidance. Lastly, authors state that both firms with local management and firms with foreign investors are less likely to engage in tax avoidance activities because of strict monitoring of a board.

Gulzar et al (2018) suggest similar control variables as to previously discussed case. Authors test Chinese listed companies in order to find the impact that CSR has on tax avoidance. The research contains regression model as the main assessment model. Dependent variable of a model is cash effective tax rate while CSR is set as an independent variable. CSR was measured by taking Rankins corporate social responsibility ratings. Authors of this research also believe that profitability is positively correlated to tax avoidance and use return on assets as a profitability ratio for further research. Another control measure is debt to assets ratio which shows the structure of a capital. It is important to point that firm size also has an impact on tax avoidance since bigger firms might use the opportunity to maximize their profits by minimising tax payments. The size of a firm is calculated as a natural logarithm of total assets. Similarly as to previous research, authors point out that firms with higher growth rates may take an advantage by investing in assets which might reduce pretax income.

Lanis and Richardson (2014) take a bit different approach by introducing such control variables as the independence of board directors, stock ownership of the board, block held, age of a stock, tenure of CEO and audit by big four companies together with standard measures such as firm size, capital structure, profitability ratios and other measures. Authors believe that independent board members might be a preventive measure against tax avoidance. This variable measures the proportion of independent board directors. Furthermore, it is believed that board members that hold ordinary shares of a company might be more motivated to increase the value of a firm by taking improper actions related to tax avoidance (Jensen & Meckling, 1976). Consequently, authors measure the proportion of equity held by insiders. Additionally, it is known that blockholders have a higher influence over the board. Such ordinary shares holders usually have at least 5 percent of equity and are not related to the board. Thus, the proportion of blockholders are used as a measure to control regression. Authors also find that firms which trade in stock markets for a longer time have an incentive to engage in fraudulent activities in order to reach financial goals and meet the expectations of shareholders. Therefore, the number of days traded in trading markets are used as a control variable. Furthermore, it is believed that the longer the company has same CEO, the more likely he or she will act in their own interest and will be motivated to avoid taxes. Hence, authors use tenure of CEO in years as a control measure of regression. Finally, the study suggests that companies which are audited by big

four companies, are less likely to be involved in fraudulent activities, therefore, dummy measure is introduced in the analysis as a control measure.

Table 8 below concludes the control variables which are mostly used in other researches. Since all of the listed variables has an impact on tax avoidance, the following research will select most popular variables based on financial statements data of the analysed companies.

Table 8. Summary of control variables (prepared by author)

Control variable	Formula	Authors
Firm size	Natural logarithm of total assets	Kim & Im (2017); Gulzar et al (2018); Lanis & Richardson (2014); Col & Patel (2019); Kiesewetter & Manthey (2017); Mao (2019); Zeng (2018); Huseynov & Klamm (2012).
Capital structure	1) Debt / Total assets 2) Total liabilities / Total assets 3) Total debt / Total equity	Kim & Im (2017); Gulzar et al (2018); Lanis & Richardson (2014); Col & Patel (2019); Kiesewetter & Manthey (2017); Mao (2019); Zeng (2018); Huseynov & Klamm (2012).
Profitability	Return On Assets = Net Income / Total assets	Kim & Im (2017); Gulzar et al (2018); Lanis & Richardson (2014); Mao (2019); Zeng (2018); Huseynov & Klamm (2012).
Growth	1) (Current year sales – previous year sales) / previous year sales 2) (Market value / book value) / Total assets	Kim & Im (2017); Gulzar et al (2018); Mao (2019).
Proportion of tangible assets	Property, plant and equipment / Total assets	Kim & Im (2017); Gulzar et al (2018); Lanis & Richardson (2014); Kiesewetter & Manthey (2017); Mao (2019); Zeng (2018).
Proportion of intangible assets	Intangible assets / Total assets	Kiesewetter & Manthey (2017); Mao (2019); Zeng (2018).
Operating cash flows	1) Operating cash flows / Total assets 2) Net cash from operating activities	Kim & Im (2017); Gulzar et al (2018).
Proportion of current assets	1) Cash / Total assets 2) Inventory / Total assets	Lanis & Richardson (2014); Col & Patel (2019); Mao (2019); Zeng (2018).
R&D investments	1) R&D / Total assets 2) R&D / Total Sales	Kim & Im (2017); Lanis & Richardson (2014);

Control variable	Formula	Authors
		Col & Patel (2019).
Market to book value	1) Market capitalisation / Net book value 2) Share price / Net book value per share Where Net book value = Total Assets – Total liabilities;	Col & Patel (2019).
Efficiency	Return on Equity (ROE) = Net income / Shareholder's Equity	Kiesewetter & Manthey (2017).
Capital expenditure	Capex / Total assets	Huseynov & Klamm (2012).
Adoption of IFRS	Dummy variable, where 1 – if adopts IFRS, 0 – if not.	Zeng (2018).

To conclude, it can be stated that in order to run a successful regression analysis it is important to take into account various internal and external environment factors that might also determine the change in tax avoidance. It is clear that most popular factors used in analysis are company's profitability, leverage ratios as well as firm size and proportion of tangible assets.

2.6. Research hypothesis development

Theoretical analysis showed that many studies find different results of the relationship between corporate social responsibility and tax avoidance. Some studies showed that firms which actively engage in CSR initiatives are usually more transparent and have less incentives to avoid taxes. However, most of the researches showed otherwise stating that firms use CSR as a tool to conceal their wrong behavior towards taxation. Moreover, it was found that in most cases CSR has a lower impact on tax avoidance comparing to other variables such as company size, profitability or capital structure. Thus, the following hypothesis were set for the following research.

H1.1: CSR rating (total rating) has an impact on tax avoidance (i.e. explanatory variable is statistically significant and have a positive impact on BTD variable/negative impact on ETR variable);

H1.2: Environment, social and governance ratings has an impact on tax avoidance (i.e. at least one of the three explanatory variables is statistically significant and have a positive impact on BTD variable/negative impact on ETR variable).

H2: Company related control variables are statistically significant.

Hypothesis H1.1 is only applicable for models, where explanatory variable is total CSR score while hypothesis H1.2 is only applicable for models, where explanatory variables are separate environment, social and governance scores. Hypothesis H2 is applicable for all models.

3. Research methodology of the relationship between tax avoidance and corporate social responsibility

Little research is done addressing the issue of the relationship between CSR and tax avoidance in European Union. Therefore, the aim of this research is to address this problem by analysing listed companies in Nasdaq Baltic stock market. The following section will describe the model used for finding the impact of CSR to tax avoidance. It is important first to define the methods for evaluating CSR and tax avoidance, and later, final research method is discussed.

3.1. Data and sample

Financial statements and sustainability reports were taken from Nasdaq Baltic website which provides publicly available data of listed companies. However, due to differences of corporate income tax regulations in Baltic countries, which cause incomparability between companies, it was decided to only analyse Lithuanian capital companies. Therefore, the sample consists of 29 Lithuanian companies listed in shares and bonds markets. The period of analysis is from 2015 to 2018.

3.2. Dependent variable

Since this research aims to evaluate CSR impact on tax avoidance, tax avoidance is considered to be dependent variable. This research will estimate tax avoidance by using two different measures – effective tax rate (ETR) and book-tax difference (BTD). Formulas for each measures are provided below:

$$1) \text{ ETR} = \text{Total tax} / \text{Pre-tax income}$$

$$2) \text{ BTD} = (\text{Pre-tax income} - (\text{current tax expense} / \text{statutory tax rate})) / \text{Pre-tax income}$$

Prior research use BTD formula as an absolute number, however, since analysed companies in this research are of different sizes, it was decided to adjust the formula by dividing it from pre-tax income to express it as a percentage. BTD variable shows the deviation from stated income tax and income tax calculated on statutory rate. For instance, if company's effective tax rate is close to zero, while statutory tax rate is 15%, BTD will be close to 100%, on the contrary, if company pays in taxes more than 15% of pre-tax income, BTD will be equal to zero percent. In substance, high BTD reflects avoidance to pay taxes.

3.3. Independent variable

CSR rate will be used as an explanatory variable since the the following analysis will test the impact of CSR on tax avoidance. After deep theoretical analysis of several possible ways to measure CSR, it was decided to adapt both MSCI ESG Rating model and GRI standards to this research. This research will apply simplified version of the model because of lack of data (i.e. industry specific ESG scores are not available). Therefore, the process of CSR evaluation consists of following steps:

1. Gather annual and sustainability reports for the period of 2015-2018;
2. Evaluate each key issue and provide a score on a scale from 1 to 10;
3. Evaluate total score for each pillar on a scale from 1 to 10 as an average of all key issues;
4. Calculate total score of all three pillars on a scale from 1 to 10 as a sum of weighted key issues.

Key issues were selected based on MSCI ESG Rating methodology and they were adapted to the analysed companies (see Table 9).

Table 9. Key issues and its weights on total ESG rating (prepared by author)

Environmental	Social	Governance
Carbon emissions (15%)	Labor management (11%)	Board diversity (8%)
Product carbon footprint (8%)	Privacy and data security (7%)	Executive pay (2%)
Financing environmental impact (4%)	Health and safety (4%)	Business ethics (8%)
Packaging and waste (7%)	Health and demographic risk (4%)	Anti competitive practices (5%)
Natural resources (4%)	Access to communications (1%)	Tax transparency (6%)
Environmental opportunities (1%)	Access to finance (1%)	Corruption and instability (4%)

All annual and sustainability reports of the analysed period (2015-2018) will be analysed and addressed to each key issue. Scores for each key issue will be given by comparing data of all analysed companies and evaluating each key issue based on the following criterias:

1. Is the issue addressed in the report?
2. If the issue is addressed, comparing to other companies, how well is it described?
3. What is the impact on environment, society, governance of each issue?
4. How the impact of each issue changed over the years?

Each key issue has different weight on total ESG rating score (weights are provided in brackets in Table 9). Since there is no available data on industry-specific ESG scores, the total score will be considered as a final rate for each company.

As it was mentioned above, total score of ESG is taken as independent variable, however, in order to expand following research, it was decided to use separate environment, social and governance pillars scores as three different independent variables to see which pillar has the most impact on tax avoidance. In this case, each key issue has the same weight on the pillar, therefore, total score of one pillar is the average of scores given to each issue.

3.4. Control variables

The following research will try to find the most reliable results as possible, thus, in order for more detailed results, additional company-level measures will be used as control variables in this research. Following table provides the summary of all variables, abbreviation and formula.

Table 10. Summary of control variables (prepared by author)

Control variable	Abbreviation	Formula
Firm size	SZ	Natural logarithm of total assets
Leverage	LEV	Debt / Total assets
Profitability	ROA	Net income / Total assets
Growth rate	GR	(Current year sales – previous year sales) / previous year sales
Fixed assets intensity	FX	Property, plant and equipment / Total assets
Efficiency	ROE	Net income / Total equity
GDP growth	GDP	GDP growth of a country
EURIBOR interest rate	EUR	EURIBOR interest rates

Firm size was selected because larger firms might invest more in CSR activities. Leverage ratio might impact tax avoidance since companies with borrowed capital are more likely to use tax exemptions of interest payments. Additionally, profitable, efficient and growing firms are more motivated to reach shareholders' expectations, therefore, it might become an incentive to engage in fraudulent activities such as tax avoidance as well as it might motivate to invest more in CSR initiatives. Also, firms which invest in tangible long term assets might benefit from depreciation charges which reduce taxable income. Lastly, it is important to take into consideration macroeconomic conditions under which firms operate, therefore, country's GDP growth rate and average interest rates in Eurozone (EURIBOR) will be used in regression as control variables as well.

3.5. Instrument of the research

Since this study examines CSR impact on tax avoidance using three different dependent variables of tax avoidance, the research will test three following regression model equations:

$$1) ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it}$$

$$2) BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it}$$

$$3) ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} EUR_{it}$$

$$4) BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} EUR_{it}$$

Analysis will test mentioned equations in different models – Pooled Ordinary-Least-Squares (later – OLS), Fixed effects, weighted least squares (later- WLS) and Between-group models. Regression analysis will be done using GRETL software.

3.6. Limitations

Some limitations should be considered before proceeding to further analysis due to lack of data or other reasons:

- Since this research only included Lithuanian listed companies due to major differences in income tax regulations between Baltic countries, data gathered for this research might be compromised because all of the results are showed on a consolidated level and some companies might have subsidiaries in other countries. This means that income tax showed in statements of comprehensive income might not be accurate and cannot be compared to statutory rate of Lithuania.
- As some of the companies might have subsidiaries in other countries, transfer pricing and thin capitalization issue should be taken into account since interest expenses are tax-deductible, therefore, companies might manipulate with intercompany loans. However, due to lack of data it was assumed that all analysed companies are operating only in Lithuania.
- As data sample is relatively small, it was decided not to separate different industries which might have an effect on overall results.
- Corporate Social Responsibility ratings might be highly affected by years as rating system is only based on reporting provided by companies throughout the years. CSR is rather new concept and obligation to report it was introduced only in recent years. Hence, scores might be compromised because of lack of data and not because of actual performance towards social responsibility.
- Theoretical background showed that there are at least four common measures used for indicating tax avoidance, however, due to lack of data only effective tax rate and book-to-tax difference can be calculated for this research.

4. Empirical research of the relationship between CSR and tax avoidance – assessment, results and discussion

Empirical analysis, which is developed based on prior research, will be performed and investigated in the following sections in order to determine the impact of corporate social responsibility on tax avoidance. Following section will overview the summary of the analysis of total CSR and each pillar (environment, social and governance) ratings. Later, descriptive statistics of variables and overall data sample will be provided following by assessment of regression. Lastly, results of analysis will be provided and discussed together with recommendations for further improvement of the research.

4.1. Summary of Corporate Social Responsibility ratings

First part of the analysis is to evaluate each company's contribution to socially responsible activities. Since there is no available CSR index for Lithuanian companies, each company was evaluated based on available sources provided in Nasdaq Baltic website. Unfortunately, not all companies are preparing separate sustainability reports, therefore, in such case, missing information was gathered in annual reports. After gathering and analyzing data of all 29 companies, it was found 6 companies do not have any available data related to social responsibility. Therefore, companies without any data were omitted from the sample and only 23 companies remained for further research.

Each key issue was evaluated on a scale from 1 to 10, where 1 means that the company is poorly addressing or does not mention evaluated issue in its reports and 10 means a great performance regarding evaluated issue. After evaluating each key issue, total CSR score was calculated for each company based on weights of key issue. Figure 5 below summarizes the distribution of companies based on their final CSR rating. As it can be seen, in 2018, 17 companies had a rating from 6 to 10 while in 2015, only three companies fell in the same category. Also, in 2018, only one company had a rating lower than 4, while in 2015 there were 9 companies with the same rating. It can be concluded that CSR rating tends to be higher as the years past. There are several reasons behind the increase in CSR rating. First of all, it was found that companies tend to invest more to socially responsible activities each year. Second of all, investing in such activities and innovative technology improves their capabilities of protecting environment and contributing to overall societal welfare. Lastly, it was found that the quality of reporting is improving each year which, consequentially, increase CSR rating as well.

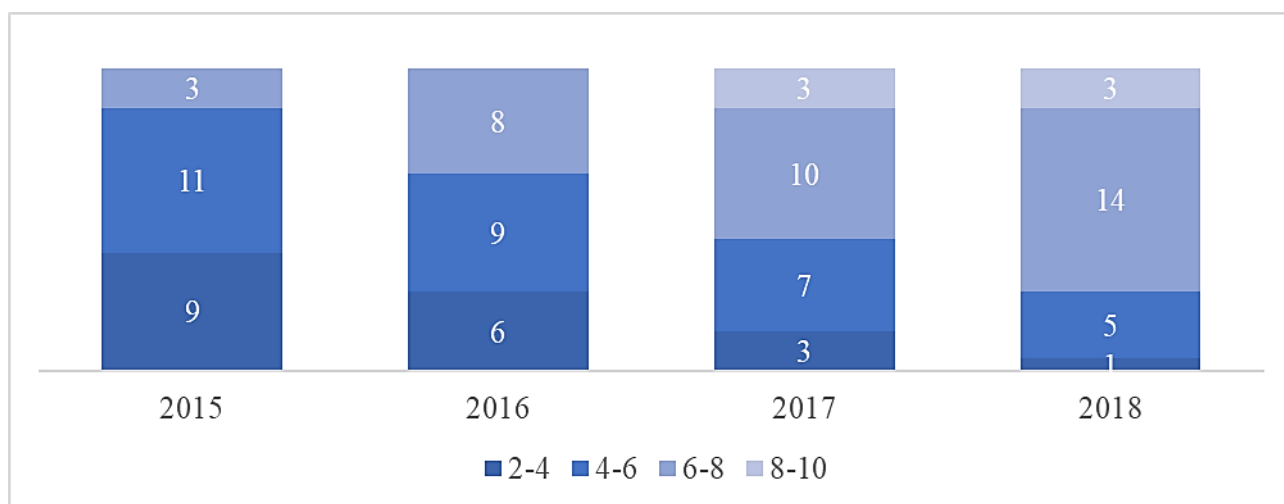


Figure 5. Distribution of companies based on their final CSR rating (prepared by author)

Figure 6 below plots the distribution of companies in each pillar based on average scores of each key issue. The same tendency can be seen as previously that ratings increase over the years. However, distribution of companies in environment pillar shows average score falls between 0 and 6. Analysis showed that most of the companies do not manage matters related to environment protection, i.e. carbon emissions, waste, use of natural resources are not monitored closely and there are no exact amounts and descriptions of responsible actions provided. Furthermore, it was found that social pillar ratings were the highest compared to other pillars (all companies are rated above 4) due to excellent labor management and exceptional care of occupational health and safety. Lastly, governance pillar shows that the average rating in 2015-2016 period is between 4 and 6 and improves in 2017-2018 by falling between 6 and 8. It was found that companies became more transparent in later years and disclosed more information regarding management of business ethics, anti-corruption, fair competitiveness and transparency policies.

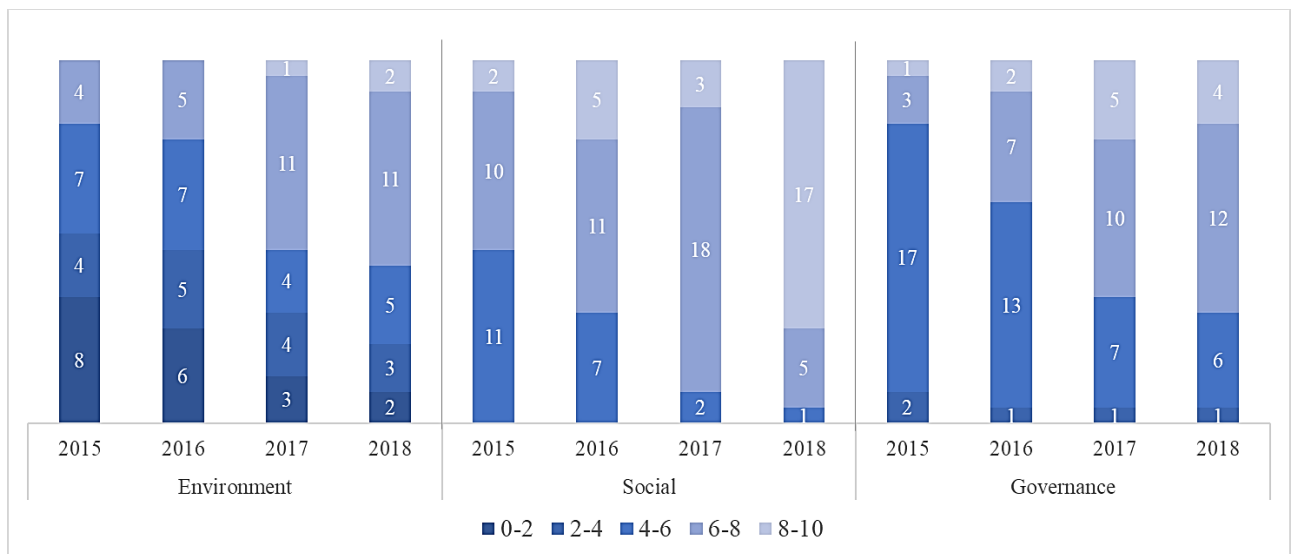


Figure 6. Distribution of companies based on their environment, social and governance average scores (prepared by author)

Overall, it can be stated that corporate social responsibility is becoming more and more important for companies as new regulations towards information disclosure is required by various stakeholders. As a result, a major improvement of actions taken, management as well as monitoring of various non-financial indicators and more detailed reporting related to social responsibility can be seen over the years.

4.2. Descriptive statistics

Descriptive statistics of all variables are provided in Table 11 below. It can be seen that the median of ETR is 9,5% which is similar to the mean of 10,3%. It shows that most of the companies are paying around 5% less income tax compared to statutory income tax rate in Lithuania of 15%. Standard deviation of ETR is not high, although, skewness of 4,3 shows that this variable is not normally distributed (one observation was found with maximum value of 106%) which might negatively affect overall accuracy of the model. Descriptive statistics of second dependent variable shows that the mean is 47,5% which is a bit higher than the median of 36%. It correlates with the results of ETR statistics meaning that most of the companies are paying less taxes than 15% of pre-tax income. Normally, if firms would always pay 15% of taxes, BTD indicator should be equal to 0. Descriptive

statistics of independent variables (CSR, ENV, SOC and GOV) shows quite normal results, although, standard deviation figures are a bit higher compared to other variables due to higher difference between minimum and maximum values. Additionally, it can be seen that overall all ratings are above 5 (on a scale from 1 to 10) meaning that most of the companies are above average performance towards socially responsible actions. Statistics of control variables show some discrepancies. Large skewness of profitability (ROA), growth (GR) and efficiency (ROE) variables shows that data is not normally distributed meaning that the accuracy of models might be compromised because of these variables.

Table 11. Descriptive statistics of variables (preped by author)

Variable	Mean	Median	Min	Max	Std. Dev.	Skewness
Effective tax rate (ETR)	0,1030	0,0950	0,0000	1,0600	0,1336	4,3018
Book-to-tax difference (BTD)	0,4752	0,3600	0,0000	1,0000	0,4176	0,2042
CSR total score (CSR)	5,6593	5,7500	2,6300	8,8300	1,6006	-0,1490
Environment score (ENV)	4,7865	5,0000	1,0000	9,0000	2,3934	-0,1946
Social score (SOC)	7,3460	7,6700	4,6700	9,6700	1,3929	-0,3132
Governance score (GOV)	6,1777	6,0000	3,3300	9,0000	1,473	0,0611
Profitability (ROA)	0,0427	0,0500	-0,4500	0,1700	0,0730	-3,2779
L_Size (SZ)	18,7010	18,5640	15,9450	21,5390	1,3118	0,1610
Leverage (LEV)	0,2522	0,2600	0,0000	0,6400	0,1771	0,1410
Growth (GR)	0,0712	0,0300	-0,3200	1,7600	0,2593	3,3877
Efficiency (ROE)	0,0562	0,0800	-2,1700	0,3000	0,2500	-7,7769
Fixed assets intensity (FX)	0,4792	0,5050	0,0000	0,9300	0,29074	-0,2458
GDP growth (GDP)	3,1000	3,1000	2,0000	4,2000	0,8591	0,0000
EURIBOR (EUR)	-0,0900	-0,1300	-0,2700	0,1700	0,1737	0,4689

In order to understand the relationship between given variables, correlation matrix was created. Correlation coefficient between two variables which is close to 1 means that once one of the variables is changed, another will move in the same direction at a locked up rate. On the other hand, if coefficient is close to -1 it means that once one of the variables is changed, another will move in the opposite direction. Figure 7 below shows the results of correlation matrix. It can be seen that ETR and BTD variables are negatively correlated because as the company pays less taxes, book-to-tax difference indicator increases. Also, Figure 7 shows that none of the CSR variables are correlated with tax avoidance variables. It is also clear that all variables related to social responsibility (ENV, SOC and GOV) are positively correlated to CSR since final CSR score is constructed of the same scores used for ENV, SOC and GOV variables. Moreover, it can be seen that country related variables (GDP and EUR) are almost perfectly negatively correlated which means that if GDP growth rate is moving up, EURIBOR will decrease and vice versa. Furthermore, GDP has a positive correlation with CSR related variables while EURIBOR has a negative correlation which can be explained by the fact that companies over the years tend to perform better at socially responsible activities but also GDP growth is positive and higher each year while EURIBOR tends to decrease over the years. Finally, efficiency and profitability seems to have almost perfect positive correlation since both indicators are calculated using net income.

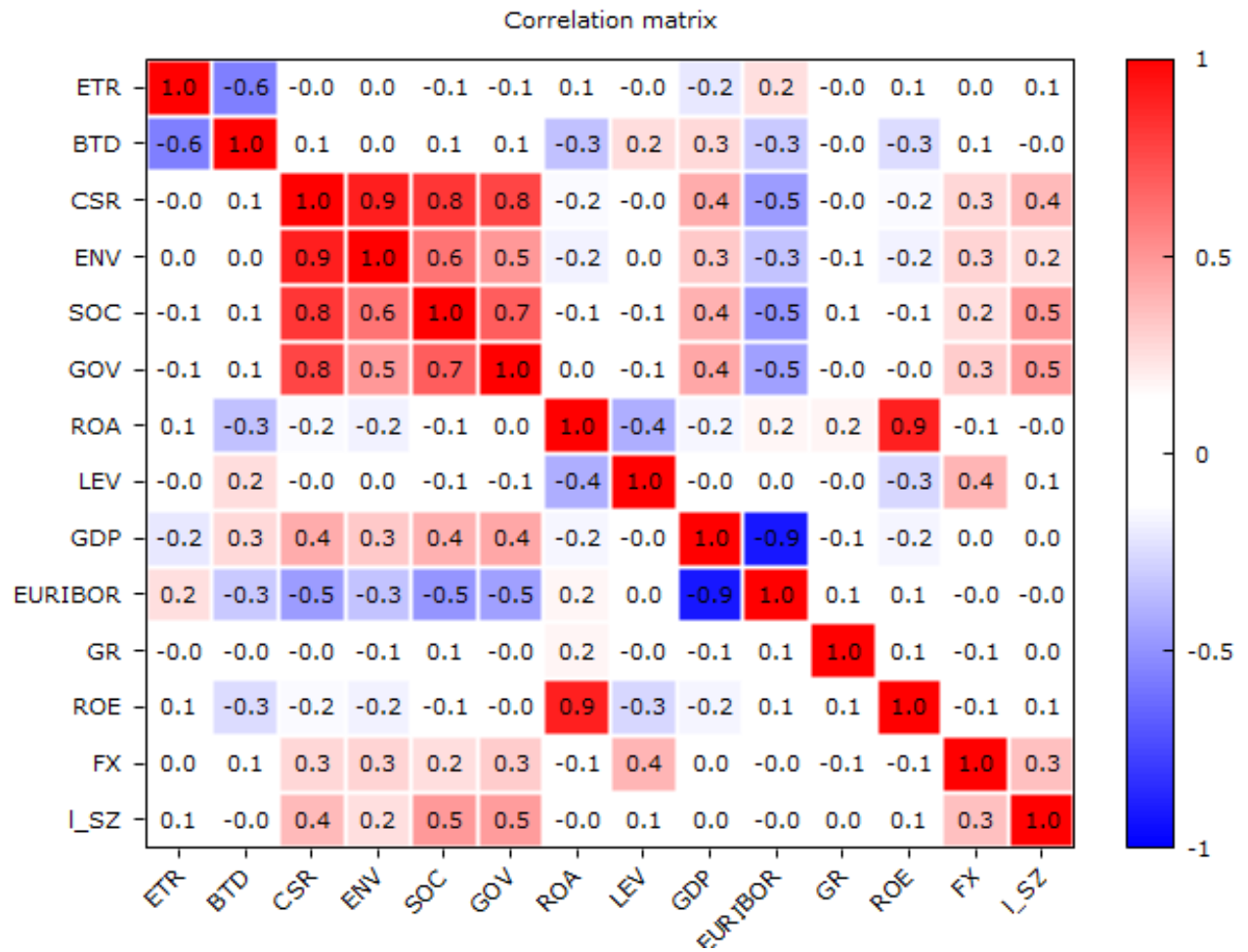


Figure 7. Correlation matrix of analysed variables (prepared by author using GRETL software)

Descriptive statistics of selected variables shows that almost all of the variables are normally distributed and there are no major discrepancies in data, thus, data and formulas transformation is not needed for further research. In addition, correlation matrix shows that variables that have same components in their formulas have a linear relationship between them which as expected. Although, most of the variables that are not linked by the same figures are not correlated as correlation coefficient is near zero. Since gathered data is consistent and no further corrections are needed, regression analysis can be constructed for further research.

4.3. Analysis of regression results

In order to find links between corporate social responsibility and tax avoidance, all of the examined variables were put into four different regressions which are defined by the following formulas:

- 1) ETR to total CSR: $ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it}$
- 2) BTD to total CSR: $BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it}$
- 3) ETR to ENV, SOC, GOV: $ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} EUR_{it}$

$$4) \text{ BTD to ENV, SOC, GOV: } BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} EUR_{it}$$

It is important to mention that all of the models are based on panel data, thus, it is necessary to check more than one panel data specific models. Therefore, Fixed effects, Weighted Least Squares and Between-groups models will also be constructed. Although, before testing other models, standard Pooled OLS regression model was constructed. Table 12 below shows basic statistics of R-squared and Adjusted R-squared which explain the goodness of fit of all models. As it can be seen, R-squared as well as adjusted R-squared are relatively small which means that the models might be constructed incorrectly and that additional variables or omitting existing variables might potentially improve the fitness of the models. It can be said that so far, models with BTD as dependent variable are more reliable.

Table 12. Pooled OLS regression quality before data transformation (prepared by author)

Model	R-squared	Adjusted R-squared
1)ETR to total CSR	0,08	-0,02
2)BTD to total CSR	0,24	0,16
3)ETR to ENV, SOC, GOV	0,09	-0,04
4)BTD to ENV, SOC, GOV	0,25	0,14

Before proceeding to correction of models reliability, it is important to test primary models against normality of residuals and heteroscedacity. When performing regression analysis, it is assumed that residuals (i.e. differences between observed and predicted values) are normally distributed. In such a way the results taken from regression can be trusted. Another assumption of regression is that all residuals are coming from a population which is homoscedastic or, in other words, has a constant variance. If residuals have high variance it means that the model becomes heteroscedastic and breaks the assumption of regression. Therefore, Chi square test for normality of residuals and White's test for heteroscedacity were performed and the results of p-value are provided in Table 13 below. As it can be seen from the results of Chi square test, all of the models are normally distributed as p-value is close to zero. Furthermore, as this research is working on 5% (0,05) and White's test p-values for all models are higher than 5% it can be stated that heteroscedasticity is not present. Hence, since basic regression assumptions were met there is no need to transform variables and the same models can be used for further analysis.

Table 13. Results of Chi square and White's tests (prepared by author)

Model	Chi square test (p-value)	White's test (p-value)
1)ETR to total CSR	0,00	0,57
2)BTD to total CSR	0,00364	0,27
3)ETR to ENV, SOC, GOV	0,00	0,75
4)BTD to ENV, SOC, GOV	0,00227	0,34

Since pooled OLS models showed relatively low R-squared it was decided to transform models by omitting statistically insignificant variables, i.e. variables with highest p-value generated in pooled OLS regression. After testing various possibilities, the best results were achieved when regression formulas are adjusted as follows:

- 1) ETR to total CSR: $ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 LEV_{it} + \beta_3 GR_{it} + \beta_4 ROE_{it} + \beta_5 GDP_{it} + \beta_6 EUR_{it}$
- 2) BTD to total CSR: $BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 GR_{it} + \beta_5 ROE_{it} + \beta_6 GDP_{it} + \beta_7 EUR_{it}$
- 3) ETR to ENV, SOC, GOV: $ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 GR_{it} + \beta_6 ROE_{it} + \beta_7 EUR_{it}$
- 4) BTD to ENV, SOC, GOV: $BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 ROE_{it} + \beta_7 EUR_{it}$

Table 14. Pooled OLS regression quality after data transformation (prepared by author)

Model	R-squared	Adjusted R-squared
1)ETR to total CSR	0,08	0,01
2)BTD to total CSR	0,24	0,18
3)ETR to ENV, SOC, GOV	0,09	0,003
4)BTD to ENV, SOC, GOV	0,24	0,17

Results of transformed models, unfortunately, were not as expected. Adjusted R-squared improved, however, not as much as it needed to ensure reliability of the models. Fixed asset intensity (FX) and firm's size (SZ) variables were omitted from all models as these variables were found to be statistically insignificant and have lowest coefficients. Furthermore, all models showed that CSR related variables are statistically insignificant which means that hypothesis H1.1 and H1.2 of this research are rejected. Besides that, a same tendency regarding the relationship between CSR and tax avoidance was found in first and second models – when CSR increases, tax avoidance tends to decrease. Third model showed similar tendency as coefficients for environment and social variables were positive, although, governance variable had a reverse sign. Which draws a conclusion that when performance towards governance (i.e. board diversity, transparency, business ethics, etc.) improves, ETR tends to decrease meaning that tax avoidance comes into place. Fourth model shows similar tendency as well, although, instead of governance, social variable has reverse sign, meaning that tax avoidance increases when social activities improves. Additionally, models with BTB as dependent variable (second and fourth models) showed that profitability and EURIBOR are statistically significant and negatively related to dependent variable. It means that because of increase in EURIBOR rates causes more profitable firms to keep distance form tax avoidance activities.

Table 15. Pooled OLS results after transformation¹ (prepared by author)

Variable	Model 1		Model 2		Model 3		Model 4	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const.	0,036	0,7877	0,8813	0,0221**	0,0977	0,2914	0,5078	0,0664*
CSR	0,008	0,4066	-0,0402	0,1594	N/A	N/A	N/A	N/A
ENV	N/A	N/A	N/A	N/A	0,0062	0,4103	-0,0290	0,1777
SOC	N/A	N/A	N/A	N/A	0,0019	0,9060	0,0069	0,8785
GOV	N/A	N/A	N/A	N/A	-0,0021	0,8759	-0,0018	0,9622
ROA	N/A	N/A	-2,3769	0,0877*	N/A	N/A	-2,3608	0,0845*
LEV	-0,0255	0,7568	0,3070	0,2323	-0,0288	0,7279	0,3233	0,2113
GR	-0,0270	0,6184	0,0931	0,5545	-0,0240	0,6671	N/A	N/A
ROE	0,0427	0,4750	0,2745	0,4685	0,0438	0,4666	0,2834	0,4454
GDP	0,0172	0,6846	-0,0939	0,4397	N/A	N/A	N/A	N/A
EUR	0,2980	0,1663	-1,2749	0,0419**	0,2118	0,0292**	-0,7782	0,0053***

Pooled OLS regression models showed that models with ETR as a dependent variable are inconsistent as R-squared is almost equal to zero. In addition, third and fourth models, where CSR indicator is separated into three variables, have higher quality. The following conclusions can be drawn:

1. Model 1 – R-squared is lowest compared to other models. Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a negative impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
2. Model 2 – R-squared is higher, the overall quality of model is great but not enough to be trusted. Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a positive impact on dependent variable. Hypothesis H2 is rejected, although, one company related control variable was statistically significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance, though, profitability of the company lowers the incentive to avoid taxes.
3. Model 3 – R-squared is second lowest result of all four models. Hypothesis H1.2 is rejected as all three independent variables are statistically insignificant and do not have a negative impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related variables were statistically significant. Based on results, it can be stated that CSR does not have an impact on tax avoidance.
4. Model 4 – R-squared is equal to Model 2 results, although, the overall quality of the model is not enough to be trusted. Hypothesis H1.2 is rejected as all three explanatory variables are statistically insignificant and do not have a positive relationship with dependent variable. Hypothesis H2 is rejected, although, one company related control variable was statistically significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance, though, profitability of the company decrease the incentive to avoid taxes.

¹ Symbol ‘*’ reflects statistical significance of a variable

Since overall results of Pooled OLS models are undoubtedly low it is clear that these models are not adequate and reliable for the analysis. Thus, Fixed effects model will be tested as it should improve the quality of regression since it is more suitable for panel data and it will control time-invariant variables by including time dummies. In order to achieve best quality of regression, all models were reviewed and regression formulas were adjusted as follows:

- 1) ETR to total CSR: $ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it} + \beta_{10} Dt_2it$
- 2) BTD to total CSR: $BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GR_{it} + \beta_6 FX_{it} + \beta_7 ROE_{it} + \beta_8 GDP_{it} + \beta_9 EUR_{it} + \beta_{10} Dt_2it$
- 3) ETR to ENV, SOC, GOV: $ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} Dt_2it$
- 4) BTD to ENV, SOC, GOV: $BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 SZ_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + \beta_7 GR_{it} + \beta_8 FX_{it} + \beta_9 ROE_{it} + \beta_{10} GDP_{it} + \beta_{11} Dt_2it$

Table 16 below shows overall quality and accuracy of the models before and after transformation. It is seen that the quality of models before and after transformation is significantly higher compared to the results received from Pooled OLS models. Also, first and second models were not transformed because any change in the model caused a significant decrease in Within R-squared and none of the variables became statistically significant. Third and fourth models remained of the same quality after transformation. Furthermore, Fixed effects regression also showed that ETR models have twice as lower results compared to BTD models and models with separated CSR variables also have higher quality compare to models with total CSR variable. This leads to a conclusion that fourth model is the most consistent.

Table 16. Fixed effect regression quality before and after data transformation (prepared by author)

Model	Within R-squared before transformation	Within R-squared after transformation
1)ETR to total CSR	0,16	N/A
2)BTD to total CSR	0,36	N/A
3)ETR to ENV, SOC, GOV	0,18	0,18
4)BTD to ENV, SOC, GOV	0,39	0,38

Results of Fixed Effects regression model are provided Table 17. Model 1 shows positive CSR coefficient meaning that effective tax rate increase if CSR performance increase. On the contrary, Model 2 shows positive coefficient for CSR which means that if CSR score increase, tax avoidance increase as well. Since R-squared of Model 2 is higher, it can be stated that results of Model 2 can be trusted more compared to Model 1. Furthermore, Model 2 shows that EURIBOR is statistically significant and have a positive impact on BTD meaning that increase in average interest rates in Eurozone increases book-to-tax difference of pre-tax income. Which can be explained by the fact that interest expenses are tax deductible, therefore, the higher the interest rates are, the more interest expenses incur, the more expenses can be deducted from pre-tax income and less taxes are paid. In addition, Model 2 shows that profitability (ROA), firm's growth rate (GR) and size (SZ) are negatively related to dependent variable, meaning that more profitable, bigger and faster growing

companies are less likely to engage in tax avoidance activities. On the other hand, firm's leverage (LEV), efficiency (ROE) and fixed assets intensity (FX) are positively related to dependent variable meaning that more efficient firms which invest more into fixed assets and which have borrowed capital will more likely to avoid taxes as BTD indicator increases.

Model 3 showed that one of the independent variables is statistically significant (low p-values). It can be seen that better scores in social activities pillar leads to a decrease in effective tax rate or, in other words, better scores increase the likelihood of tax avoidance activities. Although, environment and governance rates are not significant in the regression, these variables show positive coefficients meaning that better performance in environment and governance activities increase ETR indicator. Moreover, Model 3 showed that GDP has a significant negative effect on effective tax rate, meaning that the better the conditions of country's economy, the less taxes are paid by companies. Profitability, capital structure, firm's growth, efficiency and size of a firm were found to be positively related to ETR meaning that these variables decrease the chance of tax avoidance.

Model 4 indicates that social rating is the most statistically significant variable in the model and, as in Model 3, social rating increase BTD variable (positive coefficient). Compared to Model 3, governance rating coefficient shows the same tendency – increase in GOV will decrease tax avoidance indicator. However, environment rating shows a reverse sign in Model 4, meaning that the more companies invest in activities related to environment, the more likely they will engage in tax avoidance. Although, as in Model 3, environment and governance independent variables are not statistically significant. None of the control variables were found to be statistically significant and all of them show the same signs of coefficients as Model 2, where dependent variable is BTD, except for fixed assets intensity variable. Model 4 shows that this variable has a positive impact on BTD meaning that more investments in fixed assets leads to a tax avoidance.

Table 17. Fixed Effects regression results after transformation (prepared by author)

Variable	Model 1		Model 2		Model 3		Model 4	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const.	-2,4883	0,3318	7,5128	0,2410	-3,4234	0,2182	10,4634	0,1309
CSR	0,0139	0,4937	0,0098	0,8471	N/A	N/A	N/A	N/A
ENV	N/A	N/A	N/A	N/A	0,0052	0,6995	0,0047	0,8862
SOC	N/A	N/A	N/A	N/A	-0,0482	0,0789*	0,1847	0,0077***
GOV	N/A	N/A	N/A	N/A	0,0359	0,2243	-0,1136	0,1235
ROA	-0,1118	0,8907	-2,7704	0,1754	0,0024	0,9975	-3,2160	0,1026
LEV	0,0860	0,7600	0,3250	0,6437	0,0459	0,8716	0,4220	0,5499
GR	0,0391	0,5260	-0,0418	0,7861	0,0822	0,2117	-0,1913	0,2416
ROE	0,0858	0,6589	0,3303	-0,4963	0,0577	0,7596	0,4331	0,3568
FX	-0,1582	0,6030	0,3864	0,6104	-0,0345	0,9137	-0,0833	0,9162
L_SZ	0,1335	0,3294	-0,3625	0,2885	0,2015	0,1807	-0,5818	0,1207
GDP	0,0331	0,5200	-0,1850	0,1522	-0,0422	0,0905*	0,0881	0,1530
EUR	0,4121	0,1435	-1,4672	0,0386**	N/A	N/A	N/A	N/A
Dt_2 ²	0,0099	0,8075	-0,1454	0,1556	-0,0327	0,3733	0,0061	0,9467

² Time dummy included automatically in Fixed Effects regression model

Fixed effects regression analysis showed that models with ETR dependent variable are slightly inconsistent and that BTD models have higher overall regression quality. Also, models where CSR is separated into three variables are also more precise than models with CSR as total rating. Hence, the conclusions are as follows:

1. Model 1 – R-squared is lowest compared to other models. Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a negative impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
2. Model 2 – R-squared is higher, the overall quality of model is great. Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a positive impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were statistically significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
3. Model 3 – R-squared is second lowest result of all four models. Hypothesis H1.2 cannot be rejected as one of the three independent variables is statistically significant and has a negative impact on dependent variable meaning that social rating has an impact on tax avoidance. Hypothesis H2 is rejected as none of the company related variables were statistically significant.
4. Model 4 – R-squared is highest of all four models. Hypothesis H1.2 cannot be rejected as one of the three explanatory variables is statistically significant and has a positive relationship with dependent variable. Therefore, it can be stated that social rating has a positive impact on tax avoidance. Hypothesis H2 is rejected as none of the company related variables were found to be statistically significant.

The following regression type applied to this research analysis is Weighted Least Squares method. This method is usually applied for models that suffers from heteroscedasticity. Although, models in this research does not have heteroscedasticity, it was important to test more models in order to find the most precise results. First regression was run with all variables. Table 18 below shows the results from WLS regression before data transformation. It can be stated that overall quality is similar to Fixed effects models. Similarly as in previous models, WLS showed that models with effective tax rate as a dependent variable have lower R-squared compared to models with book-to-tax difference variable. Looking at adjusted R-square, Model 2 is the most consistent before transformation.

Table 18. Weighted Least Squares regression quality before data transformation (prepared by author)

Model	R-Squared	Adjusted R-Squared
1)ETR to total CSR	0,21	0,12
2)BTD to total CSR	0,37	0,30
3)ETR to ENV, SOC, GOV	0,21	0,11
4)BTD to ENV, SOC, GOV	0,37	0,28

In order to achieve better results, all models were tested by omitting non-significant (i.e. highest p-value) variables. Accordingly, regression formulas were adjusted as follows:

$$1) \text{ ETR to total CSR: } ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROE_{it} + \beta_5 EUR_{it}$$

- 2) BTD to total CSR: $BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 GR_{it} + \beta_5 ROE_{it} + \beta_6 GDP_{it} + \beta_7 EUR_{it}$
- 3) ETR to ENV, SOC, GOV: $ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 ROE_{it} + \beta_7 GDP_{it} + \beta_8 EUR_{it}$
- 4) BTD to ENV, SOC, GOV: $BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 GR_{it} + \beta_7 ROE_{it} + \beta_8 EUR_{it}$

Table 19 below shows WLS results after the adjustment of formulas. As it can be seen, Model 2 and Model 4 remained of the highest quality as R-squared is over 30%. Previously done methods showed that Model 4 was the most consistent due to highest R-squared, WLS models show that Model 2 and Model 4 are of the same quality.

Table 19. Weighted Least squares regression quality after data transformation (prepared by author)

Model	R-squared	Adjusted R-squared
1)ETR to total CSR	0,19	0,15
2)BTD to total CSR	0,37	0,32
3)ETR to ENV, SOC, GOV	0,27	0,20
4)BTD to ENV, SOC, GOV	0,37	0,31

Table 20 below shows WLS regression results of all models. Model 1 seems to be least decent as its R-squared is the lowest and almost none of the variables are statistically significant. CSR shows positive relationship with dependent variable meaning that as CSR performance improves, effective tax rate increase, thus, likelihood of tax avoidance decrease. Also, in order to improve quality of the model, four variables were omitted. Although, R-squared increased, the model has too little variables to ensure reliability of the regression. In addition, Model 1 shows that capital structure as well as firm size are negatively related to effective tax rate. It means that bigger and more leveraged companies are more likely to engage in tax avoidance activities. Lastly, company efficiency was found to be statistically significant and positively related to effective tax rate. It shows that more efficient companies tend to pay more taxes.

Model 2 resulted better than expected. First of all, R-squared and adjusted R-squared are the highest compared to other three models. Second of all, excluding constant, four variables were found to be statistically significant including independent variable. Model 2 shows that CSR is negatively related to dependent variable meaning that as CSR rating increase, book-to-tax difference indicator decrease. Furthermore, profitability (ROA), capital structure and EURIBOR are statistically significant as well, though, these variables have different signs of coefficients. According to Model 2, profitability and EURIBOR have negative impact on BTD while capital structure shows positive relationship with BTD. Compared to all previous models, Model 2 shows the most reliable results so far.

Looking at R-squared of Model 3 before and after transformation, it can be stated that omitting variables increased the quality significantly. Despite that, only two variables were found to be statistically significant – environment score and EURIBOR. Environment rating has a positive impact on effective tax rate, meaning that as the score increases, tax avoidance decreases. On the other hand, social and governance variables show reverse signs, meaning that these two variables increase the chance of tax avoidance. Average interest rates of Eurozone has a positive relationship with effective

tax rate meaning that as interest rates goes up, ETR also increase which is consistent with the results reveived from previously tested models.

R-squared of Model 4 is relatively high compared to other models, although, a little bit lower than R-squared of Model 2. Model 4 shows that CSR ratings are not statistically significant, environment and governance variables are negatively related to BTD variable while social rating has a positive impact on BTD meaning that better scores in environment and governance sectors lead to a less tax avoidance while better performance in social activities increases the likelihood of tax avoidance. These results are consistent with Pooled OLS Model 4. In addition, ROA, LEV and EUR variables are statistically significant in Model 4 and show the same relationship direction as Model 2 – profitability and EURIBOR are negatively related to BTD while capital structure has a positive impact on dependent variable.

Table 20. Weighted Least Squares regression results after data transformation (prepared by author)

Variable	Model 1		Model 2		Model 3		Model 4	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const.	0,1616	0,1015	0,7771	0,0180**	0,0850	0,2238	0,5084	0,0380**
CSR	0,0071	0,1894	-0,0495	0,0417**	N/A	N/A	N/A	N/A
ENV	N/A	N/A	N/A	N/A	0,0080	0,0545*	-0,0313	0,1337
SOC	N/A	N/A	N/A	N/A	-0,0037	0,6431	0,0036	0,9375
GOV	N/A	N/A	N/A	N/A	-0,0006	0,9344	-0,0034	0,9293
ROA	N/A	N/A	-2,8561	0,1093**	0,1177	0,6619	-3,1174	0,0115**
LEV	-0,0725	0,1253	0,4296	0,0538*	-0,0765	0,1012	0,4042	0,0755*
GR	N/A	N/A	0,1643	0,1670	N/A	N/A	0,1521	0,2273
ROE	0,0783	0,0862*	0,4025	0,2326	0,0418	0,6458	0,4539	0,1708
L_SZ	-0,0045	0,4560	N/A	N/A	N/A	N/A	N/A	N/A
GDP	N/A	N/A	-0,0575	0,5873	0,0091	0,6532	N/A	N/A
EUR	0,1346	0,1253	-1,2813	0,0192**	0,1779	0,0876*	-0,9024	0,0003***

To conclude, it can be said that WLS regression method shows overall better results compared to other two methods. Adjusted R-squared is highest for models with BTD as a dependent variable and these models were also more precise in showing which variables have the most impact on tax avoidance. The conclusions for WLS regression results are as follows:

1. Model 1 – R-squared is lowest compared to other models. Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a negative impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be significant except for efficiency, however, one variable is not enough to confirm a hypothesis. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
2. Model 2 – R-squared is the highest compared to other three variables. Although, explanatory variable was found to be statistically significant, it does not have a positive relationship with dependent variable, therefore, hypothesis H1.1 is rejected. Hypothesis H2 is rejected as well, as only two variables were found to be statistically significant. Based on the results, it can be stated that CSR does have a positive impact on tax avoidance.

3. Model 3 – compared to other three models, R-squared shows average overall quality of regression. Although, one of the explanatory variables was found to be statistically significant, it does not have negative impact on ETR, therefore, hypothesis H1.2 is rejected. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be statistically significant.
4. Model 4 – the quality of regression is similar to Model 2. Hypothesis H1.2 is rejected as none of the three explanatory variables is statistically significant. Hypothesis H2 is rejected as only two company related control variables were statistically significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.

Lastly, between-group panel data model was tested. First of all, it should be mentioned that GDP and EURIBOR variables were omitted immediately due to exact collinearity, therefore, these models will not contain country related variables. By the first look at R-squared (see Table 21 below), it is seen that adjusted R-squared is too low in all models for regression to be trusted. Therefore, transformation is needed in order to improve quality of all models.

Table 21. Between-group regression quality before data transformation (prepared by author)

Model	R-Squared	Adjusted R-Squared
1)ETR to total CSR	0,33	0,01
2)BTD to total CSR	0,31	-0,01
3)ETR to ENV, SOC, GOV	0,33	-0,14
4)BTD to ENV, SOC, GOV	0,32	-0,16

As it was mentioned earlier, all country related variables were already omitted, hence, models were manipulated by changing company related control variables. The best results were achieved when regression formulas were changed as follows:

$$1) \text{ ETR to total CSR: } ETR_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 SZ_{it} + \beta_3 LEV_{it} + \beta_4 ROE_{it} + \beta_5 GR_{it}$$

$$2) \text{ BTD to total CSR: } BTD_{it} = \alpha_0 + \beta_1 CSR_{it} + \beta_2 LEV_{it} + \beta_3 ROA_{it} + \beta_4 GR_{it}$$

$$3) \text{ ETR to ENV, SOC, GOV: } ETR_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 GR_{it} + \beta_6 ROE_{it}$$

$$4) \text{ BTD to ENV, SOC, GOV: } BTD_{it} = \alpha_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 GR_{it}$$

After regression formulas transformation, R-squared of all models remained of similar quality as before while adjusted R-squared was improved significantly (see Table 22 below), however, not enough to be trusted. Furthermore, results after transformation show that Model 2 is the most consistent model since its R-squared is the highest of all four models.

Table 22. Between-group regression quality after data transformation (prepared by author)

Model	R-Squared	Adjusted R-Squared
1)ETR to total CSR	0,30	0,09
2)BTD to total CSR	0,29	0,14
3)ETR to ENV, SOC, GOV	0,29	0,03
4)BTD to ENV, SOC, GOV	0,30	0,03

Table 23 below provides results of Between-groups regression. Model 1 shows that only growth rate of a firm is statistically significant. Also, growth rate shows negative relationship with effective tax rate meaning that the more the company grows, the more likely it will avoid taxes. CSR, leverage and efficiency variables show the same relationship direction. On the contrary, size of a firm appears to be positively related with dependent variable which means that the bigger the company, the more taxes it will pay. However, since there are no other significant variables except for GR, it can be stated that the model is inconsistent.

Model 2 does not show promising results as well, as there are no statistically significant variables, although, the reliability of the model is the highest compared to other three models. This model shows that CSR is negatively related to BTD which contradicts with the results of Model 1 since improvement of CSR will decrease book-to-tax difference. Profitability (ROA) also have a negative impact on dependent variable which is consistent with all previous models (OLS, Fixed effects and WLS). Finally, Model 2 shows that capital structure and firm's growth rate have a positive impact on book-to-tax difference which means that firms with more debt in their capital structure and higher growth rate will more likely to avoid taxes.

Model 3 is very similar to the results of Model 1 as it also shows only one statistically significant variable – growth rate. Growth rate also has the same negative relationship with dependent variable as well as leverage and efficiency. Although, this model omitted firm's size (SZ) variable from the model as it helped to improve overall quality. Looking at explanatory variables, environment rating shows negative relationship with ETR while social and governance variables have reversed signs. Compared to WLS model, these results are completely reversed. However, quality of this model is the lowest compared to other three models, thus, it can be said that results cannot be trusted.

Model 4 does not have any statistically significant variables as well. Environment and social variables are negatively related to book-to-tax difference indicator meaning that if these scores increase it will decrease the likelihood of tax avoidance. On the other hand, governance variable shows reversed sign meaning that it would increase tax avoidance. Furthermore, capital structure and firm's growth have positive relationship with BTD while profitability have negative coefficient. Looking at overall quality of the model, it has the lowest adjusted R-squared which means that the results cannot be trusted.

Table 23. Between-group regression results after data transformation (prepared by author)

Variable	Model 1		Model 2		Model 3		Model 4	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const.	-0,0253	0,9040	0,6938	0,0281**	0,0602	0,6140	0,7299	0,1287
CSR	-0,0012	0,9397	-0,0624	0,1698	N/A	N/A	N/A	N/A
ENV	N/A	N/A	N/A	N/A	-0,0030	0,7766	-0,0251	0,5180
SOC	N/A	N/A	N/A	N/A	0,0132	0,5526	-0,0478	0,5728
GOV	N/A	N/A	N/A	N/A	0,0015	0,9336	0,0160	0,8131
ROA	N/A	N/A	-0,9889	0,4401	N/A	N/A	-1,1546	0,4197
LEV	-0,1202	0,2218	0,5326	0,1621	-0,1032	0,3034	0,4981	0,2221
GR	-0,2622	0,0394**	0,5975	0,1907	-0,2739	0,0419**	0,5750	0,2448
ROE	-0,0797	0,5100	N/A	N/A	-0,0647	0,6208	N/A	N/A
L_SZ	0,0101	0,4426	N/A	N/A	N/A	N/A	N/A	N/A

Between-group regression analysis showed relatively low results in terms of adjusted R-squared. What is more, all country related variables (i.e. GDP and EURIBOR) were omitted due to exact collinearity. According to adjusted R-squared results, Model 2 has the highest quality, although, two out of five control variables were omitted in order to achieve such result. To summarize, all conclusions are provided below:

1. Model 1 – Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a negative impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be significant except for growth rate, however, one variable is not enough to confirm a hypothesis. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
2. Model 2 – Hypothesis H1.1 is rejected as explanatory variable is not statistically significant and does not have a positive impact on dependent variable. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be statistically significant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
3. Model 3 – Hypothesis H1.2 is rejected as none of the independent variables are statistically significant. Hypothesis H2 is rejected as well, as none of the company related control variables were found to be significant except for growth rate, however, one variable is not enough to confirm a hypothesis. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.
4. Model 4 – Hypothesis H1.2 is rejected as none of the three explanatory variables are statistically significant. Hypothesis H2 is rejected as well as all of the company related control variables are statistically insignificant. Based on the results, it can be stated that CSR does not have an impact on tax avoidance.

4.4. Summary and recommendations

In order to find what impact corporate social responsibility has on tax avoidance, 16 regression models were tested under four different methods – Ordinary Least Squares, Fixed Effects, Weighted Least Squares and Between-groups. First of all, it can be stated that all of the models had relatively low overall regression quality as highest R-squared was 38%. Second of all, analysis showed that all

models with book-to-tax difference indicator as dependent variable were the most consistent models compared to models with effective tax rate as dependent variable. Based on the theoretical framework and performed empirical research, it can be stated that compared with effective tax rate, book-to-tax difference indicator is more precise and specific as it shows the exact difference between effective tax rate and statutory tax rate, hence, it explains tax avoidance better. Additionally, it was discovered that Fixed Effects regression method is the most suitable in this analysis while Pooled OLS method is the least suitable as this research used panel data for regression. Lastly, Between-groups model showed the lowest regression statistics compared to other methods. Therefore, it can be stated that Fixed Effects models can be trusted the most.

This research was based on the following hypothesis:

H1.1: CSR rating (total rating) has an impact on tax avoidance (i.e. explanatory variable is statistically significant and have a positive impact on BTD variable/negative impact on ETR variable);

H1.2: Environment, social and governance ratings has an impact on tax avoidance (i.e. at least one of the three explanatory variables is statistically significant and have a positive impact on BTD variable/negative impact on ETR variable).

H2: Company related control variables are statistically significant.

In order to accept hypothesis H1.1 and H1.2, regression models should show that explanatory variables are statistically significant. Thus, Table 24 below summarizes all 16 models by indicating statistical significance of independent variables. It can be seen that only four out of 16 models showed that at least one part of CSR rating might have an impact on tax avoidance. One model showed that total CSR rating is statistically significant, two models showed that only social rating has an impact on tax avoidance and one model showed that environment rating is statistically significant. Based on the results, it can be stated that in most cases, hypothesis H1.1 and H1.2 are rejected meaning that corporate social responsibility does not have an impact on tax avoidance.

Table 24. Summary of regression models – statistical significance of explanatory variables (prepared by author)

Model	Explanatory variable	Pooled OLS	Fixed Effects	WLS	Between-groups
1)ETR to total CSR	CSR	No	No	No	No
2)BTD to total CSR	CSR	No	No	Yes	No
3)ETR to ENV, SOC, GOV	ENV	No	No	Yes	No
	SOC	No	Yes	No	No
	GOV	No	No	No	No
4)BTD to ENV, SOC, GOV	ENV	No	No	No	No
	SOC	No	Yes	No	No
	GOV	No	No	No	No

Hypothesis H1.1 and H1.2 also indicated that explanatory variables should have certain relationship with dependent variables so that these hypothesis would be accepted. In order to prove that CSR tends to increase the incentives to avoid taxes, regression analysis should show that explanatory variables

have negative relationship with effective tax rate and positive relationship with book-to-tax difference indicator. Hence, Table 25 below summarizes results of regression models by indicating coefficient signs of independent variables. As it can be seen, three out of four regression methods showed that total CSR rating has positive impact on effective tax rate meaning that better rating cause less avoidance of taxes, though, results regarding separate environment, social and governance were found to be mixed. At the same time, three out of four methods showed that total CSR score is negatively related to book-to-tax difference measure indicating the same tendency – better CSR performance leads to lower chance of tax avoidance. All in all, it can be summarized that both H1.1 and H1.2 hypothesis are fully rejected as overall tendency showed that corporate social responsibility does not have an impact on tax avoidance and the relationship between them is negative.

Table 25. Summary of regression models – coefficient signs of explanatory variables (prepared by author)

Model	Explanatory variable	OLS	Fixed Effects	WLS	Between-groups
1)ETR to total CSR	CSR	Positive	Positive	Positive	Negative
2)BTD to total CSR	CSR	Negative	Positive	Negative	Negative
3)ETR to ENV, SOC, GOV	ENV	Positive	Positive	Positive	Negative
	SOC	Positive	Negative	Negative	Positive
	GOV	Negative	Positive	Negative	Positive
4)BTD to ENV, SOC, GOV	ENV	Negative	Positive	Negative	Negative
	SOC	Positive	Positive	Positive	Negative
	GOV	Negative	Negative	Negative	Positive

Lastly, hypothesis H2 stated that tax avoidance might be influenced by other company related factors such as profitability, size, growth rate and others. Table 26 below summarizes results of regression models by indicating specific control variables that were found to be statistically significant. As illustrated, most of the models showed that none of the company related control variables are statistically significant, although, some models indicated that company's profitability might have an influence on behavior towards tax avoidance. Overall tendency leads to a decision to reject hypothesis H2. Finally, it should be pointed out that some of the models showed that average interest rates in Eurozone (i.e. EURIBOR) and Gross Domestic Product (i.e. GDP) might also have an impact on tax avoidance.

Table 26. Summary of regression models – statistical significance of company related control variables (prepared by author)

Model	OLS	Fixed Effects	WLS	Between-groups
1)ETR to total CSR	None	None	ROE	GR
2)BTD to total CSR	ROA	None	ROA	None
3)ETR to ENV, SOC, GOV	None	None	None	GR
4)BTD to ENV, SOC, GOV	ROA	None	ROA, LEV	None

Although, scientific literature provides mixed results regarding the relationship between corporate social responsibility and tax avoidance, results achieved in this research are partially consistent with the results received by Kim and Im (2017), Karthikeyan and Jain (2017) and Mao (2018). Kim and

Im (2017) found that firms are more passive towards tax avoidance if CSR score is higher which is similar to this empirical study which shows that in most of the models CSR is negatively related to tax avoidance meaning that higher CSR score encourages firms to be more tax responsible. Furthermore, Karthikeyan and Jain (2017) in one of their models found that none of the explanatory variables (i.e. CSR related measures) are statistically significant which is also consistent with the results received from this research. Lastly, Mao (2018) found that if characteristics of companies are not similar and financial ratios are not adjusted in any way, CSR is found to be statistically insignificant meaning that CSR does not have an impact on tax avoidance. While this empirical study examines Lithuanian listed companies, it does not separate different industries, as a result, characteristics of companies might differ significantly.

As it was mentioned before, some limitations were included in the analysis. Hence, it is recommended that further research would firstly concentrate on eliminating those restrictions. First of all, data should be gathered on a company level instead of group level. It would help to separate taxing systems between different countries as well as it would allow to include thin capitalization rule as a country related variable as all countries that a company is operating in would be identified. Moreover, it might improve regression model if different industries were identified and used as control variable. In this way, companies would have similar characteristics and data would be more comparable. Additionally, CSR rating model might be improved by including more or substituting some of the key issues used for scoring in order to get more accurate results. Furthermore, if possible, CSR Indexes should be used instead as it might be more reliable and less dependent on reporting quality. Also, as this research showed that effective tax rate models have lowest quality compared to BTD indicator, it is recommended that further research would include additional tax avoidance measures which due to lack of data could not be included in this research. Lastly, further research should be done on how to treat non-deductible expenses and non-taxable income while measuring tax avoidance as this research did not cover this issue.

Conclusions

1. Analysis of concepts of corporate social responsibility shows that corporate social responsibility is becoming one of the main topics in nowadays society and businesses. Companies are proactively engaging in such activities in order to contribute to overall societal welfare and environment. On the other hand, tax avoidance concept analysis shows that tax avoidance is closely linked to tax planning but it can also be confused with tax evasion. Both of the concepts were found to be closely related because of the following reasons:
 - Corporate social responsibility requires transparency from the companies regarding issues related to tax payments, employment processes or anti-corruption practices. Thus, disclosing such information helps to prevent tax avoidance activities.
 - Tax avoidance is considered to be a legal way to reduce taxes, however, it raises a question if it is appropriate to reduce tax burden to a minimum and still have a strong societal trust since tax contribution is considered to be a responsible action as it funds public services and goods.
 - Socially responsible activities in some cases might be used as a tool in order to conceal negative impacts that companies might have on society, for example, tax avoidance.
2. Theoretical literature review provided numerous methods and variables suitable for determining the relationship between corporate social responsibility and tax avoidance. After deep analysis, it can be stated that the empirical research should contain the following measures:
 - Corporate social responsibility rating model must include different key issues related to environmental, societal and governance impact. Theoretical review showed that key issues should have different weights on total CSR score as some of the issues such as carbon emissions, pollution and waste, human capital and corporate behavior have the most impact in business environment.
 - Tax avoidance should be measured through effective tax rate or book-to-tax difference. Effective tax rate shows an average tax rate at which taxes were paid. It should be taken into account that this measure might not be consistent as income tax disclosed in financial statements usually includes deferred taxes as well as taxes paid for previous years. Book-to-tax difference compares effective tax rate with country statutory rate.
3. Research methodology was prepared based on different theoretical studies in order to find what impact corporate social responsibility has on tax avoidance. Theoretical background showed that the most appropriate method for evaluation of relationship between CSR and tax avoidance is to perform regression analysis:
 - Two different measures of tax avoidance were selected to be as dependent variable – effective tax rate and book-to-tax difference of pre-tax income.
 - Explanatory variable of this research is corporate social responsibility score. CSR rating model consists of three pillars – environment, social and governance with six key issues in each pillar. Scores were provided based on each key issue addressed individually to each company.
 - Control variables were developed based on theoretical research and included profitability, firm size, leverage, company growth rate, efficiency, fixed assets intensity, GDP growth and EURIBOR rate.

4. Empirical research conducted in this research was based on panel data, therefore, included four different regression methods – Pooled OLS, Fixed Effects, Weighted Least Squares and Between-groups:
 - In total 16 different models were tested in order to find most suitable model with highest quality in order to prove or reject hypothesis, unfortunately, each model shows relatively low overall regression quality (highest R-squared – 38%). Fixed Effects model is found to be the most consistent in this research as the quality is the highest compared to other methods.
 - All but Between-groups methods shows that models which use book-to-tax difference as dependent variable are the most reliable.

5. Based on empirical study which was performed in this research, it can be stated that corporate social responsibility does not have an impact on tax avoidance because of the following reasons:
 - 12 out of 16 different models show that neither total CSR rating nor separate environment, social and governance scores does not influence tax avoidance in any way as all of those variables were found to be statistically insignificant.
 - Although, explanatory variables are not statistically significant, common tendency can be found throughout models – CSR have a negative relationship with tax avoidance which means that the more companies invest in CSR activities, the less likely they will engage in tax avoidance.
 - Most of the models shows that none of the control variables have an impact on tax avoidance, although, profitability was found to be statistically significant in four out of 16 models.
 - It is recommended to take into account limitations before further research. First of all, data gathered for the research should be of better quality and more informative. Second of all, if official CSR Indexes are not available, CSR rating model might be improved by including more or substituting some of the key issues. Finally, further research should be conducted on how to treat such issues as non-deductible expenses or non-taxable income in order to improve the quality of tax avoidance measures.

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Appendices

Appendix 1. CSR rating scoreboard for period of 2015-2018 (prepared by author)

2015	Environmental						Social						Governance						Total score				Average score		
	Carbon emissions	Product carbon footprint	Financing environmental impact	Packaging and waste	Natural resources	Environmental opportunities	Labor management	Privacy and data security	Health and safety	Health and demographic risk	Access to communications	Access to finance	Board diversity	Executive pay	Business ethics	Anti competitive practices	Tax transparency	Corruption and instability	E	S	G	CSR score (sum)	E	S	G
Apranga	1	1	2	1	1	1	7	1	2	2	10	10	5	7	3	5	7	1	0,43	1,20	1,49	3,12	1,17	5,33	4,67
Auga Group	1	1	1	1	1	1	7	1	1	1	10	10	5	9	3	1	7	1	0,39	1,12	1,33	2,84	1,00	5,00	4,33
ESO	4	4	8	1	4	8	9	1	9	9	10	10	10	10	5	2	7	10	1,55	1,98	2,32	5,85	4,83	8,00	7,33
Grigeo	1	1	1	1	1	1	6	1	1	1	10	10	8	9	2	1	7	1	0,39	1,01	1,49	2,89	1,00	4,83	4,67
Klaipėdos nafta	4	2	7	1	6	8	9	1	9	9	10	10	7	7	8	1	7	1	1,43	1,98	1,85	5,26	4,67	8,00	5,17
Linus Agro Group	1	1	5	5	2	3	7	1	6	8	10	10	5	6	2	1	6	1	0,89	1,60	1,13	3,62	2,83	7,00	3,50
Ignitis	3	3	8	6	4	5	8	2	8	5	10	10	7	10	6	2	7	2	1,64	1,74	1,84	5,22	4,83	7,17	5,67
Panevėžio statybos trestas	1	1	2	1	2	2	7	1	2	2	10	10	5	8	3	2	6	1	0,48	1,20	1,30	2,98	1,50	5,33	4,17
Pieno žvaigždės	1	3	1	1	1	1	4	1	2	2	10	10	5	3	3	1	7	1	0,55	0,87	1,21	2,63	1,33	4,83	3,33
Rokiškio sūris	7	9	8	5	6	7	7	1	3	3	10	10	5	8	3	3	10	1	2,75	1,28	1,59	5,62	7,00	5,67	5,00
Šiaulių bankas	4	8	7	3	2	6	9	9	7	9	10	10	10	9	10	2	10	1	1,87	2,46	2,52	6,85	5,00	9,00	7,00
Telia	3	8	10	9	7	9	10	10	8	8	10	10	7	8	10	7	10	10	2,49	2,64	2,87	8,00	7,67	9,33	8,67
Vilkyškių pieninė	5	5	5	3	3	5	8	1	7	2	10	10	6	8	3	8	7	1	1,73	1,51	1,74	4,98	4,33	6,33	5,50
Amber grid	2	2	2	2	2	2	9	1	8	8	10	10	8	8	5	4	7	1	0,78	1,90	1,86	4,54	2,00	7,67	5,50
INVL Baltic real estate	1	1	1	1	1	1	5	1	1	1	10	10	8	7	4	1	5	1	0,39	0,90	1,49	2,78	1,00	4,67	4,33
Invalda INVL	1	1	1	1	1	1	8	1	3	3	10	10	8	8	10	1	8	1	0,39	1,39	2,17	3,95	1,00	5,83	6,00
Kauno energija	6	6	7	4	6	6	8	1	5	5	10	10	6	6	6	4	7	8	2,24	1,55	2,02	5,81	5,83	6,50	6,17
Litgrid	5	5	8	1	3	8	8	1	3	3	10	10	6	5	5	1	8	1	1,74	1,39	1,55	4,68	5,00	5,83	4,33
Linus	6	8	3	3	1	1	6	1	2	3	10	10	10	9	3	1	10	1	1,92	1,13	1,91	4,96	3,67	5,33	5,67
Snaižė	8	8	5	9	9	7	10	1	3	3	10	10	9	7	3	1	6	1	3,10	1,61	1,55	6,26	7,67	6,17	4,50
Utenos trikotažas	2	2	2	2	2	5	8	1	8	8	10	10	6	7	3	1	7	1	0,81	1,79	1,37	3,97	2,50	7,50	4,17
Vilniaus baldai	5	6	7	2	2	2	6	1	4	4	10	10	4	8	3	1	9	1	1,75	1,25	1,35	4,35	4,00	5,83	4,33
Žemaitijos pienas	6	7	7	6	7	7	9	1	5	5	10	10	8	9	3	1	6	1	2,51	1,66	1,51	5,68	6,67	6,67	4,67

2016	Environmental						Social						Governance						Total score				Average score		
	Carbon emissions	Product carbon footprint	Financing environmental impact	Packaging and waste	Natural resources	Environmental opportunities	Labor management	Privacy and data security	Health and safety	Health and demographic risk	Access to communications	Access to finance	Board diversity	Executive pay	Business ethics	Anti competitive practices	Tax transparency	Corruption and instability	E	S	G	CSR score (sum)	E	S	G
Apranga	1	1	2	1	1	1	6	1	4	3	10	10	6	7	7	10	7	4	0,43	1,21	2,26	3,90	1,17	5,67	6,83
Auga Group	1	1	1	1	1	1	7	1	1	1	10	10	7	9	6	1	7	4	0,39	1,12	1,85	3,36	1,00	5,00	5,67
ESO	5	5	8	6	7	8	9	7	10	10	10	10	8	10	8	5	10	10	2,25	2,48	2,73	7,46	6,50	9,33	8,50
Grigeo	5	5	6	7	8	7	8	1	1	1	10	10	7	9	5	2	8	2	2,27	1,23	1,80	5,30	6,33	5,17	5,50
Klaipėdos nafta	4	2	8	5	8	8	9	1	9	9	10	10	7	8	6	5	10	10	1,83	1,98	2,45	6,26	5,83	8,00	7,67
Linās Agro Group	1	1	6	5	2	3	8	1	6	7	10	10	5	8	3	1	6	1	0,93	1,67	1,25	3,85	3,00	7,00	4,00
Ignitis	3	3	8	8	4	5	8	8	9	5	10	10	8	10	6	6	7	9	1,78	2,20	2,40	6,38	5,17	8,33	7,67
Panevežio statybos trestas	1	1	2	1	2	4	7	1	8	3	10	10	6	8	4	4	6	2	0,50	1,48	1,60	3,58	1,83	6,50	5,00
Pieno žvaigždės	1	6	2	1	1	2	4	1	5	5	10	10	6	8	3	1	7	2	0,84	1,11	1,43	3,38	2,17	5,83	4,50
Rokiskio suris	7	9	8	5	6	7	8	4	8	7	10	10	5	8	7	7	10	1	2,75	1,96	2,11	6,82	7,00	7,83	6,33
Siauliu bankas	5	8	6	5	2	7	9	9	7	9	10	10	10	9	10	2	10	8	2,13	2,46	2,80	7,39	5,50	9,00	8,17
Telia	1	1	5	1	1	1	8	6	7	8	10	10	7	8	5	2	8	1	0,55	2,10	1,74	4,39	1,67	8,17	5,17
Vilkyskiu pienine	6	6	7	2	6	6	7	1	7	6	10	10	5	6	5	8	7	1	2,10	1,56	1,78	5,44	5,50	6,83	5,33
Amber grid	4	4	6	6	4	3	9	1	8	8	10	10	8	7	7	2	7	10	1,77	1,90	2,26	5,93	4,50	7,67	6,83
INVL Baltic real estate	1	1	1	1	1	1	5	1	1	1	10	10	8	7	4	1	5	1	0,39	0,90	1,49	2,78	1,00	4,67	4,33
Invalda INVL	1	1	1	1	1	1	8	1	5	7	10	10	9	7	9	1	8	1	0,39	1,63	2,15	4,17	1,00	6,83	5,83
Kauno energija	6	6	7	4	6	6	8	1	9	10	10	10	6	8	9	6	8	10	2,24	1,91	2,54	6,69	5,83	8,00	7,83
Litgrid	7	8	8	1	3	9	8	9	8	5	10	10	7	6	9	3	7	9	2,29	2,23	2,33	6,85	6,00	8,33	6,83
Linās	7	9	3	3	1	1	6	1	2	3	10	10	9	9	3	1	10	1	2,15	1,13	1,83	5,11	4,00	5,33	5,50
Snaige	8	9	5	9	9	8	10	1	7	7	10	10	9	7	6	3	6	3	3,19	1,93	1,97	7,09	8,00	7,50	5,67
Utenos trikotazas	3	3	3	3	3	3	9	1	8	8	10	10	6	8	5	1	7	2	1,17	1,90	1,59	4,66	3,00	7,67	4,83
Vilniaus baldai	2	6	7	2	2	2	6	1	4	2	10	10	5	9	6	1	9	1	1,30	1,17	1,69	4,16	3,50	5,50	5,17
Zemaitijos pienas	6	8	8	7	7	7	8	1	7	7	10	10	8	8	3	1	6	1	2,70	1,71	1,49	5,90	7,17	7,17	4,50

2017	Environmental						Social						Governance						Total score				Average score		
	Carbon emissions	Product carbon footprint	Financing environmental impact	Packaging and waste	Natural resources	Environmental opportunities	Labor management	Privacy and data security	Health and safety	Health and demographic risk	Access to communications	Access to finance	Board diversity	Executive pay	Business ethics	Anti competitive practices	Tax transparency	Corruption and instability	E	S	G	CSR score (sum)	E	S	G
Apranga	1	1	6	6	3	6	6	1	8	7	10	10	6	5	7	10	7	10	1,07	1,53	2,46	5,06	3,83	7,00	7,50
Auga Group	8	10	8	8	10	10	9	1	8	9	10	10	8	7	10	6	10	9	3,38	1,94	2,84	8,16	9,00	7,83	8,33
ESO	6	7	7	7	7	7	9	8	9	10	10	10	8	10	7	6	10	10	2,58	2,51	2,70	7,79	6,83	9,33	8,50
Grigeo	7	7	8	8	8	8	7	1	9	1	10	10	8	9	9	1	7	5	2,89	1,44	2,21	6,54	7,67	6,33	6,50
Klaipėdos nafta	7	7	8	7	8	8	9	1	9	9	10	10	6	8	5	7	10	10	2,82	1,98	2,39	7,19	7,50	8,00	7,67
Linās Agro Group	1	1	8	5	2	3	8	1	6	7	10	10	6	7	2	2	6	1	1,01	1,67	1,28	3,96	3,33	7,00	4,00
Ignitis	2	2	8	8	4	7	10	1	9	7	10	10	9	10	6	5	7	9	1,57	2,01	2,43	6,01	5,17	7,83	7,67
Panevežio statybos trestas	1	1	2	1	2	5	6	1	8	8	10	10	6	8	5	3	6	9	0,51	1,57	1,91	3,99	2,00	7,17	6,17
Pieno žvaigždės	2	6	2	1	2	2	6	1	5	6	10	10	7	8	6	1	7	7	1,03	1,37	1,95	4,35	2,50	6,33	6,00
Rokiskio suris	7	9	9	5	6	9	9	1	8	10	10	10	5	7	7	7	9	10	2,81	1,98	2,39	7,18	7,50	8,00	7,50
Siaulių bankas	7	9	6	6	6	7	8	9	7	9	10	10	9	9	10	7	9	10	2,74	2,35	2,99	8,08	6,83	8,83	9,00
Telia	8	7	10	9	6	7	10	10	10	8	10	10	8	8	10	10	8	10	3,10	2,72	2,98	8,80	7,83	9,67	9,00
Vilkyskių pieninė	7	7	6	7	7	6	9	1	8	9	10	10	5	7	7	6	7	10	2,68	1,94	2,22	6,84	6,67	7,83	7,00
Amber grid	4	4	6	1	4	2	9	1	8	8	10	10	7	9	7	2	5	10	1,41	1,90	2,10	5,41	3,50	7,67	6,67
INVL Baltic real estate	1	1	1	1	1	1	5	1	1	1	10	10	7	7	4	1	5	1	0,39	0,90	1,41	2,70	1,00	4,67	4,17
Invalda INVL	1	1	1	1	1	1	8	1	6	7	10	10	9	8	8	2	7	4	0,39	1,67	2,20	4,26	1,00	7,00	6,33
Kauno energija	7	7	7	4	6	6	8	1	9	10	10	10	6	10	9	6	8	10	2,47	1,91	2,58	6,96	6,17	8,00	8,17
Litgrid	7	7	8	4	5	8	8	1	7	7	10	10	6	10	8	3	7	9	2,49	1,71	2,25	6,45	6,50	7,17	7,17
Linās	8	10	3	4	2	1	7	1	2	4	10	10	8	9	3	1	10	1	2,49	1,28	1,75	5,52	4,67	5,67	5,33
Snaigė	8	9	5	9	9	8	9	1	9	9	10	10	10	7	6	3	6	3	3,19	1,98	2,05	7,22	8,00	8,00	5,83
Utenos trikotazas	2	10	7	5	1	3	9	1	8	8	10	10	7	8	5	1	7	7	1,80	1,90	1,87	5,57	4,67	7,67	5,83
Vilniaus baldai	3	7	7	3	3	3	8	1	9	5	10	10	7	9	6	1	9	1	1,65	1,71	1,85	5,21	4,33	7,17	5,50
Zemaitijos pienas	6	8	8	8	8	8	8	1	9	10	10	10	4	8	3	1	6	10	2,82	1,91	1,53	6,26	7,67	8,00	5,33

2018	Environmental						Social						Governance						Total score				Average score		
	Carbon emissions	Product carbon footprint	Financing environmental impact	Packaging and waste	Natural resources	Environmental opportunities	Labor management	Privacy and data security	Health and safety	Health and demographic risk	Access to communications	Access to finance	Board diversity	Executive pay	Business ethics	Anti competitive practices	Tax transparency	Corruption and instability	E	S	G	CSR score (sum)	E	S	G
Apranga	5	5	7	7	9	10	7	10	8	7	10	10	6	3	9	10	7	10	2,38	2,27	2,58	7,23	7,17	8,67	7,50
Auga Group	6	8	6	8	9	9	9	6	10	9	10	10	8	7	10	7	9	9	2,79	2,37	2,83	7,99	7,67	9,00	8,33
ESO	2	2	5	5	5	6	9	9	10	8	10	10	5	9	7	3	9	10	1,27	2,54	2,23	6,04	4,17	9,33	7,17
Grigeo	6	7	1	1	1	3	9	5	9	9	10	10	7	8	9	7	8	9	1,64	2,26	2,63	6,53	3,17	8,67	8,00
Klaipėdos nafta	6	4	7	6	8	9	10	5	9	10	10	10	6	7	8	8	10	10	2,33	2,41	2,66	7,40	6,67	9,00	8,17
Linus Agro Group	6	7	8	4	8	7	8	5	7	8	10	10	6	2	2	5	5	1	2,45	2,03	1,27	5,75	6,67	8,00	3,50
Ignitis	2	2	10	7	6	6	8	7	9	9	10	10	9	10	7	5	7	10	1,65	2,29	2,55	6,49	5,50	8,83	8,00
Panevezio statybos trestas	4	4	4	3	5	6	8	5	9	10	10	10	7	9	5	3	6	9	1,55	2,19	2,01	5,75	4,33	8,67	6,50
Pieno zvaigždės	4	7	3	2	2	3	7	5	7	5	10	10	7	10	7	3	5	7	1,53	1,80	2,05	5,38	3,50	7,33	6,50
Rokiskio suris	7	8	9	6	7	9	10	8	10	10	10	10	6	10	10	6	7	10	2,84	2,66	2,60	8,10	7,67	9,67	8,17
Siaulių bankas	9	7	6	7	8	7	10	10	8	6	10	10	10	9	10	3	5	10	3,03	2,56	2,63	8,22	7,33	9,00	7,83
Telia	10	7	10	8	8	8	10	10	10	8	10	10	8	9	10	5	7	10	3,42	2,72	2,69	8,83	8,50	9,67	8,17
Vilkyskių pieninė	8	7	7	9	7	7	10	5	9	9	10	10	6	9	6	7	7	10	3,02	2,37	2,31	7,70	7,50	8,83	7,50
Amber grid	5	5	2	1	1	1	8	5	5	8	10	10	7	9	5	7	7	9	1,35	1,95	2,27	5,57	2,50	7,67	7,33
INVL Baltic real estate	1	1	1	1	1	1	5	5	1	1	10	10	7	7	5	6	5	1	0,39	1,18	1,74	3,31	1,00	5,33	5,17
Invalda INVL	2	2	2	2	2	2	9	5	9	9	10	10	8	7	7	4	6	4	0,78	2,26	2,06	5,10	2,00	8,67	6,00
Kauno energija	8	8	7	4	7	6	8	5	9	10	10	10	6	8	9	5	7	10	2,74	2,19	2,43	7,36	6,67	8,67	7,50
Litgrid	7	7	10	7	7	9	9	5	5	5	10	10	7	10	8	3	7	8	2,87	1,94	2,29	7,10	7,83	7,33	7,17
Linus	9	10	5	5	4	4	8	5	4	6	10	10	8	9	5	3	10	1	2,90	1,83	2,01	6,74	6,17	7,17	6,00
Snaige	8	10	8	9	9	9	10	5	9	10	10	10	6	5	6	3	6	1	3,40	2,41	1,61	7,42	8,83	9,00	4,50
Utenos trikotazas	5	10	8	5	1	3	9	5	10	10	10	10	7	6	5	1	7	7	2,29	2,34	1,83	6,46	5,33	9,00	5,50
Vilniaus baldai	4	8	9	3	2	5	8	5	9	9	10	10	7	8	9	3	8	9	1,94	2,15	2,43	6,52	5,17	8,50	7,33
Zemaitijos pienas	6	8	8	9	7	8	8	5	8	10	10	10	4	7	3	1	6	9	2,85	2,15	1,47	6,47	7,67	8,50	5,00