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**Erasmus
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Tax Avoidance and Corporate Governance

Does the board of directors influence tax avoidance?

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Abstract

This study examines whether the proportion of the independent directors on the board have an influence on tax avoidance. A formal definition of tax avoidance is missing, because it has studies in several fields and for everyone tax avoidance has a different meaning. In this study tax avoidance is described as any tax planning strategies to reduce the payment of explicit taxes. With the fixed effect model and industry fixed effect model of the S&P 500 firms over a nine-year period, I tried to investigate the proposed research question. The results of the fixed effect model suggest that when there are more independent directors on the board, the level of tax avoidance will be lower. This is consistent with prior literature. However, when I include the industry fixed firm effect model and control for eight industries, the proportion of independent board members has not a significant influence on tax avoidance. This might be due to the fact that S&P 500 index firms have in general a high proportion of independent board members on the board. Another factor why the industry fixed effect model contradicts the prior literature is that the measure I used for tax avoidance, does not take the year-to-year volatility away. The main limitation of this paper is the inability to use the long-run measure for tax avoidance, because this study is based on panel data.

Key words: Corporate tax avoidance, corporate governance, board of directors, agency theory, tax costs

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1 Introduction

In 2012, Starbucks became global news. Unfortunately, the news did not cover the company's beverages but instead discussed that no corporate tax was paid from the £400 million sales Starbucks made in UK in 2012. This was possible because Starbucks transferred money to a sister company, located in the Netherlands. Furthermore, Starbucks bought coffee beans from Switzerland and paid high interest rates for borrowing from other parts of the businesses. Nevertheless, Starbucks was not the first multinational corporation that became worldwide news for its corporate taxes. One year before the Starbucks scandal, Amazon and Google hit the headlines. The sales of Amazon were £3.35 billion in UK, but it reported a tax expense of just £1.8 million. A unit of Google, located in UK, paid £6 million for corporate taxes on a turnover of £395 million. When this news hit the headlines, the first thing the public asked was "Is this even legal?" (Barford & Holt, 2013). To answer this question, a difference between tax avoidance and tax evasion must be defined.

Hanlon and Heitzman (2010) defined tax avoidance as a reduction of explicit taxes. According to the authors, tax avoidance represents a continuum of tax planning strategies. Investments in municipal bonds lower explicit taxes and are perfectly legal; hence, they are at one end of the continuum. However, "noncompliance," "evasion," and "aggressiveness" would be at the other end of the continuum. Although tax evasion could be illegal, Starbucks' tax avoidance activities were legal. However, the public thought Starbucks crossed a line and the company's actions were morally incorrect (Barford & Holt, 2013). In 2016, the *Financial Times* published an article about Starbucks UK, stating the latter has paid £8.1 million in corporation tax in September 2015. This amount was as much as the total contribution of corporate taxes between 1998 and 2012. Starbucks aimed to repair the reputational damage that occurred in 2015 (Houder, 2016).

Corporate governance deals with whether the suppliers of finance earn a return on their investments. The agency problem is caused by a separation of ownership and control. Thus, shareholders do not know what happens with their money, and corporate governance is necessary in a company to ensure managers will not act in their own interests (Shleifer & Vishny, 1997). The board of directors protects the interests of the shareholders, ensuring ensure the separation of decision management and control in an organization. The board has the power to hire, fire, and composite the top-level decision managers, as well as to ratify and monitor important decisions (Fama & Jensen 1983). Research shows tax avoidance hurts the company's reputation, leading to a decrease in firm value, which in turn leads to a decrease in the shareholders' return of investments of the shareholders (Hanlon & Heitzman, 2010). Thus,

it is the aim of the board of directors to avoid this problem. As in the case of Starbucks, the board of directors needs to avoid actions that could damage the company's reputation. Hanlon and Slemrod (2009) argued, when news comes out regarding tax avoidance, the stock price of that firm declines. This negative effect is stronger in the retail sector because investors are afraid consumers will have a negative reaction to this issue, which will lead to a reduction in the firm's profitability, ultimately hurting the firm's reputation.

Reputational costs are not the only costs associated with tax avoidance. Other cost are political costs and marginal costs. The marginal costs are potential costs, such as penalties and fines imposed by the tax authorities (Chen, Chen, Cheng, & Shevlin, 2010). Desai and Dharmapala (2006) argued managers might conceal rent extractions through tax aggressiveness. This will create agency costs, and therefore, investors could impose a price discount on the share price of the corporation.

There is a long history of tax research because tax is hard to investigate. Tax is studied in accounting, economics, finance, and law. In accounting research, there is a widespread interest about the determines, magnitude, and consequences of tax avoidances. For example, there is research about the characteristics of corporate governance on tax avoidance (Minnick and Noga, 2010). However, tax avoidance is used as a widespread term; there is no clear universally accepted definition for tax avoidance. For each person, tax avoidance has a different meaning. Therefore, there is a lack of research on tax avoidance and specific subjects (Hanlon & Heitzman 2010).

An important question is whether tax avoidance could be beneficial for the shareholders. The board of directors needs to act in the best interest of the shareholders. Thus, the research question of this paper will be as follows:

Does the board of directors influence tax avoidance?

In this research, I thus want to examine whether the independence of the board of directors affects the magnitude of tax avoidance.

There are several important reasons why tax avoidance should be examined. One direct consequence of tax avoidance is that it will increases the cash flow and investors wealth because it is possible to take a deduction for a non-deductible expense. However, when tax avoidance is identified by the tax authorities, these authorities can force firms to pay additional taxes, or in worse cases, they can impose a fee or a penalty. As a result, the cash outflows decrease, which leads to a decrease in the wealth of the shareholder (Hanlon &

Heitzman, 2010). As mentioned, when the shareholders' interests are being discussed, the board of directors has an important role.

There have been several research studies about the relationship between corporate governance and tax aggressiveness (e.g., Desai & Dharmapla, 2006; Minnick & Noga, 2010). Lanis and Richardson's (2011) study was the first paper that considered the effect of the board of directors' composition on tax aggressiveness. The researchers tested, on 32 corporations, whether outside members of the board reduced the likelihood of tax aggressiveness. The results of this study confirm that there is a negative statistically significant association between outside board of directors and tax aggressiveness. The important limitation of this paper is that the total number of tax-aggressive corporations was small. Additionally, the researchers examined some corporations on the Australian stock exchange. Thus, this study is only applicable in Australia, and the results cannot be generalized.

Also, Richardson, Taylor, and Lanis (2013) examined the relationship between the board of directors' oversight characteristics and corporate tax aggressiveness based on 203 publicly-listed Australian firms over the years 2006 to 2009. The paper states that it is less likely a firm is tax aggressive if it has an effective internal control, risk management systems, engages a big four auditor, has an external auditor's service that involves proportionally fewer non-audit services than audit services, and has a more independent internal audit committee. The authors of this paper mentioned the same limitations as Lanis and Richardson (2011). This study was conducted with corporations listed on the Australian stock exchange. Therefore, the results may differ for firms operating outside of Australia.

In my master thesis, I would like focus on Lanis and Richardson's (2011) study. However, in this study, the authors focused on tax aggressiveness. As the introduction explained, I do not want to focus on one side of tax avoidance, but on the whole continuum. Therefore, I will use a different measure to identify companies that avoid paying taxes. Both studies that examined the relationship between the board of directors and tax avoidances were conducted in Australia. In my thesis, I want to focus on the companies listed in the S&P 500 index because this index covers the 500 largest companies in the US, as well as multinational companies like Apple, Microsoft, and Exxon Mobile.

To examine the proposed research question, a regression analyze was conducted. The results of the fixed effect model are consistent with prior literature; this model suggests when the proportion of independent board directors increases, corporate tax avoidance decreases. However, when industries' effects in the model are included, the results become insignificant.

Thus, it cannot be statistically proven that more independent directors on the board influence corporate tax avoidance. These results may conflict with prior literature because of the measure of tax avoidance, which was unable to take away the year-to-year volatility. Another reason might be that the proportion of independent board members of corporations included in the S&P 500 index have a high proportion of independent board members. For future research, I would recommend establishing a research design in which it is possible to use a different measure of tax avoidance and hand collect firms where the proportion of independent directors is diverse.

This study is divided into four sections. In the first section, the introduction of this topic is covered. I provided an explanation why it is important to study tax avoidance and its relationship with corporate governance. The second section is the literature review. In this section, previous literature about this topic is discussed, and with the help of several theories, I developed the hypotheses. In the third section, I explain how I conducted this research and which variables I used. The results of this study are explained in the fourth section, and in the last section, I conclude and explain the limitation for this study.

This chapter will cover the research methodology. I will describe both the dependent and the independent variables. Also, I will explain the reasoning behind including certain control variables in this study. Furthermore, I will explain the research design used in the following chapters. Last, I will discuss the sample selection.

2 literature review

In this paper, I would like to use two theories that explain the relationship between corporate tax avoidance and the board of directors: agency theory and the theory of corporate social responsibility. First, I will introduce tax avoidance and explain how it is defined in this study. I will discuss the tax avoidance consequences and the methods to measure it. Second, I will refer to the corporate governance and board of directors. Last, to develop my hypothesis, the above-mentioned theories will be studied

2.1 Tax avoidance

There is no clear and universally accepted definition of tax avoidance. According to Hanlon and Heitzman (2010), tax avoidance is a reduction of corporate taxes. This means all activities in a firm that reduce the tax liability are defined as tax avoidance. The researchers presented, in their review of tax research, a continuum for tax planning strategies. At one end of the continuum are tax planning strategies that lead to a reduction of lower explicit taxes, which are legal, such as lobbying for a lower tax rate or investment in municipal bonds. At the other end of the continuum are tax planning strategies that lead to a high reduction of explicit taxes, which are not considered legal, such as tax evasion, tax noncompliance, and tax aggressiveness. Thus, a tax planning strategy can be anywhere in the continuum, depending on the amount of the reduction of explicit tax liability. However, in an entity, there are different stakeholders with different interests in the company. Where for some groups, a certain tax planning activity would be at one end of the continuum, it can be at the other end of the continuum for a different interest group. Hence, shareholders might prefer tax avoidance because it leads to a lower cost of debt (Lim, 2011), whereas governmental bodies might want companies to comply with the tax regulations and prefer no tax avoidance activities (Schön, 2008).

2.1.1 Consequences of tax avoidance

In this section, I will discuss the benefits and costs of tax avoidance. As a starting point, the costs involving tax avoidance are greater than its benefits. Also, a cost for someone could be a benefit for someone else. Here, I will take the perspective of the shareholders. One of the most important and clear benefits of a reduction of explicit taxes is that tax avoidance reduces the expected bankruptcy costs, lowers the default risk, and increases the financial slack; therefore, cost of debt decreases (Lim, 2011). Furthermore, there is more cash saved, leading

to an increase in cash flow. An increased cash flow leads to opportunities for investments for the firm, which in turn leads to increased firm value, so the shareholders' wealth increases.

Every benefit comes with a cost. If a firm engages in illegal tax avoidance, tax authorities might detect it after the audit and apply a fee or a penalty (Chen, Chen, & Cheng, 2009). However, it is not the amount of the fee that hurts the company the most, but the reputational costs that comes with it. There are two kinds of reputational costs. The first is related to the fact that a firm operates in an environment; when a firm engages in tax avoidance, the organizational legitimacy of the firm is questioned by the public. Mainly, the question arises whether the firm contributes to the economic well-being of the society (Annuar, Salihu, & Obid, 2014). Another potential reputational cost is related to the decline of the share prices caused by a firm engaging in tax avoidance. Hanlon and Slemrod (2009) studied whether news about corporate tax aggressiveness has a negative effect on stock prices. The results suggest that when a company is involved in tax shelters, on average, the company's share price declines. Firms operating in the retail sector have the strongest negative effect on stock price. The reason for this could be the consumer/tax payer backlash. Desai, Dyck, and Zingales (2007) found that companies in Russia that have increased tax enforcements have an increased market value.

Other costs involving tax avoidance are political costs. The firm can be exposed to these costs through high profits or political actions by external parties. As a result, firms will tend to shift profits from the current period to future periods. This could be accomplished by several actions, such as government lobbying, social responsibility campaigns, and the selection of certain accounting procedures. According to Mills, Nutter, and Schwab (2013), higher corporate tax avoidance leads to higher political costs. Higher effective tax rates lead to contractors that are highly sensitive to political costs. Concluded, shareholders might benefit from tax avoidance, because it leads to a higher income. However, the shareholders would like to comply with tax regulations, because the costs associated with tax avoidance might be higher than the benefits.

2.1.2 Factors that influence tax avoidance

There are several measurements of tax avoidance, and in this section, I will discuss some of them. Hanlon and Heitzman (2010) claimed the method one uses to measure tax avoidance depends on one's research question. To measure the average rate of tax per dollar of income or cash flow, one needs to divide the tax liability by before-tax profits or cash flow. If the GAAP ETR is used, then the worldwide total income tax expenses are divided by the

worldwide total pre-tax accounting. With this method, one measures the total tax expense per dollar of pre-tax book income. The drawback of GAAP ETR is that it does not capture tax planning strategies that defer taxes. Rather, it measures items not in tax planning strategies, such as valuation allowances.

Dyreng, Hanlon, and Maydew (2008) developed a new method to measure long-run tax avoidance: “long-run cash effective tax rate.” When using this method, it is possible to show firms are able to avoid paying taxes over a longer period.

According to Dyreng et al. (2008), tax avoidance is anything that reduces the firm’s cash effective tax rate over a longer period. In this study, the authors emphasized the measure they developed does not necessarily imply that a firm avoiding taxes is conducting illegal activities. Possibly, a firm is engaging in tax avoidance that complies perfectly with the law. Thus, this measure of tax avoidance measures all the tax avoidance activities that reduce the cash effective tax rate. This method is advantageous because it allows for tax avoidance measurement over a longer period. Prior literature focused more on annual tax avoidance. The important drawback of this measure is that it reflects all transactions that reduce the firms’ tax liability, so it might be hard to distinguish whether it is a real activity, like a tax avoidance strategy, that directly reduces taxes or a tax favored activity, like tax benefits from lobbying activities.

From Hanlon and Heitzman’s (2010) list, which states several methods to measure tax avoidance, I will use the effective tax rate measure. In my study, tax avoidance will be defined as all activities that reduce the firm’s explicit tax liability (the whole “continuum”). Taking my research question and the above definition into consideration, the effective tax rate fits as the best method to conduct this research because it is possible to measure all the tax planning activities and not only the ones that are “illegal” or not compliant with the law.

2.2 Corporate governance

Corporate governance examines whether the financiers earn a return on their investments. One of the most important issues in a company is the separation of ownership and management, which leads to agency problems (Shleifer and Vishny, 1997). The latter will be discussed broadly in the theoretical background section. With corporate governance, the agency issue is mitigated. Bhagat and Bolton (2008) found there is a relationship between better corporate governance and better firm performance. They suggested board characteristics are an effective measure of corporate governance because corporate boards have input into all important decisions in a firm, such as investments policies, management

compensation policies, and the board governance itself. The role of the board of directors is the protection of shareholders by monitoring the management. Johnson, Daily, and Ellstrand (1996) classified the board of directors' responsibilities into three broadly defined roles: control, service, and resource dependence. The control role serves as a monitoring mechanism of the management to ensure the shareholders' interests are not harmed. Also, in this role, the board hires/fires top management and determines executives' pay. The service role concerns advising top management on managerial and administrative issues and initiating and formulating the firm's strategy. Finally, the resource dependence role focuses on facilitating recourses to keep the firm successful.

Several studies have been conducted to examine the relationship between corporate governance and corporate tax avoidance. Minnick and Noga (2010) examined how corporate governance mechanisms influence tax management. They limited corporate governance in their research to four areas: board composition, executive compensation, board compensation, and managerial entrenchment. Board composition includes the size of the board and the number of independent directors on the board. Managerial entrenchment refers to whether the CEO also serves as a chairman of the board. Both board composition and executive compensation focus on the long-term sensitivity to performance.

The relationship between corporate tax avoidance and corporate governance is of interest for two reasons. First, tax planning could lead to managerial optimism, which is why the role of governance is important. Second, the benefits of tax planning serve as a long-term investment rather than a short term because tax planning involves certain amounts of uncertainty and the benefits of it are not directly observed. Understanding how tax avoidance and governance are interrelated helps in understanding how governance works in both the long and short term. The findings of this paper suggest that governance plays an important role in tax management because the tax planning strategy depends on the structure of the corporate governance. When directors and executives have compensation contracts, these contracts might motivate them to reduce long-term taxes. Board independence affects domestic taxes differently than foreign taxes. An increase of 1% of board independence will lead to a decrease of foreign taxes by 0.054% and to an increase of domestic taxes by 0.137%. According to the authors, this is because political costs are associated with domestic taxes. Therefore, independent directors would focus more on foreign taxes to persevere their reputational capital Minnick and Noga (2010).

Desai, Dyck, and Zingales (2007) found a relationship between corporate governance and the response to changes of taxes. The findings of this paper suggest that when the

governance is weak, an increase in the tax rate results in lowering the corporate tax revenues. In the case of strong corporate governance, an increase in the corporate tax rates will lead to higher corporate tax revenues. The composition of the board of directors refers to the size of the board and the percentage of insiders on the board. Previous studies showed the size and the composition of the board of directors influences the effectiveness of monitoring. Also, more financially sophisticated boards will be able to better monitor their firms' tax positions (Armstrong, Blouin, and Jagolinzer, 2015).

Lanis and Richardson (2011) tested the link between board of director composition and tax aggressiveness. They conducted their study in Australia to test whether a higher proportion of outside members on the board of directors leads to a lower level of tax aggressiveness. Their sample consisted of 32 choice-based corporations comprising 16 tax aggressive corporations and 16 non-tax-aggressive corporations. According to the authors, based on previous studies, the board of directors has a more important role in monitoring the management than any other corporate governance mechanism. In particular, a high number of independent directors might lead to a better monitoring system of management for the benefit of the shareholders and society. The authors based their research on two theories: the agency theory and the corporate social responsibility theory. They chose to add the corporate social responsibility theory because the agency theory does not completely explain the link between corporate governance and tax aggressiveness. Moreover, the agency theory focuses more on the link between shareholders and managers, while the corporate responsibility theory might better explain the link between the corporation and all the stakeholders, such as governmental bodies, political groups, customers, and the public. The results of this study suggest a higher proportion of independent board members leads to a decrease in tax aggressiveness through better governance. However, this study has several limitations. First, they had a very small sample. Second, this research was only conducted in Australia. Thus, the results cannot be generalized. Third, the method they used to identify tax aggressiveness might have led to misclassifications as some operations might have avoided taxes. However, the avoidance of corporate taxes has not yet been detected. Fourth, they checked only for publicly-listed corporations because no data could be found for non-listed corporations.

As previously mentioned, in my thesis, I want to put an emphasis on this study and want to try to cover some of the limitations. In my thesis, I will use S&P 500 over a timeframe of five years. These are worldwide multinational companies; therefore, the results might be generalized. Also, I will focus on tax avoidance while the study of Lanis and Richardson (2011) was more focused on the "right side" of the continuum, as explained by Hanlon and

Heitzman (2010). Moreover, the authors identified tax aggressive corporations by searching on websites for the Australian publicly listed companies for the words strings “tax aggressiveness,” “tax avoidance,” “tax evasion,” “tax shelter,” and “amended tax assessment.” However, I will calculate the tax avoidance using the measure of effective tax rate and will focus on the whole continuum of tax planning strategies, not only on the right side.

2.3 Theory

After I studied prior research on corporate tax avoidance and corporate governance, I learned the agency theory and the theory of corporate responsibility are both important theories in explaining the relationship between corporate tax avoidance and the board of directors. In the next section, both theories will be explained.

2.3.1 Agency theory

Fama and Jensen (1983) introduced a framework in which they explained a separation between ownership and control in an organization. According to the authors, the agency issue is the result of the separation between ownership and control. Both the principal (shareholder) and the agent (manager) want to maximize their own utility. Because of the owners’ lack of information, and especially when both interests are not aligned, the owners’ interest might be harmed by the managers’ opportunistic behavior. With agreements and contracts, it is possible to solve this issue. For example, when the organization’s profits increase, this will also lead to an increase in the managers’ bonuses. Thus, the interests of the managers and shareholders could be aligned. The authors further stressed the composition of the board of directors is an important factor to determine whether the actions of the management are monitored in an effective manner. The combination of both inside (management) and outside (non-managers) board members are a function of the effectiveness in monitoring the management. As previously described, the board of directors is one of the corporate governance mechanism to monitor the managers. Therefore, the number of inside managers needs to be limited; because of the information asymmetry and opportunistic behavior of managers, managers might use the board as a tool for their own needs and ignore the shareholders’ interests. Nevertheless, the managers possess the most valuable information of the organization as they are the ones in charge of making decisions. Therefore, it is of great importance that managers are included as members of the board of directors (Williamson, 1984). To reduce the problem of opportunistic managers on the board, outside directors should also be included in the board of directors. A

higher proportion of outside directors should increase the effectiveness of monitoring the management and improve corporate compliance. One of the main task of the outside directors is to act as mediators during disagreements between internal managers and to oversee competition among the top management. Another important function of the outside directors is to avoid decision making by the management that involves agency problems (Fama & Jensen, 1983)

Eisenhardt (1989) explained, because of the owners' lack of information and the managers' conflict of interest, a contractual relationship problem between the managers and the shareholders arises, which leads to agency costs. Agency costs are the total amount of monitoring costs, bonding costs, and residual costs. Residual costs result from the monitoring and bonding costs. High monitoring or bonding costs will lead to a residual loss. Another contractual problem between the managers and owners is their attitude regarding risks. Usually, shareholders tend to be more concerned about the future than the managers. Where shareholders are risk averse, to avoid their stock value declining, managers often are concerned with the short-time results. Usually, the managers' bonuses depend on short-time profits. Additionally, managers are often concerned with the short-term because of their limited tenure; thus, they are oriented on the results of the current period rather than on investments, which might result in profits in five or ten years.

Desai and Dharmapala (2006) argued, through tax avoidance, it is possible for managers to conceal rent extractions. This might be a conflict of interest for managers because this leads to agency costs for the shareholders, which in turn, leads to a price discount on the share price.

Desai, Dyck, and Zingales (2007) explained that opportunistic managers will structure the corporation in a way to reduce the corporate taxes. Thus, they will manipulate after-tax earnings for private gains. In this situation, the monitoring of managers by tax authorities will increase. Thus, the incentive of both tax authorities and the board of directors will be aligned to reduce the self-interest of the managers.

Overall, there are two competing views on corporate tax avoidance. The traditional view argues that managers' and shareholders' interests are closely aligned. Thus, managers engaging in tax avoidance transactions are solely driven by their incentives to reduce the firm's tax liability. However, the agency perspective of corporate tax avoidance argues that tax avoidance activities can create a new agency problem: masking rent extraction through the opaqueness of tax avoidance activities by opportunistic managers.

Nevertheless, the agency theory is not able to provide a complete explanation of the relationship between tax avoidance and corporate governance because the agency theory focuses mainly on the shareholders and managers. This theory covers the area of the board of directors to align the interests of the managers and shareholders. Whereas the agency theory emphasizes the relationship between shareholders and managers, the theory of corporate social responsibility covers the relationship between shareholders and other stakeholders in the society. In the next section, I will explain the theory of corporate responsibility.

2.3.2 Corporate social responsibility theory

Like tax avoidance, a clear definition of corporate social responsibility is absent. In this study, I will use Waller and Lanis's (2009) definition. The social responsibility theory states the existence of an implicit contract between the corporations and society, and this contract is based on expectations of several groups in the society. Another important aspect of social corporate responsibility is that organizations seek legitimacy from various stakeholders within the society. One way to gain legitimacy is to conduct operations in a socially responsible manner, which is determined by the stakeholders of corporations. The greater the influence and power of the reference groups, the more willing the organization to make changes to legitimize itself to the relevant groups.

An organization can gain legitimacy within the society if it complies with the law and regulations. In the case of tax avoidance, the organization can maintain a good standing with the tax authorities and can gain legitimacy from the society if it complies with the tax regulations. Additionally, stakeholders view tax avoidance as an unethical act. When a company avoids its corporate taxes, the stakeholders view this as the corporation not wanting to pay its "fair share" of taxes to contribute to the government to ensure the financing of public goods. Thus, the theory of corporate social responsibility suggests that an organization should comply with its corporate taxes to gain legitimacy within the society. Therefore, corporate governance mechanisms, such as the board of directors, should promote compliance with tax regulations (Lanis and Richardson, 2012). According to Ibrahim, Howard, and Angelidis (2003), the composition of the board of directors influences the responsiveness of the corporation to the needs of the stakeholders. Outside directors tend to be more focused on the needs of the stakeholders. Also, outside directors have a broader definition of firm performance. Where inside directors focus mainly on financial performance, outside directors put more emphasize on the needs of the society.

2.4 Hypothesis

As follows from the research question. I want to examine whether more independent directors on the board lower the level of tax avoidance. Derived from previous literature and theory, I have learned there is a relationship between corporate tax avoidance and corporate governance. In firms where there is a weak corporate governance, it is more likely those firms will avoid corporate taxes. In firms where the corporate governance is well structured, it is less likely that a firm will avoid corporate taxes (Desai et al., 2007). Bhagat and Bolton (2008) argued that the characteristics of the board of directors is an effective measure of corporate governance. The authors stated that the role of the board of the directors is to protect the company shareholders by monitoring the management. How the board of directors monitors the managements is influenced by the composition of the board of directors; boards with a higher proportion of independent directors will be better at monitoring the management because other board members, who have affiliations with the firm, might protect their own interests (Armstrong et al., 2015). Tax avoidance leads to a reduction of explicit taxes, which has benefits like a decrease in the cost of debt due to the increase of the financial slack and an increase in cash flow, which will lead to an increase in the shareholders wealth. There are still risks that come with tax avoidance such as political costs, managerial rent extraction, marginal costs, and reputation damages. These costs might harm the shareholders more than the benefits delivered. As the board of director's task is the avoid shareholders' interests being harmed, the board should avoid the firm being faced with the above-mentioned costs. As previously described, I will follow in some extent the study of Lanis and Richardson (2011). They describe the relationship between independent board members as follow; First, tax authorities see the board of directors as an important internal control mechanism that reduces the corporate tax aggressiveness. Second, the accounting profession recognizes that the board plays an important role in monitoring the management. Investors also expect firms to comply with tax regulations. This all leads to the following hypotheses:

H1: The higher the proportion of outside directors on the board, the lower is the level of tax avoidance.

3 Research methodology

This chapter will cover the research methodology. I will describe both the dependent and the independent variables. Also, I will explain the reasoning behind including certain control variables in this study. Furthermore, I will explain the research design used in the following chapters. Last, I will discuss the sample selection.

3.1 Variable measurement

3.1.1 Tax avoidance measurement

As previously described in this study, there has been considerable research conducted on tax avoidance. Because there is no clear definition of tax avoidance, there is an absence of a clear proxy to measure tax avoidance.

The study conducted by Hanon and Heitzman (2010) provides different measures of tax avoidance. The researchers argued which tax avoidance measure to use for different research studies because not all proxies are appropriate for measuring tax avoidance. There are several measures, such as book-tax differences and GAAP/Current/Cash effective tax rate, and unrecognized tax benefits.

Dyreng, Hanlon, and Maydew (2008) introduced a new measure for tax avoidance: the long-term cash effective tax rate. The authors argued there are several measures, such as book-tax differences. The measures like GAAP ETR and Cash ETC do not capture the changes affected by allowances. However, most of these studies measured only annual tax avoidance and not long-term tax avoidance. No distinction was made between whether tax avoidance happens year to year or when a specific phenomenon happens. Annual cash effective tax rates are not a correct predictor for long-term tax avoidance. Using a long-run measure of tax avoidance makes it possible to examine whether companies avoid taxes over a longer period. Using this measure is only effective when one's sample period is longer than three years because the long-run measure takes away the year to year volatility. Ideally, I would use this measure in this study. However, this was not possible since this study analyses panel data and has a sample period of nine years. The long-term effective tax rate was calculated by dividing the nine years average cash taxes paid by the nine years average pre-tax accounting income. However, due to data issues, I was forced to delete this measure. If I used this measure, I would have had an outcome for nine years, but the proportion of independent directors differed per year. It is not correct to divide all the independent directors over the nine years by all the boards of directors over the nine years. Therefore, I had one

outcome of the long term effective tax rate and nine different outcomes for the independent variable.

Effective tax rates models are the commonly used proxies for tax avoidance. Both the GAAP ETR and the cash provides insights into different objectives the board or management might have in increasing corporate tax avoidance. Hanlon and Heitzman (2010) pointed out these differences of GAAP ETR and cash ETR. GAAP ETR captures tax planning strategies using accounting accruals, which affects accounting earnings. On the other hand, cash ETR is not affected by accounting accruals but does show strategies to defer taxes. The GAAP ETR does not capture tax deferral strategies, and the definition in this study of tax avoidance is focused on the whole continuum of tax planning strategies. Overall, cash ETR captures permanent and contemporary tax strategies, and the cash ETR is the most commonly used proxy for tax avoidance (Dyreg et al., 2008; Watston 2015). The dependent variable was cash effective tax rate (CASHETR) to measure corporate tax avoidance. This variable was measured by cash taxes paid divided by the pre-tax accounting income.

3.1.2 Independent variable

The independent variable of this research was the proportion of the independent board members on the board. Independent board members are classified as directors who were not employees of the firm and were not linked with the firm. Thus, other than sitting on the board, they had no affiliation with the firm. It is possible directors who had affiliations with the firm might violate the independence of the board. Some examples of directors who had an affiliation with their firms are directors whose family members worked for the company, members who had previously worked for the company, or member who had shares in the company. I gathered the data of the board of directors' members of the S&P 500 firms from the Institutional Shareholders Services via the Wharton research data services. I named the variable of the proportion of the independent board of directors BOARD_IND. This variable was measured as the independent board members divided by the total board members sitting on the board.

3.1.3 Control variables

In this study, several factors were controlled to avoid endogeneity concerns that might affect the relationship between tax avoidance and the independent board of director members.

Therefore, the conclusions and the results of this papers will be more valid if several control variables are included. The following variables were controlled:

- Growth (GROWTH): Growth was employed in my study to control for the extent of the growth of the corporation. Loebbecke, Eining, and Willingham (1989) found, in firms with greater growth opportunities, the management might engage in fraudulent behavior. Therefore, to keep the company at a stable growth, managers are more motivated to engage in non-compliant tax activities. Also, firms with high growth opportunities will show a lower cash effective tax rate, and thus a higher level of tax avoidance. Chen et al. (2009) discussed that market-to-book ratios are good proxies for the growth of a firm. GROWTH was measured by the market value of the company divided by the book value of the company. I gathered the data of the S&P 500 firms from Compustat via the Wharton Research data services.
- Size (SIZE): Based on previous studies (Richard and Lanis 2007; Tran, 1997), larger firms will have a lower cash effective tax rate because, compared to smaller firms, they have more economic and political power and are able to reduce tax burdens. Hence, those firms might conduct tax avoidance. For this reason, in this study, I controlled for size. SIZE was measured as the natural log of total assets. All the data was derived from Compustat via the Wharton Research data services.
- Leverage (LEV): Hope, Ma, and Thomas (2013) explained more leveraged firms are less likely to avoid corporate taxes because firms might benefit from debt financing. Therefore, I employed leverage in this study to control for this effect. Leverage was measured by dividing total long-term debt by total assets. All the data was derived from Compustat via the Wharton Research data services.
- Research and development intensity (RD): Stickney and McGee (1982) found firms might stimulate investments in depreciable assets because tax savings might be larger when corporations invest in depreciable assets. This will lead to a lower effective tax rate. Thus, research and development intensity is positively associated with tax avoidance. Therefore, research and development intensity should be controlled to avoid causing endogeneity concerns. To measure research and development intensity, the costs of research and development were divided by the total assets. All the data was derived from Compustat via the Wharton Research data services.
- Return On Assets (ROA): ROA is a control variable for profitability. Research shows the profitability of the firm has a relationship with the effective tax rate. However, due to inconsistent research, it is difficult to say whether ROA is negatively or positively associated with tax avoidance (Adkikari, Derashid, and Zang, 2006; Gupta and

Newbery, 1997). ROA was measured as the pre-tax income divided by the total assets. All the data was derived from Compustat via the Wharton Research data services.

- CEO power (CEOCHAIR): The power of the CEO is greater when the CEO of the company is also the chairman of the board of directors. If a CEO has more power, than is it probable the CEO has a large influence on the board. Also, other board members are usually appointed by the CEO. These members are older and have positions as directors in other companies. When the CEO is also the chairman, it will be easier to mislead other board members. Therefore, when the CEO is also the chairman, the cash effective tax rate will be lower. Thus, the power of the CEO is positively associated with tax avoidance. CEOCHAIR is a dummy variable. When the CEO is also the chairman of the board, this variable has the number 1. Otherwise, it is the number 0. Data was gathered from the ISS.

Table 1: Observation of the variables

Variable	Observations	Missing
CASHTR	4157	298
BOARD_IND	3825	630
GROWTH	3750	705
SIZE	4336	119
LEV	4317	138
RD	2390	2065
ROA	4335	120
CEOCHAIR	3828	627

This table shows how much data is collected from all the firms over nine years and how much there is missing.

3.2 Sample selection

This research was conducted with the index of Standard and Poor's 500 firms. There are several reasons I chose S&P 500 firms. First, to the best of my knowledge, only two studies have been conducted to research the effect of the board of directors on tax avoidance: Lanis and Richardson (2011) and Richardson, Taylor, and Lanis (2013). Both studies based their research on Australian firms. Second, the S&P 500 index covers the market capitalization of the 500 largest firms in the United States of America. The S&P is composed by economists and analyst who are objectively assigned, and there are several criteria to be a part of the S&P index. Therefore, the S&P index is viewed as a reliable source. Also, the index includes

world-wide well-known companies, like Apple, Microsoft, and MasterCard. Hence, because this index includes companies operating worldwide, the external validity of this research will be larger than the previous two studies. Last, larger firms possess better resources than smaller firms to apply tax strategies to avoid corporate taxes (Dyrenge et al., 2008).

The sample period for this research was nine years, from 2007 to 2015. All the data in this period is available both in Compustat and ISS.

3.3 Model

In Appendix A, I include the predictive validity framework. This framework shows the relationship between independent board members and tax avoidance. Longitudinal data, also known as panel data, has the best fit with the model of this research. Panel data makes it possible to check for different measurements over time. Thus, panel data allows for observation of the data of multiple firms for two or more years. Panel data provides two types of information: Cross-sectional and time-series. Cross-sectional information reflects differences between subjects, and the time series information, also known as within subjects, reflects the information of changes in subjects over time.

While it is possible to use ordinary regression techniques on panel data, it would not be optimal. The estimates of coefficients derived from regression may be subject to omitted variable bias, a problem that arises when there is some unknown variable or variables that cannot be controlled for that affect the dependent variable. Panel data makes it possible to control for omitted variables, even when the variables are not included in the model. This study's data contains the cash effective tax rates of 495 firms over nine years. After conducting the Hausman test, I used the fixed or random effect model to analyze the results.

$$CAHSETR_{i,t} = \alpha_{i,t} + \beta_1 \text{BOARD_IND}_i + \beta_2 \text{GROWTH}_i + \beta_3 \text{SIZE}_i + \beta_4 \text{LEV}_i + \beta_5 \text{RD}_i + \beta_6 \text{ROA}_i + \beta_7 \text{CEOCHAIR}_i + \varepsilon_i$$

where

I	corporations 1-495
CASHETR	the cash effective tax rate
BOARD_IND	proportion of independent board members.
GROWTH	the market value of the company divided by the book value.
SIZE	the size of the company, measured by the natural log of total assets .
LEV	measures how leveraged a corporation is.
RD	the research and development intensity of the corporate.
ROA	measures the profitability of the company.
CEO	a dummy variable that takes a value of 1 if the CEO is also the chairman of the board and 0 otherwise.
ε	the error term

4 Empirical results

4.1 Descriptive statistics

The descriptive statistics of this research are presented in Table 2. The descriptive statistics of the panel data show the overall variation over time and firms. The between variation provides the information between the firms, and the within variation is the variation within the firms over time. The overall mean of the cash effective tax rate is around 22%.

Each company has its unique ticker symbol. I generated the ticker symbols in STATA to ID. Because of some absence of the data, I ended up with 495 companies instead of 500. Since my sample period is from 2007 to 2015, the firm years it should have been 4455, but because of the absence of some firm years, I ended up with 4373 observations. Also, the number of observations of other variables varies considerably. I decided not to drop firms when some data of the control variables was missing because this could bias my results. The mean of the overall effective tax rate is around 22%. The within standard deviation of the firms is 0 because, within each subject, the value of this variable does not vary. The mean of the proportion of independent directors is 82%. Thus, on average, the independent directors cover 82% of the board. This means that compositions of the boards are highly dominated by independent directors.

Table 2: Descriptive statistics

Variable		Mean	Std. Dev.	Min.	Max.	Observations
ID	overall	248.370	143.116	1	495	N = 4372
	between		143.039	1	495	n = 495
	within		0	248.370	248.370	T-bar = 8.832
Year	overall	2010.968	2.557	2007	2015	N = 4372
	between		0.277	2010.5	2013.5	n = 495
	within		2.547	2006.968	2014.968	T-bar = 8.832
CASHETR	overall	0.225	2.113	-29.148	123.333	N = 4157
	between		0.774	-2.942	15.656	n = 489
	within		1.974	-25.981	107.902	T-bar = 8.501
BOARD_D	overall	0.817	0.109	0	1.9	N = 3825
	between		0.095	0.439	1.197	n = 474
	within		0.059	0.138	1.721	T-bar = 8.070
GROWTH	overall	0.558	204.530	-10785.6	4923.705	N = 3750
	between		60.846	-1140.395	510.596	n = 478
	within		193.911	-9644.65	4413.667	T-bar = 7.845
SIZE	overall	9.634	1.423	5.448	14.761	N = 4336
	between		1.388	5.929	14.598	n = 495
	within		0.320	7.187	12.029	T-bar = 8.760
LEV	overall	0.230	0.174	0	1.705	N = 4317
	between		0.159	0	1.018	n = 495
	within		0.071	-0.360	1.110	T-bar = 8.721
RD	overall	0.040	0.061	0	0.637	N = 2390
	between		0.056	0	0.435	n = 286
	within		0.021	-0.229	0.449	T-bar = 8.357
ROA	overall	0.086	0.110	-1.498	0.878	N = 4335
	between		0.084	-0.313	0.671	n = 495
	within		0.072	-1.310	0.794	T-bar = 8.758
CEOCHAIR	overall	0.571	0.495	0	1	N = 3828
	between		0.406	0	1	n = 473
	within		0.296	-0.318	1.460	T-bar = 8.093

4.2 Correlation results

The Pearson correlation results are presented in Table 3. The correlation matrix shows that BOARD_ID is significantly negatively associated with CASHETR ($p < 0.01$). This means, when the proportion of independent directors increases, the cash effective tax rate decreases. This will result in tax avoidance. However, this is not consistent with my alternative hypothesis. Also, it does not support previous studies, which claim the proportion of independent board members has an influence on tax avoidance. Specifically, those studies showed, when there are more independent directors on the board, the corporate tax avoidance decreases (Lanis et al., 2015; Lanis & Richardson, 2011). A reason for the significantly negatively association between the proportion of independent board members and cash

affective tax rate might be that, in this study, I used panel data. With panel data, there are variation over time for one subject and a variation between subjects. Therefore, panel data might harm the results of the correlation matrix.

Table 3: Pearson correlation matrix

	CASHETR	BOARD_D	GROWTH	SIZE	LEV	RD	ROA	CEOCHAIR
CASHETR	1.000							
BOARD_D	-0.002***	1.000						
GROWTH	-0.000***	0.010***	1.000					
SIZE	0.034**	0.174	0.007***	1.000				
LEV	0.019**	0.052*	-0.009**	0.068*	1.000			
RD	-0.024**	-0.002***	0.012**	-0.160	-0.227	1.000		
ROA	-0.030**	-0.021**	-0.000***	-0.106	-0.213	-0.171	1.000	
CEOCHAIR	0.012**	0.263	-0.012**	0.138	0.058*	-0.109	-0.021**	1.000

Note: Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

4.3 Empirical analyses

The sample data in this study includes both cross-sectional panel data and time-series data.

The difference in the effective tax rate across time, but for the same firm, is called the time-series data, and the difference in the effective tax rate from the proportion of independent board directors of the firm is called the cross-sectional panel data. As previously discussed, conducting a simple regression will provide biased results. To avoid this concern, I employed the random effects or fixed effects model to study whether the proportion of independent directors has an influence on corporate tax avoidance. First, I performed a Hausman test to analyse whether the fixed effect model or random effect model had to be employed. The dependent variable in this regression analyses is the corporate tax avoidance, measured with the cash effective tax rate (CASHETR). The independent variable is the proportion of independent board members (BOARDIND), the independent directors divided by the total board of directors. The control variables are some profitability measures, like growth, size, and ROA.

4.3.1 Fixed effects model

With panel data, it is necessary to distinguish fixed effects and random effects. When providing a firm's fixed-year effects, the differences between subjects were controlled for but the subjects within were kept constant over time. Thus, with the fixed effect model, I was able to analyze the relationship between the cash effective tax rate and the proportion of independent board directors among the S&P 500 firms. The fixed effect model is the commonly use model, but before deciding which model to employ, the Hausman test needed to be conducted. The Hausman test tests for endogenous variables in a regression model. Specifically, this test allows a researcher to examine whether there is a correlation between the errors and the variables in the model. If the p-value of the Hausman test is less than 0.05, the null hypotheses is rejected. In this case, I needed to use the fixed effect model. If the alternative hypothesis is rejected (p-value > 0.05), the random effect model is preferred. In this study, the Hausman tests provided a significant p-value (Prob > chi2 = 0.0007, which is smaller than p > 0.05). Therefore, I accepted the alternative hypothesis and employed the fixed effect model.

Table 4: Hausman test for fixed versus random effects model

	(b) fixed	(b) random	(b-B) difference	Sqrt (diag(V_b-V_B)) S.E.
BOARD_IND	-2.415	-0.270	-2.146	1.165
GROWTH	0	0	0	0
SIZE	0.600	0.068	0.533	0.244
LEV	1.247	0.111	1.135	0.985
RD	-1.975	-1.227	-0.749	4.036
ROA	-4.105	-0.985	-3.120	1.083
CEOCHAR	-0.069	0.040	-0.109	0.185

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 23.20
Prob>chi2 = 0.0007

Table 5 shows the number of observation is 1891, with a total group of 266. The number of F(7,1618) with a significant F value was Prob > F = 0.0007. The prob > F value is smaller than 0.01, which means I could reject the null hypothesis. By accepting the alternative hypothesis, this model was acceptable. Usually, one only rejects the hypotheses when the p-value is lower than 0.05. However, if I wanted to use this model in a stricter way, I could also reject the other variables when they have a smaller p-value than 0.01, and it is also possible to accept the model less strictly and reject it when the p-value is lower than 0.1. This model shows the p-value of the BOARDIND on CASHETR is 0.074 (p-value < 0.01). This means I could reject the null hypotheses of this study with a significance level of 0.1. Also, the proportion of independent directors has a positive relationship with the cash effective tax rate. When there are more independent board members, the cash effective tax rate of the company will be higher. As a result, the corporation will be less likely to conduct tax avoidance.

Because of mixed results in previous studies about the effect of the ROA on the cash effective tax rate, I did not predict a sign. This model shows ROA has a positively significant effect on the cash effective tax rate. Thus, when firms are more profitable, they will have higher effective tax rates. Therefore, the corporation will be less likely to conduct corporate tax avoidance.

This model predicts the size of the corporation has a significantly positive effect on the cash effective tax rate with a p-value of 0.017, which is lower than 0.05. This means larger firms are less likely to conduct corporate tax avoidance. This contradicts what was expected. According to Lanis and Richardson (2011), larger firms will have lower cash effective tax rates because, compared to smaller firms, they have more economic and political power and are able to reduce tax burdens. A reason for this could be that larger firms show a higher cash effective tax rate because there is an association between firm size and political costs. Larger firms are more likely than smaller firms to be subject to governmental scrutiny. Because larger firms know this, they will be less likely avoid the payment of corporate taxes (Zimmerman, 1983).

All the other control variables do not play key roles in determining the cash effective tax rate because all the p-values are higher than 0.1. Although all control variables have no significant effect, all the variables have a positive effect on the cash effective tax rate. This means when the growth, leverage, and the power of the CEO increases, the effective tax rate increases. Hence, the company is not avoiding corporate taxes. The R-square predicts, in simple regression models, how much of the independent variables in the model explain the dependent variable. However, in a fixed effect model, the R-square is not relevant.

Table 5: Fixed effects

Fixed-effects (within) regression		Number of obs	=	1891		
Group variable: ID		Number of groups	=	266		
R-sq: within = 0.0155		Observation per group: min	=	1		
between = 0.0000		avg	=	7.1		
overall = 0.0022		max	=	9		
		F(7,1618)	=	3.64		
corr(u_i, Xb) = -0.5755		Prob > F	=	0.0007		
CASHETR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
BOARD_IND	-2.415	1.353	-1.79	0.074 *	-5.070	0.238
GROWTH	0	0	0.03	0.973	0	0
SIZE	0.600	.251	2.39	0.01***	.108	1.092
LEV	1.247	1.097	1.14	0.256	-0.906	3.399
RD	-1.976	4.250	-0.46	0.642	-10.312	6.360
ROA	-4.105	1.349	-3.04	0.002***	-6.751	-1.460
CEOCHAIR	-0.069	0.233	-0.30	0.767	-0.526	0.388
cons-	-3.032	2.482	-1.22	0.222	-7.901	1.837
sigma_u	1.322					
sigma_e	2.910					
rho	0.171 (fraction of variance due to u_i)					

Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Last, I used the model of industry fixed effect to test the relationship between the board of directors and the cash effective tax rate. In this model, I included the following industries: finance, insurance and real estate, manufacturing, mining, retail trade, wholesale, gas/electric, and non-classifiable industries. The non-classifiable industries include those industries not categorized into the other industries. When I used the industry fixed effect model, I controlled for the concerned industries over a period of eight years. I decided to drop 2007 in this model because I had many missing variables, which could let to biased results. The results of this model suggest the proportion of independent board members does not have a significant effect on the cash effective tax rate. This means, according to this regression, the alternative hypothesis of this study is rejected. Also, controlling for the industries led to none of the variables in this model having a significant effect on tax avoidance. However, all the variables have a positive effect on the corporate tax rate. As in the previous fixed-effect model, the R-square is not useful for the industry fixed-effect model.

Table 6: Industry fixed effect model

Source	SS	Df	MS	Number of observations	=	1891
Model	367.266	23	15.968	F(23, 1867)	=	1.91
Residual	15607.391	1867	8.360	Prob> F	=	0.006
Total	15974.657	1890	8.452	R-squared	=	0.023
				Adj R-squared	=	0.011
				Root MSE	=	2.891
CASHETR	Coef.	Std. Err.	t	p> t	[95% Conf. Interval]	
BOARD_IND	-0.465	0.700	-0.66	0.507	-1.838	0.908
GROWTH	0	0	0.02	0.982	0	0.001
SIZE	0.043	0.060	0.71	0.476	-0.075	0.161
LEV	0.191	0.514	0.37	0.710	-0.816	1.198
RD	-0.770	1.427	-0,54	0.590	-3.569	2.030
ROA	-1.033	0.822	-1.26	0.209	-2.645	0.580
CEOCHAIR	0.049	0.144	0.34	0.733	-0.233	0.331

Industry						
Finance, Insurance and Real Estate	-0.411	1.042	-0.39	0.693	-2.454	1.633
Manufacturing	-0.078	0.972	-0.08	0.936	-1.984	1.827
Mining	1.985	1.050	1.89	0.059	-0.074	4.045
Nonclassifiable	-0.299	1.227	-0.24	0.807	-2.705	2.106
Retail Trade	0.074	0.993	0.07	0.940	-1.874	2.023
Services	0.009	0.989	0.01	0.993	-1.931	1.948
Gas, electric, etc	-0.419	1.343	-0.31	0.755	-3.054	2.216
Wholesale Trade	-0.016	1.047	-0.02	0.988	-2.070	2.038
Year						
2008	-0.045	-0.296	-0.15	0.879	-0.626	0.536
2009	-0.071	0.299	-0.24	0.812	-0.656	0.515
2010	-0.065	0.293	-0.22	0.824	-0.639	0.509
2011	-0.030	0.292	-0.10	0.917	-0.603	0.542
2012	-0.010	0.289	-0.03	0.973	-0.577	0.558
2013	-0.092	0.288	-0.32	0.750	-0.658	0.474
2014	-0.017	0.288	-0.06	0.954	-0.582	0.549
2015	0.723	0.301	2.40	0.017	0.132	1.313
_cons	0.316	1.290	0.24	0.807	-2.215	2.846

There are several reasons the results of this study might contradict the previous literature. First, this study's research question was whether the proportion of independent directors on the board have an influence on tax avoidance. To study the independent board members, I used S&P 500 index firms. As previously described, when firms want to be included in the S&P 500 index, they must meet several criteria. Several economists and analysts follow them to rank them as companies. As a result, the proportion of independent directors on a given board of directors is overall high. As it was distributed in the descriptive statistics, the overall

average of the independent directors of the 495 firms in seven years was above 80%. This might bias the results of this study because all 495 firms are not diverse in regard to proportion of independent directors. The second reason is the measure of tax avoidance. The cash effective tax rate does not take the year-to-year volatility away because it does not capture the tax avoidance over a longer period. The cash effective tax rate measures the annual tax avoidance (Dyreg et al., 2008). Third, these contradicting results might be caused by some shareholders preferring a reduction of explicit taxes because this leads to a decrease of the cost of debt and to an increase of the firm's cash flow (Lim, 2011).

Conclusion

This study examines whether the proportion of independent directors has an influence on tax avoidance. Tax avoidance does not yet have a single definition. In this study, I followed the definition of Hanlon and Heitzman (2011). The authors defined tax avoidance as a reduction of explicit taxes. Investment in bonds would be at one end of the continuum of tax avoidance and tax evasion at the other end. I examined the whole continuum.

There are several reasons why it is important to study the relationship between corporate governance and tax avoidance. First, corporate governance's main task is to act in the interests of the shareholders and ensure the management will not act in its own interest (Shleifer and Vishny, 1997). The board of directors is an effective measure of corporate governance because the board has input into the decisions made in the firm, and the role of the board is to protect the shareholders by monitoring the management (Bhagat and Bolton, 2008). Therefore, I used the board of directors to measure corporate governance. Also, Minnick and Noga (2010) explained the independent board members have an influence on how the corporation performs. Second, corporate tax avoidance has some benefits for shareholders. Tax avoidance results in an increased cash flow that will lead to an increase of the firm's value, which in turn will lead to an increase of shareholder wealth. Furthermore, a reduction of explicit taxes will lead to a lower cost of debt because of the increase in financial slack (Lim, 2011). Thus, shareholders should prefer tax avoidance. However, there are several risks involved in tax avoidance, such as reputational costs, marginal costs, political costs, and managerial rent extraction. This results in shareholders not favoring tax avoidance because the risks involved could hurt their wealth. Last, the subject of tax avoidance has been studied in fields like law, economics, accounting, and finance. This makes the study of this subject complicated and of interest at the same time. Because of this broad range of interests, there is a lack of studies on the relationship between a specific subject and tax avoidance. To the best of my knowledge, there were only two studies conducted on the relationship between independent board members and tax avoidance (Lanis and Richardson, 2011; Richardson et al., 2013). For all of the above reasons, it is worthy to conduct this research.

I used two theories to explain the relationship between independent boards of directors and tax avoidance: the agency theory and the theory of corporate social responsibility. The agency theory on tax avoidance explains that the interests of the shareholders and managers might not be aligned because opportunistic managers mask rent extraction through the opaqueness of tax avoidance activities. Therefore, independent board members are necessary

on the board to monitor opportunistic managers (Desai and Dharmapala, 2006). While the agency theory explains the relationship between shareholders and the management, the corporate social responsibility theory covers the relationship between shareholders and other stakeholders in the society. It is important that a corporation gains legitimacy within the society; otherwise, that corporation would not be able to operate. A way to gain legitimacy is complying with the law and regulations. According to Ibrahim, Howard, and Angelidis (2003), outside directors tend to be more focused than inside directors on the needs of the society. Thus, outside directors can maintain a good standing with the tax authorities and can gain legitimacy from the society if the company complies with the tax regulations.

With a panel data analysis, I tried to examine the proposed research question. The results of the fixed effect model are consistent with prior literature; this model suggests that when the proportion of independent board directors increases, the corporate tax avoidance decreases. However, when industries' effects in the model were included, the results became insignificant. Thus, it cannot be statistically proven that more independent directors on the board influence corporate tax avoidance. The contradicting results may be caused by the measure of tax avoidance. With panel data, I was unable to use the long-term corporate tax avoidance measure (Dyreng et al., 2008). The cash effective tax rate measures annual tax avoidance and is not able to take away the year-to-year volatility. Another reason might be the proportion of corporations included in the S&P 500 index that already have a high proportion of independent board members. Thus, the data of the firms' board members were not diverse; all firms had, to some extent, the same number of independent board members. Last, shareholders might prefer tax avoidance because it leads to an increase in their wealth (Lim, 2011). For future research, I would recommend creating a research design in which it is possible to use a different measure of tax avoidance and hand-collect firms where the proportion of independent directors is diverse.

References

Adhikari, A., Derashid, C., & Zhang, H. (2006). Public policy, political connections, and effective tax rates: Longitudinal evidence from Malaysia. *Journal of Accounting and Public Policy*, 25(5), 574-595.

Annuar, H. A., Salihu, I. A., & Obid, S. N. S. (2014). Corporate ownership, governance and tax avoidance: An interactive effects. *Procedia-Social and Behavioral Sciences*, 164, 150-160.

Armstrong, C. S., Blouin, J. L., Jagolinzer, A. D., & Larcker, D. F. (2015). Corporate governance, incentives, and tax avoidance. *Journal of Accounting and Economics*, 60(1), 1-17.

Badertscher, B. A., Katz, S. P., & Rego, S. O. (2013). The separation of ownership and control and corporate tax avoidance. *Journal of Accounting and Economics*, 56(2), 228-250.

Barford, V & Holt, G. (2013, 21 May). Google, Amazon, Starbucks: The rise of 'tax shaming'. Retrieved on 1 February, 2017, from <http://www.bbc.co.uk/news/magazine-20560359>.

Baysinger, B. D., & Butler, H. N. (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law, Economics, & Organization*, 1(1), 101-124.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of corporate finance*, 14(3), 257-273.

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms?. *Journal of Financial Economics*, 95(1), 41-61.

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms?. *Journal of Financial Economics*, 95(1), 41-61.

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of financial economics*, 51(3), 371-406.

Desai, M. A., & Dharmapala, D. (2006). Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics*, 79(1), 145-179.

Desai, M. A., Dyck, A., & Zingales, L. (2007). Theft and taxes. *Journal of Financial Economics*, 84(3), 591-623.

Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2008). Long-run corporate tax avoidance. *The Accounting Review*, 83(1), 61-82.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, 26(2), 301-325.

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, 16(1), 1-34.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(2), 127-178.

Hanlon, M., & Slemrod, J. (2009). What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics*, 93(1), 126-141.

Holder, V. (2016, 29 June). Starbucks' European unit pays \$15m UK tax. Retrieved on 1 February, 2017, from 1 February 2017 <https://www.ft.com/content/5222fd14-3d3b-11e6-9f2c-36b487ebd80a>.

Hope, O. K., Ma, M. S., & Thomas, W. B. (2013). Tax avoidance and geographic earnings disclosure. *Journal of Accounting and Economics*, 56(2), 170-189.

Ibrahim, N. A., Howard, D. P., & Angelidis, J. P. (2003). Board members in the service industry: An empirical examination of the relationship between corporate social responsibility orientation and directorial type. *Journal of Business Ethics*, 47(4), 393-401.

Johnson, J. L., Daily, C. M., & Ellstrand, A. E. (1996). Boards of directors: A review and research agenda. *Journal of management*, 22(3), 409-438.

Loebbecke, J. K., Eining, M. M., & Willingham, J. J. (1989). Auditors experience with material irregularities-frequency, nature, and detectability. *Auditing-A Journal of Practice & Theory*, 9(1), 1-28.

Lanis, R., & Richardson, G. (2011). The effect of board of director composition on corporate tax aggressiveness. *Journal of Accounting and Public Policy*, 30(1), 50-70.

Lim, Y. (2011). Tax avoidance, cost of debt and shareholder activism: Evidence from Korea. *Journal of Banking & Finance*, 35(2), 456-470.

Mills, L. F., Nutter, S. E., & Schwab, C. M. (2012). The effect of political sensitivity and bargaining power on taxes: Evidence from federal contractors. *The Accounting Review*, 88(3), 977-1005.

Minnick, K., & Noga, T. (2010). Do corporate governance characteristics influence tax management?. *Journal of corporate finance*, 16(5), 703-718.

Richardson, G., Taylor, G., & Lanis, R. (2013). The impact of board of director oversight characteristics on corporate tax aggressiveness: An empirical analysis. *Journal of Accounting and Public Policy*, 32(3), 68-88.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The journal of finance*, 52(2), 737-783.

Schön, W. (2008). Tax and corporate governance: A legal approach. In *Tax and corporate governance* (pp. 31-61). Springer, Berlin, Heidelberg.

Stickney, C. P., & McGee, V. E. (1982). Effective corporate tax rates the effect of size, capital intensity, leverage, and other factors. *Journal of accounting and public policy*, 1(2), 125-152.

Waller, D. S., & Lanis, R. (2009). Corporate social responsibility (CSR) disclosure of advertising agencies: an exploratory analysis of six holding companies' annual reports. *Journal of Advertising*, 38(1), 109-122.

Watson, L. (2015). Corporate social responsibility, tax avoidance, and earnings performance. *The Journal of the American Taxation Association*, 37(2), 1-21.

Zimmerman, J. L. (1983). Taxes and firm size. *Journal of accounting and economics*, 5, 119-149.

Appendix A: Predictive Validity Framework

