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The effect of board diversity on CSR decoupling

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Abstract

This study aims to examine the effect of board diversity on CSR decoupling. CSR decoupling is defined as the difference between internal and external CSR actions (Hawn & Ioannou, 2016). Diversity is defined as the reflection of the diverse skills, knowledge, and experience board members bring with them (Kanadli et al., 2018). To provide a more holistic view of board diversity, this study focuses on the effect of Board Gender Diversity, Board Age Diversity, and Board Nationality Diversity. A panel data set covering 6 years (2016-2021) for Dutch firms included in the Refinitiv database is used to test the hypotheses. CSR decoupling is measured based on an adapted method based on the method of Hawn & Ioannou (2016) for the variable CSR decoupling after 2016. Fixed effects regression models are used to investigate the effects of Board Gender Diversity (*BGD*), Board Age Diversity (*BAD*), Board Nationality Diversity (*BND*), and Total Board Diversity (*TBD*) on CSR decoupling, using two different measures of CSR decoupling: *CSR_Decoupling* and *CSR_Decoupling_lag*. First, the study explores the effect of Board Gender Diversity (*BGD*), Board Age Diversity (*BAD*), and Board Nationality Diversity (*BND*), on CSR decoupling. Second, the study explores the combined effect of these board diversity characteristics (Total Board Diversity) on CSR decoupling. Hypotheses 1-3 expect a negative effect of Board Gender Diversity, Board Age Diversity, and Board Nationality Diversity on CSR decoupling. The results provide mixed support for the hypotheses. In model 1 (using *CSR_Decoupling* as the measure of CSR decoupling) *BGD*, *BAD*, and *BND* have no significant effects on CSR decoupling. Meaning that the negative effects of Board Gender Diversity, Board Age Diversity, and Board Nationality Diversity on CSR decoupling were not statistically supported. However, in model 2 (using *CSR_Decoupling_lag* as the dependent variable), *BAD* has a significant negative effect on CSR decoupling, supporting hypothesis 2. This indicates that a more age-diverse board is associated with a decrease in CSR decoupling (when internal CSR actions are lagged with 1 year), after controlling for variations in CSR decoupling related to the other factors specified in the model. However, in model 2 the effects of *BGD*, and *BND* on *CSR_Decoupling_lag* are not statistically significant as well. Hypothesis 4 expects a negative effect of Total Board Diversity on CSR decoupling. The results depict that *TBD* has a different effect on the two different measures of CSR decoupling. In model 3, (which uses *CSR_Decoupling* as the measure of CSR decoupling) *TBD* has a positive and significant effect on CSR decoupling, after controlling for variations in companies' CSR decoupling related to other factors specified in the model. So, hypothesis 4 is not supported, indicating that firms with more diverse boards were more likely to decouple their CSR actions. Furthermore, model 4 (using *CSR_Decoupling_lag* as the dependent variable), also does not support hypothesis 4 as the effect of *TBD* is insignificant. This paper provides insights into the relationship between CSR decoupling and board diversity based on a Dutch sample. These insights can be valuable for board members, policymakers, and stakeholders.

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Chapter 1: Introduction

As stakeholders are no longer just interested in the financials of a firm, but also in the environmental and social impacts of the firm, CSR has become an important concept in the business world. The European Commission has defined CSR as *'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.'* (European Commission, 2011). With the coming of the Global Reporting Initiative (GRI) and soon the Corporate Social Responsibility Directive (CSRD) in the EU, more firms disclose non-financial information. Although sustainability reporting is voluntary, 96% of The World's 250 largest companies by revenue report on sustainability or ESG matters (KPMG, 2022). So, it has become increasingly important for firms to show accountability and transparency about this topic (Bromley & Powell, 2012). On the one hand, firms disclose CSR information as a mechanism to reduce social and governmental pressures and corroborate their activities' legitimacy (Gallego-Álvarez & Quina-Custodio, 2016). Yet because of these pressures, some firms only disclose innocent impacts, creating an impression of transparency while masking their true performance (Marquis et al., 2016). On the other hand, *'90% of executives see sustainability as important, but only 60% of companies have a sustainability strategy.'* (MIT Sloan Management Review & The Boston Consulting Group, 2017). Thus, executives do care about sustainability, however, this is not always communicated. So, there is a gap between the CSR strategies and the actions described in CSR reports. External CSR actions are more externally oriented in terms of disclosure and claims (e.g., reporting). Internal CSR actions are more internally oriented in terms of policies (Hawn & Ioannou, 2016). In this study, CSR decoupling is defined as the difference between internal and external CSR actions (Hawn & Ioannou, 2016). Diversity in the board of directors has also become a more important concept in the business world. This is stipulated by for example new EU law regarding the gender balance on corporate boards (European Commission, 2022). Diversity is defined as *'the reflection of the diverse skills, knowledge, and experience board members bring with them'* (Kanadlı et al., 2018). The information available for decision-making is improved by diversity, as a consequence, more alternatives will be evaluated to reach a decision choice (Kanadlı et al., 2018).

This study will focus on the effect of board diversity characteristics on CSR decoupling. Prior research describes the mechanisms causing CSR decoupling from several theoretical perspectives. Most prior research is based on institutional theory and looks at the effect of the progressiveness of states (Visser et al., 2022), institutional environments (Khan et al., 2020), MNEs' dual embeddedness in their home countries, and the global institutional environment (Tashman et al., 2019) on CSR decoupling. Based on stakeholder and institutional theory Malik et al. (2020) argue that coercive isomorphism, monitoring mechanisms, and firm reputation are strongly associated with CSR decoupling (Malik et al., 2020). Based on agency theory,

Gull et al. (2022a) show that the existence of a CSR committee has a negative association with CSR decoupling. This association is further increased by the nature of a firm's industry, CSR orientation, and corporate governance quality. Additionally, Gull et al. (2022a) discover that CSR decoupling is negatively impacted by longer tenure, higher independence, and a larger CSR committee (Gull et al., 2022a).

From a firm-level perspective, García-Sánchez et al. (2021) look at the effect of CSR decoupling on financial outcomes (García-Sánchez et al., 2021). According to Sauerwald & Su (2018), overconfident CEOs increase CSR decoupling, however, this effect is mitigated when outside directors have CSR expertise and ownership incentives (Sauerwald & Su, 2019). García-Sánchez et al. (2022) based on legitimacy theory note that assurance of CSR reports in accordance with the GRI guidelines decreases CSR decoupling (García-Sánchez et al., 2022).

Instead of looking at CSR decoupling from an (inter)national level or firm level, this research focuses on the board level. Because the board of directors leads the process of CSR policies when CSR policies are initially under discussion (Mathis, 2004). When people are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019). Earlier research mostly focuses on one proxy for board diversity such as gender diversity (Cabeza-García et al., 2018; Eliwa et al., 2023; García-Sánchez et al., 2019). This study, however, extends current research by focusing on gender as well as age and nationality as proxies for board diversity.

This study also differs from existing research on CSR decoupling because of its scope. Earlier studies focused on developing countries (Khan et al., 2020), China (Zhao et al., 2022), Pakistan (Malik et al., 2020), the US (García-Sánchez et al., 2021; Kim & Lyon, 2015; Sauerwald & Su, 2019), emerging markets (Tashman et al., 2019) or an international (García-Sánchez et al., 2022; Graafland & Smid, 2019; Gull, et al., 2022; Marquis et al., 2016; Visser et al., 2022). However, focusing on multiple countries or markets might lead to a size and internationalization bias, to get rid of this bias this study will focus only on Dutch firms. It is specifically important to get rid of this internationalization bias as the research by Tashman et al. (2019) shows that firms who are motivated to internationalize, use CSR reporting to manage liabilities of origin, which causes them to engage in CSR decoupling.

It is also interesting to look at Dutch firms as, CSR has been widely accepted in Dutch society and the business community, probably more than in other European nations (Remmé, 2015). Most Dutch managers are aware of this trend in Dutch society, and are increasingly taking CSR into account in their strategies and operations (Remmé, 2015). In addition, CSR reporting structures and procedures are best integrated in the Netherlands, compared to leading British and German firms in terms of CSR (Mathis, 2004). In the

Netherlands, CSR is not regulated by legislation yet. In 2023, European law is expected to make CSR reporting mandatory. However, listed companies in the Netherlands are legally obliged to comply with the Corporate Governance Code, they should comply to this code according to the ‘comply or explain’ principle (Monitoring Committee Corporate Governance Code, 2016). The code describes responsibilities for long-term value creation, risk control, effective management and supervision (including diversity), remuneration, and the relationship with shareholders and stakeholders (Monitoring Committee Corporate Governance Code, 2016). In addition, the Dutch government recognizes international standards and guidelines for CSR, such as the OECD guidelines. The OECD guidelines are mainly voluntary, except the rule on corruption is mandatory as this is a criminal offense in the Netherlands (RVO, 2020). The Dutch government requires 90% of its large companies to explicitly endorse the OECD guidelines by 2023. Besides, larger businesses are expected to adopt an International Corporate Social Responsibility (ICSR) policy when conducting international business. These companies are obliged to report on their ICSR, which entails incorporating the OECD guidelines in their social and annual reports (RVO, n.d.). In addition, Dutch businesses must incorporate CSR into their business practices and provide evidence that they explicitly endorse the OECD guideline, to receive government subsidies or loans or to take part in trade missions. Also, Dutch firms may even be held liable in particular cases when there are abuses throughout the production chain and the firm could have addressed or prevented these abuses (RVO, n.d.). However, some companies might not be able to resolve CSR risks on their own, due to the sector they operate in. So, the textile, clothing, banking, food, and metal sector, made agreements to prevent abuses and laid those down in an ICSR covenant (RVO, n.d.). The study by Mathis (2004) shows that Dutch companies see governmental requirements as the reason for higher expectations laid on the corporation. Mathis (2004) also shows that the main reasons for Dutch firms to behave more responsibly were third-party pressure and public expectations (Mathis, 2004). This is in line with legitimacy theory which states that firms disclose CSR information to maintain legitimacy. Besides the Netherlands have a very advanced auditing standard for CSR reporting, the COS 3410N "Assurance engagements relating to sustainability reports". This standard, issued by Royal NIVRA in 2007, is based on ISAE 3000 and ensures the reliability of the data contained in sustainability reports and determines if the report meets the relevant reporting criteria (PWC, 2007).

When there is a wider gap between internal and external CSR actions, which is the case of CSR decoupling, this negatively affects the market value of a firm (Hawn & Ioannou, 2016). De Jong & van der Meer (2017) state that both greenwashing and brownwashing illustrate a misalignment between CSR elements, thereby leading to a lack of transparency and accountability regarding CSR issues (de Jong & van der Meer, 2017). This lack of transparency and accountability may alter investors’ perception of the firm, which will impact the firm’s valuation (Hawn & Ioannou, 2016). Firms may generate a higher market return when they do not

only change their processes and procedures (internal CSR actions) but also communicate these changes (external CSR actions) effectively to capital market participants (Hawn & Ioannou, 2016). Similarly, García-Sánchez et al. (2021) find that CSR decoupling leads to higher analysts' forecast errors, a greater cost of capital, and reduced access to finance. In addition, CSR decoupling can threaten the legitimacy of the firm to stakeholders (Khan et al., 2020; Tashman et al., 2019). A more diverse board is preferred as problems will be solved more easily, decisions will be made more efficiently, and it has a positive impact on firm value (Hambrick & Mason, 1984; Hassan & Marimuthu, 2016). It might be interesting for firms to know what effect board diversity has on CSR decoupling as this concept has a negative effect on the performance, legitimacy, and financial market outcomes of the firm.

This leads to the following research question: *'How does board diversity influence CSR decoupling, in Dutch firms?'*

This study will contribute to the literature in several ways. Firstly, this study will add to the literature by establishing a relationship between board diversity and CSR decoupling using legitimacy theory and Upper Echelons theory. It can be useful for a firm to know the determinants of CSR decoupling so the board can use this information in their decision-making about CSR decoupling. Besides, those who choose board members can benefit from understanding which board diversity criteria affect CSR decoupling. For example, if a more diverse board leads to less CSR decoupling, if a new board member should be selected this information should be taken into account. Also, following from Upper Echelon theory knowing what board diversity factors influence CSR decoupling can help the strategists of the firm to better predict the competitor's outcomes. For example, if a more gender-diverse board leads to less CSR decoupling, and the competitor has a more gender-diverse board, the firm might be able to predict the outcomes of this diminishing CSR decoupling behavior on the competitor's performance. Thus, this might be an incentive for the firm to select a more gender-diverse board. Overall, this research will increase the understanding of both CSR decoupling and board diversity, and the determinants of CSR decoupling.

This study is constructed as follows. In chapter 2 the relevant literature is discussed. Legitimacy theory and Upper Echelon theory will be described, and definitions of important terms will be given. In chapter 3 the methodological approach and research method will be presented. This chapter highlights the data scope, variables, and data collection that will be used in this research. Chapter 4 will present the research findings and data analysis methods. Finally, in chapter 5 all of this will come together in a conclusion, the research question will be answered, potential limitations will be discussed and future implications will be given.

Chapter 2: Theoretical framework and literature overview

2.1 CSR decoupling

Different definitions of CSR decoupling are being used. García-Sánchez et al. (2021) refer to CSR decoupling as *'the gap between CSR disclosure and CSR performance'* (García-Sánchez et al., 2021, p. 1435). Tashman et al. (2019) define CSR decoupling as *'the symbolic strategy whereby firms overstate their CSR performance in their disclosures to strengthen their legitimacy.'* (Tashman et al., 2019, p. 154).

Bromley & Powell (2012) distinguish 2 levels of decoupling: 1) the gap between means and ends and 2) the gap between policy and practice (Bromley & Powell, 2012). The gap between means and ends means there is a gap between the implementation and the impact of the program, so a symbolic implementation of the policy. Means-ends decoupling explains why firms implement practices that have no clear relationship with the outcomes. The gap between policy and practice means that policies are not fully implemented, so a symbolic adoption of the policy (Bromley & Powell, 2012). Visser et al. (2022) refer to CSR decoupling as the *'inconsistency between external and internal elements of CSR actions'* (Visser et al., 2022, p. 2). In this study, CSR decoupling is defined as the gap between internal and external CSR actions (Hawn & Ioannou, 2016).

Hawn & Ioannou (2016) classify external actions as actions that appeared to be more externally oriented in terms of disclosure (e.g., reporting) and claims. They classify actions as internal when actions are more internally oriented in terms of policies (Hawn & Ioannou, 2016). The accrual of legitimacy through internal CSR actions takes relatively longer to materialize than the accrual of legitimacy through external CSR actions (Hawn & Ioannou, 2016). Thus, firms may focus more on external CSR actions as this takes less time to materialize. However, if firms undertake more internal actions, compared to external actions, this negatively affects firm performance (Hawn & Ioannou, 2016). So, firms should focus on both, as the sum of internal and external actions positively affects firm performance (Hawn & Ioannou, 2016).

The gap between internal and external actions can be defined as either greenwashing or brownwashing. Greenwashing is defined as a firm's behavior *'to exaggerate favorable environmental performance to improve the opinion of one or more stakeholders.'* (Kim & Lyon, 2015, p. 706). Thus, when a firm focuses more on external than internal CSR actions, it can be seen as a 'greenwashing' firm (Hawn & Ioannou, 2016). Whereas brownwashing is defined as *'issuing communications that understate environmental achievements.'* (Kim & Lyon, 2015, p. 706). Thus, when a firm focuses more on internal than external CSR actions, it can be seen as 'brownwashing' (Hawn & Ioannou, 2016). It is important to note here that, unlike the words may seem to indicate, greenwashing and brownwashing are not just about environmental performance, but also about social and governance issues. Firms may understate their charitable

contributions or governance changes such as requiring the board to include gender diversity, as well (Kim & Lyon, 2015).

Legitimacy theory is crucial in explaining how and why (or why not) firms implement CSR policies and then report on this CSR information. Legitimacy theory offers a helpful framework for understanding how organizations engage with their environment and the strategies they use to maintain their legitimacy being confronted with continuously changing social norms and expectations. Suchman (1995) defined legitimacy as '*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.*' (Suchman, 1995, p. 574). It follows from the legitimacy theory that organizations cannot survive if society perceives that the organization has broken its social contract (Deegan, 2002). Society can revoke this social contract, for example by reducing the demand for the organization's products, if it thinks the organization is not operating legitimately. On the other hand, firms are able to change society's perception of legitimacy through disclosures (Deegan, 2002).

Legitimacy theory stresses the importance and power of disclosure. The study by Deegan et al. (2002) confirms that legitimacy theory is an explanation for increasing CSR disclosures (Deegan et al., 2002). Firms use CSR disclosure to improve the perception of stakeholders about their CSR performance (Deegan, 2002). Deegan et al. (2002) state that unless the community is concerned, for example, because of a social or environmental incident, firms will show little or no CSR disclosure (Deegan et al., 2002). Hence, businesses that just respond to stakeholders' concerns are not really adopting the idea of accountability, and only respond to stakeholders' concerns when it aligns with their own goals. Kahn et al. (2020) studied businesses in developing countries with a weak institutional environment and found that firms do indeed feel pressure to disclose CSR information but are not held responsible for not carrying out their CSR policies (Khan et al., 2020). In addition, firms conduct a cost-benefit analysis, and when the benefits of reporting exceed the costs of realizing the actual performance, reporting without taking further action becomes the standard course of action. So, firms use CSR reporting as a way to gain legitimacy without actually implementing the promised CSR practices, which is CSR decoupling (Khan et al., 2020).

Gallego-Álvarez & Quina-Custodio (2016) note that one of the reasons for firms to disclose CSR information is the firm's image to society (Gallego-Álvarez & Quina-Custodio, 2016). Kazmi et al. (2016) also argue that CSR is a way to connect organizations to society. But they add to this that CSR is an opportunity for those in favor of corporate capitalism to align their moral values with their economic interests as well. They present CSR as a way to ensure the continuity and growth of organizations, society,

and future generations as well as a new approach to achieving fairness, which also directly benefits top management (Kazmi et al., 2016). Organizations disclose information about economic, environmental, and social elements as a strategy to lower social and governmental pressure (Gallego-Álvarez & Quina-Custodio, 2016). The information organizations present in their CSR reports is crucial in confirming the legitimacy of their activities (Gallego-Álvarez & Quina-Custodio, 2016). However, actions which are not disclosed will not be able to effectively change the perception of stakeholders (Deegan, 2002). So, when a firm's CSR disclosure does not align with its CSR actions, which is CSR decoupling, it will not be able to change the perception of the firm by stakeholders.

Legitimacy theory also provides useful insights into decision-making processes. Deegan et al. (2002) argue that the decision to disclose information should not be based on perceived legitimacy threats but rather be based on managers' beliefs of what they are accountable for. Also, if there is a legitimacy threat, different managers will consider different legitimizing strategies (Deegan et al., 2002).

2.2 Board diversity

To understand how a firm responds to stakeholders' expectations, the interests and characteristics of individuals within the organization must be explored as well. The board of directors is the top decision-making body in an organization, and it is the responsibility of the board to oversee and direct the business (Whitler & Puto, 2020). The board's main roles are monitoring and governing top management, providing human capital (e.g., knowledge, skills, and experience), and providing social capital (through networks and resources) (Whitler & Puto, 2020). Through board meetings, boards can influence what topics are discussed with top management and thus can form and affect the organization's direction as well as the strategies considered and used to achieve organizational goals. Hartmann & Carmenate (2021) argue that the board can influence a company's engagement in CSR activities and its CSR reputation as perceived by its stakeholders. So, the board can decide about the CSR strategy and if the firm will engage in CSR decoupling. The board composition will influence the board's perception about how they view a certain strategy and the extent to which they will implement this strategy (Whitler & Puto, 2020). Mathis (2004) shows that although external factors (legal requirements, external pressures by for example NGOs, and media coverage) triggered the business world to engage in CSR and when CSR policies are initially under discussion, it is the board of directors and the middle management who lead the process of CSR policies.

Diversity is a reflection of the different skills, knowledge, and experience these board members bring with them and thus enhances the information available for decision-making (Kanadlı et al., 2018). As a consequence, more alternatives will be evaluated to reach a decision choice (Kanadlı et al., 2018). Literature on diversity often makes the distinction between two types of diversity. Firstly, observable diversity refers

to visible characteristics such as ethnicity, age, or gender. Secondly, non-observable diversity refers to less visible or underlying characteristics such as education, technical abilities, functional background, and tenure in the organization (Milliken & Martins, 1996). Hassan & Marimuthu (2016) based on Upper Echelon theory (combined with agency theory), find that a more diverse board has a positive impact on the firm value (Hassan & Marimuthu, 2016).

Upper Echelon theory shows that the knowledge, values, and background of the board are reflected in their decisions (Hambrick & Mason, 1984). The Upper Echelon theory by Hambrick & Mason (1984) sees organizational outcomes as reflections of values and cognitive bases of powerful actors in the organization, such as the board (Hambrick & Mason, 1984). Each decision-maker brings his own set of 'givens' to a situation. These givens reflect his or her cognitive base and values. The cognitive base is the knowledge/assumptions about alternatives, the consequences of these alternatives, and future events (Hambrick & Mason, 1984). The Upper Echelon theory by Hambrick & Mason (1984) states that at the basis of every strategic decision lies the perception of the situation combined with the different values of each board member (Hambrick & Mason, 1984). They define strategic decisions as '*choices made formally and informally, indecision as well as decision, major administrative choices (e.g., reward systems and structure) as well as the domain and competitive choices more generally associated with the term "strategy."*' (Hambrick & Mason, 1984, p. 195). Values are the principles for ordering consequences or alternatives according to their preferences (Hambrick & Mason, 1984, p. 195). As CSR is part of almost every business strategy nowadays, CSR actions can be seen as strategic decisions. Thus, CSR actions are based on the different values board members assigned to the situation.

The Upper Echelons theory also proposes that a heterogeneous group works best in problem-solving and that heterogeneous boards make more efficient decisions compared to homogenous boards (Hambrick & Mason, 1984). One board member cannot scan every aspect of the organization and its environment. So, he/she selectively perceives only some parts of the situation. Next, the selected information about the situation is interpreted through a filter of his/her values and cognitive base (Hambrick & Mason, 1984). When the board is more diverse, it can be expected that more different parts of the situation are perceived, and this information goes through more diverse filters, leading to more information about the organization and its environment. In addition, a more diverse board will consider the consequences of their CSR actions more thoroughly, as every board member might order the consequences differently. A more diverse board is thus preferred, as it collects more information, problems will be solved more easily, and decisions will be made more efficiently.

2.3 The effect of board diversity on CSR decoupling

Post et al. (2011) state that *'ethical and environmental values vary across demographic characteristics'* (Post et al., 2011, p. 2). Hence, board members with different demographic characteristics may have varying perceptions and values regarding CSR. Thus, it is important to consider observable diversity characteristics, such as gender, age, and nationality, when examining the effect of board diversity on CSR decoupling. Most prior research on board diversity focuses on gender, rather than characteristics such as age or nationality. However, the human and social capital of the board is influenced by a wide range of demographic characteristics that interact with one another (Baker et al., 2020). Only focusing on one of these characteristics would be insufficient, therefore to provide a more holistic view, this study will focus on the effect of gender, age, and nationality diversity. In addition, different types of group heterogeneity might have different causes. Therefore, these types of diversity may have various effects (Nielsen, 2010). Thus, this study focuses on multiple proxies for diversity.

2.3.1 Gender

The first aspect of board diversity this study focuses on is the number of female directors on the board compared to the number of male directors on the board. A study by the SER shows that in 2022 the percentage of female directors increased from 14% to 15% for listed companies in the Netherlands (SER, 2022). However, the percentage of female supervisory directors went from 33% to 38% (SER, 2022). By 2026, companies within the EU will need to have 33% women among all directors and 40% women among non-executive directors (European Commission, 2022). The Netherlands already adopted this in national law, as of January 2022 the 'diversity act' stipulates that the board and supervisory board of large public and private companies must consist of at least one-third of men and one-third of women (Staatsblad van het Koninkrijk der Nederlanden, 2021). Whereas the study by the SER focused on all directors, a study by Spencer Stuart shows that 86% of the 50 largest companies on the Euronext Amsterdam had at least 1/3 male and 1/3 female non-executive directors (Spencer Stuart, 2023). The study by Spencer Stuart also reveals that 39% of non-executive directors are women, compared to 18% a decade ago (Spencer Stuart, 2023).

Men and women differ in their characteristics, and these different characteristics might influence CSR decoupling. Due to female psychological traits (e.g., helpfulness, sensitivity, etc.), educational backgrounds, psychological traits, and professional experience, women appear to be more sensitive to sustainability measures than men (Menicucci & Paolucci, 2022). When women take up positions usually held by men, environmental, ethical, and caring values are more likely to be considered in decision-making (Post et al., 2015). Following from Upper Echelon theory women behave more ethically and with less risk aversion than

males because they are more prone to peer pressure (Eliwa et al., 2023). On the other hand, women might be influenced by this male peer pressure, causing them to behave riskier and more unethically.

More female members on the board results in more balanced, concise, clear, comparable, and reliable CSR information thereby improving CSR information transparency and reducing CSR decoupling (García-Sánchez et al., 2019). This is because female directors decrease information asymmetry, more effectively monitor executives, and are more likely to question and report fraudulent reporting incidents (García-Sánchez et al., 2019). Additionally, female directors are less likely to use impression management methods with CSR reports (García-Sánchez et al., 2019). So, female directors are less likely to make the firm look more legitimate than it is, which can be seen as greenwashing. More gender-diverse boards make more informed CSR decisions, as they take into account the needs of different stakeholders (Islam et al., 2022). When board members are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019).

If women are the minority in a group, their voices and values may not be heard or considered (García-Sánchez et al., 2019). The study by Islam et al. (2022) shows the same phenomenon if the majority of the board consists of male directors, women can feel threatened (Islam et al., 2022). If this is the case, their perspectives, knowledge, and skills may not be sufficient to have an impact on CSR decisions (Islam et al., 2022). Hence, if the proportion of women on the board is low, women's voices regarding CSR might not be considered and thus, CSR decoupling might still occur. However, as the proportion of female directors on the board increases, it is more likely that their voices will be heard and will influence board decisions. This is confirmed by Post et al. (2015) who show that companies that have more women on their boards generally behave in a more socially responsible manner than those with no or fewer women (Post et al., 2015). Cabeza-García et al. (2018) found that if there are at least three female directors on the board it will stimulate more CSR disclosure (Cabeza-García et al., 2018). Gull et al. (2022b) also looked at the proportion of female directors on boards and find that a minor representation of female directors on the board already reduces CSR decoupling, however, the larger the proportion of female directors on the board, the more prominently CSR decoupling is reduced (Gull et al., 2022b).

Female board members are less likely to engage in greenwashing behavior (García-Sánchez et al., 2019). As more gender-diverse boards consider the needs of various stakeholders, they make better-informed CSR decisions (Islam et al., 2022). When board members are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019). Besides, female directors through their corporate

governance role, play an important role in stimulating both internal and external CSR activities, leading to less CSR decoupling (Gull et al., 2022b). This leads to the following hypothesis:

H1: Board Gender Diversity has a negative effect on CSR decoupling.

2.3.2 Age

The second aspect of board diversity this study focuses on is the age of the directors on the board. Board age shows the influence of different generations, and consequently of diverse values, motivational goals, cultures, habits, and experiences, on the decision-making approach of directors (Menicucci & Paolucci, 2022). Prior research about Board Age Diversity and CSR focuses on CSR performance or CSR disclosure, instead of CSR decoupling. In addition, Islam et al. (2022) propose that a more age-diverse board improves CSR investment and strategy decisions within firms which in turn improves CSR performance (Islam et al., 2022). Also, Beji et al. (2021) find a positive association between age diversity and CSR performance, specifically for the CSR areas human resources, environment, corporate governance, and human rights issues (Beji et al., 2021). However, Khan et al. (2019) show a negative association between Board Age Diversity and the quality of corporate social responsibility disclosure (Khan et al., 2019). Furthermore, Hassan & Marimuthu found that the age of board members has a positive impact on firm performance (Hassan & Marimuthu, 2016).

Older board members may be at a point in their lives at which financial security is more important, so they might avoid risky actions that disrupt their financial security (Carlsson & Karlsson, 1970). CSR decoupling can be seen as risky behavior, so older board members are less likely to engage in CSR decoupling. Whereas young board members will be more inclined to pursue risky strategies than older board members (Hambrick & Mason, 1984). This might be an implication for younger board members to engage in risky behavior such as CSR decoupling.

Longer-tenured directors are better able to advise management on CSR initiatives because they have a greater understanding of the implications of possible CSR-related actions taken by the company (Gull et al. (2022a)). So longer-tenured directors have a negative impact on CSR decoupling. However, Gull et al. (2022a) also show that if there is tension between short-term profitability and long-term CSR investment, longer-tenured directors will be more likely to choose short-term profitability, and in such conditions are more likely to show CSR decoupling behavior (Gull et al. (2022a)). Tenure can be interrelated with age, as older people usually have a longer tenure and thus more years of work experience. As directors gain experience and knowledge about firms' CSR, they can better align CSR disclosure with performance (Gull

et al., 2022a). Older board members are more likely to have more experience and be more invested in the firm and thus will show less CSR decoupling behavior.

Younger directors are more sensitive to environmental and ethical concerns through logic and principle, whereas older directors are more sensitive to society as a whole and more inclined to contribute to social welfare. Consequently, a combination of young and older directors enhances CSR performance (Islam et al., 2022). In addition, younger people have more knowledge about environmental issues and perceive a higher vulnerability to climate change consequences (Ciocirlan & Pettersson, 2012). Diamantopoulos et al. (2003) find that age is negatively related to (intended) green behavior, while looking at current behavior older people seem to behave more environmentally conscious (Diamantopoulos et al., 2003). Besides, younger people are more knowledgeable about green issues than older people (Diamantopoulos et al., 2003). Furthermore, younger directors show more concern about environmental issues (Post et al., 2011). Thus, it is more likely that younger people truly care about CSR, and therefore are less likely to engage in CSR decoupling. Although younger people state they intend to behave environmentally conscious, younger people are usually not in the position to do so as they lack decision-making power (Ciocirlan & Pettersson, 2012). Hence the combination of younger and older board members might reduce CSR decoupling.

Harrison & Klein (2007) argue that age diversity leads to more balanced decision-making (Harrison & Klein, 2007). Menicucci & Paolucci (2022) also suggest an age-diverse board as different age clusters can benefit the understanding of ESG issues and the improvement of ESG attitudes (Menicucci & Paolucci, 2022). Better-informed board members will be less likely to show CSR decoupling (Graafland & Smid, 2019). Thus, the combination of younger and older board members will benefit the understanding of CSR, consider more perspectives, and increase information, thereby decreasing CSR decoupling. This leads to the following hypothesis:

H2: Board Age Diversity has a negative effect on CSR decoupling.

2.3.3 Nationality

The third aspect of board diversity this study focuses on is the different nationalities that are represented on the board. The proportion of foreign board directors has increased from 38% to 50% over the past decade for the fifty largest companies on the Euronext Amsterdam (Spencer Stuart, 2023). Besides, van Veen & Marsman (2008) show that the Netherlands is the leader in terms of nationality diversity compared to other European countries and therefore operates more progressively (van Veen & Marsman, 2008). In addition, when ownership changes are realized, Dutch firms do not show nationalistic feelings, indicating a more open attitude towards different nationalities on the board (van Veen & Marsman, 2008). Earlier research

about Board Nationality Diversity focuses on financial performance (Carter et al., 2007), market capitalization, independence, and workforce (Singh, 2007), or tax avoidance (Alshabibi et al., 2022). Yet, Harjoto & Yang (2018) find a positive relationship between Board Nationality Diversity and CSR (Harjoto & Yang, 2018). Khan et al. (2019) argue that both gender and national diversities are the firms' most valuable resources, thereby having the most potential to improve the quality of CSR disclosure (Khan et al., 2019). Yet, the effect of Board Nationality Diversity on CSR decoupling remains an unexplored research question.

Directors with various backgrounds may have different perspectives on whether the organizational objective is to maximize stakeholders' or shareholders' interests (Harjoto & Yang, 2018). Additionally, Harjoto & Yang (2018) find that foreign directors from Europe and Australia are associated with higher CSR and CSR strengths than North American directors (Harjoto & Yang, 2018). This might be explained by the culture in these different regions. Whereas the Anglo-American culture is more individualistic, result-oriented, and shareholder-focused, European culture focuses more on community, is less result-driven, and is more stakeholder-focused (Harjoto & Yang, 2018). The Netherlands has an egalitarian culture, employees treat each other as colleagues and are expected to treat each other with respect at all levels of the organizational hierarchy. One characteristic of Dutch culture is the tendency for everyone to be involved. Furthermore, Dutch people are known for being 'opinionated' both domestically and abroad (Remmé, 2015). One paradox of Dutch culture is revealed by this: *'everyone wants to be left alone, but they also all have opinions about other people'* (Remmé, 2015, p. 95). In addition, the Dutch culture is very individualistic. This in combination with the egalitarian culture, makes it difficult for managers to express criticism, because criticism might be seen as undermining egalitarian relationships (Remmé, 2015).

Harjoto & Yang (2018) find that Board Nationality Diversity is positively correlated with CSR strengths, but not with CSR concerns. This suggests that there lies value in nationality diversity for companies seeking to go beyond regulatory compliance and increase voluntary CSR activities. This might imply that more nationality-diverse boards want to go beyond and voluntarily increase CSR activities, and thus are less likely to show CSR decoupling.

According to van Veen & Marsman (2008), differences in nationality diversity in European companies are mainly driven by differences in the national institutional frameworks and, to a lesser extent, by organizational characteristics (van Veen & Marsman, 2008). Therefore, it is likely board members are only selected because of institutional pressures, and not because companies truly want to have a nationality-diverse board. Because of this, these board members might feel isolated from the rest of the board. People

who believe they are not connected to the other group members may withhold contributions to the group (Milliken & Martins, 1996). This may result in poorer communication and cooperation, which might increase CSR decoupling. The study by Islam et al. (2022) shows that directors need to share common values in order to acknowledge the interests of stakeholders (Islam et al., 2022). A less nationality-diverse board is more likely to share common values but may lack different perspectives. Thereby a less diverse board might not consider the wide range of consequences of their CSR actions, leading to less information about the organization and environment, which might in turn lead to CSR decoupling. This leads to the following hypothesis:

H3: Board Nationality Diversity has a negative effect on CSR decoupling

2.3.4 Total Board Diversity

A more diverse board brings together a wider range of perspectives, which can enhance problem-solving abilities and lead to more efficient decision-making (Hambrick & Mason, 1984). Besides, a more diverse board has a positive impact on firm value (Hassan & Marimuthu, 2016). Also, if there is a legitimacy threat, a more diverse board will consider different legitimizing strategies, as more diverse board members bring various insights (Deegan et al., 2002).

Graafland & Smid (2019) find that giving the responsibility for CSR to the board level reduces decoupling by strengthening the quality of CSR programs. Allocating CSR at the board level is a signal to external stakeholders that the company is truly committed to CSR. As committed board members will not accept communications that can be decoupled from practices, and thus stimulate employees to behave socially responsibly. Because of this, expectations from society will rise and thus the firm will have another incentive to align its CSR practices with its impacts (Graafland & Smid, 2019). So, when the board is truly committed to CSR, it will not accept CSR decoupling within its organization.

Firms hire more diverse board members to match the increased diversity represented in their markets (Milliken & Martins, 1996). Organizations might do this to look more legitimate to society. As stakeholders seek more representation of women and minorities on the board, board diversity characteristics will have an impact on firms' decision-making processes and their CSR initiatives (Hartmann & Carmenate, 2021). Because of this stakeholders demand, boards will become more diverse, and thus a broader range of interests might be considered.

However, board heterogeneity may have a negative impact on the individual's satisfaction because the individual may not be able to identify or integrate within the group and thus may withhold contributions to

the group (Milliken & Martins, 1996). In this case, different perspectives will not be noticed, leading to less information being available and board members being less informed. As the individual feels more integrated, the barrier will be overcome, and the minority's voice will be heard. For board heterogeneity to increase information and thereby decrease CSR decoupling, the individual needs to feel integrated within the board. However, dominant Upper Echelon reasoning assumes equality of individual effects (Nielsen, 2010). Thus, based on Upper Echelon theory every individual contributes equally to the group and thus neglects the need for integration and openness within a heterogeneous group.

Also, more diverse groups make higher-quality decisions, because opinions held by the majority are enriched by the counterarguments of the minority (Milliken & Martins, 1996). Besides, decision-making quality improves because more diverse groups reason more realistically and look at more complex ways to their environment (Milliken & Martins, 1996). In line with the Upper Echelon theory, this will lead to more different perspectives on a topic such as CSR. When the board consists of more diverse members, a broader range of aspects of the situation will be noticed, which will lead to a more comprehensive understanding of the organization and its environment. When board members are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019).

A more diverse board will consider a wider range of perspectives leading to more enhanced problem-solving, more efficient decision-making, higher quality decisions, and a more comprehensive understanding of the organization and its environment (Hambrick & Mason, 1984; Hassan & Marimuthu, 2016; Milliken & Martins, 1996). In addition, more diverse boards foster a culture of CSR commitment and accountability (Graafland & Smid, 2019). This in combination with the expected negative sign for the various board diversity proxies (gender, age, and nationality) leads to the following hypothesis:

H4: Board Diversity has a negative effect on CSR decoupling

Chapter 3: Methodology

3.1 Sample and data collection

In order to find the effect of board diversity on CSR decoupling, a panel data set covering 6 years (2016-2021) for Dutch firms included in the Refinitiv database was compiled. Panel data was used as time series or cross-sectional data would have fallen short of the research question.

This study focused on the period 2016-2021, as many earlier studies (García-Sánchez et al., 2021; Graafland & Smid, 2019; Hawn & Ioannou, 2016; Marquis et al., 2016; Sauerwald & Su, 2019; Tashman et al., 2019; Visser et al., 2022) focus on the period before 2016. As the Thomson Reuters ASSET4 database was taken over by Refinitiv in 2016, some definitions of relevant data points have been adjusted. However, to correct for this an adapted method based on the method used by Visser et al. (2022) and Hawn & Ioannou (2016) was used. Besides this study focused on the period 2016-2021, as from 2012 to 2014 there was a sovereign debt crisis in Europe, which might have affected the outcomes.

The data for the variable CSR decoupling as well as some of the control variables were taken from Refinitiv. Refinitiv data was used as it includes transparent, accurate, and comparable environmental, social, and governance (ESG) data (Refinitiv, 2022). The Refinitiv database consists of 630 different ESG metrics. The database provides ESG scores on resource use, emissions, innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy. Besides, it provides an overall ESG combined (ESGC) score. These scores are available for 12.500 public and private companies globally, for the period 2002-2022 (Refinitiv, 2022). The data for the board diversity determinants of age, gender, and nationality, as well as some of the control variables, were taken from BoardEx.

In order to study the effect of Board Age Diversity (BAD), Board Gender Diversity (BGD), and Board Nationality Diversity (BND) on CSR decoupling a quantitative study was conducted. Stata was used to analyze the panel data and to conduct multiple regression analyses. The dependent variable (Y) is CSR decoupling. The independent variables are Board Gender Diversity (BGD), Board Age Diversity (BAD), and Board Nationality Diversity (BND). The control variables (X) are size, financial resources, tenure, year, and sector. A combination of all explanatory variables was expected to affect the dependent variable.

3.2 Variables

3.2.1 Dependent variable

The dependent variable, CSR decoupling (*CSR_Decoupling*), was measured based on an adapted method using the method of Hawn & Ioannou (2016) for the variable CSR decoupling after 2016. Hawn & Ioannou (2016) classified 120 Thomson Reuters (ASSET4) data points into two categories: internal and external actions. In their research, the internal actions category included ‘*corporate policy questions as well as*

several quantitative indicators of CSR implementation' and the external actions category included '*claims that firms make and disclosures they issue*' (Hawn & Ioannou, 2016, p. 18). The same categorization was used in this study. This adapted method meant looking for each item used in the study by Hawn & Ioannou (2016) and whether this item was available in Refinitiv. If not so, the item was replaced with a reasonable proxy in the renewed Refinitiv database. This resulted in 20 data points for internal actions and 24 data points for external actions, see Appendix A.

The first 3 data points for internal actions were measured as a percentage, but all the other data points were binary variables. In order to transform the percentages into binary variables, the mean of the variable in a certain year was calculated. If the value of the variable was greater than the mean the variable got a 1, otherwise, it got a 0. CSR decoupling was calculated as the difference between the score of external CSR actions and the score of internal CSR actions. In this measure, every difference between the score of external and internal actions represented CSR decoupling, with higher values indicating higher levels of CSR decoupling. Where a score higher than 0 means greenwashing, and a score lower than 0 means brownwashing.

The stock of intangible CSR resources in a given period is likely to be the outcome of current external activities combined with prior internal actions (Hawn & Ioannou, 2016). Therefore, internal actions were lagged by 1 year. Hence, a new CSR decoupling variable (*CSR_Decoupling_lag*) was calculated as the difference between the score of external CSR actions and internal actions lagged by 1 year.

CSR decoupling was calculated as the absolute difference between external and internal CSR actions. However, the absolute score on external and internal CSR actions did matter. For example, firm A had an internal CSR Score of 6 and an external CSR Score of 4, while firm B had an internal CSR Score of 20 and an external CSR Score of 18. Both firm A and firm B had a value of 0,056 (2/36) for *CSR_decoupling*, however firm B was more committed to CSR as their *CSR_Score* is 38, while firm A only had a *CSR_Score* of 10. To correct for robustness, CSR decoupling was also measured by the variable *CSR_Score*, which is the sum of internal CSR actions and external CSR actions.

3.2.2 Independent variables

The independent variable Board Gender Diversity was measured using the variable '*BGD*'. This variable included the proportion of female directors selected at the annual report date (BoardEx, 2020). A higher BGD value indicated that the board consisted of fewer different genders.

The independent variable Board Age Diversity (*BAD*) was measured in two ways.

First, board members were categorized into generations based on their year of birth. As different age cohorts learn and know very different things that might contribute to different views on a topic (Harrison & Klein, 2007). The categorization is based on the generation list by Pew Research Center (2019):

1. Silent Generation: Born between 1928 and 1945
2. Baby Boomers: Born between 1946 and 1964
3. Generation X: Born between 1965 and 1980
4. Millennials: Born between 1981 and 1997
5. Generation Z: Born between 1998 and 2012
6. Generation Alpha: Born after 2012

(Pew Research Center, 2019)

Generation Alpha and Generation Z were not included in the sample as the year of birth for the sample ranged from 1939 to 1988. With this categorization, four dummy variables were made, where category 1 reflected the youngest and category 4 reflected the oldest generation. The reference category is Millennials because it has the lowest frequency count, this means the other categories (Generation X, Baby Boomers, and Silent Generation) are compared to Millennials. Based on these year of birth categories the variable '*BAD*' was made, by calculating the unique number of generation categories each board consisted of and dividing this by the number of generation categories (4). A higher *BAD* value indicates that the board consists of more different generation categories.

Second, in order to correct for robustness Board Age Diversity was also measured by the average age of the board of directors (*Age_mean*). This variable was created, by summing up the age of all directors on the board and dividing this by the number of directors on the board.

The independent variable Board Nationality Diversity was measured based on the variable '*BND*'. This variable included the proportion of directors from different countries at the annual report date selected (BoardEx, 2020). A lower *BND* value indicated that the board consisted of more different nationalities.

Besides, the variable '*TBD*' was made by summing up the values for Board Age Diversity (*BAD*), Board Gender Diversity (*BGD*), and Board Nationality Diversity (*BND*) and dividing this by three. Because of this Total Board Diversity indicator, the general effect of board diversity on CSR decoupling can be studied as well.

3.2.3 Control variables

Bigger firms have more possibilities to diversify their board, for example by hiring more women. So, diversity can be influenced by the size of the board, thus a control variable for size was added. Besides, smaller firms lack experience and knowledge about the implementation of CSR programs, which can lead

to more CSR decoupling (García-Sánchez et al., 2021; Graafland & Smid, 2019). The variable '*Board_size*' was measured as the number of executive directors, supervisory directors, or all of the directors at the annual report date selected (BoardEx, 2020).

As CSR practices are expensive, firms need to have enough financial resources to be able to translate CSR policies into CSR programs (García-Sánchez et al., 2021; Graafland & Smid, 2019). As financial resources increase a firm's relative environmental performance will improve in the next period (Clarkson et al., 2011). So, *REV* and *TA* were added as control variables for financial resources. The variable '*REV*' measured as gross sales and other operating revenue less discounts, returns and allowances.. '*TA*' measured The sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.

Tenure can be interrelated with age, as older people have a longer tenure and thus more years of work experience. Longer-tenured directors are better able to advise management on CSR initiatives because they have a greater understanding of the implications of possible CSR-related actions taken by the company (Gull et al., 2022a). As directors gain experience and knowledge about firms' CSR, they can better align CSR disclosure with performance (Gull et al., 2022a). As tenure is interrelated with age, and might negatively affect CSR decoupling, a control variable for tenure was added. This was measured using the variable '*Tenure_b*', which measured the time on the board for each board member. As this study focuses on the board level, '*Tenure_b*' was used in the main analysis. However, to correct for robustness, tenure was also measured by the variable '*Tenure_c*'. '*Tenure_c*' measured the time in the company for each board member.

Finally, dummy variables were added to control for specific effects. Year dummies were included in order to control for factors that vary over time but are constant among the firms. In some industries, CSR may be more important than in others, and also some industries will have more diverse boards than others. For example, the study by Hawn & Ioannou (2016) showed that natural resources and extractive industries show a costly gap between internal and external CSR actions (Hawn & Ioannou, 2016). Thus, industry dummies were included to control for industry-specific effects. Industry is classified using the FTSE International classification (BoardEx, 2020).

The definitions and sources of the dependent, independent, and control variables are shown in table 3.1.

Variable Name	Definition	Database
Age_mean	Sum of the age of each director divided by number of directors on the board	BoardEx
BAD	The unique number of age categories each board consisted of divided by the number of age categories (5).	BoardEx
BGD	The proportion of female directors selected at the annual report date	BoardEx
BND	The proportion of directors from different countries at the annual report date selected	BoardEx
Board_Size	The number of executive directors, supervisory directors, or all of the directors at the annual report date selected	BoardEx
CSR_Decoupling	Gap between external CSR actions and internal CSR actions	Refinitiv
CSR_Decoupling_lag	Gap between external CSR actions and internal CSR actions (one-year lagged)	Refinitiv
CSR_Score	The sum of internal CSR actions and external CSR actions	Refinitiv
Industry	A vector of dummy variables based on the Industry (FTSE International classification) in which the firm operates	BoardEx
REV	Gross sales and other operating revenue less discounts, returns and allowances.	Refinitiv

TA	The sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.	Refinitiv
TBD	The sum of BAD, BGD and BND divided by 3	BoardEx
Tenure_b	Time on the board for the individual at a selected annual report date	BoardEx
Tenure_c	Time in the company for the individual at a selected annual report date	BoardEx
Year	A vector of year dummies.	

Table 3.1: Definitions of the variables used in the analyses.

3.3 Econometric model and methodology

Because of the use of panel data which has the potential to be clustered at the firm level, a fixed effects model was used to account for the time-invariant unobserved heterogeneity at the board level. Existing literature in this topic had also used a fixed effects model which keeps the non-random parameters such as year, firm, and industry constant (García-Sánchez et al., 2022; Gull, Hussain, Khan, Khan, et al., 2022; Gull, Hussain, Khan, Nadeem, et al., 2022; Hawn & Ioannou, 2016; Tashman et al., 2019). To test hypotheses 1-3, the following equation model was used, where Board Age Diversity (BAD), Board Gender Diversity (BGD), and Board Nationality Diversity (BND) explain variation in CSR decoupling while controlling for size, financial resources, tenure, year, and industry (X):

$$CSR_Decoupling = \beta_0 + \beta_1 * BGD + \beta_2 * BAD + \beta_3 * BND + \beta_4 * X + \theta + \epsilon$$

The coefficient β_0 is the value of the dependent variable (CSR_Decoupling) when all other variables and the error term are zero. A multivariate regression coefficient (β_1 - β_4) indicates the change in the dependent variable associated with a one-unit increase in the independent variable, holding the other independent variables in the equation constant. X is the factor for all control variables. θ include the fixed effects. ϵ stands for the error term.

Table 3.2 shows how this equation can be represented schematically with a conceptual model:

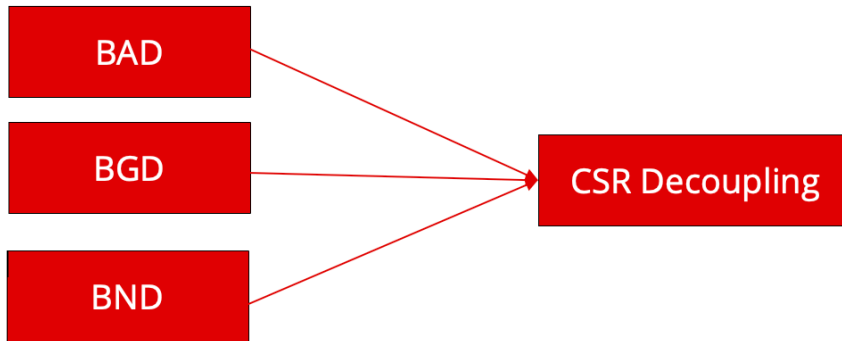


Table 3.2: Conceptual model 1

Second, the same analysis was conducted, however, the dependent variable *CSR_Decoupling* was replaced with the variable *CSR_Decoupling_lag*. *CSR_Decoupling_lag* represented the difference between the score of external CSR actions and the score of internal CSR actions lagged by 1 year. This led to the following equation:

$$CSR_Decoupling_lag = \beta_0 + \beta_1 * BGD + \beta_2 * BAD + \beta_3 * BND + \beta_4 * X + \theta + \epsilon$$

Thirdly, an additional analysis was conducted with the Total Board Diversity variable (*TBD*), in order to test hypothesis 4 and see what the general effect of board diversity is on CSR decoupling. This led to the following equation, where Total Board Diversity (*TBD*) explains variation in CSR decoupling while controlling for size, financial resources, year, and sector (*X*):

$$CSR_Decoupling = \beta_0 + \beta_1 * TBD + \beta_2 * X + \theta + \epsilon$$

Table 3.3 shows how this equation can be represented schematically with a conceptual model:

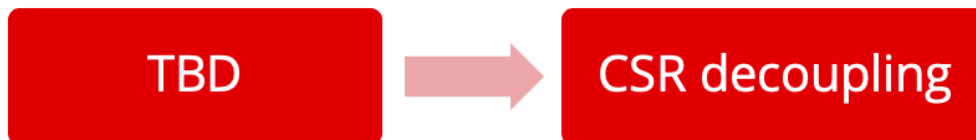


Table 3.3: Conceptual model 2

Finally, the same analysis was conducted, however, the dependent variable *CSR_decoupling* was replaced with the variable *CSR_Decoupling_lag*. *CSR_Decoupling_lag* represented the difference between the score of external CSR actions and the score of internal CSR actions lagged by 1 year. This lead to the following equation:

$$CSR_decoupling_lag = \beta_0 + \beta_1 * TBD + \beta_2 * X + \theta + \epsilon$$

Chapter 4: Results

4.1 Descriptive statistics

The sample consisted only of companies from the Netherlands. The sampled companies were categorized by industry to control for industry effects. The sample consisted of unbalanced panel data as some firms had missing years for at least some cross-sectional units in the sample (Wooldridge, 2012, p. 491). However, every firm had observations for at least one firm year. The original dataset consisted of 298 observations, however after removing missing values this resulted in 230 observations. The variables *REV* and *TA* were divided by 1.000.000 euros to make them more fitting.

Table 4.1 shows the summary statistics of the dataset.

Variable	Observations	Mean	Standard deviation	Min	Max
CSR Decoupling	231	-0,462148	0,3432581	-0,9047619	0,6
CSR Decoupling lag	231	-0,3930901	0,3771223	-0,9047619	0,84
BGD	231	0,2487056	0,1108929	0	0,5
BAD	231	0,3593074	0,1766535	0,25	1
BND	231	0,4385281	0,2895807	0	0,8
TBD	231	0,348847	0,1234373	0,0833333	0,7146667
REV	231	8,095933	13,42838	-0,037668	66,26
Board Size	231	9,229437	2,674225	3	21
TA	231	50,24086	152,0962	0,076592	950,333
Tenure b	231	5,017749	4,416558	0	26
CSR Score	231	15,42424	9,786509	0	40
Age mean	231	58,5908	3,656843	47,28571	69
Tenure c	231	6,005628	5,799949	0	32,8

Table 4.1: Summary statistics

The average CSR decoupling score was -0,46 (or -0,39 when internal actions are lagged), which showed that on average the firms in the sample undertook more internal than external CSR practices, which can be seen as brownwashing. The average CSR Score was 15,42, with a maximum of 40. The average BGD score was 0,25, which indicated that on average only 25% of the board members were female. The average BAD score was 0,36, which indicated that the average board in the sample represented 1,8 different age generations. 69,09% of the board members in the sample was a Baby Boomer, 26,62% was Generation X, 3,34% was the Silent Generation, and 1,08% was a Millennial (see Appendix B table B.2). The mean of Age_mean was approximately 59, meaning that the average age of all board members for the average board in the sample is 59. With respect to the control variables, the average revenue of the firms in the sample was 8,09 million (euros) and their average total assets represented 50 million (euros). The average board size of the firms in the sample was 9,23 and the board members on average spent 5,02 years on the board and 6 years in the company. 64,98% of the board members in the sample were Dutch, 6,91% were French, 5,07% were American, and 23,04% had another nationality (see Appendix B table B.3).

A boxplot was made of *CSR_Decoupling*, to look for outliers (see Appendix B graph B.1). The boxplot showed that the first quartile was -0,7619, which meant that 25% of the observations had a value of -0,7619 or lower. The median was -0,5238, indicating that 50% of the observations had a value of -0,5238 or lower. The third quartile was -0,1314, meaning that 75% of the observations had a value of -0,1314 or lower, and thus only 25% had a value of -0,1314 or higher. The lowest value was -0,9048 and the highest value was 0,6. As *CSR_Decoupling* is the external CSR actions score minus the internal CSR actions score, this meant that most of the firms in the sample did decouple CSR actions and especially focused more on internal than external CSR actions (which can be seen as brownwashing). A frequency table (see Appendix B table B.4) depicted that 40 observations had a value of 0 on *CSR_decoupling* which meant that the external CSR actions equal the internal CSR actions, thus these firms did not decouple their CSR actions. However, 185 observations were smaller than 0 so, did indicate CSR decoupling and especially focused more on internal CSR actions than external CSR actions (which can be seen as brownwashing). 5 observations were greater than 0 which indicated CSR decoupling, with a focus more on external CSR actions than internal CSR actions (which can be seen as greenwashing).

A boxplot was also made of *CSR_Decoupling_lag*, to check for outliers (see Appendix B graph B.2). The boxplot showed that the first quartile was -0,7143, which meant that 25% of the observations had a value of -0,7143 or lower. The median was -0,4762, indicating that 50% of the observations had a value of -0,4762 or lower. The third quartile was 0, meaning that 75% of the observations had a value of 0, or lower, and thus only 25% had a value of 0 or higher. The lowest value was -0,9048 and the highest was 0,84. The boxplot showed that 25% of the observations had a value of 0 or higher on *CSR_Decoupling_lag*, as *CSR_Decoupling_lag* is the external CSR actions minus the internal CSR actions score lagged with 1 year, this meant that 25% of the firms in the sample did decouple CSR actions and especially focused more on external than internal CSR actions (which can be seen as greenwashing). A frequency table (see Appendix B table B.5) depicted that 56 observations had a value of 0 on *CSR_decoupling_lag* which meant that the external CSR actions equal the internal CSR actions (lagged with 1 year), thus these firms did not decouple their CSR actions. However, 166 observations were smaller than 0 and thus did indicate CSR decoupling, and especially focused more on internal CSR actions (lagged with 1 year) than external CSR actions (which can be seen as brownwashing). 8 observations were greater than 0, which indicated CSR decoupling, with a focus more on external CSR actions than internal CSR actions (which can be seen as greenwashing). The dataset was separated in 'greenwashing' firms (if CSR decoupling > 0) and brownwashing firms (if CSR decoupling < 0). However, there were too few observations for both greenwashing and brownwashing to conduct a separate analysis.

As there were 20 data points for internal actions and 24 data points for external actions (see Appendix A), *CSR_Score* can range from 0 to 44. *CSR_Score* was normally distributed (see Appendix C graph C.3). A boxplot was made of *CSR_Score* to look at the data in more detail (see Appendix E graph E.1). *CSR_Score* ranged from 0 to 40 (see table 4.1). The median is 15, which suggested that approximately 50% of the observations in the dataset had values above 15. The interquartile range ranged from 10 to 19. The first quartile was 10, which meant approximately 25% of the observations in the dataset had values below 10. The third quartile is 19, which meant that approximately 75% of the observations in the dataset had values under 19, so only 25% of the observations had values above 19. A frequency table (see Appendix E table E.1) showed that 45 observations in the dataset had values above 22 on *CSR_Score*, and 185 observations in the dataset had values under 22 on *CSR_Score* (see Appendix E table E.1). However, 40 observations in the dataset had a value of 0 on *CSR_Score*, meaning that these companies did not conduct any CSR actions at all. So, these observations were deleted from the dataset.

As the standard deviation of some of the variables was quite high, which suggests that the data was not clustered around the mean, the normal distribution of the variables needed to be inspected. Therefore, for each variable, the quadratic and logarithmic term was generated. The quadratic term improved the normal distribution of *TBD* and *CSR_decoupling* (see Appendix C). Furthermore, the normal distribution of *REV*, *Board_Size*, *TA*, *Tenure_b*, and *Tenure_c* improved with the logarithm term (see Appendix C). However, the logarithm of a negative value cannot be determined, thus *REV* was used in its original form (as the minimum of *REV* was -0,038, see table 4.1). With this transformation, the standard deviation and the dispersion of the data decreased, leading to a more reliable dataset. This led to the following summary statistics:

Variable	Observations	Mean	Standard deviation	Min	Max
<i>CSR_Decoupling</i>	230	0,3303028	0,2834976	0	0,8185941
<i>CSR_Decoupling_lag</i>	230	- 0,3924721	0,371501	- 0,9047619	0,84
<i>BGD</i>	230	0,2492261	0,110037	0	0,5
<i>BAD</i>	230	-1,156742	0,345205	-1,386294	0
<i>BND</i>	181	- 0,6691194	0,4348736	-1,609438	- 0,2231435
<i>TBD</i>	230	0,340829	0,1142	0,0833333	0,6166667
<i>REV</i>	230	7,622801	12,30613	-0,037668	66,26
<i>Board Size</i>	230	2,182669	0,2845715	1,098612	2,890372
<i>TA</i>	230	1,721443	1,990332	-2,569263	6,856812
<i>Tenure b</i>	228	1,29754	0,9326244	-2,302585	3,292126
<i>CSR_Score</i>	230	15,27391	9,79166	0	40
<i>Age_mean</i>	230	58,63735	3,591439	47,28571	69

Tenure c	228	1,454793	0,9229751	-1,609438	3,459466
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Table 4.2: Summary statistics after transformation

The correlation between variables was inspected, by calculating the Pearson correlation coefficient (see Appendix D table D.1). If the correlation coefficient is high, there is a strong correlation between two variables and there is a possibility of multicollinearity. A value of 0.80 is often taken as an absolute value for high correlation (Stundenmund, 2017, p. 233). All correlation coefficients were smaller than 0,8 so there was no strong correlation. There was a high (significant) correlation (0,76) between *TBD* and *BND*, but this can be explained by the fact that *TBD* consisted of *BND* (among *BGD* and *BAD*). However, the correlation between *TBD* and *BAD* (0,295) and *TBD* and *BGD* (0,504) was much lower. There was a positive correlation between *CSR_Decoupling* and *BGD*, *BAD*, *BND*, *TBD*, *Board_Size*, *TA*, and *Tenure_b*. This for example meant that as the board became more gender diverse (thus more female board members), the board showed more CSR decoupling. There was a negative correlation between *CSR_decoupling*, and *REV*. This for example meant that as the firm made more revenue, the board showed less CSR decoupling. There was a positive correlation between *CSR_Decoupling_lag* and *REV*, *Board_Size*, and *TA*. Also, there was a negative correlation between *CSR_decoupling_lag* and *BGD*, *BAD*, *BND*, *TBD*, and *Tenure_b*.

To test for multicollinearity, a VIF test was performed with *BGD*, *BAD*, and *BND* as the independent variables in the regression analysis. The VIF measures how much multicollinearity has increased an estimated coefficient's variance (Stundenmund, 2017, p. 234).

	VIF	1/VIF
TA	2,634	0,38
REV	2,088	0,479
Board Size	1,605	0,623
BND	1,222	0,818
BGD	1,184	0,845
Tenure b	1,055	0,948
BAD	1,046	0,956
Mean VIF	1,548	.

Table 4.3: VIF test

A rule of thumb is that if the VIF is greater than 5, the multicollinearity is significant. As all the VIF scores were smaller than 5, there was no indication of multicollinearity.

In addition, a VIF test was performed for the regression with *TBD* as the independent variable.

	VIF	1/VIF
TA	2,456	0,407
REV	1,947	0,514
Board Size	1,694	0,59
TBD	1,3	0,769
Tenure b	1,034	0,967
Mean VIF	1,686	.

Table 4.4: VIF test

As all the VIF scores are smaller than 5, there was again no indication of multicollinearity.

To test for heteroskedasticity, a Breusch-Pagan test was conducted with *CSR_Decoupling* as the dependent variable and *BGD*, *BAD*, and *BND* as the independent variables (see Appendix D table D.2). H_0 states there is homoskedasticity, so the residuals are distributed with equal variance. H_0 was not rejected because $\text{Prob} > \chi^2 = 0,2948 > 0,05$. Therefore, it can be concluded that there was homoskedasticity. Also, the residuals plot (see Appendix D graph D.1) showed there was homoskedasticity

An additional Breusch-Pagan test was conducted with *CSR_decoupling_lag* as the dependent variable and *BGD*, *BAD* and *BND* as the independent variables (see Appendix D table D.3). H_0 was not rejected because $\text{Prob} > \chi^2 = 0,9056 > 0,05$. Therefore, it can be concluded that there was homoskedasticity. Also, the residuals plot (see Appendix D graph D.2) depicted there was homoskedasticity.

In addition, a Breusch-Pagan test was conducted with *CSR_Decoupling* as the dependent variable and *TBD* as the independent variable (see Appendix D table D.4). H_0 was not rejected because $\text{Prob} > \chi^2 = 0,0758 > 0,05$. Therefore, it can be concluded that there was homoskedasticity. Also, the residuals plot (see Appendix D graph D.3) showed there was homoskedasticity.

An additional Breusch-Pagan test was conducted with *CSR_Decoupling_lag* as the dependent variable and *TBD* as the independent variable (see Appendix D table D.5). H_0 was not rejected because $\text{Prob} > \chi^2 = 0,6338 > 0,05$. Therefore, it can be concluded that there was homoskedasticity. Also, the residuals plot (see Appendix D graph D.4) showed there was homoskedasticity.

A Skewness-kurtosis test was carried out to test if the residuals for the regression with *CSR_Decoupling*, *BGD*, *BAD*, and *BND* were normally distributed (see Appendix D table D.6). The null hypothesis states that the residuals are normally distributed. Overall, this test showed that the residuals were not normally distributed, as the p-value (0,0917) was greater than the critical p-value of 0,05, so the null hypothesis was not rejected. Then a kernel-density plot (see Appendix D graph D.5) and a probability plot (see Appendix D graph D.6) were conducted to show if the residuals were normally distributed. These graphs showed that the residuals were not normally distributed.

An additional skewness-kurtosis test was conducted for the residuals for the regression with *CSR_Decoupling_lag*, *BGD*, *BAD*, and *BND* (see Appendix D table D.7). Overall, this test showed that the residuals were normally distributed, as the p-value (0,012) was smaller than the critical p-value of 0,05, so the null hypothesis was not rejected. The p-value of the kurtosis test was 0,1050, which indicated that the residuals were significantly different from the skewness of a normal distribution at the 5% significance

level. However, based on the skewness test alone, the null hypothesis that the residuals are normally distributed can not be rejected, as the p-value (0,0072) was greater than the critical p-value of 0,05. Thus the residuals (for the regression with *CSR_Decoupling_lag*, *BGD*, *BAD*, and *BND*) were not skewed but did show significant kurtosis. Then a kernel-density plot (see Appendix D graph D.7) and a probability plot (see Appendix D graph D.8) were created to show if the residuals were normally distributed. These graphs showed that the residuals (lag) were normally distributed.

In addition, a skewness kurtosis test was conducted for the residuals for the regression with *CSR_Decoupling*, and *TBD* (see Appendix D table D.8). Overall, this test showed that the residuals were normally distributed, as the p-value (0,0906) was greater than the critical p-value of 0,05, so the null hypothesis was not rejected. Then a kernel-density plot (see Appendix D graph D.9) and a probability plot (see Appendix D graph D.10) were created to show if the residuals were not normally distributed. These graphs showed that the residuals (lag) were normally distributed.

An additional skewness-kurtosis test was conducted for the residuals for the regression with *CSR_Decoupling*, and *TBD* (see Appendix D table D.9). Overall, this test showed that the residuals were not normally distributed, as the p-value (0,0037) was smaller than the critical p-value of 0,05, so the null hypothesis was rejected. Then a kernel-density plot (see Appendix D graph D.11) and a probability plot (see Appendix D graph D.12) were generated to show if the residuals were normally distributed. These graphs also showed that the residuals (lag) were normally distributed.

The assumption of normality for the error terms is not required for OLS estimation, but it should be taken into account in hypothesis testing (Stundenmund, 2017, p. 99).

Because the dataset contained panel data, the dataset could not be tested for autocorrelation.

4.2 Hypothesis testing

A fixed effects regression was conducted to test hypotheses 1 to 3 (see table 4.5). Hypotheses 1 to 3 expected a negative effect of respectively Board Gender Diversity, Board Age Diversity, and Board Nationality Diversity on CSR decoupling. In model 1 *CSR_Decoupling* was taken as the measure for CSR decoupling, in model 2 *CSR_Decoupling_lag* was taken as the measure for CSR decoupling.

VARIABLES	Model 1 CSR Decoupling	Model 2 CSR Decoupling lag
BGD	-0,269 (0,286)	-0,0562 (0,349)
BAD	0,00895	-0,104**

	(0,0426)	(0,0521)
BND	0,128	-0,188
	(0,101)	(0,124)
REV	-0,000363	0,00312
	(0,00624)	(0,00762)
Board_Size	-0,205	0,128
	(0,143)	(0,175)
TA	0,0350	-0,0358
	(0,0555)	(0,0678)
Tenure_b	0,0231	-0,00423
	(0,0162)	(0,0198)
Constant	0,793**	-1,014**
	(0,345)	(0,422)
Observations	181	181
R ²	0,173	0,673
Number of BoardID	44	44

Standard errors in parentheses

*** p<0,01, ** p<0,05, * p<0,1

Note: Results on industry, and year dummies effects were not reported for parsimony.

Table 4.5: Regression results for *CSR_Decoupling* (model 1) and *CSR_Decoupling_lag* (model 2)

Model 1 showed a within R² of 0,1728 indicating that around 17,28% of the variation in *CSR_Decoupling* was explained by the included variables taking into account the within-group variation. In model 1 *BGD* ($\beta = -0,269$) had a negative effect on *CSR_Decoupling* however, this effect was insignificant ($p > 0,1$). This is in line with the expectations (although the result is insignificant), indicating that firms with more gender-diverse boards were less likely to decouple their CSR actions. Model 1 revealed a positive relationship between respectively *BAD* ($\beta = 0,009$) and *BND* ($\beta = 0,128$) and *CSR_Decoupling* however, these relationships were also insignificant ($p > 0,1$). This contradicts with hypotheses 2 and 3 (although the results are insignificant).

Model 2 revealed a within R² of 0,6735, thus 67,35% of the variation in *CSR_Decoupling_lag* was explained by the included variables, taking into account the within-group variation. In model 2 *BGD* ($\beta = -0,0562$) had a negative effect on *CSR_Decoupling_lag* however, this effect was also insignificant ($p > 0,1$). This is in line with the expectations (although the result is insignificant), indicating that firms with more gender-diverse boards were less likely to decouple their CSR actions. However, model 2 depicted a negative significant effect of *BAD* ($\beta = -0,104$, $p < 0,05$) on *CSR_Decoupling_lag*. This was in line with the expectations so, H2 was supported. This meant that firms with more age-diverse boards were less likely to decouple their CSR actions. Model 2 also revealed a negative effect of *BND* ($\beta = -0,188$) on *CSR_Decoupling_lag* however, this effect was insignificant ($p > 0,1$). In line with the expectations, the result (although insignificant) provided support for hypothesis 3, indicating that firms with more nationality-diverse boards were less likely to decouple their CSR actions.

This means that model 1 provided no support for hypotheses 1,2 and 3, as the coefficients of all the independent variables were insignificant. Model 2 also provided no support for hypotheses 1 and 3 due to the coefficients of the independent being insignificant. However, model 2 showed a significant negative effect of *BAD* ($\beta = -0,104$, $p < 0,1$) on *CSR_Decoupling_lag*. This is in line with the expectations, so hypothesis 2 was supported by model 2. This indicated that a board with more age-diverse was associated with a decrease in CSR decoupling, after controlling for variations in CSR decoupling related to the other factors specified in the model.

A fixed effects regression was conducted to test hypothesis 4 (see table 4.6). Hypothesis 4 expected a negative effect of total board diversity on CSR decoupling. In model 3 *CSR_Decoupling* was taken as the measure for CSR decoupling, in model 4 *CSR_Decoupling_lag* was taken as the measure for CSR decoupling.

VARIABLES	Model 3 CSR Decoupling	Model 4 CSR Decoupling lag
TBD	0,341* (0,203)	-0,415 (0,274)
REV	0,00126 (0,00390)	0,00629 (0,00743)
Board_Size	-0,257 (0,182)	0,142 (0,143)
TA	0,0452 (0,0322)	-0,0680 (0,0618)
Tenure_b	0,0140 (0,0165)	-0,00337 (0,0178)
Constant	0,556* (0,301)	-0,633** (0,296)
Observations	229	229
R ²	0,220	0,666
Number of BoardID	52	52

Robust standard errors in parentheses

*** p<0,01, ** p<0,05, * p<0,1

Note: Results on industry, and year dummies effects were not reported for parsimony.

Table 4.6: Regression results for *CSR_Decoupling* (model 3) and *CSR_Decoupling_lag* (model 4)

Model 3 showed a within R² of 0,2199 indicating that around 21,99% of the variation in *CSR_Decoupling* was explained by the included variables taking into account the within-group variation. In model 3 *TBD* had a positive and significant effect ($\beta = 0,341$, $p < 0,1$) on *CSR_Decoupling*, after controlling for variations in companies' CSR decoupling related to other factors specified in the model. In contrary with the

expectations, the results provided no support for H4, indicating that firms with more diverse boards were more likely to decouple their CSR actions.

Model 4 revealed a within R^2 of 0,6657 indicating that around 66,57% of the variation in *CSR_Decoupling_lag* was explained by the included variables taking into account the within-group variation. In line with hypothesis 4, model 4 showed that TBD had a negative effect ($\beta = -0,415$) on *CSR_Decoupling_lag* however, this effect was insignificant ($p > 0,1$), thus hypothesis 4 can not be supported.

Considering the R^2 values, model 2 ($R^2 = 67,35\%$) and model 4 ($R^2 = 66,57\%$) had higher explanatory power compared to model 1 ($R^2 = 17,28\%$) and model 3 ($R^2 = 21,99\%$). Therefore, *CSR_Decoupling_lag* was assumed to be a better measure of CSR decoupling. In the social sciences, low R^2 's are not uncommon, especially for cross-sectional analysis (Wooldridge, 2012, p. 39). A small R^2 implies that the error variance is large relative to the variance of the dependent variable. However, a large error variance can be offset by a large sample size (Wooldridge, 2012, p. 201). As a result of the small sample size, the error variance was larger and therefore the R^2 became smaller. The R^2 of models 1 and 3 can still be assumed as high considering the number of observations and the research topic.

4.3 Robustness tests

To test the robustness of the results, an alternative measurement of the variables was also used. These robustness models were compared to models 1 to 4.

As an alternative measure for CSR decoupling, *CSR_Score* was used (see definition in table 3.2). In addition, as an alternative measure for Board Age Diversity, *Age_mean* was used (see definition in table 3.2). Hassan & Marimuthmu (2016) also measured age as the average age of board members, and they found a positive relationship between the age profile and both ROE and Tobin's Q (Hassan & Marimuthmu, 2016). Menicucci & Paolucci (2022) also used the average age of the board, although they did find a positive sign for board age, they found no significant relationship between age and ESG performance. Finally, *Tenure_c* was used as an alternative measure for tenure. Where *Tenure_b* measured the time on the board for each board member, *Tenure_c* measured the time in the company for each board member. The analyses were conducted again but with alternative measures for CSR decoupling, Board Age Diversity, and tenure.

First, the Pearson correlation coefficients were calculated (see Appendix E table E.2). There was no high correlation between any of the variables. *CSR_Score* was positively correlated with all the variables. Next, the VIF scores were calculated (see Appendix E table E.3 and E.4), as all are lower than 5 it could be said

there was no multicollinearity. The error terms were homoscedastic (see Appendix E table E.5 and E.6). Furthermore, the residuals were not normally distributed (see Appendix E table E.7 and E.8).

VARIABLES	Robustness model 1 CSR Score	Robustness model 2 CSR Score
BGD	1,939 (8,111)	
Age_mean	0,426 (0,325)	
BND	-2,849 (2,869)	
REV	0,0957 (0,203)	0,0953 (0,190)
Board_Size	-1,895 (4,246)	-1,324 (3,293)
TA	0,0130 (1,470)	0,256 (1,335)
Tenure_c	0,544 (0,465)	0,583 (0,395)
TBD		-8,233 (6,788)
Constant	-11,29 (21,80)	15,63** (7,063)
Observations	180	228
R-squared	0,297	0,349
Number of BoardID	44	52

Standard errors in parentheses
 *** p<0,01, ** p<0,05, * p<0,1

Note: results on industry, and year dummies were not reported for parsimony.

Table 4.7: Robustness models with CSR_Score as the dependent variable

Table 4.7 shows that the use of alternative proxies for CSR decoupling and Board Age Diversity did change some of the main results in table 4.5 and 4.6. *BAD* had a positive insignificant effect ($\beta = 0,009$, $p > 0,1$) on *CSR_Decoupling* in model 1 (see table 4.5) and a negative significant effect ($\beta = -0,104$, $p < 0,05$) on *CSR_Decoupling_lag* in model 2 (see table 4.5). However, *Age_mean* had an insignificant positive effect ($\beta = 0,426$, $p > 0,1$) on *CSR_Score* in robustness model 1 (see table 4.7). This suggested that the results related to hypothesis 2 were not robust to different measurement approaches.

In line with both model 1 (see table 4.5) and model 3 (see table 4.6), *Tenure_c* had a positive ($\beta = 0,544$ (robustness model 1), $\beta = 0,1584$ (robustness model 2)) but insignificant effect ($p > 0,1$) on *CSR decoupling*

in robustness models 1 and 2. However both model 2 (see table 4.5) and model 4 (see table 4.6), *Tenure_b* had a negative insignificant effect. It can thus be concluded that *Tenure_b* was not a robust measure.

In robustness model 1, *BGD* ($\beta = 1,939$) had a positive but insignificant effect ($p > 0,1$) on *CSR_Score*, this is in contrast with models 1 and 2 (see table 4.5), where *BGD* had a negative but insignificant effect. In robustness model 1, *BND* ($\beta = -2,849$) had a negative but insignificant effect ($p > 0,1$) on *CSR_Score*, this is in line with model 2 (see table 4.5). However, this contradicts the positive insignificant effect of *BND* on *CSR* decoupling in model 1 (see table 4.5).

In line with model 4 (see table 4.6), *TBD* had a negative ($\beta = -8,233$) but insignificant effect ($p > 0,1$) on *CSR_Score*. Nevertheless, this was not in line with model 3, where *TBD* showed a positive significant effect on *CSR* decoupling. This indicated that the findings related to hypothesis 4 were not robust to different measurement approaches.

Chapter 5: Discussion and conclusion

This study aimed to examine the effect of board diversity on CSR decoupling. The analysis used fixed effects regression models to investigate the effects of Board Gender Diversity (*BGD*), Board Age Diversity (*BAD*), Board Nationality Diversity (*BND*), and Total Board Diversity (*TBD*) on CSR decoupling, using two different measures of CSR decoupling: *CSR_Decoupling* and *CSR_Decoupling_lag*.

First, the study explored the effect of Board Gender Diversity, Board Age Diversity, and Board Nationality Diversity on CSR decoupling. Second, the study explored the combined effect of these board diversity characteristics (Total Board Diversity) on CSR decoupling.

Prior studies revealed a negative relationship between Board Gender Diversity and CSR decoupling. Based on Upper Echelon theory women behave more ethically and with less risk aversion than males (Eliwa et al., 2023). Besides, female directors through their corporate governance role, play an important role in stimulating both internal and external CSR activities, leading to less CSR decoupling (Gull et al., 2022b). As more gender-diverse boards consider the needs of various stakeholders, they make better-informed CSR decisions (Islam et al., 2022). When board members are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019). Thus, hypothesis 1 expected a negative effect of Board Gender Diversity on CSR decoupling. The results showed that *BGD* had no significant effects on CSR decoupling. Meaning that the expected negative effect of Board Gender Diversity on CSR decoupling could not be statistically supported. These results contrast with those obtained by Eliwa et al. (2023) and Gull et al. (2022b), who found that Board Gender Diversity had a negative significant effect on ESG decoupling. A possible explanation for the insignificant effect of Board Gender Diversity in this study might be that there were not enough female board members represented in the sample. As the study from the SER showed, in 2021 the percentage of female directors was only 14% for listed companies in the Netherlands (SER, 2022). Future research might focus on Board Gender Diversity after 2022, as of January 2022 the Dutch ‘diversity act’ stipulates that the board and supervisory board of large public and private companies must consist of at least one-third of men and one-third of women (Staatsblad van het Koninkrijk der Nederlanden, 2021).

Prior research about Board Age Diversity focused on CSR performance or CSR disclosure, instead of CSR decoupling and providing mixed effects. Younger directors have more knowledge about environmental issues and perceive a higher vulnerability to climate change consequences, making them less likely to engage in CSR decoupling. Although younger people usually lack decision-making power (Ciocirlan & Pettersson, 2012). Older board members are more likely to have more experience and be more invested in the firm, thus will show less CSR decoupling behavior (Gull et al., 2022a). Hence this study argued that the

combination of younger and older board members will benefit the understanding of CSR, consider more perspectives, and increase information, thereby decreasing CSR decoupling. So, hypothesis 2 expected a negative effect of Board Age Diversity on CSR decoupling. In model 1 (which used *CSR_Decoupling* as the measure of CSR decoupling) *BAD* had no significant effect on CSR decoupling. However, in model 2 (using *CSR_Decoupling_lag* as the dependent variable) *BAD* had a significant negative effect on CSR decoupling, supporting hypothesis 2. This indicated that a more age-diverse board was associated with a decrease in CSR decoupling (when internal CSR actions are lagged with 1 year), after controlling for variations in CSR decoupling related to the other factors specified in the model.

Board Nationality Diversity received less attention in the existing literature. Harjoto & Yang (2018) suggested that there lies value in nationality diversity for companies seeking to go beyond regulatory compliance and increase voluntary CSR activities. This implied that more nationality-diverse boards want to go beyond and voluntarily increase CSR activities, so are less likely to show CSR decoupling. This study argued that a more nationality-diverse board considers a wider range of stakeholder interests and more consequences of their CSR actions, leading to more information about the organization and environment, which will decrease CSR decoupling. Therefore, hypothesis 3 expected a negative effect of Board Nationality Diversity on CSR decoupling. The results showed that *BND* had no significant effects on CSR decoupling. Meaning that the expected negative effect of Board Nationality Diversity on CSR decoupling could not be statistically supported. The Netherlands is the leader in terms of nationality diversity compared to other European countries and Dutch firms do not show nationalistic feelings, indicating a more open attitude towards different nationalities on the board (van Veen & Marsman, 2008). Thus, it was expected to find a significant effect of Board Nationality Diversity on CSR decoupling. A possible explanation for the insignificant effect of Board Nationality Diversity in this study might be that the sample was biased. As 59,62% of the board members in the sample were Dutch, 9,39% were American, 8,45% were British and the other 18 nationalities represented only 22,54% of the sample (see Appendix B table B.3). One reason for the results being insignificant might be the Dutch culture. The strongly individualistic culture combined with an egalitarian culture makes expressing criticism difficult. In addition, Dutch people are ‘opinionated’ and like to be involved (Remmé, 2015). This might make non-Dutch board members feel less integrated and resistant to sharing criticism, leading to poorer communication and cooperation.

Based on legitimacy theory a more diverse board will consider different legitimizing strategies, as more diverse board members bring various insights (Deegan et al., 2002). A more diverse board will consider a wider range of perspectives leading to more enhanced problem-solving, more efficient decision-making, higher quality decisions, and a more comprehensive understanding of the organization and its environment

(Hambrick & Mason, 1984; Hassan & Marimuthu, 2016; Milliken & Martins, 1996). When board members are more informed, they will be less likely to show CSR decoupling behavior (Graafland & Smid, 2019). So, hypothesis 4 expected a negative effect of Total Board Diversity on CSR decoupling. The results showed that Total Board Diversity had a different effect on the two different measures of CSR decoupling, and these effects also differed in significance. In model 3, (which used *CSR_Decoupling* as the measure of CSR decoupling) *TBD* had a positive and significant effect on CSR decoupling, after controlling for variations in companies' CSR decoupling related to other factors specified in the model. So, hypothesis 4 was not supported, indicating that firms with more diverse boards were more likely to decouple their CSR actions. Furthermore, model 4 (using *CSR_Decoupling_lag* as the dependent variable), also did not support hypothesis 4 as the effect of *TBD* was insignificant. A possible explanation for the positive effect of Total Board Diversity on CSR decoupling might lie in the lack of integration and openness within more diverse boards. Firms hire more diverse board members to match the increased diversity represented in their markets (Milliken & Martins, 1996). However, it is likely board members are only selected because of institutional pressures, and not because companies truly want to have a diverse board (van Veen & Marsman, 2008). Based on Upper Echelon theory every individual contributes equally to the group and thus neglects the need for integration and openness within a heterogenous group (Nielsen, 2010). However, in reality, board members might feel isolated from the rest of the board and may withhold contributions to the group (Milliken & Martins, 1996). This may result in poorer communication and cooperation, which might increase CSR decoupling.

To test the robustness of the results, alternative measurements for CSR decoupling, Board Age Diversity, and tenure were used. The results of these robustness tests showed that some of the main results were not robust to different measurement approaches. Specifically, the positive significant effect of *BAD* on *CSR_Decoupling_lag* in model 2 was not supported in the robustness model, as the effect of *Age_mean* differed from the original model. Furthermore, *Tenure_b* and *Tenure_c* showed different effects on CSR decoupling. Because the robustness models differed quite a bit from the original models, this indicated a lack of robustness for the measures of CSR decoupling, Board Age Diversity, and tenure. Overall, it can be concluded that the relationship between board diversity and CSR decoupling is complex and may vary depending on the measures used. While some support was found for the negative relationship between Board Age Diversity and CSR decoupling, the effects of Board Gender Diversity, Board Nationality Diversity, and Total Board Diversity were insignificant and inconsistent across different models.

This study contributes to the corporate governance and CSR literature by examining whether Board Gender Diversity, Board Age Diversity, Board Nationality Diversity, and Total Board Diversity can limit CSR

decoupling. The study has several implications for practitioners, board members, policymakers, and stakeholders. Firstly, the results suggested that Board Age Diversity plays a role in decreasing CSR decoupling, while Board Gender Diversity and Board Nationality Diversity had less evident effects. However, further research is needed to confirm and understand these findings in different contexts. Secondly, the study emphasized the need for organizations to consider the composition of their boards and the potential impacts on CSR decoupling. For example, if a new board member is chosen the age of this individual should be taken into account to improve Board Age Diversity. Thirdly, following from Upper Echelon theory knowing what board diversity factors influence CSR decoupling can help the strategists of the firm to better predict the competitor's outcomes. For example, if the competitor has a more age-diverse board, the firm might be able to predict the outcomes of this diminishing CSR decoupling behavior on the competitor's performance. Thus, this might be an incentive for the firm to select a more age-diverse board as well. Lastly, the results emphasized the importance of considering different measures of CSR decoupling.

Several limitations need to be taken into account when interpreting the results of this study. Firstly, this study only focused on Dutch firms, resulting in only 298 observations for a 6-year period. This resulted in a small and limited sample which could explain the insignificant results of this study. It is harder to find significance with smaller sample sizes as the critical values are larger in magnitude, and the estimators are less precise. Whereas with large sample sizes, parameters can be estimated more precisely and, standard errors are often quite small relative to the coefficient estimates, which usually results in statistical significance (Wooldridge, 2012, p. 136). Furthermore, because of the small sample size endogeneity tests could not reach convergence.

Secondly, factors such as Dutch culture and legislation might have affected the results. The Netherlands has an egalitarian culture combined with a strongly individualistic culture, with a tendency for everyone to be involved and where expressing criticism is difficult (Remmé, 2015). The Dutch culture might affect decision-making and how CSR practices are carried out in Dutch companies. In addition, the Dutch legal framework might have influenced the relationship between board diversity and CSR decoupling. Listed companies in the Netherlands are obliged to comply with the Corporate Governance Code. The Code describes, among other things, the responsibilities of directors for long-term value creation, a diversity policy, and the relationship with shareholders and stakeholders (Monitoring Committee Corporate Governance Code, 2016). Moreover, the Corporate Governance Code Monitoring Committee checks whether and how listed companies comply with the Code (Monitoring Commissie Corporate Governance Code, 2022). The Monitoring Report of 2021 shows that best practice provision 2.1.6 'Accountability for diversity' remains (as in previous years) one of the least adhered to reporting provisions. Companies often

do not explain why the diversity goals are specifically appropriate for the company and often do not make a link between the goals, the implementation, and the results achieved. Companies sometimes do more in the field of diversity than they currently show in their annual reports (Monitoring Commissie Corporate Governance Code, 2022). The report thus shows that there is a gap between internal diversity actions and external diversity actions. Future research could analyze cultural and legislative factors that might affect CSR decoupling and board diversity in the Netherlands.

Thirdly, because the sample consisted only of Dutch firms, the results could be non-generalizable to other countries. Future studies could focus on multiple countries to get over this generalizability limitation. However, focusing on multiple countries or markets might lead to a size and internationalization bias. Also, Tashman et al. (2019) showed that firms who are motivated to internationalize, use CSR reporting to manage liabilities of origin, which causes them to engage in CSR decoupling. There was another selection bias in the firms included in the sample, due to the voluntary nature of CSR reporting in the Netherlands. As a result, firms that chose not to report their CSR actions were not included in the dataset, which might lead to omitted information. Moreover, the sample might be biased because the study could only use firms that are listed. So the results might also be non-generalizable to non-listed firms. Larger companies in the Netherlands emphasize CSR differently than small and medium-sized businesses. In general, it seems that larger companies emphasize integrity and control, whereas smaller companies place greater value on dialogue and stakeholder consultation (Remmé, 2015, p. 95). To overcome the selection bias, future research might directly collect the data from the firm, for example by conducting interviews, observations, and analyzing annual reports.

Fourthly, the measurement of the variable CSR decoupling might be a limitation. While the measure for CSR decoupling had already been thoroughly validated in previous literature, resulting in a valid and reliable measure for CSR decoupling, an adapted method based on the method by Hawn & Ioannou (2016) was used in this study. Because of this adapted method, some data points were removed or replaced by comparable determinants, due to some of the original CSR determinants used by Hawn & Ioannou (2016) not being available in Refintiv anymore. However, this might have affected the reliability and validity of the measure.

Fifthly, these CSR determinants were binary variables based on a 'yes' or 'no' or percentages that eventually were classified as a 'yes' or 'no' too. One of the internal actions is 'Does the company make use of renewable energy?' if a firm answers this with yes it gets a higher internal CSR action score. However, increasing the use of renewable energy does not change the answer to the question so, has no influence on the CSR Score and so CSR decoupling. As a result, companies can have an incentive to use renewable

energy usage but keep the renewable energy usage low, because they will still comply with the internal CSR determinant. So, eventually, companies will choose to comply with these CSR determinants (so they get a yes on the determinant), but will not try to improve their CSR actions if they already have a yes, because it will not influence their score on CSR decoupling. In addition, some of the CSR determinants were about policies for example, 'Does the company have a work-life balance policy?'. However, these questions do only address the existence of the policy, not the quality of the policy. Future qualitative research might focus on the quality and feasibility of these policies, for example by conducting interviews with employees to gather their opinion on the work-life balance policy.

In addition, this study examined the difference between the external and internal CSR actions scores. Though, there are specific internal actions that connect to specific external actions. As Hawn & Ioannou (2016) already suggested future research could focus on a specific internal action and its external twin (or vice versa) and conduct a dynamic analysis on these (Hawn & Ioannou, 2016). Or future research could focus on clustering certain internal/external CSR actions all related to a specific subject and then conduct several analyses on the different subjects.

Sixthly, because there were differences between models 1 and 2 and models 3 and 4 whether *CSR_Decoupling* or *CSR_Decoupling_lag* is the better variable needs further investigation. *CSR_Decoupling_lag* was calculated as the difference between the score of external CSR actions and internal actions lagged by 1 year. Because, the stock of intangible CSR resources in a given period is likely to be the outcome of current external activities combined with prior internal actions (Hawn & Ioannou, 2016). The study by Hawn & Ioannou (2016) used lagged internal actions rather than current internal actions. Because when using current internal actions, the coefficients of the independent variables were insignificant, whereas using lagged internal actions obtained significance. In addition, external actions remain equally significant, suggesting that external actions are not likely to drive the results (Hawn & Ioannou, 2016). However, in their study, the gap between external and internal actions is, on average, due to insufficient external actions (i.e., prior internal actions outweigh current external ones) (Hawn & Ioannou, 2016). Future research might investigate whether prior external actions do influence current internal actions as well. Also, unlike the study by Hawn & Ioannou (2016), which investigated the impact of CSR decoupling on firm value, this study used CSR decoupling as the dependent variable. The aim of this study was to investigate if board diversity characteristics influence CSR decoupling and not what impact CSR decoupling had on another phenomenon. Thereby, in this study, CSR decoupling was defined as the difference between internal and external CSR actions (Hawn & Ioannou, 2016). So, theoretically using *CSR_Decoupling* as the dependent variable makes more sense. Future research should question whether it

makes sense that prior internal actions influence the outcome of current external actions (or the other way around), depending on the research design and context.

Finally, the potential existence of unobservable factors that affect board diversity and CSR decoupling, might cause endogeneity problems. Because of the small sample size, endogeneity tests could not be conducted. Based on legitimacy theory organizations engage in CSR activities to maintain their social legitimacy. However, when a firm's CSR disclosure does not align with its CSR actions, it will not be able to change the perception of the firm by stakeholders (Deegan, 2002). The lack of significant effects of board diversity on CSR decoupling may indicate that diversity alone did not lead to a stronger commitment to CSR. Future studies could analyze other factors that might affect CSR decoupling. In addition, the focus of this study was limited to observable diversity. Future research might focus on the effect of non-observable board diversity proxies such as education, or the functional background of board members on CSR decoupling.

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Appendix A

Internal actions

Question (Hawn & Ioannou, 2016)	Available in Refinitiv?	Variable in Refinitiv
Percentage of women on the board	Yes, but not used in this study as its the independent variable.	Woman directors
Percentage of non-executive board members on the audit committee as stipulated by the company	No, replaced by ' <i>Percentage of independent board members on the audit committee as stipulated by the company.</i> '	Audit Committee Independence
Percentage of non-executive board members on the nomination committee as stipulated by the company.	Yes	Nomination Committee NonExecutive Members
Percentage of independent board members as reported by the company.	Yes	Independent Board Members
Does the company have a policy to support the skills training or career development of its employees?	<i>'Does the company have a policy to improve the skills training of its employees?'</i> Is available, however does not include career development. So <i>'Does the company have a policy to improve the career development paths of its employees?'</i> Is added.	Policy Skills Training AND Policy Career Development
Does the company have a policy to improve employee health & safety within the company and its supply chain?	Yes, <i>'Does the company have a policy to improve employee health & safety?'</i> however this question does not include supply chain.	Policy Employee Health & Safety
Does the company use environmental criteria (ISO 14000, energy consumption, etc.) in the selection process of its suppliers or sourcing partners?	Yes	Environmental Supply Chain Management
Does the company make use of renewable energy?	Yes	Renewable Energy Use

Does the company have a policy to improve its energy efficiency?	Yes	Policy Energy Efficiency
Does the company have a policy to improve its water efficiency?	Yes	Policy Water Efficiency
Does the company develop products or technologies that are used for water treatment, purification, or that improve water-use efficiency?	Yes	Water Technologies
Does the company have a policy to reduce emissions?	Yes	Policy Emissions
Does the company have a policy for ensuring equal treatment of minority shareholders, facilitating shareholder engagement, or limiting the use of anti-takeover devices?	Yes	Shareholder Rights Policy
Does the company's statutes or by-laws require that stock options be only granted with a vote at a shareholder meeting?	No, replaced by ' <i>Does the company require that shareholder approval is obtained prior to the adoption of any stock based compensation plans?</i> '	Shareholders Approval Stock Compensation Plan
Does the company have a policy for performance-oriented compensation that attracts and retains the senior executives and board members?	Yes	Executive Compensation Policy
Does the company have a policy for maintaining a well-balanced membership of the board?	Yes	Board Structure Policy
Does the company have an audit committee with at least three members and at least one "financial expert" within the meaning of Sarbanes-Oxley?	Yes	Audit Committee Expertise
Does the company have a CSR committee or team?	Yes	CSR Sustainability Committee

Does the company have a policy to guarantee the freedom of association universally applied independent of local laws? AND Does the company have a policy for the exclusion of child, forced, or compulsory labor?	Yes, but formulated differently; ' <i>Does the company have a policy for the exclusion of child, forced or compulsory labour, or to guarantee the freedom of association universally applied independent of local laws?</i> '	Human Rights Policy
Does the company have a competitive employee benefits policy or ensure good employee relations within its supply chain? AND Does the company have a policy for maintaining long-term employment growth and stability?	No, comparable variables (Policy Skills Training AND Policy Career Development) are already included (and fit better with another question) so replaced by ' <i>Does the company have an environmental management team?</i> '	Environment Management Team
Does the company have a work-life balance policy? AND Does the company have a diversity and equal opportunity policy?	No comparable variable found, (only Flexible Working Hours, but already included as an external action indicator) Yes	Policy Diversity and Opportunity

This resulted in 21 datapoints for internal CSR actions. However, as Board Structure Policy correlated too much it was deleted from the analysis, resulting in 20 datapoints for internal CSR actions.

External actions

Question (Hawn & Ioannou, 2016)	Available for this scope in Refinitiv?	Variable in Refinitiv
Does the company reportedly develop or market products and services that foster specific health and safety benefits for the consumers (healthy, organic or nutritional food, safe cars, etc.)?	Yes	Healthy Food or Products
Does the company claim to favor promotion from within?	Yes	Internal Promotion
Does the company report on policies or programs on HIV/AIDS for the workplace or beyond?	Yes	HIV-AIDS Program

Does the company report on crisis management systems or reputation disaster recovery plans to reduce or minimize the effects of reputation disasters?	Yes	Crisis Management Systems
Does the company report about environmentally friendly or green sites or offices?	Yes	Green Buildings
Does the company report on initiatives to reduce, reuse, substitute, or phase out toxic chemicals or substances?	Yes	Toxic Substances Reduction
Does the company report on initiatives to reduce the environmental impact of transportation of its products or its staff?	Yes, ' <i>Does the company report on initiatives to reduce the environmental impact of transportation used for its staff?</i> ', however this does not include products	Staff Transportation Impact Reduction
Does the company show an initiative to reduce, reuse, recycle, substitute, phase out, or compensate CO2 equivalents in the production process?	No, replaced by ' <i>Does the company report on initiatives to recycle, reduce, reuse, substitute, treat or phase out e-waste?</i> '	e-Waste Reduction
Does the company report on initiatives to recycle, reduce, reuse, substitute, treat, or phase out total waste?	Yes	Waste Reduction Initiatives
Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC)?	Yes	VOC Emissions Reduction
Does the company report on initiatives to reduce, reuse, recycle, substitute, or phase out SOx (sulphur oxides) or NOx (nitrogen oxides) emissions?	Yes	NOx and SOx Emissions Reduction
Does the company report on initiatives to recycle, reduce, reuse, or substitute ozone-depleting (CFC-11 equivalents, chlorofluorocarbon) substances?	No, no comparable variables available so replaced by ' <i>Does the company report on partnerships or initiatives with specialized NGOs,</i>	Environmental Partnerships

	<i>industry organizations, governmental or supra-governmental organizations, which are focused on improving environmental issues?'</i>	
Is the company's CSR report published in accordance with the GRI guidelines?	Yes	GRI Report Guidelines
Is the company openly reporting about the challenges or opportunities of integrating financial and extra-financial issues, and the dilemmas and trade-offs it faces?	No, replaced with <i>'Does the company explicitly integrate financial and extra-financial factors in its management discussion and analysis (MD&A) section in the annual report?'</i>	Integrated Strategy in MD&A
Does the company's extra-financial report take into account the global activities of the company?	Yes	CSR Sustainability Report Global Activities
Does the company report or show to be ready to end a partnership with a sourcing partner if human rights criteria are not met?	Yes	Human Rights Breaches Contractor
Does the company report or show to use human rights criteria in the selection or monitoring process of its suppliers or sourcing partners?	Yes	Human Rights Contractor
Does the company claim to provide its employees with a pension fund, health care, or other insurance?	No, no comparable variable was found	
Does the company claim to provide a bonus plan to most employees?	No, no comparable variable was found	
Does the company claim to provide daycare services for its employees?	Yes	Day Care Services

<p>Does the company have a policy to strive to be a good corporate citizen or endorse the Global Sullivan Principles? AND Does the company have a policy to respect business ethics or has the company signed the UN Global Compact or does it follow the OECD guidelines?</p>	<p>Yes, but formulated as '<i>Does the company have a policy to improve its good corporate citizenship?</i>' Yes, but formulated as '<i>Does the company describe in the code of conduct that it strives to maintain the highest level of general business ethics?</i>' AND '<i>Has the company signed the UN Global Compact?</i>' AND '<i>Does the company claim to follow the OECD Guidelines for Multinational Enterprises?</i>'</p>	<p>Policy Community Involvement AND Policy Business Ethics AND Global Compact Signatory AND OECD Guidelines for Multinational Enterprises</p>
<p>Does the company have an external auditor of its CSR/H&S/Sustainability report?</p>	<p>Yes</p>	<p>CSR Sustainability External Audit</p>
<p>Does the company claim to provide flexible working hours or working hours that promote a work–life balance?</p>	<p>Yes</p>	<p>Flexible Working Hours</p>
<p>Does the company claim to provide regular staff and business management training for its managers?</p>	<p>Yes</p>	<p>Management Training</p>

This resulted in 25 datapoints for external actions. However, ‘GRI Report Guidelines’ was omitted from the analysis, resulting in 24 datapoints for external actions.

Appendix B Statistics

Variable	Observations	Mean	Standard deviation	Min	Max
CSR Decoupling	298	-0,3689933	0,380053	-0,9047619	0,84
CSR Decoupling lag	242	-0,3872019	0,3730781	-0,9047619	0,84
TBD	278	0,3424832	0,1231504	0,0833333	0,7146667
BGD	298	0,2379027	0,1131527	0	0,5
BAD	278	0,346223	0,168488	0,25	1
BND	298	0,4459732	0,2862751	0	0,8
REV	298	8.209.023	13.700.000	-37,668	75.600.000
Board Size	298	9,278523	2,671638	3	21
TA	298	48.600.000	147.000.000	56,166	950.000.000
Tenure b	298	4,863423	4,41378	0	26
CSR Score	298	13,15772	10,48545	0	40
Age mean	298	58,39813	3,775469	47,11111	69
Tenure c	298	5,881879	5,941772	0	32,8
year	298	2018,604	1,708835	2016	2021
Age	278	59,08993	8,524069	35	79
Year DOB	278	1959,579	8,730162	1942	1984
Internal	298	10,21812	7,493841	0	19
External	298	2,939597	5,840447	0	21
Internal Score	298	0,4865772	0,3568496	0	0,9047619
External Score	298	0,1175839	0,2336179	0	0,84
Board Member	298	1	0	1	1
ISIN	298	26,71812	14,96352	1	55

Table B.1: Summary statistics

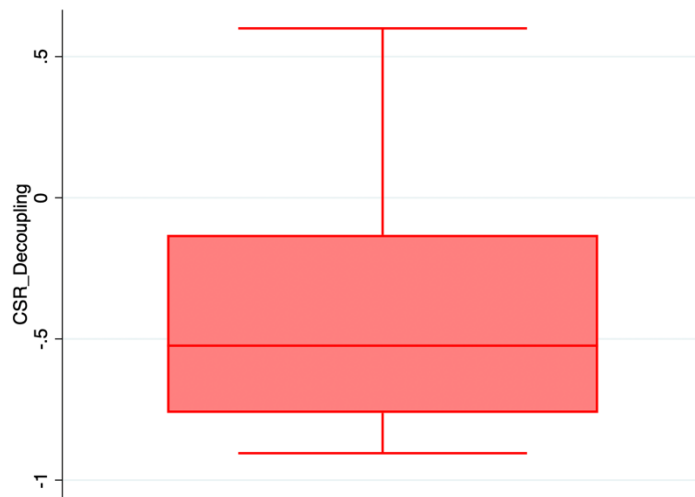
Generation	Frequency	Percentage	Cumulative
Baby Boomers	192	69,06	69,06
Generation X	74	26,62	95,68
Millennials	3	1,08	96,76
Silent Generation	9	3,24	100,00
Total	278	100,00	

Table B.2: Frequency table generations

Nationality	Frequency	Percentage	Cumulative
American	11	5,07	5,07
Austrian	2	0,92	5,99
Belgian	6	2,76	8,76
British	10	4,61	13,36
Danish	4	1,84	15,21
Dutch	141	64,98	80,18
Egyptian	2	0,92	81,11

French	15	6,91	88,02
German	8	3,69	91,71
Indian	3	1,38	93,09
Irish	1	0,46	93,55
Italian	6	2,76	96,31
Mexican	3	1,38	97,70
Romanian	1	0,46	98,16
Singaporean	1	0,46	98,62
South African	1	0,46	99,08
Spanish	1	0,46	99,54
Swiss	1	0,46	100,00
Total	217	100,00	

Table B.3: Frequency table nationality

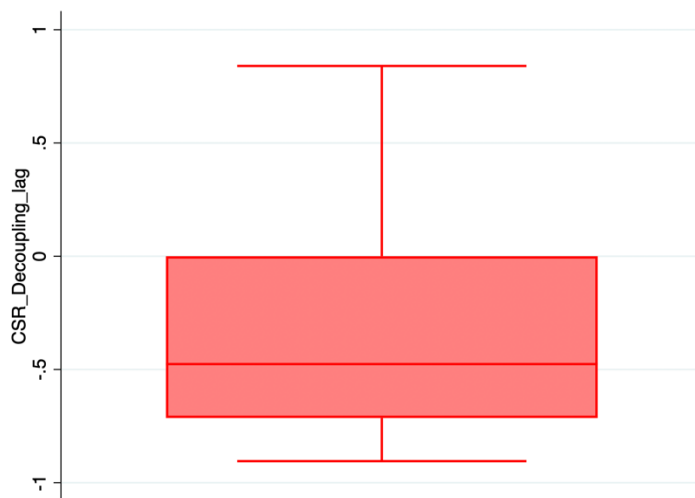


Graph B.1: boxplot of CSR_Decoupling

CSR_Decoupling	Frequency	Percentage	Cumulative
-0,9047619	16	6,96	6,96
-0,8571429	13	5,65	12,61
-0,8095238	19	8,26	20,87
-0,7619048	17	7,39	28,26
-0,7142857	21	9,13	37,39
-0,6666667	13	5,65	43,04
-0,6190476	10	4,35	47,39
-0,5714286	4	1,74	49,13
-0,5295238	1	0,43	49,57
-0,5238096	8	3,48	53,04
-0,5142857	1	0,43	53,48
-0,4761905	10	4,35	57,83
-0,4285714	5	2,17	60,00
-0,4171429	1	0,43	60,43

-0,3295238	4	1,74	62,17
-0,3219048	4	1,74	63,91
-0,2971429	2	0,87	64,78
-0,2895238	1	0,43	65,22
-0,2819048	3	1,30	66,52
-0,2495238	1	0,43	66,96
-0,2419048	4	1,74	68,70
-0,2171429	1	0,43	69,13
-0,2095238	1	0,43	69,57
-0,2019048	1	0,43	70,00
-0,1904762	2	0,87	70,87
-0,1866667	1	0,43	71,30
-0,1771429	1	0,43	71,74
-0,1542857	4	1,74	73,48
-0,1314286	1	0,43	73,91
-0,1219048	5	2,17	76,09
-0,1161905	1	0,43	76,52
-0,1142857	1	0,43	76,96
-0,1047619	3	1,30	78,26
-0,0914286	1	0,43	78,70
-0,0742857	2	0,87	79,57
-0,0647619	1	0,43	80,00
-0,0171429	1	0,43	80,43
0	40	17,39	97,83
0,2	1	0,43	98,26
0,32	1	0,43	98,70
0,52	1	0,43	99,13
0,56	1	0,43	99,57
0,6	1	0,43	100,00
Total	230	100,00	

Table B.4: frequency table CSR_Decoupling



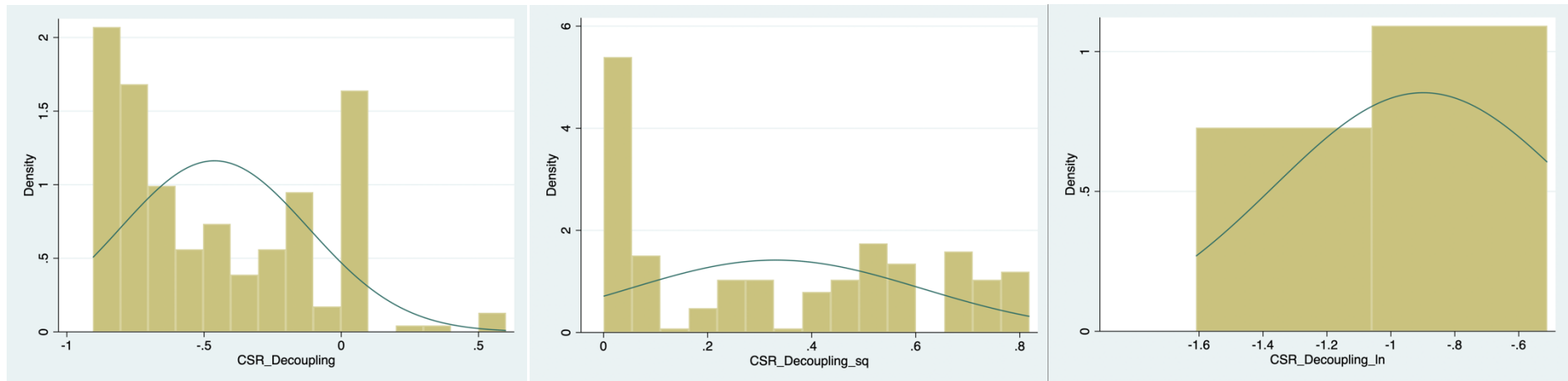
Graph B.2: boxplot of CSR_Decoupling_lag

CSR_Decoupling_lag	Frequency	Percentage	Cumulative
-0,9047619	14	6,09	6,09
-0,8571429	11	4,78	10,87
-0,8095238	15	6,52	17,39
-0,7619048	14	6,09	23,48
-0,7142857	18	7,83	31,30
-0,6666667	12	5,22	36,52
-0,6190476	9	3,91	40,43
-0,5714286	2	0,87	41,30
-0,5295238	1	0,43	41,74
-0,5238096	8	3,48	45,22
-0,4895238	1	0,43	45,65
-0,4761905	12	5,22	50,87
-0,4285714	3	1,30	52,17
-0,4171429	1	0,43	52,61
-0,3809524	1	0,43	53,04
-0,3714286	1	0,43	53,48
-0,3695238	1	0,43	53,91
-0,3295238	1	0,43	54,35
-0,3219048	1	0,43	54,78
-0,2895238	2	0,87	55,65
-0,2819048	5	2,17	57,83
-0,2742857	1	0,43	58,26
-0,2495238	4	1,74	60,00
-0,2419048	3	1,30	61,30
-0,2171429	1	0,43	61,74
-0,2095238	1	0,43	62,17
-0,2019048	1	0,43	62,61
-0,1904762	2	0,87	63,48
-0,1866667	2	0,87	64,35
-0,1790476	1	0,43	64,78
-0,1771429	1	0,43	65,22
-0,1695238	1	0,43	65,65
-0,1619048	1	0,43	66,09
-0,1542857	2	0,87	66,96
-0,1428571	1	0,43	67,39
-0,1219048	4	1,74	69,13
-0,1142857	1	0,43	69,57
-0,1047619	3	1,30	70,87
-0,0742857	1	0,43	71,30
-0,0685714	1	0,43	71,74
-0,0647619	1	0,43	72,17
0	56	24,35	96,52

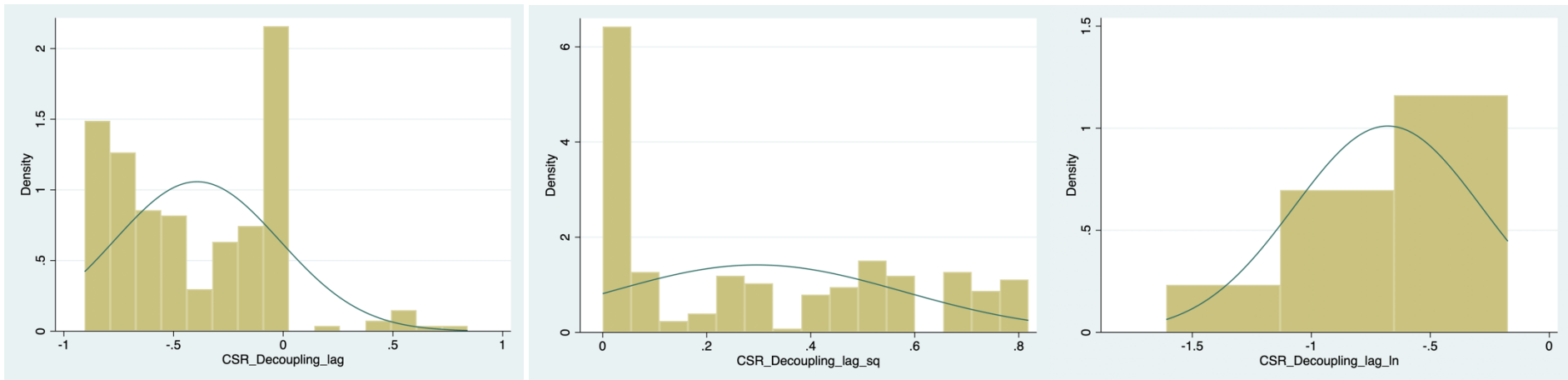
0,2	1	0,43	96,96
0,44	1	0,43	97,39
0,48	1	0,43	97,83
0,52	1	0,43	98,26
0,56	2	0,87	99,13
0,64	1	0,43	99,57
0,84	1	0,43	100,00
Total	230	100,00	

Table B.5: frequency table CSR_Decoupling_lag

Appendix C Normal distribution

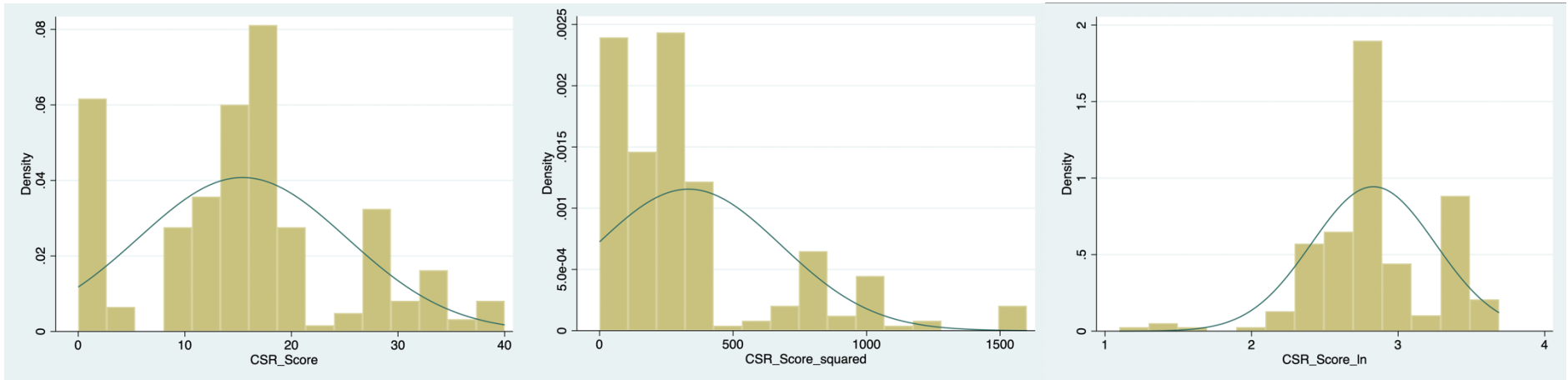


Graph C.1: normal distribution $CSR_Decoupling$
 $CSR_Decoupling$ is both skewed and shows kurtosis. $CSR_Decoupling_squared$ is not skewed, but still shows kurtosis, $CSR_Decoupling_ln$ is both skewed and shows kurtosis. Therefore $CSR_Decoupling_squared$ is kept.



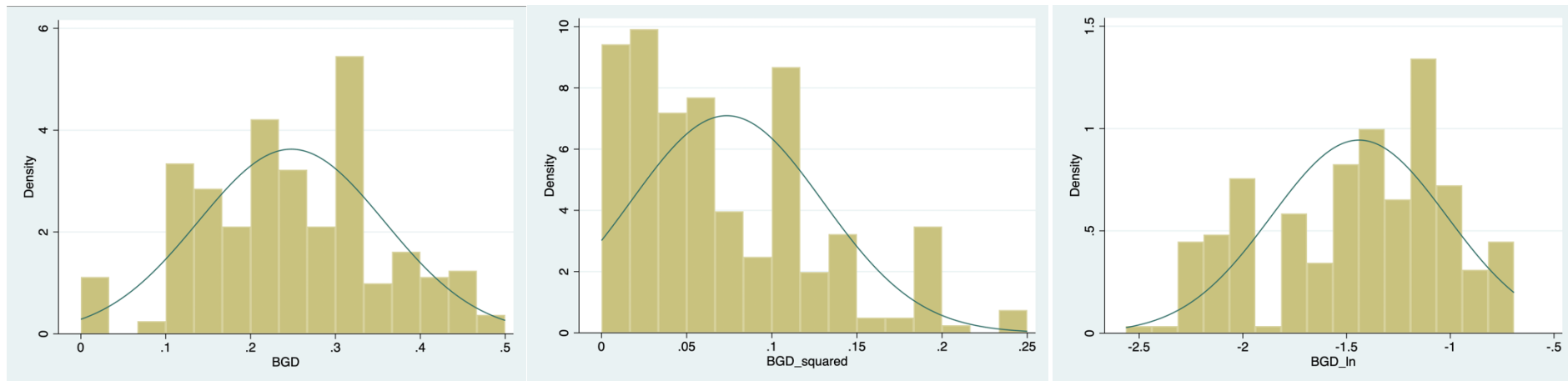
Graph C.2: normal distribution $CSR_Decoupling_lag$

CSR_Decoupling_lag is skewed but does not show kurtosis. No real improvement, thus *CSR_Decoupling_lag* is kept.



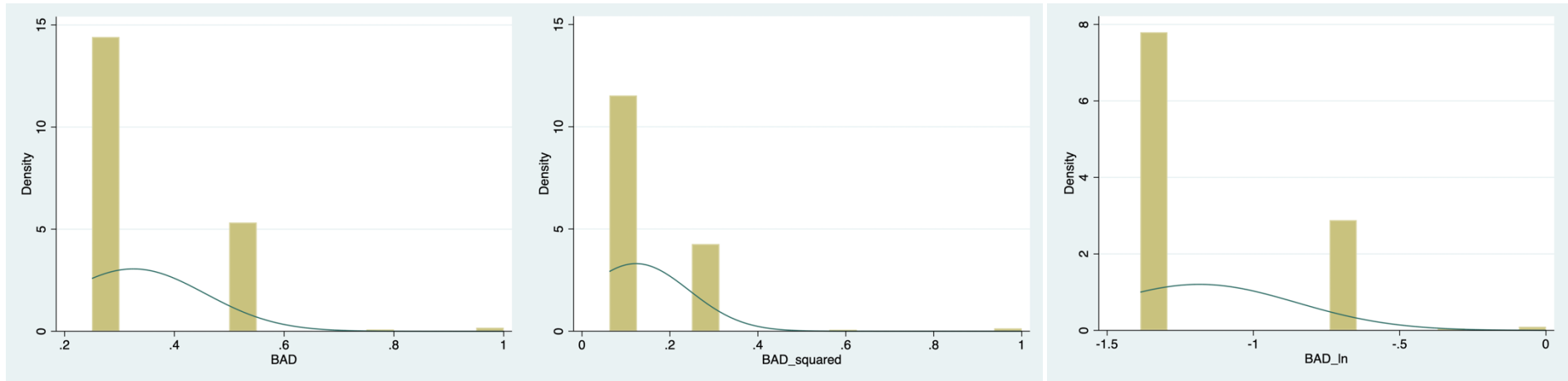
Graph C.3: normal distribution *CSR_Score*

CSR_Score is not skewed and does not show kurtosis, thus is normally distributed. No real improvement, thus *CSR_Score* is kept.



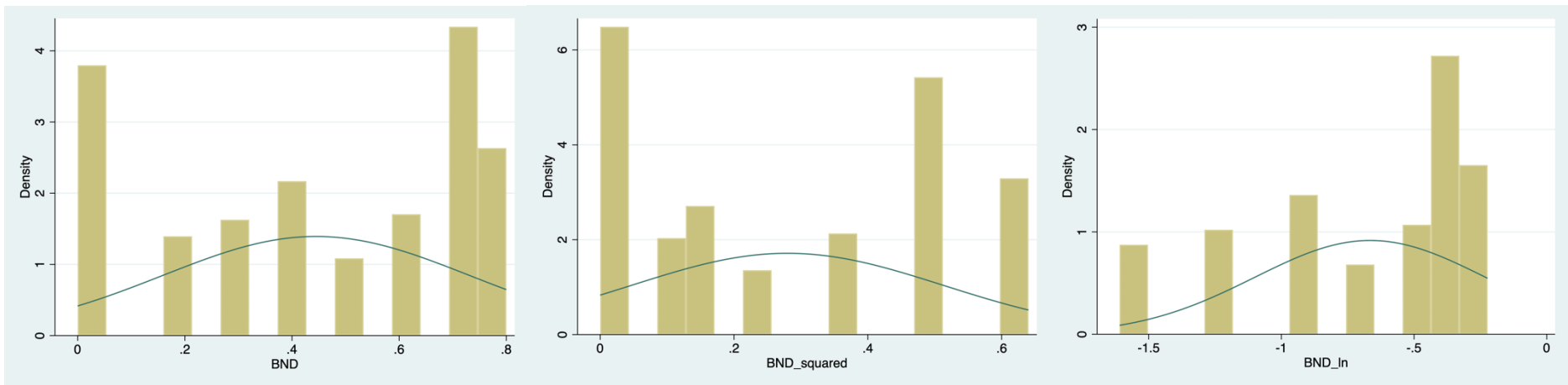
Graph C.4: normal distribution *BGD*

BGD is not skewed and shows no kurtosis, thus is normally distributed. So there is no real improvement, thus *BGD* is kept.



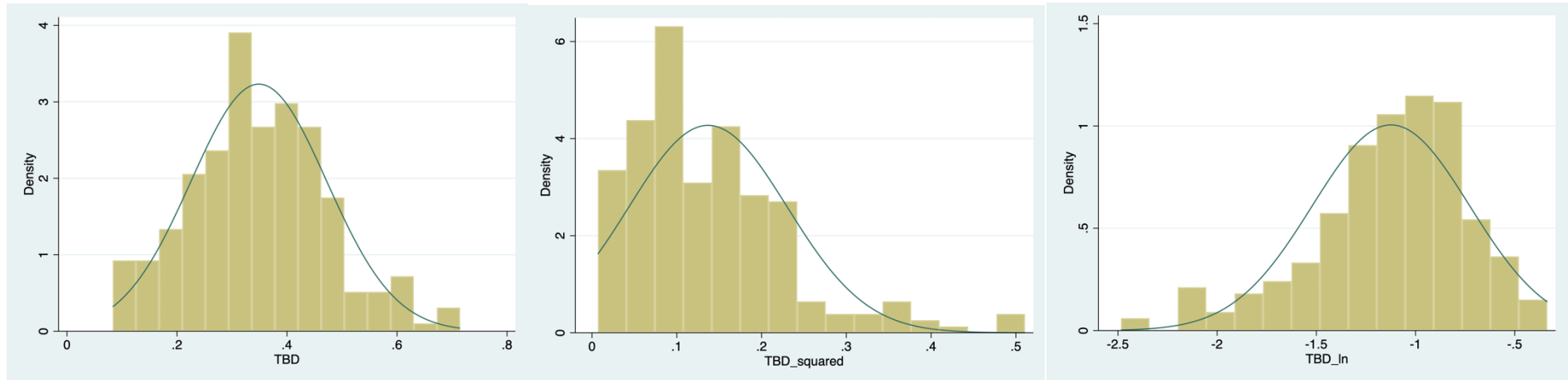
Graph C.5: normal distribution *BAD*

BAD and *BAD_squared* are skewed and show kurtosis. *BAD_ln* is skewed but does not show kurtosis, thus *BAD_ln* is kept.

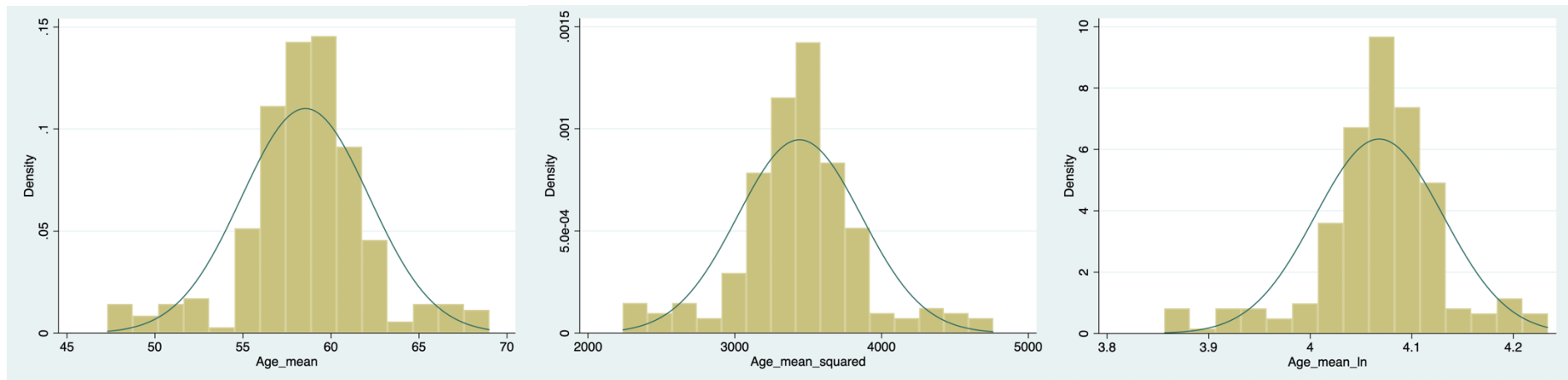


Graph C.6: normal distribution *BND*

BND is skewed and shows kurtosis, *BND_squared* is not skewed, and shows no kurtosis test value, *BND_ln* shows no kurtosis but is still skewed. Thus *BND_ln* is kept.

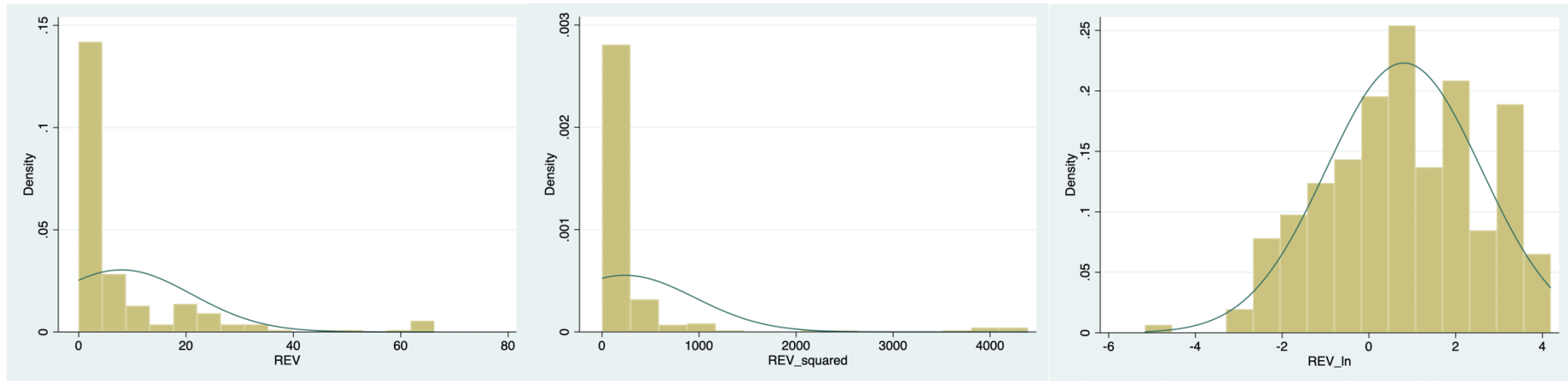


Graph C.7: normal distribution *TBD*
TBD is not skewed, but does not show kurtosis. No real improvement, thus *TBD* is kept.



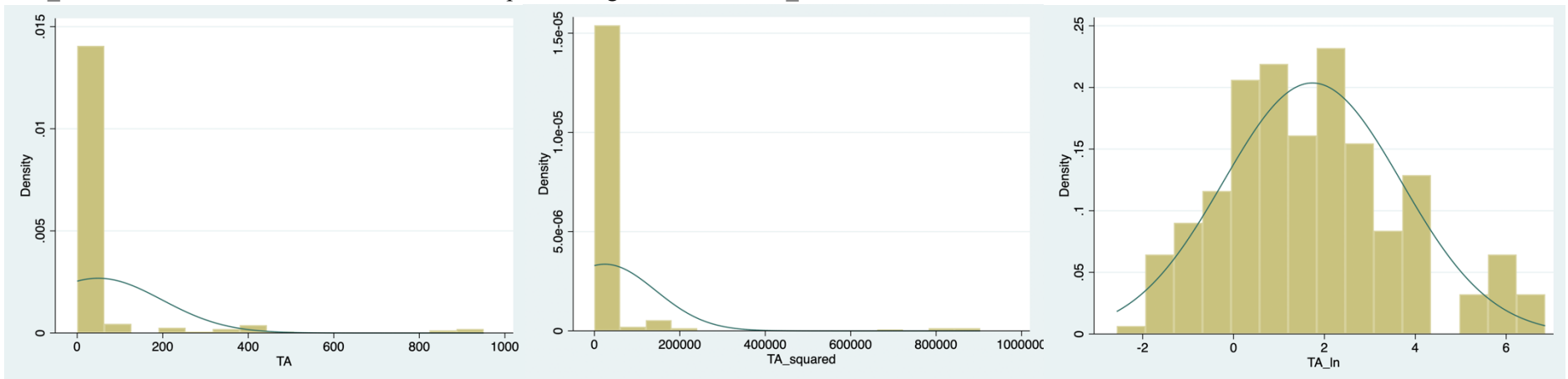
Graph C.8: normal distribution *Age_mean*

Age_mean is not skewed, but does show kurtosis. *Age_mean_squared* is also not skewed, but still does show kurtosis. *Age_mean_ln* is both skewed and does show kurtosis. Thus *Age_mean* is kept.



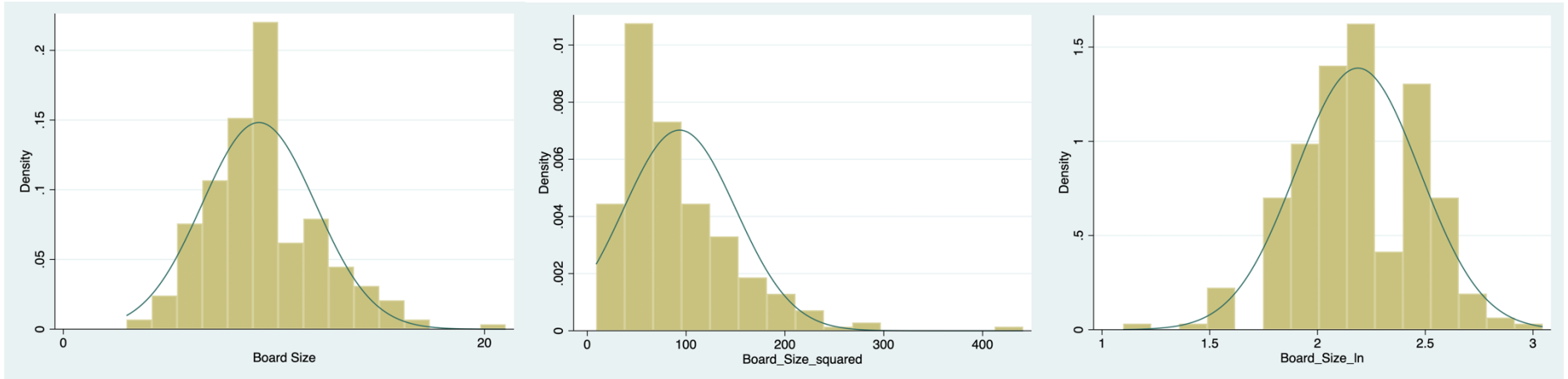
Graph C.9: normal distribution REV

REV and REV_squared are both skewed and show kurtosis. REV_ln is not skewed and does not show kurtosis, thus is normally distributed. Therefore REV_ln is the best fit, however as REV does also represent negative values REV_ln can not be used, thus REV is used.



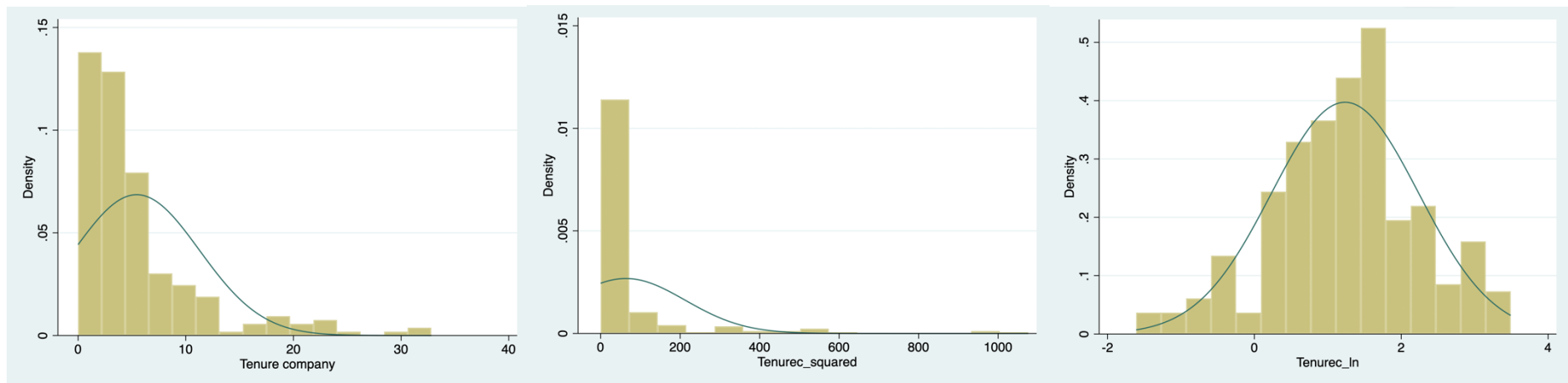
Graph C.10: normal distribution TA

TA and *TA_squared* both are skewed and show kurtosis. *TA_ln* is still skewed but shows no more kurtosis. Thus, *TA_ln* is kept.



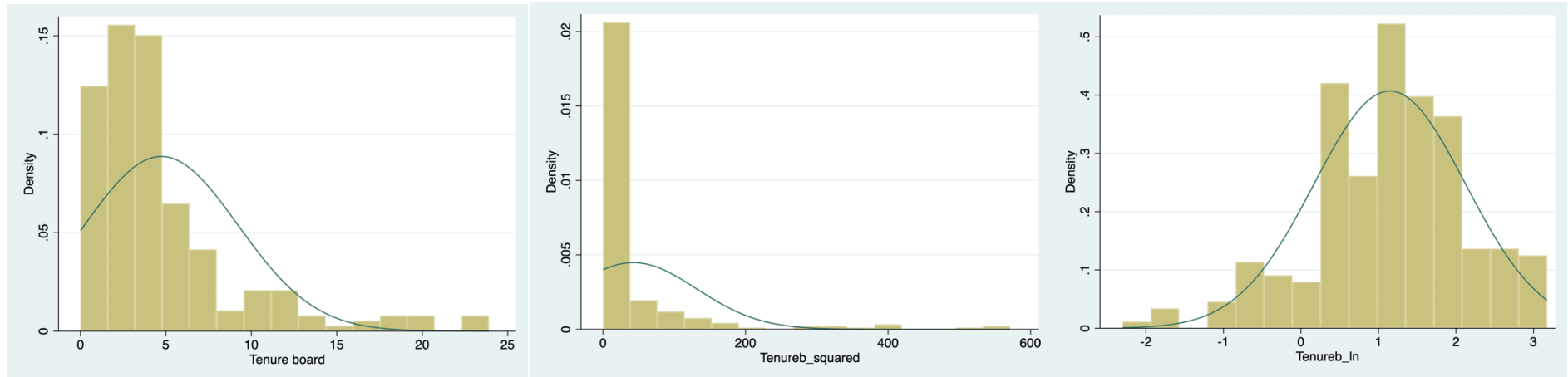
Graph C.11: normal distribution *Board_Size*

Board_Size and *Board_Size_squared* are both skewed and do show kurtosis. *Board_Size_ln* is not skewed and does not show kurtosis, thus is normally distributed. Thus, *Board_Size_ln* is kept.



Graph C.12: normal distribution *Tenure_c*

Tenure_c and *Tenurec_squared* are both skewed and show kurtosis. *Tenurec_ln* is skewed but does not show kurtosis, thus is normally distributed. So, *Tenurec_ln* is kept.



Graph C.13: normal distribution *Tenure_b*

Tenure_b and *Tenureb_squared* are both skewed and show kurtosis. *Tenureb_ln* does not show kurtosis but is still skewed. Thus, *Tenureb_ln* is kept.

Appendix D Assumptions

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CSR_Decoupling	1,000									
(2) CSR_Decoupling_lag	-0,549* (0,000)	1,000								
(3) BGD	0,066 (0,320)	-0,144* (0,029)	1,000							
(4) BAD	0,000 (0,998)	-0,015 (0,820)	0,084 (0,202)	1,000						
(5) BND	0,174* (0,019)	-0,166* (0,026)	0,251* (0,001)	-0,140 (0,060)	1,000					
(6) TBD	0,163* (0,013)	-0,147* (0,026)	0,504* (0,000)	0,295* (0,000)	0,760* (0,000)	1,000				
(7) REV	-0,002 (0,981)	0,096 (0,146)	0,226* (0,001)	-0,073 (0,268)	0,327* (0,000)	0,378* (0,000)	1,000			
(8) Board_Size	0,043 (0,520)	0,010 (0,878)	0,201* (0,002)	-0,083 (0,212)	0,228* (0,002)	0,412* (0,000)	0,436* (0,000)	1,000		
(9) TA	0,076 (0,249)	0,008 (0,901)	0,362* (0,000)	-0,004 (0,950)	0,192* (0,010)	0,407* (0,000)	0,682* (0,000)	0,602* (0,000)	1,000	
(10) Tenure_b	0,175* (0,008)	-0,087 (0,189)	0,002 (0,976)	-0,108 (0,104)	0,043 (0,569)	0,058 (0,381)	0,060 (0,369)	-0,100 (0,131)	-0,033 (0,617)	1,000

*** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$

Table D.1: Pearson correlation matrix

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

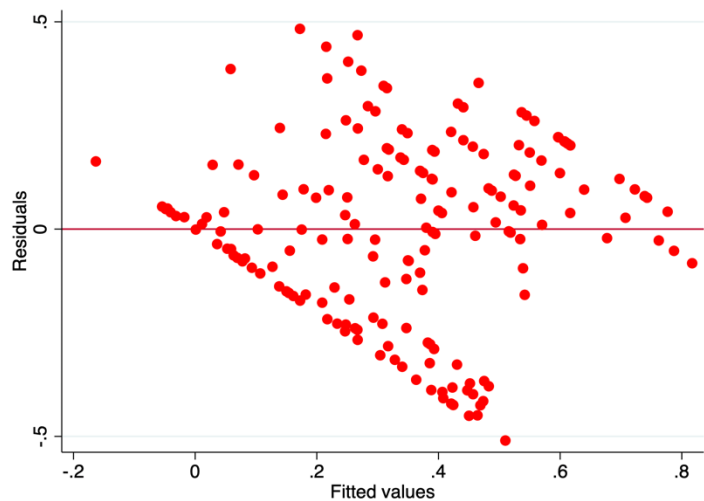
Variable: Fitted values of **CSR_Decoupling**

H0: Constant variance

chi2(1) = **1.10**

Prob > chi2 = **0.2948**

Table D.2: Breusch-Pagan test for heteroskedasticity using CSR_decoupling and BGD, BAD, and BND



Graph D.1: Residuals plot (CSR_Decoupling and BGD, BAD, and BND)

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

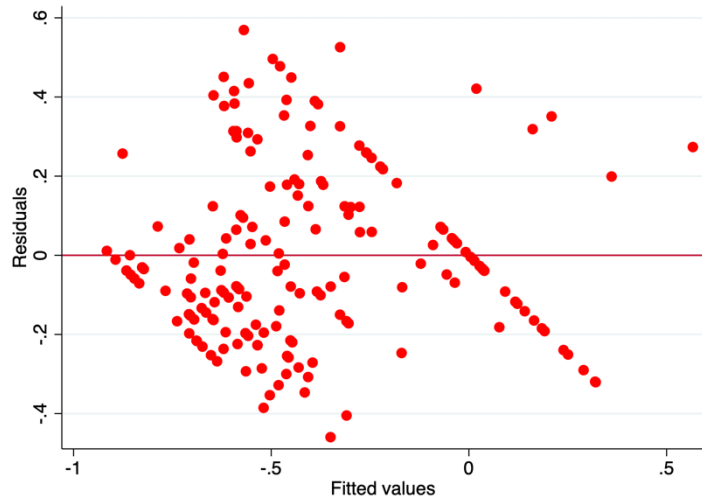
Variable: Fitted values of **CSR_Decoupling_lag**

H0: Constant variance

chi2(1) = **0.01**

Prob > chi2 = **0.9056**

Table D.3: Breusch-Pagan test for heteroskedasticity using CSR_Decoupling_lag and BGD, BAD, and BND



Graph D.2: Residuals plot (*CSR_Decoupling_lag*, *BGD*, *BAD*, and *BND*)

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

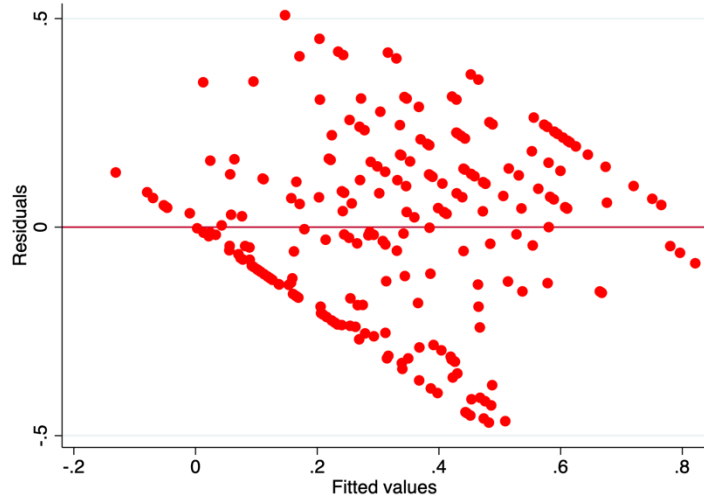
Variable: Fitted values of **CSR_Decoupling**

H0: Constant variance

chi2(1) = **3.15**

Prob > chi2 = **0.0758**

Table D.4: Breusch-Pagan test for heteroskedasticity using *CSR_Decoupling* and *TBD*



Graph D.3: Residuals plot (CSR_Decoupling and TBD)

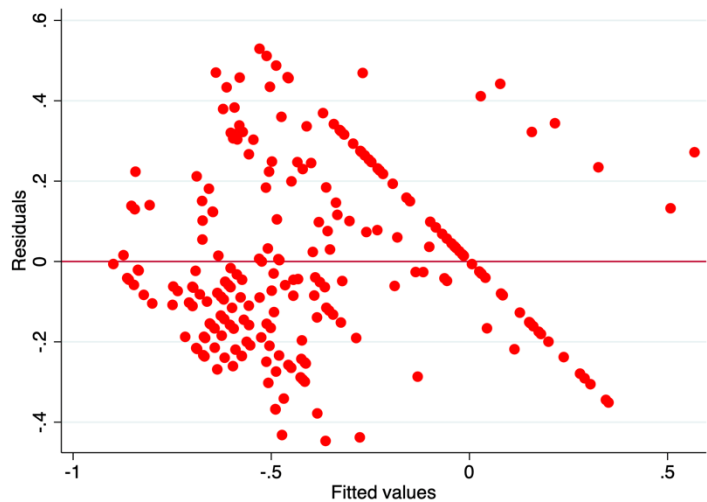
Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of **CSR_Decoupling_lag**

H0: Constant variance

chi2(1) = **0.23**

Prob > chi2 = **0.6338**

Table D.5: Breusch-Pagan test for heteroskedasticity using CSR_Decoupling_lag and TBD

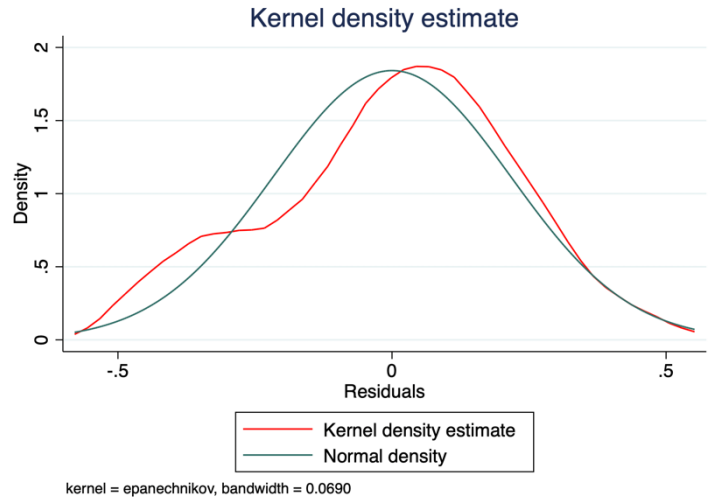


Graph D.4: Residuals plot (CSR_Decoupling_lag and TBD)

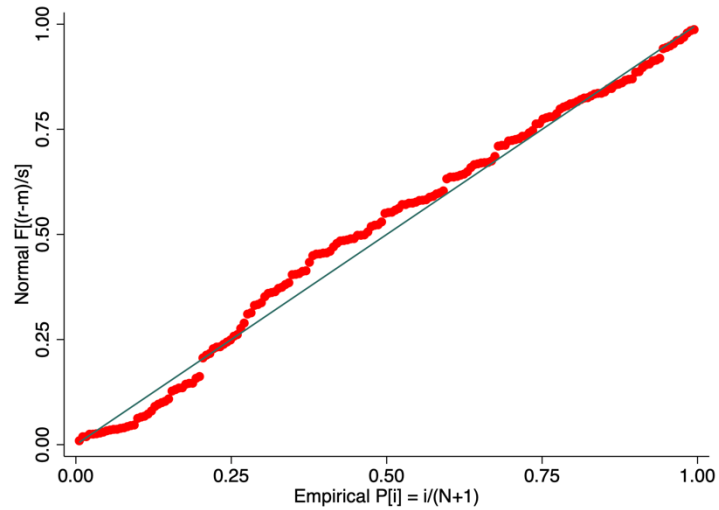
Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
r	180	0.1158	0.1340	4.78	0.0917

Table D.6: Skewness and kurtosis tests for normality residuals (CSR_Decoupling, BGD, BAD, and BND)



Graph D.5: Kernel density plot residuals (CSR_Decoupling BGD, BAD and BND)

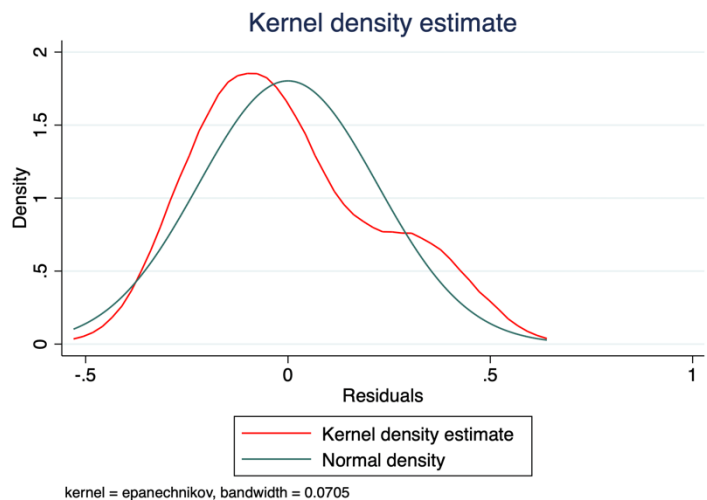


Graph D.6: Probability plot residuals (CSR_Decoupling, BGD, BAD and BND)

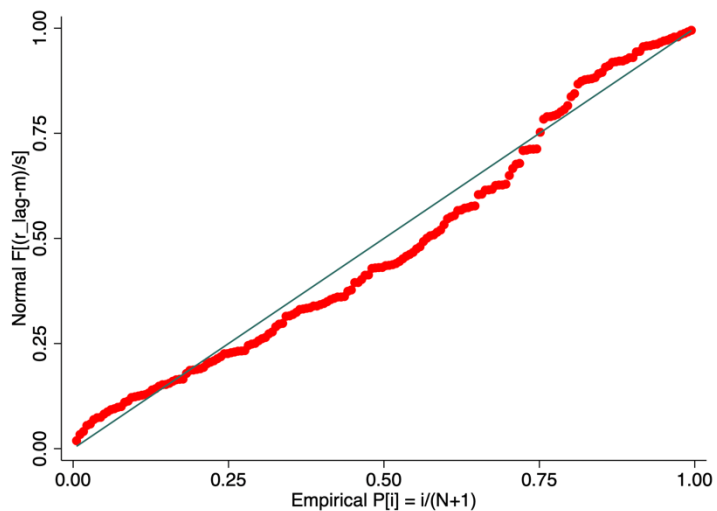
Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
r_lag	180	0.0072	0.1050	8.85	0.0120

Table D.7: Skewness and kurtosis tests for normality residuals (CSR_Decoupling_lag, BGD, BAD, and BND)



Graph D.7: Kernel density plot residuals (CSR_Decoupling_lag, BGD, BAD, and BND)

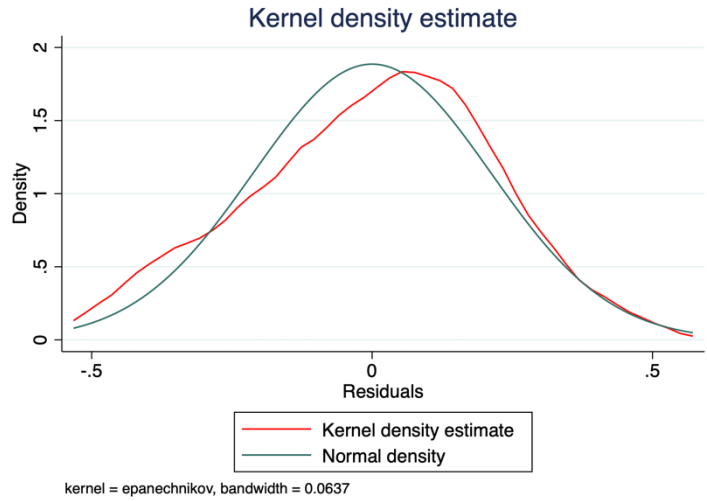


Graph D.8: Probability plot residuals (CSR_Decoupling_lag, BGD, BAD, and BND)

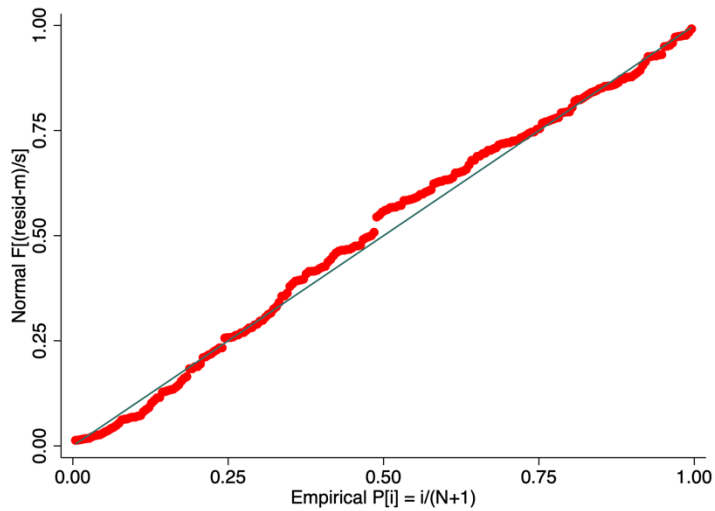
Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
resid	228	0.1825	0.0841	4.80	0.0906

Table D.8: Skewness and kurtosis tests for normality residuals (CSR_Decoupling and TBD)



Graph D.9: Kernel density plot residuals (CSR_Decoupling and TBD)

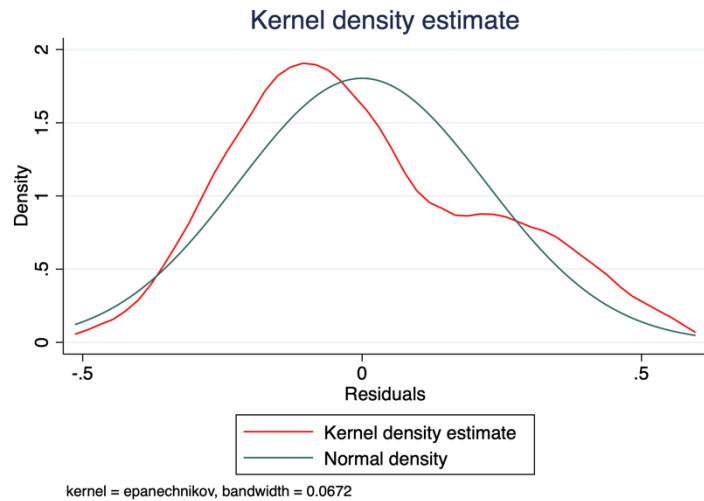


Graph D.10: Probability plot residuals (CSR_Decoupling and TBD)

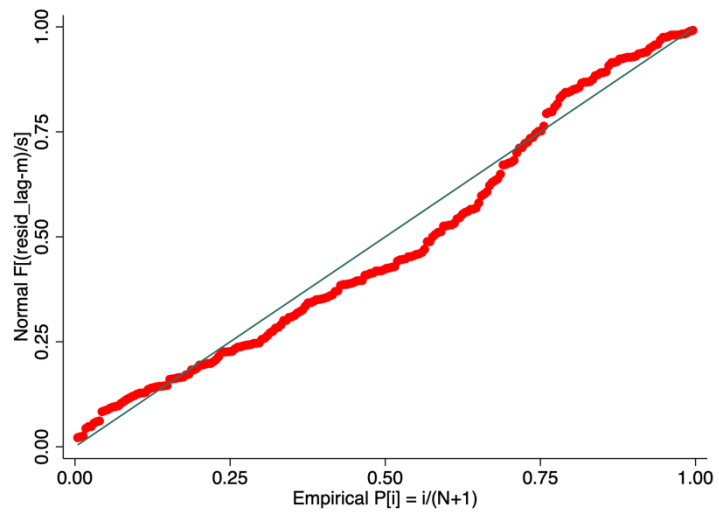
Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
resid_lag	229	0.0021	0.0650	11.23	0.0036

Table D.9: Skewness and kurtosis tests for normality residuals (CSR_Decoupling and TBD)

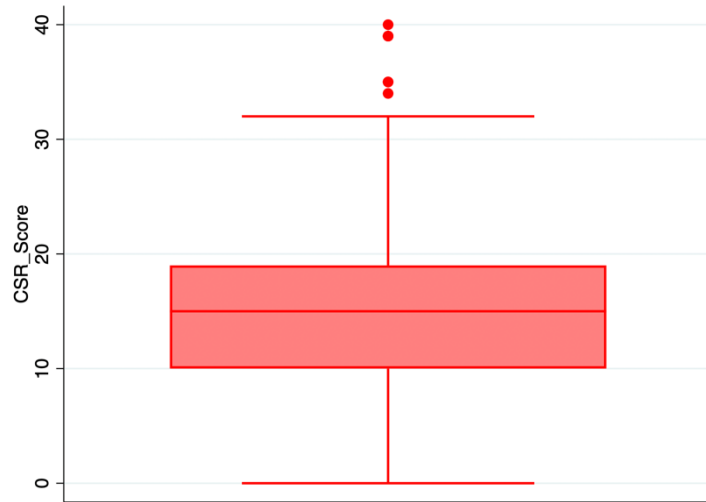


Graph D.11: Kernel density plot residuals (CSR_Decoupling_lag and TBD)



Graph D.12: Probability plot residuals (CSR_Decoupling_lag and TBD)

Appendix E Assumptions robustness tests



Graph E.1: boxplot of CSR Score

CSR_Score	Frequency	Percentage	Cumulative
0	40	17,39	17,39
4	2	0,87	18,26
5	1	0,43	18,70
8	1	0,43	19,13
9	5	2,17	21,30
10	10	4,35	25,65
11	8	3,48	29,13
12	4	1,74	30,87
13	11	4,78	35,65
14	14	6,09	41,74
15	22	9,57	51,30
16	17	7,39	58,70
17	19	8,26	66,96
18	13	5,65	72,61
19	17	7,39	80,00

20	1	0,43	80,43
23	1	0,43	80,87
24	2	0,87	81,74
26	1	0,43	82,17
27	4	1,74	83,91
28	3	1,30	85,22
29	13	5,65	90,87
30	3	1,30	92,17
31	3	1,30	93,48
32	8	3,48	96,96
34	1	0,43	97,39
35	1	0,43	97,83
39	4	1,74	99,57
40	1	0,43	100,00
Total	230	100,00	

Table E.1: frequency table of CSR_Score

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) CSR_Score	1,000								
(2) BGD	0,221* (0,001)	1,000							
(3) Age_mean	0,258* (0,000)	-0,114 (0,085)	1,000						
(4) BND	0,320* (0,000)	0,251* (0,001)	0,333* (0,000)	1,000					
(5) TBD	0,312* (0,000)	0,504* (0,000)	0,219* (0,001)	0,760* (0,000)	1,000				
(6) REV	0,493* (0,000)	0,226* (0,001)	0,097 (0,144)	0,327* (0,000)	0,378* (0,000)	1,000			
(7) Board_Size	0,292* (0,000)	0,201* (0,002)	0,036 (0,583)	0,228* (0,002)	0,412* (0,000)	0,436* (0,000)	1,000		
(8) TA	0,471* (0,000)	0,362* (0,000)	-0,011 (0,867)	0,192* (0,010)	0,407* (0,000)	0,682* (0,000)	0,602* (0,000)	1,000	
(9) Tenure_c	0,162* (0,014)	0,030 (0,652)	0,204* (0,002)	0,083 (0,268)	0,171* (0,010)	0,150* (0,024)	-0,031 (0,644)	0,038 (0,569)	1,000

*** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$

Table E.2: Pearson correlation coefficients matrix

	VIF	1/VIF
TA	2,663	0,375
REV	2,122	0,471
Board Size	1,614	0,62
BND	1,382	0,724
Age mean	1,23	0,813
BGD	1,191	0,84
Tenure c	1,064	0,94
Mean VIF	1,609	.

Table E.3: VIF scores regression with CSR_Score and BGD, Age_mean, BND, RE, Board_Size, TA, and, Tenure_c

	VIF	1/VIF
TA	2,46	0,407
REV	1,97	0,508
Board Size	1,69	0,592
TBD	1,328	0,753
Tenure c	1,068	0,937
Mean VIF	1,703	.

Table E.4: VIF scores regression with CSR_Score and TBD, REV, Board_Size, TA, and, Tenure_c

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of **CSR_Score**

H0: Constant variance

chi2(1) = **0.10**

Prob > chi2 = **0.7525**

Table E.5: Breusch-Pagan test for heteroskedasticity for the regression with CSR_Score and BGD, Age_mean, BND, REV, Board_Size, TA, and, Tenure_c

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
 Assumption: Normal error terms
 Variable: Fitted values of **CSR_Score**

H0: Constant variance

chi2(1) = **0.28**
 Prob > chi2 = **0.5940**

Table E.6: Breusch-Pagan test for heteroskedasticity for the regression with *CSR_Score* and *TBD*, *REV*, *Board_Size*, *TA*, and, *Tenure_c*

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
r	180	0.0000	0.0422	18.99	0.0001

Table E.7: Skewness-kurtosis test for the regression with *CSR_Score* and *BGD*, *Age_mean*, *BND*, *REV*, *Board_Size*, *TA*, and, *Tenure_c*

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test	
				Adj chi2(2)	Prob>chi2
resid	228	0.0000	0.0017	38.17	0.0000

Table E.8: Skewness-kurtosis test for the regression with *CSR_Score* and *TBD*, *REV*, *Board_Size*, *TA*, and, *Tenure_c*

Appendix F Stata do file

```
clear
set more off
global path "/Users/mjurjus/Documents/RU/Master/Thesis/Data/"

* install packages
ssc install estout
ssc install asdoc

* import BoardEx Organization Summary data
import excel
"/Users/mjurjus/Documents/RU/Master/Thesis/Data/BoardEx_OrganizationSummaryAnalytics_
NL.xlsx", sheet("fjkh7cyllr874x3r") firstrow

* create year variable
gen year = year(AnnualReportDate)
* only keep years 2016-2021
keep if year >= 2016 & year <= 2021

* inspect the data and if necessary make dummy
descr
tab NED
gen executive_director = (NED == "Yes" )
tab RowType
gen Board_Member = (RowType == "Board Member" )
* all people in the dataset are board members
drop NED RowType

* merge BoardEx datasets
merge m:1 DirectorID using "$path/BoardEx_IndividualProfile_NL.dta"
drop if _merge == 2
drop _merge
descr
summarize

* encode ISIN codes
encode ISIN, gen (ISIN2)
drop ISIN
rename ISIN2 ISIN

* inspect the data and if necessary make dummy
descr
tab Gender
gen Male = (Gender == "M" )
gen Female = (Gender == "F" )

* Make Board Gender Diversity (BGD) the proportion of female on the board
gen BGD = 1 - GenderRatio
```

```
* rename variables
rename NationalityMix BND
rename NumberDirectors Board_Size
label variable BGD "BGD"
label variable BND "BND"
label variable Board_Size "Board Size"

* create variable age from birth data
gen year_DOB = substr(DOB, -4, 4)
destring year_DOB, force replace
drop Age
gen Age = year - year_DOB
drop DOD DOB

* create age categories
tab year_DOB
generate generation = ""
replace generation = "Silent Generation" if year_DOB >= 1928 & year_DOB <= 1945
replace generation = "Baby Boomers" if year_DOB >= 1945 & year_DOB <= 1964
replace generation = "Generation X" if year_DOB >= 1965 & year_DOB <= 1980
replace generation = "Millennials" if year_DOB >= 1981 & year_DOB <= 1997

tabulate generation, generate(generation_dummy)
rename generation_dummy4 SilentGeneration
rename generation_dummy3 BabyBoomers
rename generation_dummy2 GenerationX
rename generation_dummy1 Millenials

* create Board Age Diversity variable
* First calculate Age mean
bysort BoardID year: egen Age_mean = mean(Age)

* Second make a Board Age Diversity variable based on the age categories
* Step 1: Calculate the number of unique age categories for each board in the dataset.
egen num_age_cat = group(generation)
* Step 2: Calculate the maximum possible number of unique age categories a board can have based on the
amount of age categories.
egen max_num_age_cat = max(num_age_cat)
* I want BAD just like BGD and BND to be a percentage
* Step 3: Calculate BAD
gen BAD = num_age_cat / max_num_age_cat

* create Total Board Diversity variable
bysort BoardID year: gen TBD = (BGD + BAD + BND) / 3
order DirectorID BoardID year TBD BGD BAD BND Gender Age year_DOB generation Nationality

* create aggregated data set op bedrijfsniveau
bysort BoardID year: gen dup = cond(_N==1,1,_n)
order BoardID year dup
drop if dup > 1
```

```
* per bedrijf per jaar maken we een variabele dup op de voorwaarde dat (if else) het totaal aantal
observaties (_N) gelijk is aan 1, dan geven we het de waarde 1 en anders tellen we het op
* en dan dropen we alles boven 1 want we hoeven maar 1 voor ieder bedrijf
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Merged_Boardex2.dta", replace
```

```
* import internal CSR actions data
import excel "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Internal CSR actions NL def.xlsx",
sheet("Sheet2") firstrow clear
destring NCNM2015-PEHS2021, replace force
reshape long NCNM PE WT EMT PWE PEE REU ESCM CSRSC ACI ACE BSP ECP IBM SAS SRP
HRP PDO PST PCD PEHS, i(ISIN) j(year)
```

```
encode ISIN, gen (ISIN2)
drop ISIN
rename ISIN2 ISIN
order ISIN
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Internal.dta", replace
```

```
* import external CSR actions data
import excel "/Users/mjurjus/Documents/RU/Master/Thesis/Data/external CSR actions NL DEF.xlsx",
sheet("Sheet1") firstrow clear
destring NSER2016-IP2021, replace force
reshape long NSER VOCER WRI EWR EPA STIR TSR GB ISMDA GCS GRI SRGA SEA PBE PCI
OECD CMS HRC HBRC HFP FWH DCS HIV MT IP, i(ISIN) j(year)
```

```
encode ISIN, gen (ISIN2)
drop ISIN
rename ISIN2 ISIN
order ISIN
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_External.dta", replace
```

```
* import control variables data
import excel "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Eikon extra controle variabelen
NL.xlsx", sheet("Blad1") firstrow clear
destring REV2015-PBEX2021, replace force
reshape long REV TA BBS BSize BSSP PBD PBEX, i(ISIN) j(year)
```

```
encode ISIN, gen (ISIN2)
drop ISIN
rename ISIN2 ISIN
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Control.dta", replace
```

```
* import master data set
use "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Merged_Boardex2.dta"
merge m:1 ISIN year using "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Internal.dta"
drop if _merge == 2
drop _merge
```

```
merge m:1 ISIN year using "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_External.dta"
  drop if _merge == 2
  drop _merge
merge m:1 ISIN year using "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Control.dta"
  drop if _merge == 2
  drop _merge

drop dup
bys BoardID year: gen dup = cond(_N==1,1,_n)
drop if dup > 1
drop dup

save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Merged.dta", replace

* Drop unnecessary variables
summarize
drop num_age_cat max_num_age_cat

* Rename variables
rename TimeBrd Tenure_b
rename TimeInCo Tenure_c
label variable Tenure_c "Tenure company"
label variable Tenure_b "Tenure board"

* Check for high correlation of the internal CSR actions with the independent variables
pwcorr BGD BND BAD TBD NCNM PE WT EMT PWE PEE REU ESCM CSRSC ACI ACE BSP ECP
IBM SAS SRP HRP PDO PST PCD PEHS, sig star (.05)
* BSP should be dropped
* Create the variable internal CSR actions Score
bysort BoardID year: egen Internal = total(NCNM + PE + WT + EMT + PWE + PEE + REU + ESCM +
CSRSC + ACI + ACE + ECP + IBM + SAS + SRP + HRP + PDO + PST + PCD + PEHS)
tabulate Internal
generate Internal_Score = Internal / 21
tabulate Internal_Score
* Drop internal actions variables
drop NCNM PE WT EMT PWE PEE REU ESCM CSRSC ACI ACE BSP ECP IBM SAS SRP HRP PDO
PST PCD PEHS

* Check for high correlation of the internal CSR actions with the independent variables
pwcorr BGD BND BAD TBD NSER VOCER WRI EWR EPA STIR TSR GB ISMDA GCS GRI SRGA
SEA PBE PCI OECD CMS HRC HBRC HFP FWH DCS HIV MT IP
tab GRI
tab ISMDA
* Drop GRI
* Create the variable external actions Score
bysort BoardID year: egen External = total(NSER + VOCER + WRI + EWR + EPA + STIR + TSR + GB
+ ISMDA + GCS + SRGA + SEA + PBE + PCI + OECD + CMS + HRC + HBRC + HFP + FWH + DCS
+ HIV + MT + IP)
tabulate External
generate External_Score = External / 25
tabulate External_Score
```

* Drop external actions variables

drop NSER VOCER WRI EWR EPA STIR TSR GB ISMDA GCS GRI SRGA SEA PBE PCI OECD
CMS HRC HBRC HFP FWH DCS HIV MT IP

* Create the variable CSR Decoupling

generate CSR_Decoupling = External_Score - Internal_Score

* Tell stata it is panel data

xtset BoardID year

* Inspect panel data

tabulate BoardID, summarize(year)

* The data is unbalanced panel data

* Make another CSR decoupling variable but with Internal Actions being lagged 1 year

generate CSR_Decoupling_lag = External_Score - L.Internal_Score

* Make the CSR score variable

generate CSR_Score = Internal + External

* Make sector dummies

tab Sector

* As Electronic & Electrical Equipment has the highest frequency, this is used as the reference category

* Create a new variable for each sector

gen Banks = (Sector == "Banks")

gen Beverages = (Sector == "Beverages")

gen Business_Services = (Sector == "Business Services")

gen Chemicals = (Sector == "Chemicals")

gen Construction_Building = (Sector == "Construction & Building Materials")

gen Consumer_Service = (Sector == "Consumer Services")

gen Diversified_Industrials = (Sector == "Diversified Industrials")

gen Electronic = (Sector == "Electronic & Electrical Equipment")

gen Food_Retail = (Sector == "Food & Drug Retailers")

gen Food_Producers = (Sector == "Food Producers & Processors")

gen Info_Tech = (Sector == "Information Technology Hardware")

gen Insurance = (Sector == "Insurance")

gen Leisure_Goods = (Sector == "Leisure Goods")

gen Life_Assurance = (Sector == "Life Assurance")

gen Media = (Sector == "Media & Entertainment")

gen Oil_Gas = (Sector == "Oil & Gas")

gen Pharma_Biotech = (Sector == "Pharmaceuticals and Biotechnology")

gen Real_Estate = (Sector == "Real Estate")

gen Software_Comp = (Sector == "Software & Computer Services")

gen Speciality_Finance = (Sector == "Speciality & Other Finance")

gen Steel_Metals = (Sector == "Steel & Other Metals")

gen Telecom = (Sector == "Telecommunication Services")

gen Transport = (Sector == "Transport")

* Tabulate the year variable and create dummies

tabulate year, generate(year_dummy)

* Year 2015 (year_dummy1) only has one observation so should be excluded from the analysis, still have 5 years

```
* label the year dummies
label variable year_dummy1 "2016"
label variable year_dummy2 "2017"
label variable year_dummy3 "2018"
label variable year_dummy4 "2019"
label variable year_dummy5 "2020"
label variable year_dummy6 "2021"
summarize year_dummy1 year_dummy2 year_dummy3 year_dummy4 year_dummy5 year_dummy6

save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Merged_def2.dta", replace

* Make a summary statistics table
summarize CSR_Decoupling CSR_Decoupling_lag TBD BGD BAD BND REV Board_Size TA
Tenure_b CSR_Score Age_mean Tenure_c year Age year_DOB Internal External Internal_Score
External_Score Board_Member ISIN

* Check for missing values
misstable summarize CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size
TA Tenure_b
* Looking at the data CSR_decoupling_lag does have 57 missing data points, as this is the dependent
variable, these should be dropped.
* BAD and TBD have 19 missing data points
* So should be looked at further
gen missing_Lag = missing(CSR_Decoupling_lag)
gen missing_BAD = missing(BAD)
gen missing_TBD = missing(TBD)
tab missing_BAD
tab missing_TBD
* Perform a little MCAR test on the missings of CSR_decoupling_lag, BAD and TBD
* Degrees of freedom are too low to perform a little MCAR test, so perform a chi square test with the null
hypothesis that the missing data is MCAR.
logit missing_Lag
logit missing_BAD
logit missing_TBD
* As the p-value (0,000) is smaller than 0,05, H0 should be rejected, the missings are not MCAR.
* As CSR_decoupling_lag is the dependent variable, the missing values should be dropped.
drop if CSR_Decoupling_lag == .
drop if TBD == .
drop if BAD == .
drop missing_BAD missing_TBD missing_Lag

* Transform REV and TA
summarize REV TA
gen Rev = REV / 1000000
gen TAssets = TA / 1000000
drop REV TA
rename Rev REV
rename TAssets TA

* Make a summary statistics table
```

```
summarize CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size TA  
Tenure_b CSR_Score Age_mean Tenure_c  
tab generation  
tab Nationality
```

* Check for outliers in the dependent variable

```
graph box CSR_Decoupling  
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Boxplot CSR  
Decoupling.png"  
summarize CSR_Decoupling, detail  
tab CSR_Decoupling
```

```
graph box CSR_Decoupling_lag  
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Boxplot CSR  
Decoupling_lag.png"  
summarize CSR_Decoupling_lag, detail  
tab CSR_Decoupling_lag
```

```
graph box CSR_Score  
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Boxplot CSR_Score.gph"  
summarize CSR_Score, detail  
tab CSR_Score  
drop if CSR_Score == 0
```

* Inspect the normal distribution of the variables

* Create quadratic variables

```
gen CSR_Decoupling_sq = CSR_Decoupling^2  
gen CSR_Decoupling_lag_sq = CSR_Decoupling_lag^2  
gen CSR_Score_squared = CSR_Score^2  
gen BGD_squared = BGD^2  
gen BAD_squared = BAD^2  
gen BND_squared = BND^2  
gen TBD_squared = TBD^2  
gen Age_mean_squared = Age_mean^2  
gen REV_squared = REV^2  
gen TA_squared = TA^2  
gen Board_Size_squared = Board_Size^2  
gen Tenurec_squared = Tenure_c^2  
gen Tenureb_squared = Tenure_b^2
```

* Create logarithmic variables

```
gen CSR_Decoupling_ln = ln(CSR_Decoupling)  
gen CSR_Decoupling_lag_ln = ln(CSR_Decoupling_lag)  
gen CSR_Score_ln = ln(CSR_Score)  
gen BGD_ln = ln(BGD)  
gen BAD_ln = ln(BAD)  
gen BND_ln = ln(BND)  
gen TBD_ln = ln(TBD)  
gen Age_mean_ln = ln(Age_mean)  
gen REV_ln = ln(REV)  
gen TA_ln = ln(TA)  
gen Board_Size_ln = ln(Board_Size)
```

```
gen Tenurec_ln = ln(Tenure_c)
gen Tenureb_ln = ln(Tenure_b)
```

* Show normal distribution

```
hist CSR_Decoupling, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling normal
distribution.png"
hist CSR_Decoupling_sq, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling_swuared
normal distribution.png"
hist CSR_Decoupling_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling_ln normal
distribution.png"
```

```
hist CSR_Decoupling_lag, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling_lag normal
distribution.png"
hist CSR_Decoupling_lag_sq, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling_lag_squared
normal distribution.png"
hist CSR_Decoupling_lag_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Decoupling_lag_ln
normal distribution.png"
```

```
hist CSR_Score, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Score normal
distribution.png"
hist CSR_Score_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Score_squared normal
distribution.png"
hist CSR_Score_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/CSR_Score_ln normal
distribution.png"
```

```
hist BGD, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BGD normal distribution.png"
hist BGD_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BGD_squared normal
distribution.png"
hist BGD_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BGD_ln normal
distribution.png"
```

```
hist BAD, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BAD normal distribution.png"
hist BAD_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BAD_squared normal
distribution.png"
hist BAD_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BAD_ln normal
distribution.png"
```

```
hist BND, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BND normal distribution.png"
hist BND_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BND_squared normal
distribution.png"
hist BND_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/BND_ln normal
distribution.png"
```

```
hist TBD, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TBD normal distribution.png"
hist TBD_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TBD_squared normal
distribution.png"
hist TBD_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TBD_ln normal
distribution.png"
```

```
hist Age_mean, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Age_mean normal
distribution.png"
hist Age_mean_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Age_mean_squared normal
distribution.png"
hist Age_mean_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Age_mean_ln normal
distribution.png"
```

```
hist REV, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/REV normal distribution.png"
hist REV_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/REV_squared normal
distribution.png"
hist REV_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/REV_ln normal
distribution.png"
```

```
hist TA, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TA normal distribution.png"
hist TA_squared, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TA_squared normal
distribution.png"
hist TA_ln, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/TA_ln normal
distribution.png"
```

```
hist Board_Size, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Board_Size normal
distribution.png"
hist Board_Size_squared, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Board_Size_squared normal  
distribution.png"
```

```
hist Board_Size_In, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Board_Size_In normal  
distribution.png"
```

```
hist Tenure_c, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_c normal  
distribution.png"
```

```
hist Tenurec_squared, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_c_squared normal  
distribution.png"
```

```
hist Tenurec_In, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_c_In normal  
distribution.png"
```

```
hist Tenure_b, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_b normal  
distribution.png"
```

```
hist Tenureb_squared, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_b_squared normal  
distribution.png"
```

```
hist Tenureb_In, normal
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/Tenure_b_In normal  
distribution.png"
```

* CSR_decoupling_lag, CSR_Score, BGD, TBD and Age_mean do not show an improvement in their quadratic and logarithmic terms, thus drop.

```
drop CSR_Decoupling_lag_sq CSR_Decoupling_lag_In
```

```
drop TBD_In TBD_squared
```

```
drop BGD_squared BGD_In
```

```
drop CSR_Score_squared CSR_Score_In
```

```
drop Age_mean_squared Age_mean_In
```

* CSR_decoupling is improved in their quadratic term

```
drop CSR_Decoupling_In
```

* BAD, BND, Board_Size, REV, TA, Tenure_c and Tenure_b are improved in their logarithmic terms

```
drop BAD_squared
```

```
drop BND_squared
```

```
drop Board_Size_squared
```

```
drop REV_squared
```

```
drop TA_squared
```

```
drop Tenureb_squared
```

```
drop Tenurec_squared
```

* However, as REV has some negative values so the logarithmic form can not be used

```
drop REV_In
```

```
rename CSR_Decoupling CSR_Decoupling_o
```

```
rename CSR_Decoupling_sq CSR_Decoupling
```

```
rename BAD BAD_o
```

```
rename BAD_In BAD
rename BND BND_o
rename BND_In BND
rename Board_Size Board_Size_o
rename Board_Size_In Board_Size
rename TA TA_o
rename TA_In TA
rename Tenure_b Tenure_b_o
rename Tenureb_In Tenure_b
rename Tenure_c Tenure_c_o
rename Tenurec_In Tenure_c
```

* Show the summary statistics after transformation

```
summarize CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size TA
Tenure_b CSR_Score Age_mean Tenure_c
```

* Check for correlation

```
asdoc pwcorr CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size TA
Tenure_b, sig star(.05)
```

* Check for multicollinearity

```
regress CSR_Decoupling BGD BAD BND REV TA Board_Size Tenure_b
asdoc vif
```

* Check for homoskedasticity by conducting a Breusch-Pagan test

```
regress CSR_Decoupling BGD BAD BND REV TA Board_Size Tenure_b year_dummy2 year_dummy3
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport
estat hettest
```

```
regress CSR_Decoupling_lag BGD BAD BND REV TA Board_Size Tenure_b year_dummy2
year_dummy3 year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services
Chemicals Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport
estat hettest
```

* Show the residuals in a graph

* CSR_decoupling

```
regress CSR_Decoupling BGD BAD BND REV TA Board_Size Tenure_b year_dummy2 year_dummy3
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport
predict r, resid
rvfplot, yline(0)
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/rvfplot.png"
```

* CSR_decoupling_lag

```
regress CSR_Decoupling_lag BGD BAD BND REV TA Board_Size Tenure_b year_dummy2
year_dummy3 year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services
Chemicals Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport
predict r_lag, resid
rvfplot, yline(0)
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/rvfplot2.png"
```

* Check whether residuals are normally distributed

```
sktest r
sktest r_lag
```

```
kdensity r, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/kerneldensity.png"
kdensity r_lag, normal
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/kerneldensity2.png"
```

```
pnorm r
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/pnorm.png"
pnorm r_lag
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/pnorm2.png"
```

* Hausman test to test whether a fixed or random effects model should be used

```
xtreg CSR_Decoupling BGD BAD BND REV Board_Size TA Tenure_b year_dummy2 year_dummy3
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, fe
estimates store model1fe
xtreg CSR_Decoupling BGD BAD BND REV Board_Size TA Tenure_b year_dummy2 year_dummy3
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, re
estimates store model1re
hausman model1fe model1re
```

```
xtreg CSR_Decoupling_lag BGD BAD BND REV Board_Size TA Tenure_b year_dummy2
year_dummy3 year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services
Chemicals Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, fe
estimates store model2fe
xtreg CSR_Decoupling_lag BGD BAD BND REV Board_Size TA Tenure_b year_dummy2
year_dummy3 year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services
Chemicals Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, re
estimates store model2re
hausman model2fe model2re
```

```
xtreg CSR_Decoupling TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3 year_dummy4  
year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals Construction_Building  
Consumer_Service Diversified_Industrials Electronic Food_Retail Food_Producers Insurance  
Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate Software_Comp  
Speciality_Finance Steel_Metals Telecom Transport, fe
```

```
estimates store model3fe
```

```
xtreg CSR_Decoupling TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3 year_dummy4  
year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals Construction_Building  
Consumer_Service Diversified_Industrials Electronic Food_Retail Food_Producers Insurance  
Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate Software_Comp  
Speciality_Finance Steel_Metals Telecom Transport, re
```

```
estimates store model3re
```

```
hausman model3fe model3re
```

```
xtreg CSR_Decoupling_lag TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate  
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, fe
```

```
estimates store model4fe
```

```
xtreg CSR_Decoupling_lag TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate  
Software_Comp Speciality_Finance Steel_Metals Telecom Transport, re
```

```
estimates store model4re
```

```
hausman model4fe model4re
```

** the tests indicates that there is no significant difference in coefficients between the fixed effects and random effects models. As earlier research used fixed effects model, this study will also used fixed effects models. **

* Conduct the first regression analysis

```
xtreg CSR_Decoupling BGD BAD BND REV Board_Size TA Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport, fe
```

* All the industry variables and year_dummy6 were omitted due to collinearity

```
xtreg CSR_Decoupling BGD BAD BND REV Board_Size TA Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5, fe
```

```
outreg2 using results, word replace
```

```
xtreg CSR_Decoupling_lag BGD BAD BND REV Board_Size TA Tenure_b year_dummy2  
year_dummy3 year_dummy4 year_dummy5, fe
```

```
outreg2 using results, word append
```

* Conduct the second regression analysis (TBD)

* Check for multicollinearity

```
regress CSR_Decoupling TBD REV TA Board_Size Tenure_b  
asdoc vif
```

* Check for homoskedasticity by conducting a Breusch-Pagan test

```
regress CSR_Decoupling TBD REV TA Board_Size Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport  
estat hettest
```

```
regress CSR_Decoupling_lag TBD REV TA Board_Size Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport  
estat hettest
```

* Show the residuals in a graph

* CSR_decoupling

```
regress CSR_Decoupling TBD REV TA Board_Size Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport  
predict resid, resid
```

```
rvfplot, yline(0)
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/rvfplot_reg2.png"
```

* CSR_decoupling_lag

```
regress CSR_Decoupling_lag TBD REV TA Board_Size Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail  
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport  
predict resid_lag, resid
```

```
rvfplot, yline(0)
```

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Results/rvfplot2_reg2.png"
```

* Check whether residuals are normally distributed

```
sktest resid
```

```
sktest resid_lag
```

kdensity resid, normal

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/kerneldensity.png"
```

kdensity resid_lag, normal

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/kerneldensity2.png"
```

pnorm resid

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/pnorm.png"
```

pnorm resid_lag

```
graph save "Graph" "/Users/mjurjus/Documents/RU/Master/Thesis/Data/pnorm2.png"
```

* Conduct the second regression analysis (TBD)

```
xtreg CSR_Decoupling TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3 year_dummy4  
year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals Construction_Building  
Consumer_Service Diversified_Industrials Electronic Food_Retail Food_Producers Info_Tech Insurance  
Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech Real_Estate Software_Comp  
Speciality_Finance Steel_Metals Telecom Transport, fe
```

* All the industry variables and year_dummy6 were omitted due to collinearity

```
xtreg CSR_Decoupling TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3 year_dummy4  
year_dummy5, fe vce(robust)  
outreg2 using results, word replace
```

```
xtreg CSR_Decoupling_lag TBD REV Board_Size TA Tenure_b year_dummy2 year_dummy3  
year_dummy4 year_dummy5, fe  
outreg2 using results, word append
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_Merged_defreg2.dta", replace
```

* Robustness test

```
tab CSR_Score
```

* Check correlation

```
asdoc pwcorr CSR_Score BGD Age_mean BND TBD REV Board_Size TA Tenure_c, sig star(.05)
```

* Check for multicollinearity

```
regress CSR_Score BGD Age_mean BND REV Board_Size TA Tenure_c
```

```
asdoc vif
```

```
regress CSR_Score TBD REV Board_Size TA Tenure_c
```

```
asdoc vif
```

* Check for heteroskedasticity

```
regress CSR_Score BGD Age_mean BND REV Board_Size TA Tenure_c
```

```
estat hettest
```

```
regress CSR_Score TBD REV Board_Size TA Tenure_c
```

```
estat hettest
```

* Check if the residuals are normally distributed

```
drop resid r_r_lag resid_lag
```

```
regress CSR_Score BGD Age_mean BND REV Board_Size TA Tenure_c
```

```
predict r
```

```
sktest r
```

```
regress CSR_Score TBD REV Board_Size TA Tenure_c
```

```
predict resid
```

```
sktest resid
```

```
drop r resid
```

* Rerun regression

```
xtreg CSR_Score BGD Age_mean BND REV Board_Size TA Tenure_c year_dummy2 year_dummy3  
year_dummy4 year_dummy5 year_dummy6 Banks Beverages Business_Services Chemicals  
Construction_Building Consumer_Service Diversified_Industrials Electronic Food_Retail
```

```
Food_Producers Info_Tech Insurance Leisure_Goods Life_Assurance Media Oil_Gas Pharma_Biotech  
Real_Estate Software_Comp Speciality_Finance Steel_Metals Telecom Transport, fe
```

```
xtreg CSR_Score BGD Age_mean BND REV Board_Size TA Tenure_c year_dummy2 year_dummy3
```

```
year_dummy4 year_dummy5, fe
```

```
outreg2 using results, word replace
```

```
xtreg CSR_Score TBD REV Board_Size TA Tenure_c year_dummy2 year_dummy3 year_dummy4  
year_dummy5, fe  
outreg2 using results, word append
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_def_robust.dta", replace
```

```
* Make greenwashing variables
```

```
keep if CSR_Decoupling > 0
```

```
keep if CSR_Decoupling_lag > 0
```

```
summarize CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size TA  
Tenure_b
```

```
*Only 7 observations, not enough to run regression.
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_greenwashing.dta", replace
```

```
* Brownwashing
```

```
use "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_def_robust.dta"
```

```
keep if CSR_Decoupling < 0
```

```
keep if CSR_Decoupling_lag < 0
```

```
summarize CSR_Decoupling CSR_Decoupling_lag BGD BAD BND TBD REV Board_Size TA  
Tenure_b
```

```
** no observations
```

```
save "/Users/mjurjus/Documents/RU/Master/Thesis/Data/Stata_brownwashing.dta", replace
```