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The Role of Age and Gender Diversity on Risk Appetite in Corporate Boardrooms: The European Case

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Abstract

This thesis investigates how gender and age diversity impact risk appetite in S&P Europe 350 boardrooms, using methods like Ordinary Least Squares, Fixed Effects, and Quantile Regressions on a 2005-2022 sample of 227 firms. Theoretically, diversity is expected to reduce risk appetite due to benefits like broader networks and improved decision-making. Regression coefficients reveal that gender diversity reduces risk appetite, indicating more women on boards foster risk aversion, evidenced by increased returns and decreased debt. Furthermore, gender diversity enhances innovation. However, age diversity surprisingly increases risk appetite, with diverse boards having higher debts and lower returns. In addition to enriching current understandings of board diversity's impact on firm risk appetite, the application of quantile-specific regressions constitutes an innovative contribution to the field as it enables measuring effects across the population.

Keywords: *Age Diversity, Board of Directors, Gender Diversity, Quantile Regressions, Risk Appetite, S&P Europe 350*

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1 Introduction

During the 1980s and 1990s, Milton Friedman's *Shareholder Value Maximization Theory* (1970) became increasingly prominent. According to Friedman, firms should generate as much shareholder wealth as possible, and make their corporate decisions without reckoning with other stakeholder groups. Practice is different. Management has to deal with a lot of circumstances in their business environment that can affect decision-making and the way risk is perceived. Corporate management is based on the assumption that management controls activities, such as strategic planning, directing, and organizing, within the organization to make informed decisions and ultimately achieve its goals. Therefore, the decisions do not only impact the performance of the organization but also how much risk the organization takes[1]. Risk (at the corporate level) can be defined as the uncertainty that something might (negatively or positively) affect the firm's ability to generate profits.

To mitigate risk within the company, especially within decision-making, corporate governance mechanisms are implemented. Corporate governance mechanisms aim to improve the performance of companies by implementing initiatives that incentivize employees to optimize efficiency and achieve long-term growth and prevent employees to abuse corporate funds by limiting their power (Guluma, 2021). Corporate governance helps boost the firm's reputation and shareholder confidence in the firm and reduces risk (Guluma, 2021; OECD, 2004). The diversity of the board is an example of a corporate governance mechanism.

Diversity in the board of directors (board diversity) is one of the most compelling corporate governance issues currently facing a corporation's management. It can be defined as diversity in the composition of observable characteristics of members of the board, like gender, age, and nationality (Carter et al., 2003). Furthermore, non-observable characteristics like educational level, experience, sexual orientation, and personality are covered by board diversity (Hossain & Kryzanowski, 2020; PricewaterhouseCoopers, n.d.).

Diversity, equity, and inclusion have reached a large public interest and therefore are being incorporated into corporate strategies (Carter et al., 2003; Hossain & Kryzanowski, 2020). Large multinationals acknowledge the importance of diversity, not only from an ethical perspective but

[1] Source:https://www.indeed.com/career-advice/career-development/corporate-management#:~:text=Corporate%20management%20includes%20tasks%2C%20such,strategic%20planning%20and%20business%20development.

also from a performance-driven motive. Several Dutch publicly listed firms acknowledge the value of diversity. The following quotes can be found on the website of these firms, and shows their view on diversity:

> *Ahold-Delhaize: "We aspire to achieve 100% gender balance at all levels, to be 100% reflective of the markets we serve (as defined by each local brand), and to strive for 100% inclusion, every day. In order to truly unlock the power of diverse teams, it is critical to foster an inclusive work environment where all associates have equitable access to opportunities and can reach their full potential."*[2]

Ahold-Delhaize perceives diversity as valuable for diverse teams, especially to unlock their full potential. Heineken takes on a more performance-based approach:

> *Heineken: "We believe diversity of thoughts leads to greater innovation and better performance. Inclusion also starts with courageous leadership which is why we nurture bold and brave leaders who create space for everyone, equally."* [3]

Shell is also focused on diversity from a business process and performance-based perspective, but instead of solely focusing on shareholder value, it looks at the impact of diversity from the broader stakeholder perspective.

> *Shell: "It will bring a richness of experience that will help us innovate and better serve our customers, so we all thrive together."* [4]

All three firms acknowledge the impact diverse teams have on their business processes, as well as the impact on customers. The corporations perceive board diversity not only as '*the right thing to do*', but also as a corporate governance mechanism enhancing performance. This performance can be related to increased shareholder value (Brancato & Patterson, 1999).

Not only do firms see the importance of diversity. Diversity, equity, and inclusion have been explored increasingly by scholars during the past two decades. This push can be characterized

[2] Source: https://www.aholddelhaize.com/about/diversity-equity-inclusion/

[3] Source: https://www.theheinekencompany.com/our-sustainability-story/people-and-behaviours/inclusion-and-diversity

[4] Source: https://www.shell.com/about-us/diversity-equity-and-inclusion.html

by several causes. First, there is a growing recognition of the importance of globalization (Miller & del Carmen Triana, 2009). As migration has increased by more than 50% since 1990, it is utterly important to understand the dynamics within and between social groups to maximize firm performance (IOM, 2021). Second, rules and regulations, such as quotas, have been implemented in several countries to increase diversity within management positions, which has increased the social recognition of the importance of diversity (Ahern & Dittmar, 2011; Terjesen et al., 2015). Third, increasing social importance often leads to an increase in performed studies. Social movements like #BlackLivesMatter, #MeToo, and the growing gender-equality movements have had a huge impact on the public perception of diversity and inclusion, which increased the awareness of researchers to address the importance of these concepts (Iorio, 2017).

With an increased practical- and academic demand for diverse boards, it is essential to examine the effect this increase has on corporate financial decisions. Psychological- and sociological studies have shown that differences in e.g., gender and age can lead to differences in risk appetite. The risk appetite of the board of directors is reflected by the corporate financial decisions, like the amount of R&D expenses, or the amount of debt the firm holds. It is important to examine whether diverse boards affect these variables, as it is essential for corporations to acquire knowledge about how the composition of the board affects their risk management.

Prior studies examine the effect of board diversity and firm performance. These studies do not find an unambiguous result regarding the effect: some find a positive effect of board diversity on firm performance (Bernile et al., 2018; Carter et al., 2003; Miller & del Carmen Triana, 2009; Perryman et al., 2016), and others find a negative effect of board diversity on firm performance (Adams & Ferreira, 2009; Talavera et al., 2018). Others do not find an effect of board diversity on firm performance (Carter et al., 2010; Sila et al., 2016). It is important to note that all these studies are performed based on the relationship between board diversity and performance, instead of the relationship between board diversity and variables that can be affected by the risk appetite of the board of directors, and thus are reflected by their corporate financial decisions. Furthermore, most studies have focused on the relationship between gender board diversity and firm performance. Finally, prior studies' main focus lies on either banks (Janahi et al., 2022; Nguyen et al., 2015; Talavera et al., 2018), or firms within the United States (Bernile et al., 2018; Brancato & Patterson, 1999). A gap in existing literature can be discovered, and this gives a rationale for the research question examined in this study:

'How does the composition of board diversity (e.g., gender and age) affect the risk appetite for S&P Europe 350 listed firms?'

This sampling decision has been made because of several reasons. First, European firms are subject to diverse laws and regulations. The S&P Europe 350 consists of 16 countries, each with its own laws and regulations regarding gender diversity (Terjesen et al., 2015). Compared to, for example, a sample of S&P 500 firms, where only within-country differences can be examined, this results in a broader view of the relationship between board diversity and risk appetite. A second rationale for this sample is that US firms are generally biased towards risk-seeking behavior, as compared to European firms, who are generally risk-neutral or risk-averse (Howald et al., 2013). The American risk culture can have a biased effect on how gender- and age diversity affect risk appetite. A third rationale is the implementation of the so-called 'Women on Boards' Directive by the European Parliament. This EU-wide directive aims to ensure that at least 33% of all board members for listed companies are occupied by the 'underrepresented sex' by the end of June 2026. Member states can also receive penalties when not complying with the regulation (European Commission, 2022). This implies that the European Union actively improves its gender diversity actions. As the US does only have the 'US Equal Employment Opportunity Commission' implemented, less incentive is present to increase their efforts towards gender equality from a regulatory perspective (Davaki, 2012).

Using Ordinary Least Squares and Fixed Effect regressions, this study takes on a quantitative approach to analyze the relationship between board diversity and risk appetite. To capture risk appetite, eight proxies are used. As most studies have performed an analysis based on the assumption that the coefficient of the effect is consistent across the population, this study contributes to the academic literature by introducing Quantile Regressions. Within risk appetite studies, this novel method has never been applied before. By applying this method, both academics and the board of directors can benefit from this study's results. This study provides valuable insights and implications, both theoretically and practically, that can be implemented in the toolbox of organizations to align the risk appetite of the board of directors with the organization's goals and thereby enhance overall firm performance. By introducing this method, this study aims to close the debate about the effect of board diversity on risk appetite, by providing robust results on multiple gender-, age-, and risk appetite-related variables.

The paper is structured as follows. Part 2 gives an overview of the literature. It introduces the concepts of the board of directors and risk appetite. Then, three theories underlying corporate governance are provided, following empirical results based on gender and age diversity. Part 3 describes the methodology. It defines the data gathered, the variables used, and the method of analysis to answer the research question. Part 4 will contain the results, where Ordinary Least Squares, Fixed Effects, and Quantile Regressions are discussed and compared with previous literature. Part 5 holds the discussion, where significant deviations from expectations are analyzed. Furthermore, implications, limitations, and avenues for future research are given. Part 6 of this study concludes concisely by answering the research question.

2 Literature Review

2.1 Theoretical Background

This study will examine the relationship between the composition of board diversity and risk appetite for publicly listed firms. Before starting with the theoretical framework underlying the corporate governance of the board of directors, these two components need to be introduced.

2.1.1 The Board of Directors

In public companies, the members of the board of directors are elected by shareholders. They are legally obliged to represent the shareholders. The board of directors can be seen as the formal link between managers and shareholders and is also defined as the 'apex' of the decision control systems of organizations (Fama & Jensen, 1983; M. C. Jensen, 1993; OECD, 2004). According to the OECD, the board has multiple functions: (1) they can give expert advice to the CEO and top managers about budgets, strategy, and plans, (2) they can monitor and control managers on behalf of the shareholders, (3) they can hire, evaluate, and fire top managers, (4) they can vote on major proposals made by management, (5) they ensure the integrity of the reporting systems, and oversee the process of disclosure. (Adams et al., 2015; Anderson et al., 2011; Fama & Jensen, 1983; Forbes & Milliken, 1999; OECD, 2004).

Based on different legislation, boards of directors differ per country in terms of power and composition requirements. Scandals in the past have led to the introduction of the Sarbanes-Oxley Act in the United States. This Act prescribes the board to be largely comprised of independent directors (Adams et al., 2015). Further, the Securities and Exchange Commission (SEC)

implemented the requirement that listed companies must disclose whether diversity was a consideration when directors are appointed (Terjesen et al., 2015).

Several countries have implemented gender quotas in the board of directors of stock-listed firms, such as Norway (40%), Spain (40%), Israel (50%), Kenya (33%), and France (40%) (Ahern & Dittmar, 2011; Terjesen et al., 2015). Countless other countries, such as Germany, Malawi, Nigeria, Poland, and the United Kingdom, were debating whether or not to adopt gender quotas in their Corporate Governance Code (Terjesen et al., 2015). In 2022, the European Commission introduced the agreement to improve the gender balance among boards of directors in EU Member States. The aim is to ensure that at least 40% of non-executive directors are represented by the underrepresented sex, while the goal for all directors is 33%. Member states can impose penalties on companies that fail to comply with the requirements (European Commission, 2022). Still, no additional requirements are in place to further diversify the composition of characteristics within the board.

2.1.2 Risk Appetite

In this study, risk appetite is defined as the amount of risk an organization is willing to take. This is based on the strategy implemented and corporate financial decisions made by management. The COSO Framework states that risk appetite guides resource allocation, and aligns the organization, people, and processes (COSO, 2012). When corporations have a high-risk appetite, they are willing to take high risks to achieve their goals. These goals mainly contain generating high returns and shareholder value (COSO, 2012). Low-risk appetite means that managers tend to avoid risks, and are more cautious in their decision-making.

Several factors influence corporate risk appetite, such as the industry, competition in the market, but also the risk appetite of the board of directors and top management. As argued in the literature, the strategic decisions of the firm are mainly representations of the values and cognitive bases of actors within the organization (Hambrick & Mason, 1984). This implies that the risk appetite of the board of directors is reflected by the financial performance and corporate financial decisions of the corporation. These decisions can include investments, dividend payout, and capital structure.

The board of directors can determine what industries to invest in, R&D resource allocation, and marketing expenditure (Bernile et al., 2018; Hambrick & Mason, 1984; Miller & del Carmen Triana, 2009). As the amount of free cash is related to risk, dividend payout can measure the risk

appetite of the board of directors. Dividends reduce the retained earnings, which limits the investment budget[5], and therefore reduces risk (Benjamin & Biswas, 2019). Further, boards determine the amount of debt acquired and the number of shares outstanding. It is found that female directors, who are characterized by more risk appetite, have lower long-term debt, and higher rates of external equity (Alves et al., 2015). According to this line of argumentation, other financial performance variables, like growth rates, earnings per share, and profitability, can represent the risk appetite of the board as well.

2.2 Theoretical Framework underlying Corporate Governance

Corporate governance can be explained via multiple theories from the economic- and psychological paradigms. Prior studies mostly explained board diversity through *'Agency Theory'* (Fama & Jensen, 1983; C. Jensen & Meckling, 1976). The *'Resource-Dependence and Human Capital Theory'* (Pfeffer & Salancik, 1978; Ruigrok et al., 2007; Talavera et al., 2018) and the *'Social Identity Theory'* (Islam, 2014; Talavera et al., 2018; Terjesen et al., 2009) are also used, but to a lesser extent (Carter et al., 2003; Kamil & Appiah, 2022).

2.2.1 Agency Theory

Based on prior studies, Agency Theory is the theoretical framework most often used by economic professionals to gather the link between board characteristics and firm value (Carter et al., 2003; Kamil & Appiah, 2022). The Agency Theory describes the relationship between the principal (shareholder) and the agent (manager) of a business. The managers of the firm are permitted to make business decisions on behalf of the shareholders, with the condition that the decision must be in the best interest of the shareholders. Based on the assumption that both parties are utility maximisers, this gives reason to believe that the managers will not always do what is best for the shareholders.

Because of the separation of power within a firm, managers are more risk-averse than shareholders (Coffee, 1986; Fama & Jensen, 1983; Jensen & Meckling, 1976). The goal of shareholders is to take risks to generate returns on their investments. Shareholders are risk neutral or even risk-seeking, as they can diversify their portfolio and thereby mitigate firm-specific risk.

[5] Source: https://smallbusiness.chron.com/happens-retained-earnings-dividend-paid-57781.html

Managers are more risk-averse, as they are personally and financially tied to the firm. Employment provides security and income, which makes the manager exhibit a lower risk appetite toward his personal wealth (Wiseman & Gomez-Mejia, 1998). This results in managers taking less risky decisions, thereby also generating lower returns, which does not align with the desires of the shareholders.

The board of directors has a central role in monitoring and controlling managers to ensure that the interests align with those of the shareholders (Fama & Jensen, 1983). Therefore, the directors can compensate managers to align their interests and replace managers if they do not create value for shareholders (Carter et al., 2003). The first thing that must be ensured is that the board consists of independent members (Carter et al., 2003; Guluma, 2021).

Board diversity increases the independence of the board, as people with a wide range of backgrounds have diverse thoughts, which might bring up more control and monitoring practices toward managers. Studies find that a well-diversified mix of directors enhances monitoring quality, and therefore also increased advice to managers. This would, in theory, reduce the problem of misaligned interests (Talavera et al., 2018).

2.2.2 Resource-Dependence Theory and Human Capital Theory

The Resource-Dependence Theory (RDT) is a framework invented by Pfeffer and Salancik and gives an understanding of how the behavior of organizations is influenced by external resources, such as regulators, institutions, customers and suppliers. This is in contrast with Agency Theory, as this focuses on monitoring and control activities (Ruigrok et al., 2007). According to the RDT, the organization is described as an open system that is dependent on contingencies in the external environment. Boards have, besides monitoring, the role of linking the firm to its own network and contacts to secure crucial resources, and thus reduce dependencies (Pfeffer & Salancik, 1978; Ruigrok et al., 2007; Talavera et al., 2018). The theory provides that the main resources to be acquired can be divided into (1) information and expertise, (2), communication channels with parties external to the firm, (3) creation of legitimacy, and (4) support from external organizations (Hillman et al., 2000; Pfeffer & Salancik, 1978; Terjesen et al., 2015). In establishing these key sources, and thereby also reducing environmental uncertainty, the board of directors plays a crucial role (Hillman et al., 2000; Talavera et al., 2018). Within the Resource-Dependence Theory, directors can have different roles: (1) insiders, (2) business experts, (3) support specialists, and (4) community influentials (Hillman et al., 2000).

Each board member has his/her role, expertise, network, and contacts. This increases the number of resources that can be implemented in strategies. According to RDT argumentation, in the current complex and uncertain environment, leadership must be given to those that have obtained certain prestige, skills, experience, and education, or in short: a wide variety of resources (Terjesen et al., 2009). Based on this, a diverse board would increase the external resources that the firm can acquire. This wide variety of resources can lead to a reduction in transaction costs associated with the firm's external linkages (Hillman et al., 2000). Therefore, the firm should be able to achieve a competitive advantage, as its board of directors is a unique set of people that is difficult to imitate (Talavera et al., 2018; Barney, 1991).

Becker's Human Capital Theory focuses more on the individual rather than the firm. The Human Capital Theory argues that every individual has a cumulative stock of education, experience, skills, and cognitive capabilities that affect the organization he/she works in. He argues that every individual can improve his skills and abilities through training and education (Becker, 1993; Terjesen et al., 2009; Barney, 1991).

Combining these theories, it can be argued that there is an interplay between the board of directors and the firm. Firms can choose directors from a pool of possible candidates, and choose whomever they think fits the organization's strategy or vision, based on their resources. As Erhardt et al. (2003) describe, candidate pools are increasingly becoming mixed with both males and females. This increases access to diverse resources, which may impact the corporate governance and overall strategy of firms. According to the literature, women tend to have multiple resources that improve corporate governance mechanisms. Women are more likely to have an MBA and more international experience. Compared to men they have more experience on smaller firm's board of directors (Terjesen et al., 2009). Thus, heterogeneous boards give firms a broad combination of additional resources, perspectives, thoughts, and experience, that results in more complete information and decision-making to solve business problems (Ruigrok et al., 2007).

2.2.3 Social Identity Theory

The Social Identity Theory is based on the assumption that people identify themselves with the social groups they belong to. People categorize themselves into groups based on age, gender, nationality, educational level, and social class to define their own personalities. The group they identify with is called the 'in-group'. This group is viewed with a positive bias compared to their

'out-group', which encompasses everyone not fitting in the 'in-group' (Islam, 2014; Terjesen et al., 2009; Tajfel & Turner, 1979).

In the view of an individual from the ´in-group', the 'out-group' is seen as a distinct group, which faces difficulties with acceptance of thoughts and visions, and joining the 'in-group' (Terjesen et al., 2009). This results in stereotyping, negative evaluations of individuals, and failure to allocate sufficient and valuable resources to 'out-group' members (Islam, 2014). When this 'out-group' is a minority group within the board of directors (e.g., female or young board members), the minority group might compete against the 'in-group' to show their distinctiveness, which might lead to clashing perspectives between groups of directors. Therefore, heterogeneity within the board of directors is likely to lead to conflicts that impede the cohesiveness, communication, and decision-making in the boardroom. Eventually, this hampers the firm performance (Talavera et al., 2018).

In a study performed by the Harvard Business School (1991), it was found that the Social Identity Theory is still deeply rooted within higher functions within organizations, namely in the form of the 'old boys' club' [6]. This refers to male employees having an advantage compared to their female employees in terms of relationships with their male, powerful, managers. The study finds that male employees are promoted faster when they are assigned to a male manager than if they are assigned to female managers. Socializing on the same level is a critical factor that affects this relationship, especially smoking together during breaks. However, female employees are not affected by this. For them, the gender of the manager does not affect their further career path within the firm (Cullen & Perez-Truglia, 2019). This shows that Social Identity Theory is still a highly relevant topic, as men still identify themselves more with other men.

This Social Identity Theory can also be identified in the paper written by Daily and Dalton (1995), as they find that male CEOs are more likely to be the chairmen of a board with members that have the same observable characteristics, like age, gender, and background.

[6] This reference is made originally to categorize the British elite that attended certain public schools as boys. Currently, the reference is used to point out social elite groups in general. This does not always imply that the 'in-group' is elite, in which this is defined as the socially accepted 'better', 'preferred' or 'higher in hierarchy' group.

2.3 Empirical Results Review

2.3.1 Results of Gender Diversity on Firm Performance/Corporate Financial Decisions

From all three aforementioned perspectives/theories, there has been a lot of research on the gender composition of the board of directors and corporate financial decisions. These financial decisions are made based on the risk appetite of the board of directors. In this review of empirical findings, the results follow the structure of the theoretical review. No consensus was found in the current literature, as positive-, negative-, or even neutral relationships are found.

Based on the Agency Theory, Benjamin and Biswas (2019) find that a gender-diverse board positively affects the dividend payout of a firm. They discover an agency-costs-based explanation, as dividend payout aligns the interests of managers to those of shareholders. More dividends imply less risk as more dividend payout means less free cash available. Besides, female directors tend to monitor and question managers' behavior better than male directors. Female directors are more likely to attend meetings, but also more likely to join monitoring-related board committees, such as the audit committee (Adams & Ferreira, 2009; J. Chen et al., 2017). This increases monitoring efficiency and thereby reduces the information asymmetry between shareholders and managers (Oyotode-Adebile & Raja, 2019). This decreases the risk of fraud and thus reduces cost of debt in firms without CEO duality (Benjamin & Biswas, 2019).

The relationship between bondholders and board diversity has also been examined. As bondholders are affected by different payout schedules than shareholders, managers and the board of directors might be in favor of increasing the risk to benefit shareholders' returns but expropriate bondholders' wealth and return. This results in bondholders perceiving board characteristics more sensitively. The study finds that the bonds issued by firms with a gender-diverse board have lower yields, higher ratings, shorter maturity, and higher issue sizes because females on the board reduce agency costs (Carter et al., 2003). In summary, these bonds are less risky (Oyotode-Adebile & Raja, 2019).

Although the presence of a board of directors improves monitoring- and controlling activities, thereby decreasing the cost of debt, some find that a gender-diverse board of directors does not affect the cost of debt. This is because the presence of the female board member was likely to fulfil the requirements set by the local government (Stefany & Joni, 2020).

However, there is also evidence that a more diverse board might result in less effective monitoring, as board members may be 'marginalized' (Carter et al., 2003; Talavera et al., 2018).

Lastly, Agency Theory is described as having little contribution to corporate governance due to its simplistic assumptions. Agents are assumed to have consistent risk aversion, although 'Prospect Theory' provides evidence that that is not always the case (Kahneman & Tversky, 1979; Wiseman & Gomez-Mejia, 1998).

From an RDT and a Human Capital Theory perspective, Byron and Post (2015) find that women display greater moral orientation and ethicality in their decision-making process. In general, women feel more responsible for others' well-being and avoid harming others. Furthermore, female directors have different norms and values, and are more inclusive than their male colleagues (Adams & Funk, 2012). Because of their, often, non-business background, women take on different perspectives and ideas than men, leading to higher corporate social performance and well-informed strategic business decisions (Byron & Post, 2015).

Miller and del Carmen Triana (2009) support the opinion of Adams & Funk (2012) and Byron & Post (2015) and argue that female directors are more likely to have different backgrounds than their male colleagues. They often have a background outside the respective business area. Furthermore, they are more likely to have higher degrees, and they join different boards quicker than males. Their research examines the effect of female board members on innovation, a key factor to gain a competitive advantage. They find a positive relationship between gender board diversity and R&D expenses, because the diversity provides 'strategic human and social capital resources' to firms, which increases their innovation capabilities and expenses (Miller & del Carmen Triana, 2009). This argument is strengthened by the article by Hambrick and Mason (1984), as they find that homogenous boards give worse advice on which business industries to enter and acquire, and therefore hamper innovation in these industries. On the other hand, heterogeneous groups have a broader range of information, ideas, perspectives, and knowledge available which leads to more innovative business opportunities in the development stage (Miller & del Carmen Triana, 2009; Mintzberg et al., 1976).

Bernile et al. (2018) find that a gender-diverse board lowers overall risk levels, due to less risky financial policies. This results in a negative relationship with leverage. Diverse backgrounds and resources that work together within a corporate governance mechanism moderate decision-making and therefore result in more stable policies, which makes board decisions less sensitive to idiosyncratic risks. Further, they identify a positive relationship between diversity and R&D expenses, which drive higher qualitative innovation output.

Carter et al. (2003) examine the relationship between gender diversity and firm value. They argue that because of that the marketplace is becoming more diverse, it is very useful to increase diversity to match the potential of the company to its customers and suppliers. This increases the chances of penetrating markets. In other words, diversity increases creativity, innovation, and problem-solving. They also find that gender diversity increases the effectiveness of leadership because multiple perspectives result in a better understanding of the complexity of the market, environment, and certain strategic decisions. To conclude, they find that firms with a gender-diverse board have better firm performance (measured via Tobin's Q) and also a higher return on assets (ROA). These results contradict the study by Adams & Ferreira (2009), which finds a negative relationship between gender diversity and firm performance. However, this is only valid for well-governed firms. Firms that have less quality corporate governance mechanisms can benefit from gender diversity.

Less studies have been performed from the Social Identity Theory perspective. The study by G. Chen et al. (2016) argues that because of a higher female representation on the board, the intra-board social psychological dynamics will change. Because individuals allocate more resources towards their 'in-group', and might avoid 'out-group' members, 'out-group' members might feel personally attacked on their identity and try to avoid confirming certain stereotypes. This increases their active participation in discussions and general interactions with the 'in-group'. This results in considerations that are more thoroughly discussed, which eventually results in more active oversight and evaluation of strategic decisions (G. Chen et al., 2016; Hogg, 2006). In terms of financials, the representation of females on the board decreases the number of acquisitions, and also the overall target acquisition size (G. Chen et al., 2016).

Based on the literature review of Carter et al. (2010)**,** the theory and evidence on group dynamics suggest that gender board diversity has both positive and negative effects on firm performance. They find that demographic diversity, defined as diversity in terms of race, gender, and ethnicity[7], lowers social cohesion. They also argue that 'in-groups' have the potential to have a disproportionate amount of influence on group decisions. Westphal & Milton (2000) find that this results in gender-diverse boards that are not affected by the addition of women. Others find

[7] Definition by Military Leadership Diversity Commission: https://diversity.defense.gov/Portals/51/Documents/Resources/Commission/docs/Issue%20Papers/Paper%2004%20-%20Relationship%20Between%20Demographic%20Diversity%20and%20Cognitive%20Diversity.pdf

that women generate more critical thinking and diverse opinions, which makes decision-making more difficult and time-consuming. On the other hand, this increases creativity and innovation. Carter et al. (2010) find that there is no relationship between gender diversity and firm performance. From this perspective, there is no conclusive answer on the effect of board diversity and firm performance or corporate financial decisions (Carter et al., 2010; Westphal & Milton, 2000).

Not all empirical results fit under a specific theory. Some findings are just due to gender differences. A common finding is that men are more tolerant to risk and show higher levels of risk appetite than women (Adhikari & O'Leary, 2021; Byrnes et al., 1999; Perryman et al., 2016; Sapienza et al., 2009).

2.3.2 Results of Age Diversity on Firm Performance/Corporate Financial Decisions

The second type of diversity examined is age diversity. Age is a very relevant factor in risk appetite and decision-making, although significantly less examined in the literature. Just like gender diversity studies, inconclusive results were found in the literature (Talavera et al., 2018).

From an Agency Theory perspective, Janahi et al. (2022) examine the relationship between age diversity and monitoring performance. They find that age negatively affects earnings management, which indicates a higher financial reporting quality. Also, with higher age diversity the effectiveness of monitoring activities increases, which in turn results in better managerial decision-making. Age affects beliefs and values, and therefore more age diversity increases the number of conflicts that appear on the board. This increases the independence of the board, and therefore also improves its monitoring activities (Janahi et al., 2022).

Based on the Resource-Dependence Theory and Human Capital Theory, Janahi et al. (2022) find that a significant and positive relationship exists between the characteristics age, expertise, knowledge and contacts, and the quality of discussions. These resources are useful for the board to make high-quality decisions, and eventually improve the profitability of the company.

This argument is strengthened by Ferrero-Ferrero et al. (2015)**,** who argue that age diversity has multiple positive effects. They state that balancing the number of directors from different generations results in greater information richness, as older people provide experience and knowledge, networks and contacts, the middle-aged people carry the highest positions in the society and organization, while the youngest directors still have the energy and a plan ahead.

Furthermore, younger people have more affinity with technology, which makes them able to learn and innovate more quickly, which creates shareholder value (Nguyen et al., 2015).

It was also found that younger directors exhibit superior abilities (Talavera et al., 2018). For example, they possess a larger international diversified portfolio, which increases the firm performance (Herrmann & Datta, 2005).

Based on the Social Identity Theory and general gender differences, Taylor found that older people seek considerably more information, but the information processing time declined, compared to younger employees. Because older people are likely to have more experience, the information rating accuracy increased significantly. Furthermore, he found that decision time increased, but decision accuracy and confidence decreased with age (Taylor, 1975).

Cheng et al. (2010) find that younger board members tend to be more risk-seeking than their older colleagues. This is because older people have less time to recover from financial losses, and also have less earning power in the market (Talavera et al., 2018). These findings are contrasted by Holmstrom (1999), who argues that when uncertainty hits the employment market, younger managers and directors become more risk-averse, as they are protective of their future career, as opposed to older directors, who are not concerned about their career because of the cumulated human capital (Nguyen et al., 2015; Talavera et al., 2018). Another study finds that the older directors were the most risk-averse, while the most successful directors were the biggest risk seekers (MacCrimmon & Wehrung, 1990).

Based on this theory, age heterogeneity hinders the social performance of a firm. Besides, it hampers its decisions and profitability. Age diversity impacts the overall process and quality of decision-making. It might even lead to more board scrutiny and therefore less extreme decision outcomes, i.e., lower risk. On the other hand, age diversity might lead to lower cohesion and more conflict in the board, which makes it difficult to reach a consensus about problems. This can increase risk because the firms miss opportunities. Based on this theory, age can be seen as a ´double-edged sword' (Talavera et al., 2018).

2.4 Hypotheses Development

Based on the empirical findings regarding gender diversity, Agency Theory argues that monitoring quality and effectiveness increase as board gender diversity increases. This decreases information asymmetry between managers and the shareholders, which results in less possibility to exercise

risky behavior by management. On the other hand, because Agency Theory uses 'simplistic' assumptions that rely on rationality and utility maximization, it would have less empirical contribution than other theories. The RDT and Human Capital Theory argue that gender-diverse boards make use of more resources, due to a wide variety of backgrounds, experiences, and expertise. Besides, women are more likely to have higher degrees. This results in more thorough decision-making, which decreases the riskiness of financial policy implemented by management. These theories also find that because women have more creativity and innovative thoughts, R&D expenses increase. Social Identity Theory finds that because of gender heterogeneous boards, decision-making becomes time-consuming due to less cohesion. This hampers risky behavior and risk appetite by men, as compromises have to be made. Also, as general gender differences have found that males have a higher risk appetite than females, an increase in female representation within the board will decrease the overall risk appetite of the board. Hence, the first hypothesis on the research question is:

H1: "Gender diversity within the board of directors has a negative effect on the risk appetite of S&P Europe 350 listed firms."

Empirical results focused on age diversity within the board of directors show similar results. From an Agency Theory perspective, it is argued that age decreases earnings management, increases monitoring quality and effectiveness, and thereby decreases risk appetite. The RDT and Human Capital Theory provide evidence that with age, experience, and knowledge increase, and decision-making results in higher quality strategic decisions. Social Identity Theory provides evidence that generational differences lower cohesion within the board, which hampers decision-making time and quality. This leads to less extreme outcomes of decisions and therefore mitigates risky strategic plans. On the other hand, it is found that slow decision-making results in missed opportunities. Based on general age differences, it is found that older people are more risk-averse, as they do not seek to improve their wealth as much as younger people. Besides, they have less time to recover from financial losses, so older people have less room to make risky investments, and possibly lose their job. Based on these findings, the second hypothesis is formulated:

H2: "Age diversity within the board of directors has a negative effect on the risk appetite of S&P Europe 350 firms."

3 Methodology

3.1 Data Sources

This paper examines the effect of board diversity on risk appetite for publicly listed firms. To investigate this research question, data for both board diversity and risk appetite needs to be collected. Data on the board composition and the board's individual characteristics are needed to assess the overall board diversity in terms of gender and age for each firm. To acquire this data, both BoardEx and Refinitiv are used. BoardEx is the main database used to collect board diversity information, as it contains more than 2 million profiles of public, private, and not-for-profit organizations. BoardEx is a reliable source of information, as the data is collected via published sources, such as company websites, annual reports, and public filings. The database is immutable for users of BoardEx. When data is missing, Refinitiv is used to collect the data. Refinitiv is a reliable database that contains over 2.6 million profiles of offers and directors for over 200,000 companies across the world. Therefore, both databases are deemed sufficient to fill the database necessary in this study. Data for risk appetite will be gathered via Refinitiv, as risk appetite will be captured by mostly accounting variables, which can be retrieved from the financial statements available.

3.2 Dependent Variable

The dependent variable examined in this study is risk appetite ('*RiskAppetite'*). As there is no unambiguous way of measuring risk appetite, measurable proxies have to be selected that represent the corporation's overall appetite for risk. According to Epetimehin (2013), balance sheet-based measures serve as a good proxy for a firm's risk. Following this line of argumentation, numerous financial measures can be found in the literature that serve as a proxy for firm risk that will be used as a measure for risk appetite in this study.

Altman's Z-score ('*Z-score'*) is a general measure to assess the likelihood of bankruptcy (Altman, 2000). The score is comprised of multiple accounting variables, which makes it an appropriate proxy in this study. According to Altman, the score uses variables that are effective indicators for financial distress (financial risk) within the company. His first model uses the following formula:

$$\text{Z-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E \quad (1)$$

In which:

$A = \frac{Working\ capital}{Total\ assets}$,

$B = \frac{Retained\ earnings}{Total\ assets}$,

$C = \frac{EBIT}{Total\ assets}$,

$D = \frac{Market\ value\ of\ equity}{Total\ liabilities}$,

$E = \frac{Sales}{Total\ assets}$ (Altman, 2000; Harjans, 2018).

These ratios can be classified into liquidity, profitability, leverage, solvency, and activity (Altman, 2000). In 2000 this model was revised by Altman, based on the change in ratio 'D'. It no longer uses the market value of equity, but the book value of equity is divided by total liabilities. This results in the following formula, which is also used to calculate *Z-score* in this study:

$$\text{Z'-Score} = 0.717A + 0.847B + 3.107C + 0.420D + 0.998E \quad (2)$$

This second formula is selected because financial data is collected via financial statements, where book values are presented. Therefore, this formula gives a better view of the risk of bankruptcy for the corporation than the first formula, where market values are used.

Miller & del Carmen Triana (2009) use return on investment (ROI) as a proxy. They argue that ROI is one of the most comprehensive measures of firm performance. In this study, ROI serves as a proxy for risk appetite, and will be referred to as return on invested capital ('*ROIC'*). If the board of directors has a high-risk appetite, they might be willing to accept and pursue more investments that potentially increase *ROIC*, even if that also implies a higher level of risk.

Return on equity ('*ROE'*) is another proxy used in this study. This measure of financial performance can be used as a proxy for risk appetite, as board members willing to take on more risky investments can be rewarded with higher returns. However, they can also be punished will high losses. Although difficult to assess, this proxy can give more understanding of risk appetite, as it assesses the returns generated related to the amount of equity.

Another measure that can be used as a proxy for the risk appetite of a firm is the debt-to-equity ratio ('*DE'*). In previous studies this is used to examine the effect of board diversity on the capital structure (Adusei & Obeng, 2019). A firm that has a higher risk appetite, might increase

debt levels to further finance its growth opportunities. Higher debt levels are problematic in times of lower cash flow, as interest payments need to be paid periodically. Therefore, the corporation's risk of going into default increases[8].

Leverage ('*Leverage'*) is also widely used in academic literature (Amit & Livnat, 1988; Perryman et al., 2016). *Leverage* is calculated in such a way that it represents the financing choices that are made by the board of directors. It is calculated as the ratio of debt to total debt and equity. According to Arioglu (2021), high *leverage* implies a higher risk appetite, as the impact of a financial shock would be larger on the profitability of the firm when the *leverage* of the corporation is high.

The sixth proxy for risk appetite follows the study performed by Sila et al. (2016). They use firm systematic risk, the historic beta (*'Beta'*), as a representation of firm risk. This type of risk represents the risk as perceived by the market, as it shows whether the firm´s stock price is perceived as more or less risky than the market, based on its volatility level. It measures the degree of congruence of the individual stock price with the movement of the overall market (Perryman et al., 2016).

Furthermore, R&D expenses can be used as a proxy for risk appetite (Bernile et al., 2018; Miller & del Carmen Triana, 2009). Heterogeneous boards present higher R&D expenses, due to more innovative ideas and opportunities (Hambrick & Mason, 1984; Miller & del Carmen Triana, 2009; Mintzberg et al., 1976). Because of data collection difficulties regarding R&D expenses, this study uses intangible assets ('*IT*') as a proxy for R&D and therefore risk appetite. It can be argued that the R&D expenses and intangible assets are related, as R&D expenses contribute to the development and creation of intangible assets. Furthermore, *IT* itself also seems like a fitting proxy for risk appetite, as it can be argued that more innovation leads to more intangible assets.

The final proxy used in this study is the current ratio ('*CR*'). This ratio is calculated by dividing current assets by current liabilities. A low *CR* implies a higher risk appetite, as a ratio under 1 indicates that the current liabilities are larger than the current assets. This can result in problems financing the business.

[8] Source:https://www.americanexpress.com/en-us/business/blueprint/resource-center/finance/pros-and-cons-of-debt-financing/#:~:text=However%2C%20debt%20financing%20in%20the,rating%20for%20the%20long%2Dterm.

3.3 Independent Variables

In this study, board diversity will be used as the independent variable to examine the effect on risk appetite. This research operationalizes board diversity in terms of (1) gender diversity and (2) age diversity, which immediately encompasses the scope of the two hypotheses.

For gender diversity, the majority of literature base their 'gender diversity variable' on an approximation of the ratio of the total number of female board members compared to the total number of members on the board (Arioglu, 2021; G. Chen et al., 2016; J. Chen et al., 2017; Perryman et al., 2016; Ruigrok et al., 2007; Sila et al., 2016). It is important to note that the need for diversity does not strive for a diversity of 100%. Diversity maximization implies a percentage of 50%, as this means that no minority groups are present (Perryman et al., 2016). In this study, gender diversity will be calculated via the absolute value of the percentage. For robustness purposes, the Blau index is used (Blau, 1977; Talavera et al., 2018). This measure is calculated as follows:

$$Blau\ diversity = 1 - \sum_{i=1}^{n} P_i^2 \tag{3}$$

Age diversity will be measured via the coefficient of variation of age (Arioglu, 2021; Talavera et al., 2018). This ratio is calculated by dividing the standard deviation of board age by the mean of board age. Other measures, such as the Blau index, and log of the standard deviation of board age can be used to calculate age diversity. However, as Talavera et al. (2018) argue that these measures are significantly correlated at 0.7 or above, this would not significantly change the reliability and accuracy of the chosen measure. Therefore, for robustness purposes, this study chooses to include the natural logarithm of the average age of the board as the representation of age diversity (Carter et al., 2003).

3.4 Control Variables

In literature, plentiful control variables can be distinguished. The first control variable in this study is board size (*'BS'*), measured as the natural logarithm of the total amount of members on the board of directors (Benjamin & Biswas, 2019). The second control variable is firm size (*'FS'*), measured by the natural logarithm of the book value of total assets (Arioglu, 2021; J. Chen et al., 2017; Ferrero-Ferrero et al., 2015; Talavera et al., 2018). This variable is used to control for the effect of

firm size, as it can be argued that larger firms can obtain higher levels of risk (Sila et al., 2016). Also, larger firms with more resources have better reputations (Miller & del Carmen Triana, 2009).

The third control variable is firm age (*'FA'*), calculated by subtracting the year the firm was founded from the current year (Miller & del Carmen Triana, 2009). The fourth control variable is added to account for the size of countries, the GDP per country ('*GDP*'). To account for the large differences, the natural logarithm of this value is used. Furthermore, a dummy variable (*'Quota'*) will be included for firms subject to certain gender quotas due to laws in the country they are placed. If they are subject to a quota, the value of the dummy will be 1. If not subject to a quota, the value will be 0. The sixth control variable used is leverage ('*Leveragecontrol*'). Multiple studies have used this measure, calculated as debt divided by total assets, as a control variable to account for debt. It indicates the performance of a company and thereby indicates how much capital is financed with debt (García-Meca et al., 2015; Levi et al., 2014). Another financial control variable used is the amount of cash divided by total assets ('*Cash*') (Levi et al., 2014). It can be hypothesized that the amount of cash a firm holds impacts the financial decisions the board of directors makes. The final control variable used is the return on assets (*'ROA'*) (Bernile et al., 2018; Carter et al., 2003; Sila et al., 2016). Various studies have found that return on assets is negatively associated with firm risk.

3.5 Setting and Timing

This study will be performed on firms listed on the S&P Europe 350. This is a stock index that represents the largest and most influential firms, based on relevance to the broad market, within Europe, and they are geographically diverse enough to truly capture the European landscape. There are ETFs built upon this index, therefore it is a way for investors to achieve exposure to the European market. It is an important benchmark for the overall performance of European firms, as all firms are 'blue chip companies', which relates to firms who have a large reputation, own a well-known brand, and show a long and steady growth path. The S&P Europe 350 consists of firms based in 16 countries[9]. Because of cleaning purposes, 227 stocks remained in the dataset[10]. The

[9] United Kingdom, France, Switzerland, Germany, Netherlands, Denmark, Sweden, Italy, Spain, Finland, Belgium, Ireland, Norway, Austria, Portugal, and Luxemburg (order based on total market capitalization in million $)

[10] In this study, 'cleaning purposes' entails removing firms operating in the financial industry, as balance sheets cannot be analyzed efficiently. Furthermore, stocks have been removed that do not contain financial data for the full data frame. Finally, merging data resulted in the loss of a few firms because of missing data.

main countries represented, based on the number of constituents, are the United Kingdom (56), France (37), Germany (28), and Switzerland (24).

This study has gathered data for the years 2005-2022. This ensures enough data points to make reliable statistical estimates.

3.6 Method of Analysis

This study uses a rarely used method in board diversity studies to investigate the true relationship between board diversity and risk appetite for S&P Europe 350 listed firms: Quantile Regression (Conyon & He, 2017; Koenker & Bassett, 1978). This analytical method makes it possible to examine the aforementioned effect, but at different risk appetite levels (Conyon & He, 2017). Previous studies have given multiple directions of relationships, although no conclusive answer can be drawn from these results. Using Quantile Regression, it is possible to delve deeper into the relationship, thereby generating more knowledge about the effect of board diversity on the corporate decision the company makes.

Previous studies have examined the effect of board diversity on various dependent variables (e.g., firm performance, dividend payout, or corporate bonds) using Ordinary Least Squares (*'OLS'*) (Adams & Ferreira, 2009; Benjamin & Biswas, 2019; Carter et al., 2003, 2010; Stefany & Joni, 2020) and Fixed Effect (*'FE'*) regression models (Janahi et al., 2022; Kamil & Appiah, 2022; Talavera et al., 2018). These models predict the average relationship between X and Y, and presume that the conditional mean is constant throughout the entire population of data points (Conyon & He, 2017).

In this study, both *OLS* and panel data *FE* models will be used to make a regression analysis. The effect of board diversity on financial decisions and performance is a slowly changing process. Therefore, lagged variables are used up to the third lag. The *FE* regression used to answer hypothesis 1 can thus be written as:

$$\begin{aligned} RiskAppetite_{i,t} = {} & \beta_0 + \beta_1 GenderDiversity_{i,t-1,2,3} + \beta_2 BoardSize_{i,t-1,2,3} + \beta_3 FirmSize_{i,t} + \\ & \beta_4 FirmAge_{i,t} + \beta_5 GDP_{i,t} + \beta_6 Quota_{i,t} + \beta_7 Leveragecontrol_{i,t} + \beta_8 Cash_{i,t} + \beta_9 ROA_{i,t} + u_{i,t} \end{aligned} \quad (4)$$

The regression used to answer hypothesis 2 is:

$$\begin{aligned} RiskAppetite_{i,t} = {} & \beta_0 + \beta_1 AgeDiversity_{i,t-1,2,3} + \beta_2 BoardSize_{i,t-1,2,3} + \beta_3 FirmSize_{i,t} + \\ & \beta_4 FirmAge_{i,t} + \beta_5 GDP_{i,t} + \beta_6 Quota_{i,t} + \beta_7 Leveragecontrol_{i,t} + \beta_8 Cash_{i,t} + \beta_9 ROA_{i,t} + u_{i,t} \end{aligned} \quad (5)$$

In both regressions, *RiskAppetite* can be measured by *Z-score, ROIC, ROE, DE, Leverage, Beta, IT,* and *CR.*

Previous studies show that the assumption of a constant effect is disputable, and most likely not true for board diversity settings (Charles et al., 2018; Conyon & He, 2017; Khan et al., 2022). Therefore, the overall *OLS* estimation of the effect between the dependent and independent variable may differ from the conditional distribution effect given by the Quantile Regression. The difference compared to Quantile Regressions is that these frequently used models are prone to strict assumptions, like homoscedasticity and the absence of outliers (Charles et al., 2018). Furthermore, Quantile Regressions can regress a relationship on the Xth quantile of the outcome variable (e.g., the 20th percentile of the *Z-score*). Quantile Regressions make it possible to examine the effect of a relationship on different parts of the distribution. Based on current knowledge, no prior empirical study has used this method of analysis to examine the relationship between board diversity and the risk appetite of the board of directors. In the Quantile Regressions, no winsorized versions of variables are used because outliers do not affect the regressions at the percentile level.

4 Results

This section provides an overview of the empirical results. First, descriptive statistics are explained. Second, the correlation tables are shown and clarified. Then, the results of multiple types of regressions are provided. This study uses a variety of regressions, such as Ordinary Least Squares and Fixed Effect regressions. To delve deeper into the relationship between board diversity and risk appetite, Quantile Regressions are used to examine the relationship across the distributed population of risk appetite. To finalize, a summary of the main findings is given. After this, to check whether these results are robust, an *OLS* and *FE* model is shown for each proxy for risk appetite that makes use of a different measurement of gender- and age diversity.

4.1 Descriptive Statistics

The descriptive statistics for board diversity, risk appetite proxies, and the control variables used are provided in Table 1[11]. For all variables, a graphical representation in the form of a histogram is provided in Appendix B – Figures, to visualize the distribution and enhance understanding of the summary statistics described shortly. An overview of all variables and underlying formulas is provided in Appendix C – Variable Definitions. The two independent variables used in this study, age- and gender diversity show a mean value of respectively 0.13 and 0.22. The mean value for age diversity implies that the coefficient of variation in this variable equals 0.13. It indicates that on average, the value of the standard deviation of age for board X divided by the mean age of board X is 0.13. This value shows that the dispersion of age for the board of directors is quite close to the average age. The mean value for gender diversity shows that the average female percentage in the board throughout the period 2005-2022 is 22%. The maximum value for gender diversity is 67%, which means that two third of the board members is female. This value might be explained by the fact that the European Commission introduced the quota that ensures that at least 33% of the board of directors comprises the underrepresented gender (European Commission, 2022).

To gain a deeper understanding of the distribution of diversity, it is useful to analyze the age- and gender diversity across countries, industries, and years. Table 2 provides an overview of age diversity in all countries. As shown, the mean of age diversity is highest in Portugal, and lowest in the United Kingdom. This implies that there is more age dispersion around the mean in Portugal than in the United Kingdom. Table 3 shows how the mean age diversity develops over time. The average age diversity decreases over time, which means that there is less dispersion of age compared to the mean age. Furthermore, fewer outliers are present in 2021 than in 2005.

Table 4 provides an overview of gender diversity for the sample period. The average percentage of women on the board of directors has increased significantly during the past 18 years. This could be the result of the implementation of quotas, but also because of increased public attention (European Commission, 2022; Giannetti & Wang, 2023).

Table 5 shows the average gender ratio per country. Interestingly, Scandinavian countries show high female representation compared to countries in southern Europe, such as Portugal and Spain. Besides the implementation of early quotas, the OECD states that this is also the result of

[11] All tables can be found in Appendix A – Summary Statistics and Regression Tables.

increased effort in gender-equal labor markets, which results in an increased inflow of highly educated, experienced, and career-oriented women in the boards of Nordic countries (OECD, 2018).

Table 6 shows the average female representation in different industries. The highest average gender ratio can be found in 'Agriculture, Forestry, Fishing'. The industry 'Finance, Insurance, Real Estate' has the least female representatives on the board of directors. A possible explanation for this is that fewer females work in this industry, but also that this industry suffers from the 'old boys' club' mentality.

The dependent variables are all proxies for risk appetite. *Z-score* measures the likelihood of future bankruptcy. According to Altman (Altman, 2000), a score of 1.8 implies that the firm is likely heading for bankruptcy. The mean value of *Z-score* is 1.94. This is a somewhat strange result, especially combined with the median value of 1.70. This indicates that more than 50% of the firms in the S&P Europe 350 are on the edge of future bankruptcy. Interestingly, the minimum value of this variable is -3.59, which would imply that this firm is seemingly very close to future bankruptcy. Furthermore, the maximum is 79.24, which suggests that this firm is in a good financial position, and therefore not likely heading toward bankruptcy. A possible explanation for the low average is that this dataset is comprised of large companies, with large amounts of total assets. Therefore, this score might be quite low compared to other datasets.

ROIC has a mean of 11.45%, and a median value of 9.87%. Therefore, it is positively skewed and also has a kurtosis coefficient equal to 30.40, which means that it is more flat than a normal distribution.

ROE has an average value of 19.28%, which is considered quite high. The median value is 15.41%, which implies that the upper 50% has a far higher *ROE* than the lower 50%. This can also be seen by the minimum value of -383.21% and the maximum of 1976.85%. The distribution has a positive skewness of 24.08, meaning a tail on the right side of the distribution.

DE has an average value of 0.80, which means that the total debt comprises 80% of the total equity of the firms. Interestingly, the maximum value in this sample is 97.94, which means that the debt is almost a hundred times higher than its shareholder's equity. As Mills (2016) states, larger firms have better access to capital markets and have more seamless integration possibilities with global supply chains, which may result in higher debt levels than smaller firms. The variable is not normally distributed, seen by the skewness of -34.87 and the kurtosis of 1536.54. *Leverage*

has an average value of 0.38, which means that on average debt is 38% of total capital. The average value is equal to the median value. The skewness of this variables reveals a coefficient of -58.95. Furthermore, the kurtosis of this variable is 3666.58, which means that this variable has a steeper distribution compared to a normal distribution. However, the range is 65.70, which is due to outlier influence.

Beta indicates that on average, firms are perceived as less risky than the market, represented by an average beta coefficient of 0.96. The minimum value of -0.20 indicates that this firm is inversely related to the market. *IT* shows an average natural logarithm coefficient of 14.54, and the median value is 14.91. In economic terms this averages $8.38 billion. It has a kurtosis of 11.37, and a skewness of -2.37. Furthermore, the range is large, which indicates outlier influence. *CR* has an average of 1.48, which means that current assets are on average 48% larger than current liabilities in this sample. This variable is not normally distributed, as the skewness and kurtosis indicate a positive skew (8.43), which implies that the mean is larger than the median, and a leptokurtic distribution (136.67).

All proxies, except for *Beta*, are winsorized. Winsorizing is a statistical technique used to minimize the effect of outliers and extreme values. In this case, the dependent variables are winsorized at the 2^{nd} and 98^{th} percentiles. This means that values until the 2^{nd} and beyond the 98^{th} percentiles are replaced by the values closest to the rest of the distribution of data points. This ensures that these variables are more robust against extreme values, which increases the accuracy of the regressions. This decision is based on the histograms, as shown in Appendix B and the descriptive statistics just described. The plots and statistics indicate an abnormal distribution. By winsorizing these variables, the kurtosis and skewness of these variables approaches the characteristics of a normal distribution (McAlevey & Stent, 2018). This increases the accuracy of the summary statistics and regression outcomes, as outliers distort the mean and standard deviation of variables.

As for the control variables, Board Size, Firm Size, Firm Age, GDP, Quota, Leverage, Cash and ROA are shortly discussed next. Here, only Cash and ROA are winsorized. The average board of directors throughout the whole sample consists of 12.62 (13) members. Combining this with the average value for gender, it can be argued that the average board of directors consisted out of 2.78 (3) females, and 9.84 (10) males. Interestingly, we see that the largest board had 33 members, while the smallest was made up of 4 members. The natural logarithm of firm size (measured in total

assets) was on average 16.50, with a median of 16.00. In economic terms, this indicate an average firm size of $34.268 billion in total assets. This control variable is almost normally distributed, looking at the skew of -0.16 and the kurtosis of -0.21.

The average GDP per country, based on the number of constituents for each country, was on average 1.555 billion, which equals a natural logarithm of 7.03. The control variable for Leverage has a mean value of 0.26. This means that debt is on average 26% of total assets for the firms in this sample. The mean of cash and cash equivalents divided by total assets is 0.12, while the average ROA equals 7.56%. Both variables are more leptokurtic than the normal distribution, as their kurtosis is higher than 3.

4.2 Assumption Testing

To test whether the variables meet the classical assumptions for *OLS* regressions, tests for homoscedasticity, multicollinearity, autocorrelation, and correlation are performed. Furthermore, a correlation table is examined.

Testing for homoscedasticity is done by a Breusch-Pagan test. If the p-value for the test is significant ($p<0.05$), heteroscedasticity is present. This means that the variances of the error terms are nonconstant. The Breusch-Pagan tests for all eight proxies for risk appetite show a significant p-value, which means for all variables the error terms are nonconstant. Therefore, the results of the regression can be questioned (Studenmund, 2014). To deal with heteroscedasticity, robust standard errors have been calculated and implemented.

Testing for multicollinearity is done by the Variance Inflation Factor (VIF). Multicollinearity is the phenomenon where two or more independent variables are highly correlated. According to Wooldridge (2012), a VIF statistic below 10 is no concern for multicollinearity. In this study, no VIF statistics are above 2, which implies no concern for multicollinearity in the regressions performed.

The third test is for autocorrelation and is performed by the Durbin-Watson test. Autocorrelation occurs when an independent variable is correlated with the lagged version of itself. The Durbin-Watson statistic can range from 0 to 4, where a value of 2 means no autocorrelation. Values from 0 to 2 point to positive autocorrelation, and values from 2 to 4 imply negative autocorrelation (Wooldridge, 2012). In this study, all Durbin-Watson statistics range from 1.86 to

2.25, which is considered normal. Furthermore, the p-values for the tests are all insignificant, and therefore no real concerns for autocorrelation are expected.

The last performed check is for correlation. Correlation is when two independent variables are related to each other, and the paths move together. It measures to what extent a change in one variable is related to the change in another variable. The correlation coefficient can range from -1 to 1, and the extremes imply perfect correlation. In this study, there are some problems with correlation. First of all, it is important to notice that the correlation between the dependent variables is not relevant, as they are not used in the same regressions. Based upon Hinkle et al. (2003), it was chosen to only note a correlation coefficient over (-)0.70, as this is described as high (negative) positive correlation, and therefore can become problematic (Mukaka, 2012). The correlation coefficients can be examined in Table 7.

FS and *IT* show a high positive correlation coefficient equal to 0.71. This can be explained by logical reasoning: the more assets a firm owns, the more *IT* the firm owns. Therefore, in the regressions with the dependent variable *IT*, *FS* is left out. The other regressions contain *FS* as a control variable. *Leveragecontrol* shows a high correlation with *Leverage* (0.91) and *DE* (0.78). This might be because, for all these variables, debt is the numerator. Therefore, for these regressions, *Leveragecontrol* has been left out. The remaining regressions include *Leveragecontrol*. Furthermore, both *ROE* (0.81) and *ROIC* (0.94) show a positive correlation with *ROA*. For these regressions, the control variable is left out. The remaining regressions contain *ROA* as a control variable.

4.3 Board Diversity and Risk Appetite – Hypotheses Testing

To test the two hypotheses, multiple regressions are performed. First, the relationship between age- and gender diversity, and the eight proxies for risk appetite are analyzed by *OLS* regressions up to the third lag. These *OLS* regressions are compared with the *OLS* regressions with control variables. The *OLS* regression without control variables provides an interpretable overview of the relationship between board diversity and risk appetite. Furthermore, by introducing the variables that are statistically controlled for, the interference of these variables with risk appetite can be shown. This increases the alternative explanations, and control variables can increase the accuracy of predictions. Second, *FE* models for all eight proxies are analyzed up to the third lag. Again, these are compared to the *FE* versions with control variables. Third, *Quantile Regressions* are analyzed

for all eight proxies of risk appetite, to gain a deeper understanding of the distribution of the relationship within the risk appetite population.

4.3.1 Ordinary Least Squares Regressions

Table 8 and Table 9 present the findings regarding the impact of board diversity on *Z-score*. The first results indicate a positive association between age diversity and *Z-score*. These results are in accordance with the results found by (Ferrero-Ferrero et al., 2015; Herrmann & Datta, 2005; Janahi et al., 2022), as a higher *Z-score* implies a lower likelihood of bankruptcy, and therefore generally better firm performance. The relationship between age diversity and *Z-score* is statistically significant to the 10% level for the third lag.

As the coefficients presented for age diversity might be difficult to interpret, a more economically meaningful explanation can enhance understanding of the regressions. The coefficient for age diversity represents the effect on the dependent variable resulting from a 1% increase or decrease of the dispersion of age around the average mean of the current board. This increase or decrease results from the appointment or the resignation of a board member, which causes the coefficient of variation to change. For the first lag, a 1% increase in dispersion of age around the mean results in an increase of 0.485% in the *Z-score*. This means that more age diversity on the board of directors leads to a lower likelihood of bankruptcy. Further, as the lag increases, the effect on *Z-score* becomes stronger.

For gender diversity, all coefficients are negatively associated with *Z-score* and are all significant to the 1% level. For the first lag, the coefficient equals -0.692, which implies that each percentual increase of female representation in the board decreases *Z-score* by -0.692%. This indicates that the more female board members, the higher the likelihood of future bankruptcy (Altman, 2000). When looking at higher lags, the effect of female board members on *Z-score* decreases (-0.587 in lag 3). Relating the *Z-score* to firm performance, these results are in accordance with the conclusion of the study performed by (Adams & Ferreira, 2009).

When control variables are introduced, it immediately becomes clear that the explanatory value of the model increases. Compared to the *OLS* without control variables, where the independent variables explain just around 1% of the variance of the dependent variable, the *OLS* with control variables shows an R-squared of around 65%. This indicates that a lot of the effect on *Z-score* is covered by the control variables introduced and that they explain variation in the *Z-score*. All control variables show statistical significance ($p<0.01$), except for *Quota*. This implies

that the introduction of a quota does not affect the *Z-score* in this sample. Looking at the independent variables, age diversity is still positive, although the effect is less positive than without the control variables. Here, all relationships between age diversity and *Z-score* are insignificant. Gender diversity shows a negative coefficient for all lags, and all relationships show high statistical significance at the 1% level.

Table 10 and Table 11 provide the results for the effect of board diversity on *ROIC*. In Table 10, the first lag of gender diversity shows negative statistically significant results at the 1% level on *ROIC*. This significance decreases to the 10% level for the second lag and is insignificant for the third lag. Interestingly, the coefficients drastically increase as the lags increase. For the first lag of gender diversity, an increase of 1% of the female ratio in the board decreases *ROIC* by almost 4%. In comparison, for the third lag, a 1% increase in the female ratio decreases *ROIC* by just 0.26%. For the first lag of age diversity, the coefficient is -0.581. As the lags increase, the relationships lose their strength and approach zero. However, the results are not significant. For all regressions, the R-squared is very low.

When implementing the control variables to the formula, Table 11 reveals that the R-squared for all three regressions is close to 19%. This is the result of the variance that is explained by the control variables. All control variables, except *FA*, are significant at a 1% level. It is very interesting to note that the coefficient for age diversity decreases immensely, from -0.581 to -7.567 in the first lag. Furthermore, all three coefficients for age diversity are significant at the 5% level. More interesting is the coefficient sign change for gender diversity. Instead of a negative relationship without control variables, with control variables a positive significant relationship can be observed. As these regressions with control variables are better estimators, it can be concluded that more age diversity on the board negatively affects the *ROIC*. Furthermore, more female board members positively affect the *ROIC*. This is in contrast with the results found by Carter et al. (2003) and Miller & del Carmen Triana (2009), who did not find a relationship between ROI and gender diversity. However, Carter et al. (2003) did find a positive association, and therefore strengthen the results of this study.

Table 12 and Table 13 show the results for the regressions with- and without control variables for *ROE*. The coefficients for age diversity on *ROE* are negative, and statistically significant to the 1% level. Table 13 provides the coefficient after the control variables are introduced, and here the same effect is observed, although the effect with the interference of control

variables is a bit more negative. Without control variables, the relationship between gender diversity and *ROE* is negative for the first two lags and becomes positive for the third lag. This implies that the board composition one and two years ago negatively affects the return on equity of a company, whereas the composition three years ago shows a positive effect. In line with Low et al. (2015) and Bennouri et al. (2018), after adding control variables, solely positive significant relationships are found (5% for the first lag, and 1% for the second and third lag). Furthermore, all control variables show significant results at the 1% level, except for insignificance in *FA* and *GDP*. *BS* shows a positive effect on *ROE*, which implies that the larger the board, the higher the *ROE*.

Table 14 provides the regressions between age- and gender diversity and *DE*. Age diversity shows positive relationships with *DE* for each lag, where only the second and third lag are statistically significant to the 10% level. As for gender diversity, no statistically significant relationships are found. Besides, a coefficient change occurs when moving from the first to the second lag. After examining the regressions with control variables in Table 15, this coefficient change is no longer present. All three lagged variables of gender diversity show negative relationships with *DE*, which is in line with the findings of Adusei & Obeng (2019). According to their results, female board members are risk averse and prefer equity over debt, thereby reducing *DE* (Alves et al., 2015). This is in contrast with the findings from Benjamin & Biswas (2019), who state that from an Agency Theory perspective, female board members decrease the cost of debt, and thereby increase *DE*. Furthermore, unlike the regressions in Table 14, the variables in Table 15 show statistical significance up to the 1% level. Comparing the age diversity coefficient with those in Table 14 reveals that the effect becomes almost twice as large after adding control variables, and gains statistical significance to the 1% level.

Table 16 and Table 17 provide information about the relationship between board diversity and *Leverage*. For the regressions without control variables, the age diversity coefficient shows negative values. This implies that the more age diversity, the lower the *Leverage* ratio, either through less debt or more equity value. Gender diversity is positively associated with *Leverage*. The first lagged variable of gender diversity is statistically significant at the 10% level. Comparing these results with the results from the regressions including the control variables, interesting things happen. First, the coefficient for age diversity changes from negative to positive. This corresponds to the findings in Table 15 for DE. This finding is not in line with the study performed by Bernile et al. (2018), which finds a negative association between age diversity and leverage. Second, the

coefficient of gender diversity changes from positive to negative. This finding also corresponds to the finding in Table 15 for *DE*. This finding is consistent with the conclusion of the study performed by Bernile et al. (2018). Unlike *DE*, no statistical significance is found in these regressions for the independent variables. All control variables, except *Quota*, are statistically significant to the 1% level. The R-squared for the regressions in Table 17 is equal to 22.4% for the first lag, 21.9% for the second lag, and 21.7 for the third lag, indicating that quite a substantial amount of *Leverage* is explained by the variables used in the regression.

Table 18 shows the results for the *OLS* without control variables on *Beta*. Age diversity has a positive coefficient equal to 0.108 for its first lag, but negative values for the second and third lags, equal to -0.118 and -0.253. These are all insignificant. The gender diversity coefficients are significant. For the first lagged variable, the coefficient equals -0.09 and is statistically significant at the 5% level. The second lag shows a negative coefficient of 0.114 and is statistically significant at the 5% level, and the third is significant at the 1% level and shows a coefficient equal to -0.135. The signs of the coefficients in Table 18 are the same as in Table 19, and the coefficients themselves did not change much. This implies that the control variables did not take over much of the variance, which can also be seen by the relatively small increase in R-squared. However, the third lagged variable of age diversity shows statistical significance at the 10% level, just like the second and third lag of gender diversity.

In Table 20 the results of the *OLS* without control variables for *IT* are presented. Interestingly, all coefficients provided are statistically significant at the 1% level. These results show that age diversity is negatively associated with *IT* and that gender diversity is positively associated with *IT*. Furthermore, the R-squared for these regressions is relatively high, keeping in mind only two variables are used: 2.7% for the first lag, 2.2% for the second lag, and 2% for the third lag. After performing the regressions with control variables included in Table 21, all coefficients for age- and gender diversity show statistically significant results to the 1% level. Again, age diversity shows a negative relationship. Here, because of the logarithmic transformation, 1% increase in age diversity results in a change in logarithmic units of -3.067. This implies that, once a 1% increase in age dispersion occurs, the IT changes with a factor of e^(-3.067). This is not consistent with the findings of Bernile et al. (2018), who argue that age diversity positively affects R&D expenses.

In line with the findings of Bernile et al. (2018), Hambrick & Mason (1984), Miller & del Carmen Triana (2009), and Mintzberg et al. (1976) on R&D expenses, this study suggests a positive relationship between gender diversity and *IT*. It is interesting to note that, in comparison to the other variables, the coefficient itself remains almost the same after implementing the control variables. This implies that the effect is not altered because of the control variables. The R-squares are respectively 29.2%, 28.7%, and 28.3%.

The *OLS* results for the final proxy, *CR*, are presented in Table 22. Just like the results for *IT*, these coefficients show statistical significance at the 1% level for both age- and gender diversity. The coefficients for age diversity are positively associated with *CR*. Thus, the higher the age dispersion around the mean, the higher *CR*. This can be either because of more current assets, or lower current liabilities. Gender diversity shows negative coefficients towards the relationship with *CR*. Thus, the higher the percentual female representation on the board, the lower *CR*, either via less current assets or more current liabilities.

Comparing the results in Table 23 with those after the introduction of control variables indicates that the signs of the coefficients remain the same: positive for age diversity and negative for gender diversity. However, age diversity loses a lot of statistical significance. The first lag is significant at the 10% level, the second lag becomes insignificant, and the third lag is significant at the 5% level. In contrast, the gender diversity coefficients remain statistically significant at the 1% level. The respective R-squares are 33%, 32.3% and 32.5%.

In summary, statistically significant effects on age diversity can be found for *ROIC* (-), *ROE* (-), *DE* (+), *IT* (-), and *CR* (+). This gives an indication on how age diversity affects risk appetite. These results can be interpreted as that returns are decreased by age diversity, which is mostly characterized by investments that do not work out well. Furthermore, debt is increased. This implies that debt is chosen over rigid financing choices such as equity. Also, *IT* show a negative relationship, which could also indicate that age harms *IT*. The results indicate that risk taking is positively affected as age diversity increases. Therefore, age diversity positively affects risk appetite.

For gender diversity the following statistically significant relationships can be found: *Z-score* (-), *ROIC* (+), *ROE* (+), *DE* (-), *Beta* (-), *IT* (+), and *CR* (-). This implies that more female representation in the board of directors leads to a higher change of future bankruptcy, while more returns are generated. Furthermore, less debt is held, and the risk as perceived by the market

decreases. More intangible assets are held, while either less current assets decreases, or current liabilities increases. According to this short analysis based on *OLS* regressions, gender diversity negatively affects risk appetite.

4.3.2 Fixed Effect Regressions

To determine whether to include the Fixed Effect (FE) regression, several tests have been performed. The Hausman test has been completed to check whether the Fixed Effect or the Random Effect regression was a better fit for this dataset. For all eight proxies, the Hausman test indicated that 'one model is inconsistent', and the p-value of these tests is lower than 5%. This implies that the *FE* coefficients are significantly different from the Random Effect coefficients, which means the *FE* regressions must be used. To finalize the *FE* regressions, a Breusch-Pagan- and a Durbin-Watson test are performed. The Breusch-Pagan test indicates that there is heteroskedasticity in the data, therefore robust standard errors are used. The Durbin-Watson test indicates that all the DW-statistics lay very close to 2, which means that there is almost no autocorrelation.

Table 24 provides the first *FE* regression with robust standard errors for the relationship between age- and gender diversity on *Z-score*. Age diversity is positively associated with *Z-score* for all three lagged versions of the variable. The relationship for lag three is significant at the 5% level and implies that once the dispersion around the mean increases by 1%, the *Z-score* increases by 0.961%. Thus, more age diversity increases *Z-score* and therefore decreases the likelihood of bankruptcy in the near future. Interestingly, as the lags increase, the same increase as in the *OLS* regression can be observed. This implies that a larger dispersion around the mean age that happened longer ago has a stronger effect on the likelihood of bankruptcy than a dispersion that happened shortly before. Gender diversity shows the opposite relationship, as the percentual increase in female board members leads to a decrease in *Z-score* for all three lagged versions of gender diversity. The results are also all significant at the 1% level. Here, the effect becomes less extreme and slowly approaches zero as the lags increase.

Table 25 provides the regression with control variables included. The first thing to notice is the decrease in extreme effects, as the coefficients are closer to zero than without the control variables. This is because some of the effect is being interfered with by the control variables. A lot of statistical significance has been lost. The R-squares are high, although not as much variance is explained by the *FE* regression as the *OLS* regression does. Furthermore, the standard errors increased overall. This is because the *FE* regression controls for firm-specific fixed effects. This

might decrease the variation explained by the regression (measurable via the R-squared), and therefore also increases the standard errors.

Table *26* gives and overview of the *FE* regressions without control variables for *ROIC*. Important to note is that, compared to the *OLS* on *ROIC*, the relationship between age diversity and *ROIC* is positive. This indicates that more age diversity results in more return on invested capital. However, this relationship is not statistically significant. Compared to the *OLS* regression, the coefficients of the gender diversity variables have also switched from positive to negative. This indicates that female representation on the board leads to a lower *ROIC*. However, again, these relationships are not statistically significant.

Table *28* and Table 29 provide the result for the *FE* regressions on *ROE*. Unlike the *OLS* regression, the coefficient for the first lagged variable of age diversity shows a positive relationship with *ROE*. However, the second and third lagged variables show negative relationships. But, all three relationships are statistically insignificant. The coefficients for the three lagged variables of gender diversity show the same signs as the normal *OLS*. However, only the first lag shows statistically significant results. With the introduction of control variables in Table 29, it can be observed that all three coefficients for age diversity are negative, and as the lags increase the effect becomes more negative. Unlike the *OLS* with control variables, the *FE* model shows that gender diversity is negatively associated with *ROE* for all lagged variables. This implies that the more females on the board, the lower the *ROE*.

The results for the regression performed with *DE* as dependent variables are provided in Table 30 and Table 31. Remarkably, both age- and gender diversity show a positive association with *DE* in the *FE* model without control variables. This means that as age and gender diversity increase, *DE* increases. However, these results are not statistically significant. The R-squared indicates that the explained variance is low. Though, as presented in Table 31, the implementation of control variables to the regressions helps, the R-squared remains relatively low. This means that a lot of variance in *DE* is not explained by the variables used in this regression. The control variables do not significantly change the effect of age diversity, other than the effect gets a bit more positive. Yet, the control variables make the coefficients for the second and third lagged variable of gender diversity become negative. This means that when the percentual female representation increases by 1%, *DE* decreases by -0.05% two years later, and even decreases by -0.143% three

years later. However, also here no real statements can be made, as the regressions do not show statistical significance for the independent variables.

The *FE* regressions on *Leverage* without control variables presented in Table 32 show that age diversity is slightly positively associated with *Leverage* in the first lag, but negatively related in the second and third lag. Again, no statistical significance is found for an age diversity relationship. Gender diversity shows a statistically significant positive association with *Leverage*. The first lag is significant at the 5% level with a coefficient of 0.067, and the second and third lag are significant at the 10% level with coefficients equal to 0.055 and 0.058. These results lead to the economic explanation that more female representation in the board of directors leads to either a higher debt or lower equity value, in line with Ahern & Dittmar (2011).

Table 33 provides the results for *Leverage* after the control variables are used in the *FE* regressions. For this proxy, this addition does not add much to the effect of the independent variables. The only coefficient sign switch is for the second lag of age diversity. Furthermore, the gender diversity coefficients lose their statistical significance. Looking at the control variables, just the firm size and ROA are statistically significant, which implies that only these two variables add to the accuracy of the regression.

The results for the sixth proxy, *Beta*, are presented in Table 34 and Table 35. It can be observed that for this proxy, the explanatory values of solely age diversity and gender diversity are very low, with R-squares equal to 0.1% for lag one, and 0.01% and 0.02% for lag two and three. This means that the risk as perceived by the market is very little being explained by board diversity. Also, after adding control variables, the R-squared remains low. Furthermore, no statistically significant results are found in the *FE* models.

Table 36 provides the results from the relationship between age- and gender diversity, and *IT*. Interestingly, all coefficients in these three regressions show statistically significant results. It can therefore be stated that age diversity is negatively related to *IT*, and gender diversity is positively related to *IT*. This means that the more age diversity on the board, the fewer intangible assets the firm holds. However, more female representation seems to add innovation possibilities and therefore also adds to the intangible asset portfolio. These results are in line with the findings of the *OLS* regressions presented in Table 20.

The R-squares for these regressions are also high, 14.5% for the first lagged regressions, and 13% and 11.7% for the second and third lag. After adding the control variables, the results

shown in Table 37 differ from the regressions before. It is relevant to note that age diversity loses its statistical significance, but gender diversity remains statistically significant. As these regressions are more accurate predictors, it must be assumed that these results are better projections of the relationship than the *OLS* regression.

The results for CR without control variables are shown in Table 38. Here, age diversity shows a positive association with *CR*, with statistical significance for the third lag. The opposite is found for the relationship between gender diversity and *CR*. More female representatives lead to a decrease in *CR*, although no statistical significance is found. After adding control variables in Table 39, similar relationships are found for both age- and gender diversity.

Based on the *FE* regression results, a second indication of the direction of the effect can be given. As age diversity increases, the only statistically significant effect is measured on *IT*. Here, *IT* decreases, which indicates that less innovative activities are performed within the company, and thus a low level of risk appetite is suggested. However, this effect can also be the result of conflict within the board, and therefore slow decision-making. Furthermore, age diversity shows, although insignificant, positive relationships with *DE* and *Leverage*, which implies increasing debt levels. Besides, *Z-score* and *ROE* are negatively associated with age diversity, which implies more chance of future bankruptcy and lower returns. Overall, it can be argued that age diversity is positively related to risk appetite.

Gender diversity shows statistically significant relationships with *Z-score* and *IT*. In combination with the negative relationships with *ROIC*, *ROE*, and *CR*, and positive relationships with *DE* and *Leverage*, this implies more investments and a growing debt amount. As innovation, investments, and debt are related to risk, it can be argued that gender diversity shows a positive association with risk appetite.

4.3.3 Quantile Regressions

This section describes and analyses the Quantile Regressions performed for each proxy of risk appetite. In the tables, the regressions are performed on each tenth percentile of the distribution of the dependent variable. By doing so, a deeper understanding of the relationship between board diversity and risk appetite can be gained. To enhance visual understanding of the coefficients across the distribution, graphical representation of the effect is provided in Appendix B – Figures. Here, the graph provides an overview of the coefficient in a graphical format.

Table 40 provides the Quantile Regressions on *Z-score*. Here, the coefficient for age diversity is mostly positive, except for the 30th and 40th percentile. This means that for these percentiles of *Z-score*, age diversity has a negative effect. It is also interesting to see that the first, seventh, and ninth regressions show statistically significant relationships between age diversity and *Z-score*. Gender diversity shows a negative relationship with *Z-score*, which is statistically significant at the 1% level from the 50th percentile onwards. However, as the percentiles increase, the coefficient becomes more negative, which implies that as *Z-score* increases, the additional women on the board of directors negatively affect the bankruptcy risk of the firm. For example, in the 90th percentile, for every 10% increase in the women's ratio on the board, the *Z-score* decreases by 3.37%. In the lower percentiles, for example, the 10th percentile reveals an effect close to zero, which means that for every 10% increase in women on the board, the *Z-score* decreases by only 1%. This could be interpreted that for low-performing, high bankruptcy-risk firms, it does not matter whether or not the board of directors is comprised of men or women. However, for high performers, and low bankruptcy risk firms it does have a great negative effect on their financial risk. It can therefore be argued that when performing well, females harm changes of long-term financial survival. On the other hand, as the *Z-score* is based upon multiple variables, all related to total assets, it can also just be that female representatives increase total assets more than the other values for *Z-score*. This would decrease *Z-score*, and show a negative relationship.

The control variables are of interest as well. The board size has an insignificant negative effect on *Z-score*, and the coefficient does not change much across the population. *FS* has a statistically significant negative effect from the 50th percentile onwards, which means that the higher the *Z-score*, the more negatively the effect is as *FS* increases. *Leveragecontrol* (negative) and *Cash* (positive) are also statistically significant.

Comparing these results with the standard *OLS* regressions as in Table 9 might give more detailed information about the true relationship between board diversity and risk appetite. As seen in the first regression, the coefficient for age diversity is 0.163 and not statistically significant. However, looking at the Quantile Regression, the assumption of a constant effect is not true and does not give a fair view of the relationship. There is statistical significance, and specifically in the higher percentiles, the effect is much stronger than the mean effect. This indicates that the higher the *Z-score*, the stronger age diversity affects the likelihood of bankruptcy. Furthermore, the *OLS* regressions in Table 8 show a statistically significant relationship between gender diversity and *Z-*

score. However, this is not the case for all percentiles. There seems to be a threshold from which gender diversity affects the *Z-score*. In this case, from the 50th percentile of *Z-score*, the female representation on the board shows a significant result. The same goes for the control variable board size. The *OLS* regressions show a significant negative relationship, while especially the percentiles below the median show statistical significance.

Table 41 provides the Quantile Regressions for *ROIC*. The coefficients for age diversity show a negative relationship, that is statistically significant from the 20th percentile onwards. Furthermore, the effect gets stronger as the percentiles increase. This implies that the higher *ROIC*, the larger the negative impact of the age dispersion across the board, as compared to firms that show lower *ROIC*. Therefore, it could be argued that either fewer returns are generated, or more investments are made. The coefficients for gender diversity note a positive association, where the coefficients mostly range between 1 and 1.6. For the 80th and 90th percentile, the coefficients are 2.631 and 5.702. This implies that for these percentiles, 1 percent increase in female representation affects the *ROIC* more than when the firm has a low *ROIC*. It is interesting to see that when comparing these results to the mean results across the population in Table 11, the age diversity average coefficients in the *OLS* seem like a good representation of the overall results in the Quantile Regressions. This can also be seen in the graph shown in Figure 20, where the quantile coefficients fluctuate around -7.5. However, this is not the case for gender diversity. As the average coefficient is 2.762, it can be observed that until the 80th percentile, the coefficient for gender diversity is lower than the mean. Only from the 80th percentile onwards, the coefficient is higher. This indicates that the average coefficient is quite overstated compared to the median. Furthermore, the statistical significance across the whole population is at the 5% level, while across the percentiles only the 40th and 90th percentile show this amount of significance.

The third proxy, *ROE*, is presented in Table 42, where the distribution of statistical significance might be different than expected, looking at the two proxies described already. The gender diversity coefficients provide evidence that the average coefficient is a good representation up until the 40th percentile. From the 50th until the 90th percentile, the coefficient lies under the average result, which indicates that for these percentiles the normal *OLS* presented in Table 13 is overstated. Also, the statistical significance is no longer present above the 50th percentile. The coefficients below the 50th percentile are higher than the coefficients for the upper percentiles. This indicates that if a firm has a low *ROE*, more female representatives significantly increase the *ROE*

of the firm. Therefore, female representation increases returns. For age diversity, the average coefficient seems like an overstatement of the result, as only the coefficient for the 90th percentile exceeds it. The coefficients indicate, again, that the more *ROE* the firm generates, the more negative the effect of larger age dispersion around the mean. This indicates that age diversity harms the returns of a company.

The Quantile Regression for *DE* is presented in Table 43. The age diversity coefficient shows a positive relationship with *DE*, except for the 30th percentile, where is it slightly negative. The results become statistically significant only up until the 40th percentile, while the *OLS* regression in Table 15 suggests that the overall result is statistically significant at the 1% level. The *OLS* regressions provide evidence that gender diversity is statistically significant at the 5% level. However, the same threshold as for the *Z-score* can be observed. Again, the results become statistically significant from above the median value. Interestingly, the negative relationship between gender diversity and *DE*, as prescribed in Table 15, is not found for the 20th and 30th percentile. Here, there is a slight positive relationship, which implies that for those firms, more female representatives lead to more debt or less shareholder equity. However, for both variables, it is found that the coefficients get higher as the percentiles increase. This implies that if the firm has a high *DE* ratio, for example the 90th percentile, increased female representation significantly decreases the *DE* ratio. For age diversity this implies that a one percent increase in age dispersion around the mean results in a 4.291% increase in *DE*. This indicates that as *DE* is high, age diversity only increases the *DE* ratio further.

The Quantile Regression results for *Leverage* are presented in Table 44. Interestingly, both variables show coefficient sign switches across the percentiles. Age diversity shows an average effect of 0.089. However, the coefficients for the 20th and 30th percentiles show a negative relationship with leverage. Gender diversity shows an overall coefficient equal to -0.021. But, the coefficients for the 10th, 20th, and 30th percentiles show slightly positive results. In terms of significance, only from the 70th percentile age diversity shows significance. This is in contrast with the normal *OLS* regression, where no statistical significance is found as measured over the whole population. This is also found for gender diversity, although the Quantile Regressions show a significance threshold from the 60th percentile. The economic interpretation of these results is the same as *DE*. Age diversity increases *Leverage* by increasing debt, or decreasing equity. Gender diversity decreases *Leverage* if *Leverage* is high, and the effect is close to zero if *Leverage* is low.

Quantile Regressions for *Beta* are shown in Table 45. The age diversity coefficients are negative until the 80th percentile, which implies that for the lowest 70% of beta coefficients, higher age dispersion decreases the risk as perceived by the market. This indicates that the combination of younger and older board members helps reduce systematic risk. However, for the higher 20%, the effect is positive, which implies that age dispersion for these firms only increases the systematic risk further. Interestingly, only statistical significance is found for the 10th, 50th, 60th, and 90th percentile. Gender diversity displays a negative association with *Beta*, with only one coefficient positive on the 20th percentile (0.001). Comparing this with the *OLS* regression in Table 19, is it important to note that the coefficient for age diversity seems exaggerated, as the OLS function provides a slight positive coefficient equal to 0.024, while only the upper 20% shows positive coefficients. Therefore, it can be concluded that the *OLS* does not provide a fair view of the distribution of the effect. However, the coefficients for gender diversity in the Quantile Regressions lay close to the average coefficient. This indicates that as *Beta* is high, female representation decreases the risk as perceived by the market.

The seventh proxy, *IT*, is described in Table 46. The coefficients for age diversity are purely negative and the effect becomes more negative on both the 10th and 90th percentiles. Furthermore, all percentiles show statistical significance. These results indicate that more age diversity negatively affects innovation within the company, as fewer intangible assets are held. This implies a lower risk appetite, as low growth is preferred over high growth. On the other hand, it may also indicate a high risk appetite because of failing investments. The effect of gender diversity on *IT* is positive, and statistically significant for all percentiles. Interestingly, the effect is high on the 10th percentile and lower on the 90th percentile. This implies that for firms that hold fewer intangible assets, an increase in female representatives is useful to increase the amount of intangible assets. This indicates their ability to innovate. The additional value of female representatives seems less for firms that already have a lot of intangible assets. Therefore, the coefficient is lower.

The Quantile Regressions performed on *CR* are described in Table 47. Age diversity shows, except for the 90th percentile, a negative relationship with *CR*. This implies that in general the more age dispersion, the lower the current assets, or the more current liabilities the firm holds. This could imply more outstanding short-term payables, or more cash outflow because of investments. The coefficients become statistically significant on the 40th percentile, then lose it on the 50th, and

proceed their significance for the rest of the distribution. Gender diversity presents negative coefficients towards *CR*, which becomes statistically significant on the 20th percentile. For both independent variables, the pattern holds that the coefficients become more extreme as the percentiles increase. Comparing the percentiles with the average *OLS* in Table 23, it can be observed that the coefficient for age diversity seems exaggerated, just as for *Beta*. The *OLS* regression provides a statistically significant positive coefficient, while this only occurs from the 90th percentile. Therefore, it can be mentioned that the *OLS* does not provide a fair view of the effect. Gender diversity seems to provide a fair average, as the mean coefficient is equal to -0.341 and is statistically significant.

A summary based on the Quantile Regressions described gives rise to the third set of conclusions. Age diversity shows a positive relationship with *Z-score*, suggesting more age diversity reduces the chances of future bankruptcy. However, age diversity is negatively associated with *ROIC* and *ROE*, especially in the upper percentiles, meaning that higher returns are diminished by age diversity. The opposite occurs for *DE* and *Leverage*, when these variables are high, age diversity significantly increases them. For all four variables, lower percentiles do not show significant relationships and therefore are not significantly affected by the age diversity of the board. If the financial situation is good, it seems like age does not have an effect. But, it can make things worse if they are already bad. This phenomenon is represented by the results for *Beta*. For the lower 70 percentiles, age diversity is negatively related to *Beta*, which indicates that it decreases the systematic risk as perceived by the market. But, when the beta coefficient is high, it seems to worsen it even further. This is represented by the positive coefficients in the upper 20 percentiles. Another indication of a negative effect on the firm is the fact that age diversity significantly decreases intangible assets. Furthermore, it significantly decreases *CR*, most likely because of increased liabilities. These variables show that age diversity significantly increases debt, while this does not move on into *IT*. Also, it seems like returns are decreasing as well. This indicates that risks are taken, and investments are made that are not performing well. Therefore, age diversity is positively related to risk appetite.

Gender diversity is negatively related to *Z-score*, which at first glance seems like an increased chance of future bankruptcy. However, the positive associations with *ROIC* and *ROE* provide insight into the financial performance of the firms, which is strengthened by the fact that *DE* and *Leverage* decrease as the female representation increases. As debt is riskier than issuing

equity, this indicates low risk-taking behavior. *Beta* indicates that this behavior is likewise picked up by the market, as a negative relationship between *Beta* and gender diversity is found. Also, the natural ability of women to innovate is represented by the positive relationship with *IT*. Yet, a negative relationship with *CR* is found, which implies that either current assets decrease, or current liabilities increase. However, these results indicate that the increase in female representation decreases risk-taking behavior. Therefore, gender diversity is negatively related to risk appetite.

4.4 Robustness Checks

To ensure the reliability and validity of the results across the whole population, the same *OLS* and *FE* regressions are conducted, although with alternative independent variables. The regression tables are provided in Appendix A – Summary Statistics and Regression Tables. For age diversity, the natural logarithm of the average age of the board is used. Gender diversity is represented by the Blau diversity index. This section mainly focuses on highlighting differences and similarities between the 'normal' variables used, and the variables used in the robustness regression. Individual coefficients and statistical significance can be examined in the appendix.

The *OLS* results in Table 48 show that for *Z-score*, the coefficients and significance are similar to the variables used in Table 9. Table 49 provides an overview of *ROIC*, and indicates that also for this variable the coefficients are robust. However, for all remaining variables (*ROE*, *DE*, *Leverage*, *Beta*, *IT*, and *CR*), the direction of the coefficient for age diversity is different from the *OLS* regressions described in 4.3.1. Therefore, it must be mentioned that the relationship as described, can be due to a spurious correlation with the coefficient of variation used in 4.3.1. Yet, gender diversity measured as Blau index provides similar directions for the coefficients as the ratio of women on the board does. Therefore, it can be argued that these results are robust, and not subject to spurious correlation to the measurement previously used.

The *FE* tables indicate a similar pattern. Age diversity shows non-robust results, as the direction of the coefficients for *ROE*, *DE*, *Leverage*, *Beta*, *IT*, and *CR* is inconsistent with the *OLS* regressions in 4.3.2. The presence of inconsistent coefficients across the regressions affects the reliability and validity of the results for this variable. However, the coefficients for the Blau index exhibit consistent signs across the *FE* regressions (except for *Beta*), indicating robustness. Therefore, the results for gender diversity can be verified and labeled as reliable and valid.

5 Discussion

This study conducted a battery of statistical tests to identify and measure different dimensions of the relationship between age- and gender diversity on the risk appetite of the board of directors for S&P Europe 350 listed firms. This section builds on the results reported in the previous section and discusses its implications for theory, empirics, and real life practice. Thereafter, recommendations for future research are offered.

5.1 The Role of Age Diversity

The first significant finding is that age diversity and risk appetite go hand in hand. Consistent coefficient values from OLS, FE, and Quantile Regressions confirm this. The Quantile Regression results provide additional insights into the effects along the distribution of the proxies. For instance, high variation of age within the board is linked to lower likelihood of future bankruptcy as measured by Z-score. This does not apply to the 30^{th} and 40^{th} percentiles, however. This finding conforms to theoretical expectations. Meanwhile, contrary to expectations, high age diversity appears to decrease profitability as captured by *ROIC* and reinforced by *ROE* results. The statistical strength of this relationship is consistent across the population. This is a consequential result because it challenges the prevailing assumption that a diverse board with people from different age groups would harmonize youthful creativity with seasoned wisdom. Such synergy would (should) then lead to innovative ideas, lucrative projects, and ultimately a thriving bottom line. Our results indicate this not to be the case. Age diversity is—as expected—also positively linked to debt (*DE* and *Leverage*). The relationship is negative against *Beta*, however, except for 80^{th} and 90^{th} percentiles. This could be an artefact of outliers as firms with younger members are likelier to have higher risk appetite. The histogram in Figure 8 illustrates this explanation. Moreover, age diversity is negatively linked to innovation levels and current ratio. This contradicts expectations because one would expect greater age dispersion to enhance networks and business opportunities. A possible explanation to this finding is the fact that younger members' networks are not as valuable as those of older members, as the latter's networks are more robust and of higher quality.

The positive nexus between age diversity and risk appetite is strengthened by the additional regression performed, as shown in Table 64. Age diversity is negatively associated with *FS*, measured in total assets. This conforms the results found for the other proxies, as a decrease in total

assets indicates higher risk appetite. It might be a result of focusing on core competencies, as resources are saved to fully develop their specializations. Further, less total assets decreases exposure to risk such as market fluctuations, depreciations or economic crises.

Now we shall attempt to discern the results above through the prism of multiple relevant theories. First, the tenets of Agency Theory expect a board with diversely aged members to enjoy superior monitoring and accountable practices (Janahi et al., 2022). Resource-Dependence and Human Capital Theory, meanwhile, positively correlate age with heightened decision quality and profitability. Ferrero-Ferrero et al. (2015) record a positive effect of age diversity on firm performance, which is counter to our finding. Instead, our results suggest the possibility of age diversity leading to impulsive and risky decisions. This could be because of the dilution of decision accuracy and confidence with age. These results and explanatory conjectures have some precedent in board diversity literature (Taylor, 1975). Moreover, Cheng et al. (2010) show that younger boards seek more risk. Thus, in boards with high age dispersion, the risk-seeking propensity of younger members appear untampered by older members' experience and decision-making process—leading to higher risk exposure compared to age-homogeneous counterparts.

The apparent contradiction between the findings and theory previously described can be further analyzed. As Agency Theory, Resource-Dependence Theory and Human Capital Theory all prescribe a negative nexus between age diversity and risk appetite, whether the underlying perspectives these theories bring are the right fit for risk appetite research merits scrutiny. Indeed, it could be that older people bring more experience and knowledge to the table, but that is not directly linked to their individual preferences, ideas and beliefs. It could also be that greater age diversity attracts more investments, reduces returns, and raises debt levels. This unexpected outcomes could stem from the senior members enabling their younger colleagues' investment decisions, perhaps due to poor business awareness of increasing clout of young board members. While our empirical setup isn't equipped to determine whether the greater diversity is due to skewness of one specific age group, the younger members' elevated risk tolerance aligns with the transmission channel we speculate about. If it is indeed so, senior members' inability to tempter the board's risk-seeking behavior complicates this hypothesis. The matter, thus, deserves deeper scrutiny in future work.

The Socioemotional Selectivity Theory is based on the assumption that with age, perception of time changes. Their set of goals does not change, but the priority of sets of goals

changes with their decreasing lifespan. Instead of safeguarding the future when plenty of time is left, emotionally meaningful choices are preferred as age increases (Carstensen, 2021; Lockenhoff & Carstensen, 2004). Instead of the expected risk-aversion, it can be argued that older people perceive less risk in taking changes and thereby pursue the emotional thrill of taking risks. This can contribute to the positive nexus between age diversity and risk appetite.

We pose an intricate, albeit speculative, rationale to explain the link between age diversity and risk aversion. Neuroanatomic studies postulate that brain structure, not age per se, drives individual risk profiles. Many studies report a positive link between intellectual pursuits, cognitive prowess, and the volume of grey matter (Haier et al., 2010). As the older board members have gathered, presumably, more training hours, experience, knowledge, and overall stimulus, it is likely that they have generated more grey matter than their younger colleagues. Combining this with another study that has found that the amount of grey matter is negatively related to risk aversion, it can be concluded that the more grey matter, the less risk aversion (Gilaie-Dotan et al., 2014).

Additionally, another possibility arises from individual characteristics of older board members. Board members often are wealthy entrepreneurs who have become rich with business investments, or working really hard. The ability to take changes and invest got them where they are in life. Therefore, it is unlikely that this ability, drive, or motivation is lost as they age. This may also give an explanation for the positive relationship between age diversity and risk appetite. These theories provide great possibilities for future research, as they create new opportunities to use an interdisciplinary approach to risk appetite studies.

Individual relationships also need examination. Bernile et al. (2018) discover a negative relationship between age diversity and leverage, similar to this study's finding. However, they also find a positive relationship between age diversity and R&D expenses. This finding is based on the Human Capital Theory. However, as Cheng et al. (2010) and Taylor (1975) suggest, Social Identity Theory might be a more fitting framework for age diversity research. Based on this theory, Richard & Shelor (2002) find a negative relationship between age diversity and return on assets (ROA). Although different than the risk appetite proxies used in this study, their finding gives an indication of the effect of age diversity on profitability.

5.2 The Role of Gender Diversity

Based on the analysis conducted through multiple OLS, FE, and Quantile Regressions, this study unveils a negative relationship between gender diversity and risk appetite. Especially the Quantile Regressions, as discussed in 4.3.3, allow for the following conclusions to be contrasted to pre-established expectations.

Based on academic literature, it was expected that an increased female representation in the board of directors would enhance firm performance. Contrary to the expectations, the quantile results for *Z-score* reveal a significant negative relationship with gender diversity beyond the 50th percentile (*Z-score* of 1.70). This indicates an increasing change of bankruptcy as firms increase female representation in their boardroom. Meanwhile, similar to expectations, positive relationships are found between gender diversity and *ROIC* beyond the 30th percentile, indicating a generalizable result. Interestingly, Quantile Regression results reveal a significant positive relationship between gender diversity and *ROE,* although significant until the 50th percentile. This implies that gender diversity only significantly increases *ROE* when returns are low. This confirms the hypothesis, as the additional female representation improves decision-making quality and fosters innovative thinking, which ultimately leads to increased profitability.

Quantile Regressions results reveal that gender diversity is – as expected – negatively linked to debt (*DE* and *Leverage*). These relationships are statistically significant beyond the 50th percentile for *DE,* and beyond the 60th percentile for *Leverage.* This finding aligns with theoretical expectations indicating that female board members significantly reduce high debt levels. Furthermore, gender diversity is negatively linked to *Beta*, except for the 20th percentile. This effect becomes stronger as *Beta* increases, indicating the impact of women in reducing risk as perceived by the financial market, especially in high-risk organizations or industries.

The results confirm the expected positive relationship between gender diversity and *IT*. This relationship is statistically consistent across the population. Notably, the effect is stronger when *IT* is low, suggesting that an increase in female board members enhances innovation levels, especially when the current innovation levels are relatively low. These results are strengthened by the negative relationship between gender diversity and *CR*, as more innovative activities may lead to an increase in short-term liabilities.

In conclusion, gender diversity in corporate boardrooms has a negative effect on the risk appetite of S&P Europe 350 listed firms. This argumentation is strengthened by robust results derived from the multiple measures of gender diversity described in section 4.4.

Previous literature did not find consensus regarding the relationship between gender diversity and risk appetite. Based on Agency Theory, previous studies find that more female board members enhances monitoring activity, which reduces risk of fraud and thereby decreases cost of debt (Adams & Ferreira, 2009; Benjamin & Biswas, 2019; Oyotode-Adebile & Raja, 2019). This is in contrast with the findings of this study. Ahern and Dittmar (2011) find that an increase in gender diversity has a positive effect on leverage, which is also in contrast with this study. Supporting evidence for this study's result is found by Bernile et al. (2018) by using the Human Capital Theory. They find a negative relationship between gender diversity and leverage. This is strengthened by the study performed Perryman et al. (2016), who also find a negative relationship between gender diversity and *Leverage* using both the Resource-Dependence Theory and the Human Capital Theory, and the Agency Theory.

A vast amount of studies finds positive relationships between gender diversity and the quality of decision-making. These studies argue that women, due to their different norms, values, and business backgrounds, contribute to an improved decision making quality in heterogenous boards, and therefore an increased creation of innovative ideas (Adams & Funk, 2012; Hambrick & Mason, 1984; Miller & del Carmen Triana, 2009). This is similar to this study's results in the relationship between gender diversity and *IT*. Therefore, it can be argued that female board members improve the innovative business opportunities, and increase R&D expenses (Bernile et al., 2018; Mintzberg et al., 1976). This study finds an overall negative relationship between gender diversity and *Beta*, which suggests that firms with female board members are perceived as less risky by financial investors. This is in accordance with the findings by Bernile et al (2018).

This study provides results that align with the results based on the Social Identity Theory. According to this theory, due to the change of female representation on the board, the intra-board social psychological dynamics change, which leads to more thorough discussions and considerations, that lead to enhanced evaluation of strategic decisions (G. Chen et al., 2016). Although not directly measurable in one of the proxies used, it aligns with the general conclusion of the relationship. Because of the dynamics change, risk appetite of men is hampered and therefore the general risk appetite decreases. In addition to economic literature, insights from sociological

and psychological studies also support these findings, as men are able to tolerate more risk than their female colleagues (Adhikari & O'Leary, 2021; Byrnes et al., 1999; Perryman et al., 2016; Sapienza et al., 2009). It would therefore make logical sense to conclude that a heterogenous board of directors would show less risk appetite than a homogenous board of directors.

The subject of differences in statistical significance across the risk appetite distribution is an important aspect of this study, so it is noteworthy to provide an analysis of these findings and avenues for future research. Threat Rigidity Theory argues that firms exhibit more risk aversion when the financial performance of a firm is threatened. Consequently, organizations behave more rigid and restrict information processing. They become conservative and less focus is on innovative business ideas, and prefer low-risk investments that increase profitability (Triana et al., 2014). Educated guesses based on the statistical significance would imply that low *ROIC* and *ROE*, and high *DE* and *Leverage* may indicate financial threat as the firm becomes more exposed to financing problems.

The Quantile Regressions indicate that for *ROE* a statistically significant and positive relationship exists within the lower 50 percentiles, while statistically significant and negative relationships in the upper 40 percentiles are found for *DE* and *Leverage*. These combined relationships indicate that once the organizations are in a threatening situation, the additional female board members can improve the financial situation, as the firm is less subject to financial distress and unforeseen events after the addition of female board members. This can be based on the fact that females favour financial stability over excessive risk-taking, thereby supporting the notion of conservatism by the Threat Rigidity Theory.

A counterargument to this could be the negative relationship between gender diversity and *Z-score*, which suggests an increase of financial instability and increased change of future bankruptcy. This may be rejected by examining the OLS regression presented in Table 64. This shows a statistically significant and positive relationship between gender diversity and *Firm Size*. Therefore, the decrease in *Z-score* should not be straightforwardly interpreted as an increase in likelihood of future bankruptcy.

After conducting the theoretical and empirical analyses, a practical analysis is given that examines the implications of the results on business level. Based upon the premise that higher risk appetite creates business opportunities through increased innovation seeking, it is important for the company to adapt their strategy to align with the increased adventurous approach of their board of

directors. As firms start to understand the results of this study, they can anticipate and incorporate these findings in their selection procedures and overall management practices. Depending on the financial situation, firms can modify their selection criteria to adjust the age diversity within the board of directors, to align the risk appetite with the financial strategy that best fits the situation. For instance, if a firm needs stability and assurance, reduced age diversity is preferred to decrease risk appetite. However, it is also possible to change risk appetite of board members through training. Through sufficient training, risk appetite should not differ substantially between younger and older members. Lastly, monitoring and incentives can be used to make risk appetites align within the board of directors. KPIs based on risk-related goals can be implemented, together with risk-related bonus components in the compensation structure.

The negative relationship between gender diversity and risk appetite also has practical implications on the business level. First of all, the selection procedure for board members is very important. Compliance with European legal requirements is obligatory, but it is also important to shape cohesion within the board to ensure the firm meets the social- and financial goals. Both age- and gender related discrimination are a hot topic in society, which leads to corporate boardrooms to take on responsibility to deter it, as this promotes fair- and equal changes for everyone, nevertheless their age or gender. The selection procedure of the board of directors is the starting point where ethical principles and social responsibility can be ingrained in the core values of the company. Similar to the implications of age diversity, the gender composition of the board can affect the overall risk appetite of the organization, and thereby help achieving financial goals. The amount of risk taken is dependent on the financial situation of the firm. An increase in female representation is characterized by an increase in financial stability, and improved innovation. If stable growth is a goal, an increase in female board members can be recommended. This can contribute to achieve stability and innovation.

Contradicting results are found for the relationship between gender diversity and Z-score, which leads to the development of a more abstract and speculative explanation that reveals a second practical implication. The increased likelihood of future bankruptcy may be explained by the theory of managerial myopia, which practically implies that executives prefer short-term profits over long-term gains. It is found that this behavior obstructs the long-term development of companies (Q. Chen et al., 2022). The increase of female representation in the board may only be used to increase short term profits, as it can be used to earn some quick money due to innovative ideas. This leads

to an increased short-term profit. However, as this might increase the insolvency risk, chances of future bankruptcy increase. This challenges current theories regarding the relationship between gender diversity and risk appetite/firm performance. This leads to the awareness of not purely increasing gender ratios because of ideological reasons, but to do so to actually increase firm performance and financial stability in the long run.

Both practical implications discussed provide suggestions on how organizations can revise their gender diversity approaches. It has both social and financial implications, and is thereby of immense importance to the overall performance of a company. The economical link between gender diversity and financial health of a firm may be undeniable, but the social welfare of the firm is just as important. This complex relationship is evident, and it is thereby useful to implement thoroughly discussed and deliberate selection processes to increase organizational well-being.

5.3 Limitations and Ancillary Discussions

While this study has provided valuable insights and practical implications, it is important to discuss its limitations. These limitations provide an avenue for future research.

This study has provided a rationale for the S&P Europe 350 as the sample in this study. These well-established organizations have developed a strong foundation based on reputation, market positioning and financial position. Based on this foundation, these firms are able to establish future growth and pursue innovation activities. The question can be asked whether academic literature would benefit from including SMEs and start-ups to the sample, as this could increase overall understanding of the dynamics within the board of directors that influence risk appetite. Furthermore, the question arises whether this framework used fits the characteristics for these firms.

Startups are characterized by extreme growth in the first few years. Hence, the board of directors, often younger male board members, should be comfortable with accepting calculated risks. Additionally, within many start-ups, the founder is also in the board of directors. Because of the completely different performance thresholds of start-ups compared to established firms, the question remains whether an increased gender- or age diversity would actually significantly decrease the risk appetite of the company. It can be argued that the high risk taking culture, in the first place, decreases the amount of female employees, and related also most likely the amount of female applications for the board of directors. But, for the women that apply to be in the board of

directors of a start-up it can be questioned whether their risk-aversion is significantly different from their male colleagues. Perhaps they do not differ that much, and therefore increased gender diversity does not change the risk appetite of the board of directors. Same argumentation holds for the additional older board members. As the study on start-ups would definitely provide a better understanding of the relationship, it might be questioned whether the study would provide significant results that actually provide additional information, as the result might be neglectable and straightforward. However, if chosen to examine the effect, the two samples mentioned cannot be used together in one sample, as the outcomes become more averaged, which leads to weakening of the effect for both groups of firms. Furthermore, it can be questioned whether the chosen framework in this study even fits the SME and startup sample, as the independent variables used are chosen specifically for S&P Europe 350 firms. For example, *Z-score*, *ROIC* and *ROE* would reveal more extreme values. Besides, *DE* and *Leverage* would show higher values, as more debt is used to finance all investments. Also, *Beta* would be higher than compared to S&P Europe 350 firms. Therefore, the usefulness of this framework can be questioned for SME and start-ups examination.

An idea for future research is to use qualitive methods to capture risk appetite. This would vastly increase the holistic understanding of the research questions answered in this study. Instead of capturing risk appetite by eight proxies, in-depth interviews with board members and higher level managers may be conducted. A sample of around 50 interviews creates a better comprehensive understanding of the concept of risk appetite. These results would further increase the already solid foundation of this study, and add to academic literature. Furthermore, surveys and questionnaires may provide additional details to the risk appetite understanding compared to creating a risk appetite concept from financial variables. Both methods are also applicable for SMEs and start-ups, and possibly provide a better framework than the quantitative framework used in this study.

Acknowledging the methodological limitations to this study is crucial to provide a comprehensive evaluation of the results found. A possible limitation may be the reliability of the databases used, as just random checks have been performed to test the reliability of the data instead of a complete walkthrough of data to ensure that the database corresponds to the information in the annual reports. Furthermore, data is merged after using multiple databases. No indication is found that leads to concerns of unreliable data, but few datapoints may be unreliable due to merging

mistakes. However, this would also not significantly decrease the reliability and usefulness of the results found.

Although this study uses a multi-country sample and therefore facilitates a generalizable result, further studies could focus on effect of board diversity on risk appetite in the financial industry. This study excluded this industry because several accounting variables could not be calculated. Furthermore, further research could benefit from a more in-dept analysis of distribution of diversity. In this study, age diversity has been calculated in terms of the variation around the mean value. However, it remains unclear whether risk appetite benefits from having more young board members, and fewer old board members, or vice versa. Moreover, determining the threshold at which board gender diversity significantly affects risk appetite would provide extremely valuable information for businesses, as this would give them a tangible result that is easily incorporated into their strategy.

In addition to acknowledging the limitation in the calculations of the independent variables, it is worth noting that beyond age- and gender diversity, more dimensions of board diversity can be considered important. Current studies that have been performed use cultural- and ethnicity diversity (Bernile et al., 2018; Carter et al., 2003, 2010). This is important to consider as, due to different norms and values, risk appetite might differ between cultures and different ethnicities, and therefore different boards posit different risk preferences. Furthermore, multiple studies examine the relationship between educational background and firm performance (Bernile et al., 2018; Kim & Lim, 2010; Rose, 2007). These studies do no provide insights in the relationship as discussed in this study. Some studies use expertise as measure for board diversity (Bernile et al., 2018; Güner et al., 2008; Minton et al., 2014). These studies show inconsistent results on the relationship between expertise and *Leverage* and R&D expenses. Further research can give additional insights. However, no study has examined the relationship between these diversity measures and risk appetite. As these are also not included in this study, further research can extend board diversity literature by implementing these proxies in their studies.

Due to time- and data constraints, this study did not focus on interaction effects. Further research can make use of interaction effects to gain a better understanding of how traditional views of diversity interact with institutional factors or other dimensions of diversity (e.g., the interaction between institutional factors and a diversity measure on risk appetite, or the interaction effect between gender and age on risk appetite).

This study relies on both OLS and FE regressions. Due to the characteristics of these models, a potential endogeneity bias might be present. In the OLS models, endogeneity can be present when there is reverse causality between the dependent- and independent variables, or when omitted variable bias is present (Smelser & Baltes, 2001; Studenmund, 2014). For the FE models, time-invariant unobserved heterogeneity and reverse causality can cause endogeneity problems. However, as this is beyond the scope of this study, no instrumental variables are used. To overcome this bias, future researchers can use instrumental variables to further enhance robustness of the results.

Another limitation to this study is the assumption that female board members have a significantly lower risk appetite than men. However, it is worth considering the theory of survivorship bias, as it might be possible that the women who successfully climbed the corporate ladder do not significantly differ from the male board members in terms of risk appetite. Those who did significantly differ in terms of risk appetite, might have not successfully reached a position in the board of directors. Therefore, gender diversity results could be biased. Because of time- and practical reasons, this hypothesis is not tested. Future research could adopt a sociological and neurological approach to examine this limitation.

The Age Stratification Theory could improve further board diversity research by addressing the limitation in this study that no control variables have been implemented that account for the difference in power within groups related to age. This theory states that older board members often possess more power and authority, and therefore shape the dynamics of the board (Foner, 1974). So, this could alter the given effect of age diversity on risk appetite, and give a better understanding of the effect of age diversity on risk appetite.

A third theory that can improve further board diversity studies is the Threat Rigidity Theory. In this study, the difference in statistical significance across the distribution of risk appetite proxies has been mentioned several times and is justified by the Threat Rigidity Theory. However, it might be worthwhile to further specify the discrepancy in significance by the Threat Rigidity Theory, by looking at the effect of board diversity on risk appetite during times of financial distress. It can be argued that the effect of board diversity on risk appetite differs between economic recessions and periods of economic success. The Threat Rigidity Theory has already been applied by Tsai and Luan (2016) to examine the effect of firm performance on risk taking behavior. Additionally, Triana et al. (2014) have provided insights into effect of gender diversity and power

on firm performance, but do not further specify how this relates to risk appetite. Therefore, combining the findings of this study with the aforementioned studies reveals a literature gap, suggesting a promising avenue for future research.

The final section of this discussion analyses the practical implications of the study's overall results, and gives an indication how firms can apply these findings in their board set-up and policies.

Firms need to consider several other factors before applying the results of this study in their board setup. First of all, setting up a board of directors should always be based on selecting members who are a good fit for the organization and are capable of performing the job efficiently. In addition, it is wise to avoid appointing younger- or female board members solely to meet quota or adhere to policies. Furthermore, boards need to keep in mind the negative impact of too much diversity on board cohesion. If cohesion is low among board members, the lack of overlapping ideas and shared beliefs results in poor decision-making quality. Therefore, optimal board set-ups are difficult to integrate and are dependent on the financial situation the firms operate in.

According to these results, age- and gender diversity can serve as a mechanism through which risk appetite and thereby firm performance can be altered. Age diversity is positively associated with risk appetite, so more age diversification can be a great implementation for firms that pursue high performance thresholds, innovation and investments. Also, age diversification can be valuable for organizations capable of covering financial losses resulting from riskier investments. Gender diversity is negatively related to risk appetite, due to the risk aversion of female board members. Firms that prefer financial stability can benefit from increasing the female representation in their board of directors.

The choice of board composition is highly dependent on the current situation, prospects and ambitions of the organization. Hence, all firms, despite of their financial situation can apply this study's findings in their board set-up, and thereby improve their financial position to align with their preferences. However, it remains utterly important for the organizations to consider their unique selling point and objectives when implementing these results to ensure a board that is capable of guiding the organization towards its goals.

6 Conclusion

This thesis has been an empirical exercise on the impact of board diversity composition—specifically, age and gender—on firm risk appetite. The empirical scope is 350 European firms listed in S&P's benchmark index. Built upon theoretical foundations, including Agency Theory, Resource-Dependence Theory, Human Capital Theory and Social Identity Theory, this study hypothesized that gender diversity negatively affects risk appetite, due to increased monitoring activity, enhanced networks and resources, and thorough decision-making. Similarly, it was hypothesized that age diversity negatively impacts risk appetite, due to risk-seeking behavior of younger members and increased networks. A series of comprehensive regressions reveals a negative relationship between gender diversity and risk appetite. This implies that as the female representation in the board of directors increases, the firm shows a more risk averse behavior due to increased returns and declining debt amounts. Furthermore, innovation (as represented by intangible assets) increases. This aligns with previous literature and affirms our first hypothesis. Meanwhile, contrary to expectations, age diversity is positively linked to risk appetite. This is characterized by increasing debt levels and decreasing returns for age diverse boards compared to more age-homogenous boards. Thus, our second hypothesis is rejected.

The findings hold several implications for corporate governance literature and business practices. The positive and negative links identified between risk appetite and age/gender diversity can help board of directors align their risk appetite with the organizational objectives and goals, and thereby enhance overall firm performance. Financial market investors also gain another potential metric to account for in their investment decision criteria. Industrial and regulatory stakeholders can heed the following take-aways. It appears for our European sample that increased female presence in the boardroom promotes risk avoidant behavior, which coincides with higher returns and lower debt. Thus, firms stand to gain from actively promoting gender diversity to enhance risk management, increase innovation, and generate higher returns for shareholders. Meanwhile, higher age variation in a board goes in tandem with debt levels, and returns diminish. This challenges the assumptions of improved performance through age diversity. Hence, firms should carefully assess the potential risks associated with high age diversity in a board. Perhaps a mitigation strategy can help in this matter. This discussion is left open for future researchers.

Further, it is important to acknowledge the limitations of this study, as they provide avenues for further research. Besides methodological constraints, an airtight explanation for the relationship between age diversity and risk appetite was not found. The results confound both theoretical expectations and prevailing market wisdom. Further research can contribute by implementing the suggestions previously proposed. Other avenues for future research may be conducting a qualitative study on the relationship between board diversity and risk appetite, to unravel richer details on the effects of board diversity on risk appetite. This promises useful insights for both the academic and practical profession.

Concluding, this study has extended knowledge on the nexus between age- and gender diversity and the risk appetite displayed by firms. The outcomes provide valuable insights that contribute to the ongoing discussion about the discrepancy found in current board diversity literature.

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8 Appendix A – Summary Statistics and Regression Tables

Table 1

Descriptive Statistics

Statistic	N	Mean	Standard Deviation	Median	Median absolute deviation	Minimum	Maximum	Range	Skewness	Kurtosis	Standard Error
Age Diversity	3,961	0.13	0.04	0.13	0.03	0.00	0.32	0.32	0.82	1.36	0.00
Gender Diversity	3,961	0.22	0.14	0.22	0.16	0.00	0.67	0.67	0.16	-0.74	0.00
Z-score	4,086	1.94	2.54	1.70	0.86	-3.59	79.24	82.83	18.50	429.66	0.04
ROIC	4,086	11.45	12.01	9.87	6.61	-124.95	183.03	307.98	1.61	30.40	0.19
ROE	4,086	19.28	44.77	15.41	10.34	-383.21	1976.85	2360.06	24.08	942.79	0.70
DE	4,086	0.80	5.73	0.60	0.52	-251.31	97.94	349.25	-34.87	1536.54	0.09
Leverage	4,086	0.38	1.01	0.38	0.21	-62.38	3.01	65.70	-58.95	3666.58	0.02
Beta	4,086	0.96	0.40	0.91	0.38	-0.20	3.34	3.54	0.81	2.11	0.01
Intangible Assets	4,086	14.54	2.36	14.91	1.93	0.00	18.96	18.96	-2.37	11.37	0.04
Current Ratio	4,086	1.48	1.13	1.25	0.49	0.13	29.27	29.14	8.43	136.67	0.02
Board Size	4,082	12.62	5.61	11.00	4.45	4.00	33.00	29.00	1.21	1.04	0.08
Firm Size	4,086	16.50	1.37	16.00	1.42	11.79	20.13	8.34	-0.16	-0.21	0.02
Firm Age	4,084	4.04	0.87	4.20	0.96	0.00	5.91	5.91	-0.60	-0.05	0.01
GDP	4,086	7.03	0.89	7.53	0.66	5.06	8.31	3.25	-0.56	-1.16	0.01
Quota	4,086	0.42	0.49	0.00	0.00	0.00	1.00	1.00	0.33	-1.89	0.01
Leverage (control)	4,086	0.26	0.15	0.25	0.15	0.00	0.86	0.86	0.34	-0.28	0.00
Cash	4,086	0.12	0.10	0.09	0.07	0.00	0.96	0.96	2.60	12.00	0.00
ROA	4,086	7.56	7.47	6.53	4.32	-36.86	128.42	165.28	2.81	34.29	0.12

Table 2

Average Age Diversity per Country

Country	Average Age Diversity
Austria	0.140
Belgium	0.136
Denmark	0.150
Finland	0.133
France	0.150
Germany	0.141
Ireland	0.141
Italy	0.141
Netherlands	0.131
Norway	0.140
Portugal	0.165
Spain	0.133
Sweden	0.129
Switzerland	0.124
United Kingdom	0.117

Table 3

Average Age Diversity per Year

Year	Average Age Diversity
2005	0.138
2006	0.140
2007	0.139
2008	0.139
2009	0.138
2010	0.138
2011	0.135
2012	0.134
2013	0.134
2014	0.132
2015	0.127
2016	0.128
2017	0.128
2018	0.129
2019	0.129
2020	0.129
2021	0.127
2022	0.123

Table 4

Average Gender Diversity per Year

Year	Average Gender Diversity
2005	0.092
2006	0.104
2007	0.111
2008	0.120
2009	0.124
2010	0.138
2011	0.159
2012	0.182
2013	0.204
2014	0.235
2015	0.256
2016	0.281
2017	0.299
2018	0.312
2019	0.331
2020	0.353
2021	0.366
2022	0.362

Table 5

Average Gender Diversity per Country

Country	Average Gender Diversity
Austria	0.178
Belgium	0.197
Denmark	0.190
Finland	0.282
France	0.266
Germany	0.173
Ireland	0.152
Italy	0.164
Netherlands	0.224
Norway	0.373
Portugal	0.097
Spain	0.173
Sweden	0.284
Switzerland	0.156
United Kingdom	0.225

Table 6

Average Gender Diversity per Country

Industry	Average Gender Diversity
Agriculture, Forestry, Fishing	0.411
Construction	0.212
Finance, Insurance, Real Estate	0.200
Manufacturing	0.211
Mining	0.231
Retail Trade	0.284
Services	0.231
Transportation & Public Utilities	0.216
Wholesale Trade	0.256

Table 7

Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Age Diversity	1																	
2 Gender Diversity	-0.04	1																
3 Z-score	0.02	-0.11	1															
4 ROIC	0.00	-0.06	0.54	1														
5 ROE	-0.04	-0.02	0.28	0.85*	1													
6 DE	0.02	0.00	-0.54	-0.20	0.12	1												
7 Leverage	-0.02	0.03	-0.68	-0.29	0.06	0.87*	1											
8 Beta	0.02	-0.03	0.03	-0.11	-0.16	-0.13	-0.09	1										
9 Intangible Assets	-0.06	0.15	-0.45	-0.25	-0.10	0.24	0.35	-0.07	1									
10 Current Ratio	0.04	-0.09	0.58	0.18	0.01	-0.38	-0.51	0.16	-0.43	1								
11 Board Size	0.01	-0.05	-0.24	-0.09	-0.03	0.12	0.16	-0.01	0.42	-0.21	1							
12 Firm Size	-0.07	0.16	-0.49	-0.32	-0.17	0.28	0.34	-0.02	0.71	-0.38	0.54	1						
13 Firm Age	-0.09	0.13	0.08	0.00	0.00	-0.08	-0.06	0.02	0.03	-0.02	0.10	0.08	1					
14 GDP	-0.05	0.07	-0.26	-0.15	-0.06	0.19	0.21	-0.01	0.22	-0.13	0.29	0.30	-0.04	1				
15 Quota	0.03	0.48	-0.17	-0.15	-0.11	0.07	0.07	-0.02	0.14	-0.08	0.03	0.24	0.03	0.13	1			
16 Leverage (control)	-0.01	0.05	-0.64	-0.30	0.01	0.78	0.91	-0.12	0.25	-0.42	0.09	0.27	-0.07	0.15	0.08	1		
17 Cash	0.10	-0.03	0.35	0.25	0.11	-0.20	-0.33	0.11	-0.23	0.46	-0.06	-0.21	-0.07	-0.11	0.01	-0.36	1	
18 ROA	0.00	-0.05	0.57	0.94	0.81	-0.21	-0.31	-0.13	-0.28	0.28	-0.13	-0.35	-0.01	-0.16	-0.15	-0.25	0.23	1

Note: The correlation coefficients higher than 0.70 have been removed. These are indicated by underlining. However, this does not apply to correlated dependent variables, as these are not used in the same regression. These are indicated with an asterisk (*).

Table 8

Z-score OLS without control variables

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.485		
	(0.373)		
Gender Diversity (lag 1)	-0.692***		
	(0.101)		
Age Diversity (lag 2)		0.576	
		(0.383)	
Gender Diversity (lag 2)		-0.633***	
		(0.106)	
Age Diversity (lag 3)			0.728*
			(0.394)
Gender Diversity (lag 3)			-0.587***
			(0.112)
Constant	1.904***	1.863***	1.818***
	(0.057)	(0.058)	(0.060)
Observations	3,857	3,632	3,405
R^2	0.013	0.011	0.009
Adjusted R^2	0.012	0.010	0.009
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 9

Z-score OLS

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.163		
	(0.224)		
Gender Diversity (lag 1)	-0.308***		
	(0.069)		
Board Size (lag 1)	-0.009***		
	(0.002)		
Age Diversity (lag 2)		0.254	
		(0.231)	
Gender Diversity (lag 2)		-0.356***	
		(0.071)	
Board Size (lag 2)		-0.010***	
		(0.002)	
Age Diversity (lag 3)			0.354
			(0.237)
Gender Diversity (lag 3)			-0.384***
			(0.073)
Board Size (lag 3)			-0.010***
			(0.002)
Firm Size	-0.118***	-0.115***	-0.112***
	(0.008)	(0.009)	(0.009)
Firm Age	0.087***	0.091***	0.090***
	(0.010)	(0.011)	(0.011)
GDP	-0.049***	-0.047***	-0.044***
	(0.010)	(0.011)	(0.011)
Quota	-0.001	-0.007	-0.018
	(0.020)	(0.020)	(0.020)
Leverage (control)	-2.783***	-2.785***	-2.780***
	(0.064)	(0.066)	(0.068)
Cash	0.761***	0.722***	0.692***
	(0.107)	(0.111)	(0.114)
ROA	0.056***	0.057***	0.058***
	(0.002)	(0.002)	(0.002)
Constant	4.145***	4.087***	4.016***
	(0.150)	(0.157)	(0.163)
Observations	3,857	3,632	3,405
R^2	0.655	0.651	0.652
Adjusted R^2	0.654	0.650	0.651
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 10

ROIC OLS without control variables

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Age Diversity (lag 1)	-0.581		
	(3.808)		
Gender Diversity (lag 1)	-3.907***		
	(1.030)		
Age Diversity (lag 2)		-0.461	
		(3.883)	
Gender Diversity (lag 2)		-2.037*	
		(1.075)	
Age Diversity (lag 3)			-0.095
			(3.948)
Gender Diversity (lag 3)			-0.260
			(1.121)
Constant	12.212***	11.538***	10.829***
	(0.581)	(0.590)	(0.599)
Observations	3,857	3,632	3,405
R^2	0.004	0.001	0.00002
Adjusted R^2	0.003	0.0004	-0.001
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 11

ROIC OLS

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Age Diversity (lag 1)	-7.567**		
	(3.474)		
Gender Diversity (lag 1)	2.762**		
	(1.074)		
Board Size (lag 1)	0.159***		
	(0.031)		
Age Diversity (lag 2)		-7.416**	
		(3.549)	
Gender Diversity (lag 2)		3.990***	
		(1.092)	
Board Size (lag 2)		0.160***	
		(0.032)	
Age Diversity (lag 3)			-7.338**
			(3.614)
Gender Diversity (lag 3)			4.938***
			(1.114)
Board Size (lag 3)			0.158***
			(0.032)
Firm Size	-1.815***	-1.840***	-1.839***
	(0.126)	(0.130)	(0.134)
Firm Age	0.042	0.049	0.073
	(0.158)	(0.165)	(0.171)
GDP	-0.473***	-0.448***	-0.425**
	(0.158)	(0.163)	(0.167)
Quota	-1.614***	-1.533***	-1.242***
	(0.308)	(0.307)	(0.307)
Leverage (control)	-10.089***	-9.823***	-9.874***
	(0.992)	(1.012)	(1.025)
Cash	17.090***	16.902***	16.949***
	(1.641)	(1.693)	(1.721)
Constant	44.227***	43.963***	43.211***
	(2.191)	(2.274)	(2.348)
Observations	3,857	3,632	3,405
R^2	0.191	0.187	0.187
Adjusted R^2	0.189	0.185	0.184
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 12

ROE OLS without control variables

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Age Diversity (lag 1)	-17.749***		
	(6.567)		
Gender Diversity (lag 1)	-3.397*		
	(1.776)		
Age Diversity (lag 2)		-18.283***	
		(6.755)	
Gender Diversity (lag 2)		-0.917	
		(1.870)	
Age Diversity (lag 3)			-19.420***
			(6.899)
Gender Diversity (lag 3)			1.381
			(1.959)
Constant	20.429***	19.643***	18.893***
	(1.001)	(1.027)	(1.046)
Observations	3,857	3,632	3,405
R^2	0.003	0.002	0.003
Adjusted R^2	0.002	0.002	0.002
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 13

ROE OLS

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Age Diversity (lag 1)	-26.100***		
	(6.444)		
Gender Diversity (lag 1)	4.917**		
	(1.992)		
Board Size (lag 1)	0.277***		
	(0.057)		
Age Diversity (lag 2)		-26.946***	
		(6.634)	
Gender Diversity (lag 2)		6.632***	
		(2.042)	
Board Size (lag 2)		0.281***	
		(0.059)	
Age Diversity (lag 3)			-28.609***
			(6.794)
Gender Diversity (lag 3)			7.662***
			(2.093)
Board Size (lag 3)			0.277***
			(0.061)
Firm Size	-2.464***	-2.539***	-2.560***
	(0.234)	(0.243)	(0.251)
Firm Age	0.264	0.230	0.231
	(0.292)	(0.308)	(0.321)
GDP	-0.369	-0.330	-0.308
	(0.294)	(0.305)	(0.314)
Quota	-2.616***	-2.396***	-1.822***
	(0.571)	(0.574)	(0.576)
Leverage (control)	12.129***	12.117***	11.529***
	(1.839)	(1.891)	(1.928)
Cash	23.670***	23.680***	23.632***
	(3.044)	(3.165)	(3.235)
Constant	53.768***	54.337***	54.212***
	(4.065)	(4.251)	(4.414)
Observations	3,857	3,632	3,405
R^2	0.063	0.063	0.061
Adjusted R^2	0.061	0.060	0.059
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 14

DE OLS without control variables

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.522		
	(0.361)		
Gender Diversity (lag 1)	0.029		
	(0.098)		
Age Diversity (lag 2)		0.632*	
		(0.371)	
Gender Diversity (lag 2)		-0.064	
		(0.103)	
Age Diversity (lag 3)			0.711*
			(0.382)
Gender Diversity (lag 3)			-0.101
			(0.109)
Constant	0.813***	0.820***	0.815***
	(0.055)	(0.056)	(0.058)
Observations	3,857	3,632	3,405
R^2	0.001	0.001	0.001
Adjusted R^2	0.00004	0.0004	0.001
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 15

DE OLS

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Age Diversity (lag 1)	1.025***		
	(0.341)		
Gender Diversity (lag 1)	-0.252**		
	(0.106)		
Board Size (lag 1)	-0.008***		
	(0.003)		
Age Diversity (lag 2)		1.136***	
		(0.351)	
Gender Diversity (lag 2)		-0.317***	
		(0.108)	
Board Size (lag 2)		-0.009***	
		(0.003)	
Age Diversity (lag 3)			1.238***
			(0.363)
Gender Diversity (lag 3)			-0.315***
			(0.112)
Board Size (lag 3)			-0.009***
			(0.003)
Firm Size	0.149***	0.152***	0.158***
	(0.013)	(0.013)	(0.014)
Firm Age	-0.091***	-0.093***	-0.092***
	(0.015)	(0.016)	(0.017)
GDP	0.095***	0.091***	0.088***
	(0.016)	(0.016)	(0.017)
Quota	0.011	0.022	0.017
	(0.030)	(0.030)	(0.031)
Cash	-1.250***	-1.244***	-1.111***
	(0.155)	(0.161)	(0.167)
ROA	-0.014***	-0.013***	-0.014***
	(0.002)	(0.003)	(0.003)
Constant	-1.621***	-1.652***	-1.747***
	(0.228)	(0.239)	(0.249)
Observations	3,857	3,632	3,405
R^2	0.131	0.129	0.129
Adjusted R^2	0.129	0.126	0.127
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 16

Leverage OLS without control variables

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Age Diversity (lag 1)	-0.079		
	(0.087)		
Gender Diversity (lag 1)	0.044*		
	(0.024)		
Age Diversity (lag 2)		-0.087	
		(0.090)	
Gender Diversity (lag 2)		0.030	
		(0.025)	
Age Diversity (lag 3)			-0.096
			(0.093)
Gender Diversity (lag 3)			0.024
			(0.026)
Constant	0.395***	0.400***	0.403***
	(0.013)	(0.014)	(0.014)
Observations	3,857	3,632	3,405
R^2	0.001	0.001	0.001
Adjusted R^2	0.001	0.0001	-0.00000
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 17

Leverage OLS

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.089		
	(0.078)		
Gender Diversity (lag 1)	-0.021		
	(0.024)		
Board Size (lag 1)	-0.001		
	(0.001)		
Age Diversity (lag 2)		0.088	
		(0.080)	
Gender Diversity (lag 2)		-0.026	
		(0.025)	
Board Size (lag 2)		-0.001	
		(0.001)	
Age Diversity (lag 3)			0.092
			(0.083)
Gender Diversity (lag 3)			-0.021
			(0.026)
Board Size (lag 3)			-0.001
			(0.001)
Firm Size	0.037***	0.038***	0.039***
	(0.003)	(0.003)	(0.003)
Firm Age	-0.019***	-0.019***	-0.019***
	(0.004)	(0.004)	(0.004)
GDP	0.021***	0.020***	0.020***
	(0.004)	(0.004)	(0.004)
Quota	-0.004	-0.002	-0.002
	(0.007)	(0.007)	(0.007)
Cash	-0.551***	-0.548***	-0.510***
	(0.035)	(0.037)	(0.038)
ROA	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)
Constant	-0.169***	-0.183***	-0.205***
	(0.052)	(0.055)	(0.057)
Observations	3,857	3,632	3,405
R^2	0.224	0.219	0.217
Adjusted R^2	0.222	0.217	0.215
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 18

Beta OLS without control variables

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.108		
	(0.164)		
Gender Diversity (lag 1)	-0.090**		
	(0.044)		
Age Diversity (lag 2)		-0.118	
		(0.165)	
Gender Diversity (lag 2)		-0.114**	
		(0.046)	
Age Diversity (lag 3)			-0.253
			(0.169)
Gender Diversity (lag 3)			-0.135***
			(0.048)
Constant	0.968***	1.005***	1.028***
	(0.025)	(0.025)	(0.026)
Observations	3,857	3,632	3,405
R^2	0.001	0.002	0.003
Adjusted R^2	0.001	0.001	0.002
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 19

Beta OLS

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.024		
	(0.161)		
Gender Diversity (lag 1)	-0.071		
	(0.050)		
Board Size (lag 1)	-0.0005		
	(0.001)		
Age Diversity (lag 2)		-0.177	
		(0.162)	
Gender Diversity (lag 2)		-0.088*	
		(0.050)	
Board Size (lag 2)		-0.001	
		(0.001)	
Age Diversity (lag 3)			-0.304*
			(0.167)
Gender Diversity (lag 3)			-0.092*
			(0.052)
Board Size (lag 3)			-0.0001
			(0.001)
Firm Size	-0.009	-0.009	-0.011*
	(0.006)	(0.006)	(0.006)
Firm Age	0.013*	0.016**	0.018**
	(0.007)	(0.008)	(0.008)
GDP	0.006	0.007	0.006
	(0.007)	(0.007)	(0.008)
Quota	-0.015	-0.013	-0.013
	(0.014)	(0.014)	(0.014)
Leverage (control)	-0.323***	-0.339***	-0.351***
	(0.046)	(0.047)	(0.048)
Cash	0.536***	0.444***	0.406***
	(0.077)	(0.078)	(0.080)
ROA	-0.014***	-0.014***	-0.014***
	(0.001)	(0.001)	(0.001)
Constant	1.170***	1.189***	1.236***
	(0.108)	(0.110)	(0.115)
Observations	3,857	3,632	3,405
R^2	0.059	0.059	0.060
Adjusted R^2	0.057	0.056	0.057
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 20

IT OLS without control variables

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Age Diversity (lag 1)	-3.029***		
	(0.809)		
Gender Diversity (lag 1)	2.056***		
	(0.219)		
Age Diversity (lag 2)		-3.005***	
		(0.828)	
Gender Diversity (lag 2)		1.876***	
		(0.229)	
Age Diversity (lag 3)			-3.200***
			(0.852)
Gender Diversity (lag 3)			1.751***
			(0.242)
Constant	14.634***	14.733***	14.838***
	(0.123)	(0.126)	(0.129)
Observations	3,857	3,632	3,405
R^2	0.027	0.022	0.020
Adjusted R^2	0.026	0.022	0.019
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 21

IT OLS

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Age Diversity (lag 1)	-3.067***		
	(0.696)		
Gender Diversity (lag 1)	1.980***		
	(0.215)		
Board Size (lag 1)	0.142***		
	(0.005)		
Age Diversity (lag 2)		-3.034***	
		(0.714)	
Gender Diversity (lag 2)		1.934***	
		(0.220)	
Board Size (lag 2)		0.142***	
		(0.005)	
Age Diversity (lag 3)			-3.166***
			(0.737)
Gender Diversity (lag 3)			1.867***
			(0.227)
Board Size (lag 3)			0.141***
			(0.006)
Firm Age	-0.070**	-0.087***	-0.095***
	(0.032)	(0.033)	(0.035)
GDP	0.080**	0.071**	0.060*
	(0.032)	(0.033)	(0.034)
Quota	0.082	0.082	0.112*
	(0.061)	(0.061)	(0.062)
Leverage (control)	1.734***	1.758***	1.800***
	(0.198)	(0.203)	(0.209)
Cash	-1.809***	-1.740***	-1.753***
	(0.333)	(0.344)	(0.355)
ROA	-0.057***	-0.054***	-0.053***
	(0.005)	(0.005)	(0.005)
Constant	12.674***	12.821***	12.993***
	(0.291)	(0.302)	(0.315)
Observations	3,857	3,632	3,405
R^2	0.292	0.287	0.283
Adjusted R^2	0.290	0.285	0.282
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 22

CR OLS without control variables

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.856***		
	(0.301)		
Gender Diversity (lag 1)	-0.412***		
	(0.081)		
Age Diversity (lag 2)		0.822***	
		(0.308)	
Gender Diversity (lag 2)		-0.416***	
		(0.085)	
Age Diversity (lag 3)			0.994***
			(0.317)
Gender Diversity (lag 3)			-0.422***
			(0.090)
Constant	1.399***	1.399***	1.373***
	(0.046)	(0.047)	(0.048)
Observations	3,857	3,632	3,405
R^2	0.009	0.009	0.010
Adjusted R^2	0.008	0.008	0.009
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 23

CR OLS

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.462*		
	(0.250)		
Gender Diversity (lag 1)	-0.341***		
	(0.077)		
Board Size (lag 1)	-0.023***		
	(0.002)		
Age Diversity (lag 2)		0.412	
		(0.257)	
Gender Diversity (lag 2)		-0.358***	
		(0.079)	
Board Size (lag 2)		-0.023***	
		(0.002)	
Age Diversity (lag 3)			0.530**
			(0.265)
Gender Diversity (lag 3)			-0.369***
			(0.082)
Board Size (lag 3)			-0.023***
			(0.002)
Firm Age	0.008	0.009	0.009
	(0.011)	(0.012)	(0.013)
GDP	0.010	0.013	0.017
	(0.011)	(0.012)	(0.012)
Quota	-0.003	-0.012	-0.020
	(0.022)	(0.022)	(0.022)
Leverage (control)	-1.273***	-1.283***	-1.304***
	(0.071)	(0.073)	(0.075)
Cash	2.656***	2.578***	2.509***
	(0.119)	(0.124)	(0.128)
ROA	0.015***	0.015***	0.017***
	(0.002)	(0.002)	(0.002)
Constant	1.562***	1.556***	1.510***
	(0.104)	(0.109)	(0.113)
Observations	3,857	3,632	3,405
R^2	0.330	0.323	0.325
Adjusted R^2	0.329	0.322	0.323
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 24

Z-score FE without control variables

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.418		
	(0.486)		
Gender Diversity (lag 1)	-0.488***		
	(0.123)		
Age Diversity (lag 2)		0.628	
		(0.480)	
Gender Diversity (lag 2)		-0.445***	
		(0.118)	
Age Diversity (lag 3)			0.961**
			(0.485)
Gender Diversity (lag 3)			-0.413***
			(0.115)
Observations	3,857	3,632	3,405
R^2	0.020	0.017	0.017
Adjusted R^2	-0.041	-0.048	-0.054
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 25

Z-score FE

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.151		
	(0.291)		
Gender Diversity (lag 1)	-0.024		
	(0.090)		
Board Size (lag 1)	-0.002		
	(0.005)		
Age Diversity (lag 2)		0.318	
		(0.286)	
Gender Diversity (lag 2)		-0.121	
		(0.111)	
Board Size (lag 2)		-0.009*	
		(0.005)	
Age Diversity (lag 3)			0.485*
			(0.273)
Gender Diversity (lag 3)			-0.118
			(0.137)
Board Size (lag 3)			-0.009*
			(0.005)
Firm Size	-0.125**	-0.106	-0.091
	(0.059)	(0.068)	(0.077)
Firm Age	0.129	0.184	0.200
	(0.093)	(0.122)	(0.151)
GDP	-0.119	-0.138	-0.173
	(0.098)	(0.102)	(0.109)
Quota	0.043*	0.042*	0.031
	(0.025)	(0.024)	(0.023)
Leverage (control)	-2.643***	-2.636***	-2.614***
	(0.198)	(0.193)	(0.189)
Cash	0.535***	0.577***	0.584***
	(0.207)	(0.206)	(0.210)
ROA	0.042***	0.042***	0.044***
	(0.005)	(0.005)	(0.005)
Observations	3,857	3,632	3,405
R^2	0.595	0.591	0.597
Adjusted R^2	0.569	0.562	0.567
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 26

ROIC FE without control variables

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Age Diversity (lag 1)	6.227		
	(5.991)		
Gender Diversity (lag 1)	-6.905***		
	(1.419)		
Age Diversity (lag 2)		6.015	
		(5.816)	
Gender Diversity (lag 2)		-4.763***	
		(1.384)	
Age Diversity (lag 3)			4.598
			(6.142)
Gender Diversity (lag 3)			-2.766*
			(1.467)
Observations	3,857	3,632	3,405
R^2	0.015	0.007	0.003
Adjusted R^2	-0.047	-0.059	-0.069
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 27

ROIC FE

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Age Diversity (lag 1)	4.749		
	(5.289)		
Gender Diversity (lag 1)	-2.344		
	(2.077)		
Board Size (lag 1)	0.102		
	(0.112)		
Age Diversity (lag 2)		3.121	
		(5.330)	
Gender Diversity (lag 2)		-0.850	
		(2.253)	
Board Size (lag 2)		0.133	
		(0.114)	
Age Diversity (lag 3)			1.021
			(6.217)
Gender Diversity (lag 3)			-1.252
			(2.291)
Board Size (lag 3)			0.091
			(0.113)
Firm Size	-2.251**	-2.165*	-2.112*
	(0.979)	(1.122)	(1.246)
Firm Age	-1.589	-0.708	1.520
	(1.967)	(1.800)	(1.851)
GDP	2.224	2.290	3.629**
	(1.474)	(1.433)	(1.415)
Quota	0.167	-0.050	-0.177
	(0.494)	(0.512)	(0.511)
Leverage (control	-24.000***	-24.731***	-25.566***
	(2.704)	(2.825)	(2.839)
Cash	20.957***	19.689***	19.443***
	(4.422)	(4.895)	(4.973)
Observations	3,857	3,632	3,405
R^2	0.136	0.126	0.128
Adjusted R^2	0.079	0.065	0.064
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 28

ROE FE without control variables

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Age Diversity (lag 1)	1.250		
	(9.501)		
Gender Diversity (lag 1)	-5.707**		
	(2.344)		
Age Diversity (lag 2)		-1.455	
		(9.412)	
Gender Diversity (lag 2)		-2.643	
		(2.326)	
Age Diversity (lag 3)			-6.758
			(10.923)
Gender Diversity (lag 3)			0.190
			(2.448)
Observations	3,857	3,632	3,405
R^2	0.003	0.001	0.0002
Adjusted R^2	-0.060	-0.066	-0.072
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 29

ROE FE

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Age Diversity (lag 1)	-2.146		
	(9.537)		
Gender Diversity (lag 1)	-3.035		
	(3.470)		
Board Size (lag 1)	0.288		
	(0.203)		
Age Diversity (lag 2)		-5.936	
		(9.570)	
Gender Diversity (lag 2)		-1.237	
		(3.510)	
Board Size (lag 2)		0.294	
		(0.198)	
Age Diversity (lag 3)			-10.263
			(11.558)
Gender Diversity (lag 3)			-3.020
			(3.552)
Board Size (lag 3)			0.164
			(0.208)
Firm Size	-4.228***	-4.142**	-4.012**
	(1.549)	(1.753)	(1.866)
Firm Age	-0.040	0.906	4.296
	(2.665)	(3.127)	(3.350)
GDP	5.945**	6.515**	9.075***
	(2.531)	(2.598)	(2.552)
Quota	0.152	0.107	0.191
	(0.962)	(0.980)	(0.975)
Leverage (control)	-10.605*	-12.927**	-15.582**
	(6.197)	(6.546)	(6.653)
Cash	23.216***	22.100***	22.444***
	(7.601)	(8.393)	(8.208)
Observations	3,857	3,632	3,405
R^2	0.034	0.031	0.037
Adjusted R^2	-0.029	-0.036	-0.034
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 30

DE FE without control variables

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.149		
	(0.526)		
Gender Diversity (lag 1)	0.186		
	(0.122)		
Age Diversity (lag 2)		0.081	
		(0.553)	
Gender Diversity (lag 2)		0.082	
		(0.133)	
Age Diversity (lag 3)			0.025
			(0.527)
Gender Diversity (lag 3)			0.067
			(0.137)
Observations	3,857	3,632	3,405
R^2	0.002	0.0004	0.0002
Adjusted R^2	-0.061	-0.067	-0.072
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 31

DE FE

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.176		
	(0.526)		
Gender Diversity (lag 1)	0.141		
	(0.135)		
Board Size (lag 1)	-0.0003		
	(0.008)		
Age Diversity (lag 2)		0.152	
		(0.568)	
Gender Diversity (lag 2)		-0.050	
		(0.149)	
Board Size (lag 2)		0.004	
		(0.008)	
Age Diversity (lag 3)			0.074
			(0.535)
Gender Diversity (lag 3)			-0.143
			(0.160)
Board Size (lag 3)			0.005
			(0.009)
Firm Size	0.092	0.083	0.052
	(0.072)	(0.072)	(0.076)
Firm Age	0.142	0.211	0.419**
	(0.148)	(0.158)	(0.212)
GDP	-0.184	-0.162	-0.159
	(0.117)	(0.125)	(0.135)
Quota	-0.071*	-0.043	-0.046
	(0.043)	(0.041)	(0.042)
Cash	0.114	0.125	0.345
	(0.270)	(0.279)	(0.283)
ROA	-0.017***	-0.017***	-0.019***
	(0.003)	(0.004)	(0.003)
Observations	3,857	3,632	3,405
R^2	0.034	0.032	0.043
Adjusted R^2	-0.029	-0.035	-0.028
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 32

Leverage FE without control variables

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.008		
	(0.122)		
Gender Diversity (lag 1)	0.067**		
	(0.031)		
Age Diversity (lag 2)		-0.040	
		(0.122)	
Gender Diversity (lag 2)		0.055*	
		(0.033)	
Age Diversity (lag 3)			-0.086
			(0.121)
Gender Diversity (lag 3)			0.058*
			(0.033)
Observations	3,857	3,632	3,405
R^2	0.006	0.004	0.005
Adjusted R^2	-0.057	-0.063	-0.067
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 33

Leverage FE

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.062		
	(0.114)		
Gender Diversity (lag 1)	0.039		
	(0.037)		
Board Size (lag 1)	0.0001		
	(0.002)		
Age Diversity (lag 2)		0.023	
		(0.116)	
Gender Diversity (lag 2)		0.015	
		(0.037)	
Board Size (lag 2)		0.002	
		(0.002)	
Age Diversity (lag 3)			-0.015
			(0.115)
Gender Diversity (lag 3)			0.012
			(0.036)
Board Size (lag 3)			0.002
			(0.002)
Firm Size	0.043***	0.043**	0.042**
	(0.016)	(0.017)	(0.019)
Firm Age	-0.020	0.001	0.019
	(0.034)	(0.036)	(0.038)
GDP	-0.037	-0.040	-0.037
	(0.030)	(0.031)	(0.031)
Quota	-0.011	-0.008	-0.008
	(0.010)	(0.010)	(0.010)
Cash	-0.060	-0.070	-0.026
	(0.070)	(0.067)	(0.068)
ROA	-0.006***	-0.006***	-0.007***
	(0.001)	(0.001)	(0.001)
Observations	3,857	3,632	3,405
R^2	0.104	0.105	0.111
Adjusted R^2	0.046	0.043	0.045
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 34

Beta FE without control variables

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.197		
	(0.320)		
Gender Diversity (lag 1)	0.049		
	(0.073)		
Age Diversity (lag 2)		-0.018	
		(0.304)	
Gender Diversity (lag 2)		0.020	
		(0.076)	
Age Diversity (lag 3)			-0.150
			(0.286)
Gender Diversity (lag 3)			-0.0005
			(0.080)
Observations	3,857	3,632	3,405
R^2	0.001	0.0001	0.0002
Adjusted R^2	-0.062	-0.067	-0.072
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 35

Beta FE

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.144		
	(0.307)		
Gender Diversity (lag 1)	0.069		
	(0.093)		
Board Size (lag 1)	-0.002		
	(0.005)		
Age Diversity (lag 2)		-0.082	
		(0.297)	
Gender Diversity (lag 2)		0.050	
		(0.097)	
Board Size (lag 2)		-0.003	
		(0.005)	
Age Diversity (lag 3)			-0.250
			(0.289)
Gender Diversity (lag 3)			0.060
			(0.103)
Board Size (lag 3)			-0.0003
			(0.005)
Firm Size	-0.041	-0.055*	-0.070**
	(0.029)	(0.029)	(0.030)
Firm Age	0.052	0.074	0.095
	(0.074)	(0.090)	(0.103)
GDP	-0.017	-0.012	-0.035
	(0.065)	(0.064)	(0.067)
Quota	-0.008	-0.006	-0.004
	(0.027)	(0.026)	(0.026)
Leverage (control)	0.157	0.224**	0.283**
	(0.101)	(0.104)	(0.115)
Cash	0.432***	0.246	0.120
	(0.160)	(0.163)	(0.182)
ROA	-0.006***	-0.006***	-0.005***
	(0.002)	(0.002)	(0.002)
Observations	3,857	3,632	3,405
R^2	0.020	0.020	0.023
Adjusted R^2	-0.044	-0.049	-0.050
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 36

IT FE without control variables

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Age Diversity (lag 1)	-1.811**		
	(0.834)		
Gender Diversity (lag 1)	2.327***		
	(0.262)		
Age Diversity (lag 2)		-1.694**	
		(0.774)	
Gender Diversity (lag 2)		2.137***	
		(0.265)	
Age Diversity (lag 3)			-1.754**
			(0.762)
Gender Diversity (lag 3)			2.007***
			(0.272)
Observations	3,857	3,632	3,405
R^2	0.145	0.130	0.117
Adjusted R^2	0.092	0.071	0.054
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 37

IT FE

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Age Diversity (lag 1)	-1.100		
	(0.781)		
Gender Diversity (lag 1)	0.701**		
	(0.313)		
Board Size (lag 1)	0.025*		
	(0.013)		
Age Diversity (lag 2)		-1.046	
		(0.734)	
Gender Diversity (lag 2)		0.733**	
		(0.322)	
Board Size (lag 2)		0.030**	
		(0.013)	
Age Diversity (lag 3)			-0.957
			(0.702)
Gender Diversity (lag 3)			0.684**
			(0.320)
Board Size (lag 3)			0.024*
			(0.014)
Firm Size	0.436**	0.427**	0.485**
	(0.172)	(0.191)	(0.217)
GDP	1.198***	1.077***	1.002***
	(0.173)	(0.174)	(0.171)
Quota	0.048	0.049	0.065
	(0.059)	(0.057)	(0.054)
Leverage (control)	1.484***	1.341***	1.252***
	(0.381)	(0.365)	(0.358)
Cash	-2.799***	-2.858***	-2.923***
	(0.532)	(0.522)	(0.514)
ROA	-0.011**	-0.009*	-0.009
	(0.005)	(0.005)	(0.005)
Observations	3,857	3,632	3,405
R^2	0.304	0.285	0.272
Adjusted R^2	0.259	0.236	0.218
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 38

CR FE without control variables

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.279		
	(0.367)		
Gender Diversity (lag 1)	-0.055		
	(0.084)		
Age Diversity (lag 2)		0.345	
		(0.372)	
Gender Diversity (lag 2)		-0.060	
		(0.087)	
Age Diversity (lag 3)			0.776**
			(0.385)
Gender Diversity (lag 3)			-0.045
			(0.087)
Observations	3,857	3,632	3,405
R^2	0.001	0.001	0.004
Adjusted R^2	-0.062	-0.066	-0.068
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 39

CR FE

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Age Diversity (lag 1)	0.231		
	(0.291)		
Gender Diversity (lag 1)	-0.068		
	(0.101)		
Board Size (lag 1)	-0.008		
	(0.006)		
Age Diversity (lag 2)		0.216	
		(0.293)	
Gender Diversity (lag 2)		-0.080	
		(0.110)	
Board Size (lag 2)		-0.008	
		(0.005)	
Age Diversity (lag 3)			0.524*
			(0.307)
Gender Diversity (lag 3)			-0.065
			(0.131)
Board Size (lag 3)			-0.008*
			(0.005)
Firm Size	0.019	0.028	0.037
	(0.045)	(0.054)	(0.061)
Firm Age	0.013	0.022	0.008
	(0.070)	(0.088)	(0.110)
GDP	-0.115	-0.131	-0.130
	(0.092)	(0.087)	(0.089)
Quota	0.012	0.006	0.001
	(0.029)	(0.027)	(0.027)
Leverage (control)	-0.584**	-0.553**	-0.532**
	(0.244)	(0.229)	(0.220)
Cash	3.164***	3.237***	3.177***
	(0.289)	(0.271)	(0.271)
ROA	0.004	0.005	0.007*
	(0.003)	(0.004)	(0.004)
Observations	3,857	3,632	3,405
R^2	0.266	0.266	0.264
Adjusted R^2	0.218	0.215	0.209
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 40

Z-score Quantile Regression

	Dependent variable:								
	Z-score Percentiles								
	10^{th}	20^{th}	30^{th}	40^{th}	50^{th}	60^{th}	70^{th}	80^{th}	90^{th}
Age Diversity (lag 1)	0.723**	0.230	-0.206	-0.100	0.192	0.087	0.490**	0.468	0.991*
	(0.293)	(0.148)	(0.167)	(0.250)	(0.217)	(0.178)	(0.224)	(0.296)	(0.580)
Gender Diversity (lag 1)	-0.099	-0.045	-0.070	-0.098	-0.185***	-0.334***	-0.532***	-0.522***	-0.337**
	(0.081)	(0.056)	(0.054)	(0.065)	(0.063)	(0.053)	(0.065)	(0.087)	(0.169)
Board Size (lag 1)	-0.014***	-0.010***	-0.005***	-0.004*	-0.002	-0.001	-0.003**	-0.003	-0.004
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Firm Size	-0.094***	-0.096***	-0.110***	-0.114***	-0.120***	-0.114***	-0.119***	-0.143***	-0.182***
	(0.009)	(0.007)	(0.006)	(0.009)	(0.008)	(0.007)	(0.008)	(0.011)	(0.019)
Firm Age	0.123***	0.093***	0.076***	0.076***	0.073***	0.064***	0.061***	0.066***	0.061**
	(0.014)	(0.009)	(0.009)	(0.010)	(0.010)	(0.008)	(0.009)	(0.013)	(0.026)
GDP	-0.133***	-0.096***	-0.067***	-0.055***	-0.047***	-0.039***	-0.030***	-0.011	0.018
	(0.014)	(0.008)	(0.009)	(0.010)	(0.010)	(0.008)	(0.010)	(0.012)	(0.025)
Quota	-0.015	-0.031**	-0.035**	-0.040**	-0.020	0.005	0.027	0.020	-0.024
	(0.024)	(0.015)	(0.016)	(0.019)	(0.018)	(0.015)	(0.018)	(0.024)	(0.045)
Leverage (control)	-1.761***	-2.303***	-2.545***	-2.668***	-2.857***	-2.948***	-3.076***	-3.199***	-3.482***
	(0.075)	(0.050)	(0.043)	(0.060)	(0.056)	(0.043)	(0.060)	(0.076)	(0.150)
Cash	0.408**	0.925***	0.883***	1.068***	1.271***	1.453***	1.520***	1.681***	2.028***
	(0.202)	(0.068)	(0.106)	(0.134)	(0.123)	(0.101)	(0.121)	(0.124)	(0.356)
ROA	0.036***	0.044***	0.046***	0.049***	0.050***	0.051***	0.050***	0.050***	0.056***
	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.005)
Constant	3.422***	3.609***	3.907***	3.972***	4.114***	4.114***	4.283***	4.681***	5.386***
	(0.169)	(0.119)	(0.106)	(0.149)	(0.140)	(0.116)	(0.143)	(0.178)	(0.348)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 41

ROIC Quantile Regression

	Dependent variable:								
	ROIC Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	-5.350	-6.917**	-5.886*	-7.595***	-8.402***	-10.178***	-8.636***	-10.327**	-13.026*
	(5.317)	(3.366)	(3.030)	(2.451)	(2.537)	(2.918)	(3.245)	(4.240)	(7.215)
Gender Diversity (lag 1)	1.027	1.653	1.533*	1.630**	0.926	1.065	1.302	2.631*	5.702**
	(1.521)	(1.039)	(0.907)	(0.749)	(0.746)	(0.799)	(0.978)	(1.385)	(2.276)
Board Size (lag 1)	0.147***	0.116***	0.090***	0.116***	0.103***	0.111***	0.126***	0.105**	0.174***
	(0.043)	(0.024)	(0.025)	(0.019)	(0.016)	(0.023)	(0.028)	(0.044)	(0.063)
Firm Size	-1.321***	-1.322***	-1.398***	-1.563***	-1.675***	-1.812***	-1.891***	-1.862***	-2.425***
	(0.184)	(0.121)	(0.108)	(0.087)	(0.092)	(0.092)	(0.115)	(0.173)	(0.253)
Firm Age	0.475*	0.192	0.118	0.161	0.115	0.209*	0.071	-0.306	-0.072
	(0.244)	(0.153)	(0.136)	(0.112)	(0.108)	(0.123)	(0.153)	(0.229)	(0.342)
GDP	0.032	0.060	0.031	-0.178	-0.260**	-0.351**	-0.515***	-0.614***	-0.749**
	(0.226)	(0.158)	(0.150)	(0.134)	(0.123)	(0.142)	(0.161)	(0.214)	(0.372)
Quota	-1.101***	-1.390***	-1.300***	-1.366***	-1.296***	-1.463***	-1.729***	-2.238***	-3.484***
	(0.417)	(0.287)	(0.269)	(0.219)	(0.221)	(0.235)	(0.282)	(0.403)	(0.662)
Leverage (control)	-1.054	-5.219***	-6.414***	-8.997***	-10.105***	-11.461***	-12.673***	-14.146***	-12.474***
	(1.424)	(0.924)	(0.768)	(0.659)	(0.643)	(0.712)	(0.845)	(1.374)	(2.211)
Cash	-1.858	3.174	5.895***	8.777***	10.501***	14.992***	20.190***	29.769***	41.860***
	(4.396)	(1.942)	(1.831)	(1.486)	(1.653)	(1.840)	(2.271)	(3.430)	(4.781)
Constant	22.110***	27.250***	30.897***	36.785***	41.135***	45.167***	49.278***	53.176***	64.883***
	(3.138)	(2.108)	(1.927)	(1.565)	(1.608)	(1.744)	(2.071)	(2.966)	(4.770)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857
Note:									*p<0.1; **p<0.05; ***p<0.01

Table 42

ROE Quantile Regression

	Dependent variable:								
	ROE								
	Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	-11.115	-9.745	-6.168	-7.491*	-15.878***	-11.825**	-8.280	-25.911***	-54.796***
	(9.827)	(6.783)	(5.313)	(4.099)	(4.676)	(5.278)	(6.039)	(5.883)	(15.507)
Gender Diversity (lag 1)	5.419*	5.717***	5.438***	4.814***	2.406*	1.909	1.166	2.840	4.416
	(2.847)	(2.019)	(1.626)	(1.307)	(1.442)	(1.609)	(1.801)	(2.217)	(5.565)
Board Size (lag 1)	0.346***	0.248***	0.246***	0.213***	0.179***	0.177***	0.209***	0.184***	0.335**
	(0.078)	(0.055)	(0.044)	(0.035)	(0.036)	(0.046)	(0.051)	(0.068)	(0.169)
Firm Size	-2.328***	-1.790***	-2.070***	-2.021***	-2.183***	-2.349***	-2.599***	-2.243***	-2.576***
	(0.323)	(0.241)	(0.192)	(0.154)	(0.172)	(0.193)	(0.218)	(0.267)	(0.715)
Firm Age	0.932**	0.218	0.253	0.417**	0.502**	0.506**	0.100	-0.909***	-1.188
	(0.414)	(0.310)	(0.232)	(0.181)	(0.210)	(0.243)	(0.296)	(0.336)	(0.955)
GDP	0.043	-0.035	-0.125	-0.234	-0.404*	-0.559**	-0.894***	-0.796***	-0.797
	(0.389)	(0.293)	(0.236)	(0.203)	(0.218)	(0.248)	(0.267)	(0.268)	(0.928)
Quota	-1.522**	-2.267***	-2.473***	-2.517***	-1.888***	-2.429***	-2.390***	-3.442***	-3.139*
	(0.771)	(0.562)	(0.457)	(0.376)	(0.403)	(0.459)	(0.500)	(0.604)	(1.714)
Leverage (control)	-3.757	-0.102	4.960***	6.437***	7.969***	9.297***	11.857***	18.547***	39.511***
	(2.837)	(1.990)	(1.500)	(1.241)	(1.341)	(1.555)	(1.807)	(2.322)	(6.219)
Cash	-1.275	6.173**	9.350***	12.402***	19.180***	25.682***	29.752***	40.048***	59.489***
	(7.024)	(3.088)	(2.575)	(2.255)	(2.971)	(3.134)	(3.485)	(3.729)	(7.972)
Constant	34.600***	34.005***	40.281***	41.909***	48.434***	53.236***	62.487***	64.192***	74.018***
	(5.647)	(4.252)	(3.298)	(2.773)	(3.023)	(3.435)	(3.891)	(4.067)	(12.904)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 43

DE Quantile Regression

	Dependent variable:								
	DE								
	Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	0.158	0.050	-0.008	0.288*	0.429*	0.489	1.111**	2.194***	4.291***
	(0.122)	(0.160)	(0.164)	(0.154)	(0.257)	(0.311)	(0.461)	(0.709)	(0.908)
Gender Diversity (lag 1)	-0.031	0.020	0.011	-0.070	-0.232***	-0.331***	-0.513***	-0.560***	-0.834***
	(0.042)	(0.050)	(0.046)	(0.043)	(0.078)	(0.089)	(0.127)	(0.199)	(0.274)
Board Size (lag 1)	0.004***	0.004***	0.004***	0.002	-0.002	-0.006**	-0.011***	-0.014**	-0.021**
	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.003)	(0.004)	(0.006)	(0.009)
Firm Size	0.065***	0.065***	0.064***	0.084***	0.113***	0.165***	0.211***	0.228***	0.276***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.010)	(0.012)	(0.016)	(0.024)	(0.033)
Firm Age	0.001	-0.002	-0.020***	-0.047***	-0.070***	-0.104***	-0.123***	-0.164***	-0.261***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.013)	(0.015)	(0.020)	(0.031)	(0.042)
GDP	-0.032***	-0.009	0.002	0.016**	0.043***	0.071***	0.116***	0.120***	0.247***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.011)	(0.013)	(0.018)	(0.029)	(0.039)
Quota	-0.008	-0.029**	-0.029**	-0.014	0.012	0.025	0.030	0.079	0.248***
	(0.013)	(0.015)	(0.013)	(0.013)	(0.024)	(0.027)	(0.037)	(0.059)	(0.074)
Cash	-0.513***	-0.724***	-0.865***	-0.968***	-1.063***	-1.044***	-1.029***	-1.421***	-1.915***
	(0.040)	(0.055)	(0.038)	(0.033)	(0.062)	(0.077)	(0.128)	(0.194)	(0.223)
ROA	-0.007***	-0.008***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***	-0.007**	-0.004
	(0.001)	(0.001)	(0.001)	(0.0003)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
Constant	-0.601***	-0.583***	-0.449***	-0.656***	-1.046***	-1.736***	-2.499***	-2.445***	-3.305***
	(0.095)	(0.108)	(0.102)	(0.101)	(0.162)	(0.180)	(0.268)	(0.428)	(0.553)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 44

Leverage Quantile Regression

	Dependent variable:								
	Leverage Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	0.088	-0.049	-0.077	0.075	0.076	0.060	0.230**	0.399***	0.510***
	(0.091)	(0.083)	(0.089)	(0.088)	(0.106)	(0.106)	(0.110)	(0.127)	(0.144)
Gender Diversity (lag 1)	0.019	0.024	0.016	-0.025	-0.047	-0.054*	-0.105***	-0.086**	-0.124***
	(0.025)	(0.025)	(0.026)	(0.025)	(0.032)	(0.032)	(0.031)	(0.037)	(0.042)
Board Size (lag 1)	0.003***	0.002***	0.002**	0.0003	-0.001	-0.002**	-0.003***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Size	0.041***	0.035***	0.034***	0.037***	0.043***	0.050***	0.048***	0.039***	0.031***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Firm Age	0.0001	-0.006*	-0.013***	-0.022***	-0.027***	-0.030***	-0.027***	-0.023***	-0.033***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.007)
GDP	-0.017***	-0.002	0.003	0.012***	0.022***	0.026***	0.039***	0.037***	0.052***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)
Quota	-0.007	-0.014*	-0.014**	-0.004	0.001	0.008	0.008	0.012	0.034***
	(0.008)	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)	(0.011)	(0.011)
Cash	-0.395***	-0.506***	-0.537***	-0.555***	-0.539***	-0.509***	-0.519***	-0.607***	-0.471***
	(0.026)	(0.015)	(0.026)	(0.030)	(0.044)	(0.037)	(0.035)	(0.040)	(0.075)
ROA	-0.005***	-0.005***	-0.005***	-0.005***	-0.004***	-0.005***	-0.004***	-0.003***	-0.002***
	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0003)
Constant	-0.343***	-0.217***	-0.145***	-0.181***	-0.272***	-0.332***	-0.356***	-0.174**	-0.056
	(0.063)	(0.051)	(0.054)	(0.054)	(0.067)	(0.066)	(0.066)	(0.073)	(0.083)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 45

Beta Quantile Regression

	Dependent variable:								
	Beta Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	-0.337*	-0.074	-0.096	-0.208	-0.334*	-0.424*	-0.010	0.287	0.632**
	(0.181)	(0.170)	(0.160)	(0.167)	(0.184)	(0.233)	(0.265)	(0.212)	(0.277)
Gender Diversity (lag 1)	-0.070	0.001	-0.030	-0.052	-0.078	-0.121*	-0.089	-0.019	-0.203**
	(0.052)	(0.048)	(0.050)	(0.053)	(0.059)	(0.069)	(0.072)	(0.069)	(0.087)
Board Size (lag 1)	-0.003*	0.0003	0.002	0.003*	0.003*	0.003	0.001	-0.002	-0.008***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Firm Size	0.032***	0.020***	0.009	-0.001	-0.003	-0.005	-0.008	-0.010	-0.005
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)	(0.011)
Firm Age	0.060***	0.054***	0.041***	0.022***	0.019**	0.013	0.011	-0.021**	-0.019
	(0.007)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.011)	(0.010)	(0.014)
GDP	-0.022***	-0.022***	-0.003	0.005	0.006	0.001	0.0004	0.010	0.031**
	(0.008)	(0.007)	(0.007)	(0.008)	(0.009)	(0.010)	(0.010)	(0.009)	(0.013)
Quota	0.025*	0.011	0.013	0.008	0.008	0.006	0.006	-0.021	-0.037
	(0.015)	(0.014)	(0.014)	(0.015)	(0.017)	(0.019)	(0.019)	(0.019)	(0.026)
Leverage (control)	-0.325***	-0.371***	-0.320***	-0.360***	-0.373***	-0.390***	-0.344***	-0.289***	-0.120
	(0.048)	(0.049)	(0.049)	(0.049)	(0.054)	(0.063)	(0.068)	(0.072)	(0.078)
Cash	0.229***	0.309***	0.278***	0.245***	0.360***	0.527***	0.668***	0.708***	0.711***
	(0.076)	(0.073)	(0.070)	(0.085)	(0.098)	(0.118)	(0.108)	(0.098)	(0.094)
ROA	-0.008***	-0.008***	-0.007***	-0.008***	-0.008***	-0.009***	-0.009***	-0.010***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.115	0.370***	0.544***	0.840***	0.982***	1.198***	1.315***	1.520***	1.484***
	(0.103)	(0.104)	(0.111)	(0.113)	(0.127)	(0.147)	(0.153)	(0.145)	(0.181)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 46

IT Quantile Regression

	Dependent variable:								
	IT								
	Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
Age Diversity (lag 1)	-2.493*	-1.568**	-1.515**	-1.860**	-1.146*	-1.145**	-1.382**	-2.084***	-2.945***
	(1.492)	(0.707)	(0.729)	(0.772)	(0.645)	(0.572)	(0.570)	(0.621)	(0.724)
Gender Diversity (lag 1)	2.777***	2.218***	2.288***	2.194***	1.819***	1.774***	1.688***	1.319***	0.459*
	(0.384)	(0.280)	(0.251)	(0.231)	(0.187)	(0.179)	(0.166)	(0.186)	(0.247)
Board Size (lag 1)	0.183***	0.152***	0.140***	0.129***	0.120***	0.117***	0.109***	0.107***	0.084***
	(0.008)	(0.005)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Firm Age	-0.073	0.066**	0.108***	0.083**	0.049*	-0.017	-0.098***	-0.190***	-0.154***
	(0.063)	(0.031)	(0.032)	(0.037)	(0.029)	(0.027)	(0.029)	(0.030)	(0.028)
GDP	-0.153***	0.107***	0.190***	0.290***	0.311***	0.273***	0.250***	0.237***	0.178***
	(0.051)	(0.032)	(0.033)	(0.032)	(0.027)	(0.029)	(0.025)	(0.032)	(0.038)
Quota	0.099	0.152**	0.046	0.022	0.065	0.107**	0.157***	0.203***	0.265***
	(0.100)	(0.074)	(0.065)	(0.064)	(0.052)	(0.049)	(0.047)	(0.056)	(0.060)
Leverage (control)	0.717*	1.186***	1.523***	2.070***	2.258***	2.319***	2.689***	2.595***	2.098***
	(0.369)	(0.246)	(0.272)	(0.227)	(0.176)	(0.161)	(0.168)	(0.160)	(0.191)
Cash	-1.978***	-2.963***	-3.076***	-3.166***	-3.224***	-3.179***	-3.146***	-3.369***	-3.094***
	(0.394)	(0.223)	(0.284)	(0.301)	(0.260)	(0.297)	(0.214)	(0.353)	(0.240)
ROA	-0.035***	-0.040***	-0.045***	-0.045***	-0.039***	-0.036***	-0.026***	-0.025***	-0.019***
	(0.005)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)	(0.004)	(0.004)
Constant	11.730***	10.653***	10.541***	10.461***	10.774***	11.592***	12.346***	13.411***	14.869***
	(0.504)	(0.285)	(0.276)	(0.309)	(0.258)	(0.255)	(0.245)	(0.285)	(0.311)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857
Note:									*p<0.1; **p<0.05; ***p<0.01

Table 47

CR Quantile Regression

	Dependent variable:								
	CR								
	Percentiles								
	10^{th}	20^{th}	30^{th}	40^{th}	50^{th}	60^{th}	70^{th}	80^{th}	90^{th}
Age Diversity (lag 1)	-0.166	-0.239	-0.251	-0.357**	-0.283	-0.557***	-0.887***	-0.881**	1.185*
	(0.116)	(0.162)	(0.158)	(0.176)	(0.186)	(0.184)	(0.276)	(0.432)	(0.689)
Gender Diversity (lag 1)	-0.036	-0.094*	-0.148***	-0.240***	-0.267***	-0.260***	-0.318***	-0.445***	-0.312*
	(0.037)	(0.048)	(0.050)	(0.055)	(0.057)	(0.070)	(0.083)	(0.110)	(0.167)
Board Size (lag 1)	0.005***	0.003***	0.003***	0.001	-0.001	-0.0003	-0.002	-0.005**	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)
Firm Size	-0.002	-0.034***	-0.062***	-0.076***	-0.091***	-0.100***	-0.117***	-0.163***	-0.244***
	(0.005)	(0.006)	(0.005)	(0.007)	(0.007)	(0.008)	(0.010)	(0.014)	(0.020)
Firm Age	-0.004	-0.016***	-0.009	0.027***	0.031***	0.032***	0.023*	0.028*	-0.004
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.010)	(0.012)	(0.015)	(0.019)
GDP	-0.043***	-0.041***	-0.038***	-0.023v	-0.015*	-0.010	0.006	0.035**	0.094***
	(0.007)	(0.010)	(0.006)	(0.008)	(0.008)	(0.011)	(0.010)	(0.017)	(0.019)
Quota	0.015	0.001	0.016	-0.007	-0.005	0.006	0.047**	0.058*	0.107***
	(0.011)	(0.012)	(0.014)	(0.015)	(0.016)	(0.021)	(0.023)	(0.030)	(0.037)
Leverage (control)	-0.390***	-0.473***	-0.649***	-0.651***	-0.752***	-0.880***	-1.011***	-1.293***	-1.751***
	(0.034)	(0.036)	(0.036)	(0.048)	(0.052)	(0.064)	(0.077)	(0.100)	(0.150)
Cash	2.230***	2.179***	2.292***	2.482***	2.706***	3.081***	3.468***	3.953***	5.465***
	(0.052)	(0.106)	(0.111)	(0.111)	(0.126)	(0.160)	(0.205)	(0.270)	(0.442)
ROA	0.002**	0.004***	0.004***	0.007***	0.008***	0.010***	0.009***	0.009***	0.009**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)	(0.004)
Constant	0.975***	1.746***	2.334***	2.459***	2.749***	2.976***	3.375***	4.226***	5.366***
	(0.097)	(0.112)	(0.100)	(0.118)	(0.120)	(0.137)	(0.164)	(0.246)	(0.317)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857

Note: *p<0.1; **p<0.05; ***p<0.01

Table 48

Z-score OLS - Robust

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Average Age (lag 1)	0.095		
	(0.158)		
Gender Diversity – Blau (lag 1)	-0.256***		
	(0.061)		
Board Size (lag 1)	-0.008***		
	(0.002)		
Average Age (lag 2)		0.108	
		(0.164)	
Gender Diversity – Blau (lag 2)		-0.302***	
		(0.062)	
Board Size (lag 2)		-0.009***	
		(0.002)	
Average Age (lag 3)			0.147
			(0.168)
Gender Diversity – Blau (lag 3)			-0.339***
			(0.063)
Board Size (lag 3)			-0.010***
			(0.002)
Firm Size	-0.120***	-0.118***	-0.116***
	(0.009)	(0.009)	(0.009)
Firm Age	0.086***	0.090***	0.089***
	(0.010)	(0.011)	(0.011)
GDP	-0.051***	-0.048***	-0.045***
	(0.010)	(0.011)	(0.011)
Quota	-0.005	-0.009	-0.016
	(0.020)	(0.020)	(0.020)
Leverage (control)	-2.785***	-2.787***	-2.780***
	(0.064)	(0.066)	(0.068)
Cash	0.749***	0.711***	0.681***
	(0.107)	(0.112)	(0.115)
ROA	0.056***	0.057***	0.058***
	(0.002)	(0.002)	(0.002)
Constant	3.834***	3.748***	3.542***
	(0.621)	(0.642)	(0.659)
Observations	3,857	3,632	3,405
R^2	0.655	0.651	0.652
Adjusted R^2	0.654	0.650	0.651
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 49

ROIC OLS - Robust

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Average Age (lag 1)	-5.518**		
	(2.454)		
Gender Diversity – Blau (lag 1)	2.612***		
	(0.949)		
Board Size (lag 1)	0.137***		
	(0.031)		
Average Age (lag 2)		-4.874*	
		(2.517)	
Gender Diversity – Blau (lag 2)		3.530***	
		(0.951)	
Board Size (lag 2)		0.139***	
		(0.032)	
Average Age (lag 3)			-2.603
			(2.566)
Gender Diversity – Blau (lag 3)			4.562***
			(0.954)
Board Size (lag 3)			0.142***
			(0.033)
Firm Size	-1.714***	-1.746***	-1.780***
	(0.131)	(0.135)	(0.139)
Firm Age	0.077	0.085	0.094
	(0.158)	(0.165)	(0.171)
GDP	-0.430***	-0.408**	-0.391**
	(0.158)	(0.163)	(0.167)
Quota	-1.610***	-1.519***	-1.293***
	(0.307)	(0.308)	(0.308)
Leverage (control)	-10.266***	-9.958***	-9.914***
	(0.994)	(1.015)	(1.028)
Cash	17.446***	17.209***	17.063***
	(1.652)	(1.703)	(1.730)
Constant	63.595***	60.829***	51.410***
	(9.572)	(9.810)	(9.993)
Observations	3,857	3,632	3,405
R^2	0.192	0.187	0.187
Adjusted R^2	0.190	0.185	0.185
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 50

ROE OLS - Robust

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Average Age (lag 1)	2.594		
	(4.561)		
Gender Diversity – Blau (lag 1)	5.951***		
	(1.763)		
Board Size (lag 1)	0.265***		
	(0.058)		
Average Age (lag 2)		2.221	
		(4.712)	
Gender Diversity – Blau (lag 2)		7.276***	
		(1.781)	
Board Size (lag 2)		0.266***	
		(0.060)	
Average Age (lag 3)			5.557
			(4.832)
Gender Diversity – Blau (lag 3)			8.364***
			(1.796)
Board Size (lag 3)			0.268***
			(0.061)
Firm Size	-2.445***	-2.509***	-2.575***
	(0.243)	(0.253)	(0.262)
Firm Age	0.299	0.271	0.258
	(0.293)	(0.309)	(0.322)
GDP	-0.304	-0.259	-0.239
	(0.294)	(0.305)	(0.315)
Quota	-2.945***	-2.717***	-2.247***
	(0.571)	(0.576)	(0.580)
Leverage (control)	12.124***	12.117***	11.624***
	(1.848)	(1.900)	(1.936)
Cash	22.929***	22.924***	22.438***
	(3.069)	(3.189)	(3.258)
Constant	38.514**	40.254**	27.090
	(17.789)	(18.368)	(18.817)
Observations	3,857	3,632	3,405
R^2	0.060	0.060	0.058
Adjusted R^2	0.058	0.057	0.056
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 51

DE OLS - Robust

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Average Age (lag 1)	-0.791***		
	(0.240)		
Gender Diversity – Blau (lag 1)	-0.317***		
	(0.093)		
Board Size (lag 1)	-0.010***		
	(0.003)		
Average Age (lag 2)		-0.825***	
		(0.248)	
Gender Diversity – Blau (lag 2)		-0.367***	
		(0.094)	
Board Size (lag 2)		-0.010***	
		(0.003)	
Average Age (lag 3)			-0.823***
			(0.257)
Gender Diversity – Blau (lag 3)			-0.356***
			(0.096)
Board Size (lag 3)			-0.010***
			(0.003)
Firm Size	0.158***	0.161***	0.167***
	(0.013)	(0.014)	(0.014)
Firm Age	-0.088***	-0.092***	-0.091***
	(0.015)	(0.016)	(0.017)
GDP	0.094***	0.090***	0.086***
	(0.016)	(0.016)	(0.017)
Quota	0.033	0.046	0.043
	(0.030)	(0.030)	(0.031)
Cash	-1.145***	-1.133***	-0.994***
	(0.157)	(0.163)	(0.168)
ROA	-0.014***	-0.013***	-0.015***
	(0.002)	(0.003)	(0.003)
Constant	1.622*	1.741*	1.648
	(0.943)	(0.975)	(1.005)
Observations	3,857	3,632	3,405
R^2	0.132	0.130	0.129
Adjusted R^2	0.130	0.127	0.127
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 52

Leverage OLS - Robust

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Average Age (lag 1)	-0.158***		
	(0.055)		
Gender Diversity – Blau (lag 1)	-0.043**		
	(0.021)		
Board Size (lag 1)	-0.001**		
	(0.001)		
Average Age (lag 2)		-0.159***	
		(0.057)	
Gender Diversity – Blau (lag 2)		-0.048**	
		(0.022)	
Board Size (lag 2)		-0.001*	
		(0.001)	
Average Age (lag 3)			-0.153***
			(0.059)
Gender Diversity – Blau (lag 3)			-0.044**
			(0.022)
Board Size (lag 3)			-0.001*
			(0.001)
Firm Size	0.039***	0.040***	0.041***
	(0.003)	(0.003)	(0.003)
Firm Age	-0.018***	-0.018***	-0.018***
	(0.004)	(0.004)	(0.004)
GDP	0.021***	0.020***	0.020***
	(0.004)	(0.004)	(0.004)
Quota	0.001	0.003	0.003
	(0.007)	(0.007)	(0.007)
Cash	-0.533***	-0.530***	-0.493***
	(0.036)	(0.037)	(0.039)
ROA	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)
Constant	0.454**	0.439**	0.395*
	(0.215)	(0.223)	(0.231)
Observations	3,857	3,632	3,405
R^2	0.226	0.221	0.219
Adjusted R^2	0.224	0.219	0.217
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 53

Beta OLS - Robust

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Average Age (lag 1)	-0.117		
	(0.114)		
Gender Diversity – Blau (lag 1)	-0.047		
	(0.044)		
Board Size (lag 1)	-0.001		
	(0.001)		
Average Age (lag 2)		-0.038	
		(0.115)	
Gender Diversity – Blau (lag 2)		-0.065	
		(0.044)	
Board Size (lag 2)		-0.001	
		(0.001)	
Average Age (lag 3)			0.024
			(0.119)
Gender Diversity – Blau (lag 3)			-0.071
			(0.044)
Board Size (lag 3)			-0.0001
			(0.002)
Firm Size	-0.008	-0.008	-0.010
	(0.006)	(0.006)	(0.007)
Firm Age	0.013*	0.017**	0.019**
	(0.007)	(0.008)	(0.008)
GDP	0.006	0.007	0.007
	(0.007)	(0.007)	(0.008)
Quota	-0.016	-0.015	-0.015
	(0.014)	(0.014)	(0.014)
Leverage (control)	-0.328***	-0.343***	-0.355***
	(0.046)	(0.047)	(0.048)
Cash	0.546***	0.440***	0.390***
	(0.078)	(0.079)	(0.081)
ROA	-0.014***	-0.014***	-0.014***
	(0.001)	(0.001)	(0.001)
Constant	1.628***	1.304***	1.088**
	(0.448)	(0.452)	(0.464)
Observations	3,857	3,632	3,405
R^2	0.059	0.058	0.059
Adjusted R^2	0.057	0.056	0.056
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 54

IT OLS - Robust

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Average Age (lag 1)	6.896***		
	(0.464)		
Gender Diversity – Blau (lag 1)	2.001***		
	(0.184)		
Board Size (lag 1)	0.144***		
	(0.005)		
Average Age (lag 2)		6.848***	
		(0.478)	
Gender Diversity – Blau (lag 2)		1.914***	
		(0.186)	
Board Size (lag 2)		0.144***	
		(0.005)	
Average Age (lag 3)			6.908***
			(0.493)
Gender Diversity – Blau (lag 3)			1.844***
			(0.189)
Board Size (lag 3)			0.143***
			(0.005)
Firm Age	-0.096***	-0.113***	-0.121***
	(0.031)	(0.032)	(0.034)
GDP	0.061**	0.052	0.040
	(0.031)	(0.032)	(0.033)
Quota	-0.055	-0.062	-0.048
	(0.060)	(0.060)	(0.061)
Leverage (control)	1.884***	1.903***	1.925***
	(0.193)	(0.198)	(0.203)
Cash	-2.377***	-2.310***	-2.343***
	(0.325)	(0.337)	(0.347)
ROA	-0.049***	-0.046***	-0.046***
	(0.005)	(0.005)	(0.005)
Constant	-15.659***	-15.276***	-15.323***
	(1.884)	(1.939)	(1.999)
Observations	3,857	3,632	3,405
R^2	0.327	0.322	0.319
Adjusted R^2	0.326	0.320	0.317
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 55

CR OLS - Robust

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Average Age (lag 1)	-0.159		
	(0.171)		
Gender Diversity – Blau (lag 1)	-0.365***		
	(0.068)		
Board Size (lag 1)	-0.023***		
	(0.002)		
Average Age (lag 2)		-0.199	
		(0.176)	
Gender Diversity – Blau (lag 2)		-0.382***	
		(0.069)	
Board Size (lag 2)		-0.023***	
		(0.002)	
Average Age (lag 3)			-0.227
			(0.181)
Gender Diversity – Blau (lag 3)			-0.396***
			(0.070)
Board Size (lag 3)			-0.023***
			(0.002)
Firm Age	0.009	0.010	0.011
	(0.011)	(0.012)	(0.013)
GDP	0.008	0.012	0.016
	(0.011)	(0.012)	(0.012)
Quota	0.008	0.002	-0.004
	(0.022)	(0.022)	(0.023)
Leverage (control)	-1.281***	-1.292***	-1.312***
	(0.071)	(0.073)	(0.075)
Cash	2.670***	2.592***	2.530***
	(0.120)	(0.125)	(0.128)
ROA	0.015***	0.015***	0.017***
	(0.002)	(0.002)	(0.002)
Constant	2.304***	2.450***	2.530***
	(0.693)	(0.716)	(0.736)
Observations	3,857	3,632	3,405
R^2	0.331	0.325	0.326
Adjusted R^2	0.330	0.323	0.325
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 56

Z-score FE - Robust

	Dependent variable:		
	Z-score		
	(1)	(2)	(3)
Average Age (lag 1)	-0.009		
	(0.257)		
Gender Diversity – Blau (lag 1)	-0.053		
	(0.080)		
Board Size (lag 1)	-0.001		
	(0.005)		
Average Age (lag 2)		-0.088	
		(0.246)	
Gender Diversity – Blau (lag 2)		-0.133	
		(0.095)	
Board Size (lag 2)		-0.008	
		(0.005)	
Average Age (lag 3)			-0.041
			(0.256)
Gender Diversity – Blau (lag 3)			-0.148
			(0.120)
Board Size (lag 3)			-0.008*
			(0.005)
Firm Size	-0.124**	-0.106	-0.093
	(0.061)	(0.069)	(0.078)
Firm Age	0.135	0.195	0.217
	(0.093)	(0.122)	(0.153)
GDP	-0.115	-0.133	-0.169
	(0.095)	(0.100)	(0.106)
Quota	0.046*	0.044*	0.035
	(0.025)	(0.025)	(0.024)
Leverage (control)	-2.642***	-2.641***	-2.617***
	(0.195)	(0.191)	(0.187)
Cash	0.537**	0.578***	0.593***
	(0.209)	(0.208)	(0.210)
ROA	0.042***	0.042***	0.044***
	(0.005)	(0.005)	(0.005)
Observations	3,857	3,632	3,405
R^2	0.595	0.591	0.597
Adjusted R^2	0.569	0.562	0.567
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 57

ROIC FE - Robust

	Dependent variable:		
	ROIC		
	(1)	(2)	(3)
Average Age (lag 1)	-10.418**		
	(4.841)		
Gender Diversity – Blau (lag 1)	-2.220		
	(1.956)		
Board Size (lag 1)	0.093		
	(0.112)		
Average Age (lag 2)		-12.280**	
		(4.889)	
Gender Diversity – Blau (lag 2)		-1.436	
		(2.122)	
Board Size (lag 2)		0.117	
		(0.115)	
Average Age (lag 3)			-10.804**
			(5.254)
Gender Diversity – Blau (lag 3)			-1.400
			(2.204)
Board Size (lag 3)			0.078
			(0.113)
Firm Size	-2.095**	-1.930*	-1.917
	(0.975)	(1.114)	(1.242)
Firm Age	-1.288	-0.222	1.929
	(1.959)	(1.813)	(1.941)
GDP	2.481*	2.688*	3.937***
	(1.455)	(1.435)	(1.414)
Quota	0.205	0.070	-0.073
	(0.496)	(0.516)	(0.524)
Leverage (control)	-24.270***	-24.991***	-25.772***
	(2.737)	(2.872)	(2.896)
Cash	20.901***	19.723***	19.457***
	(4.414)	(4.876)	(4.953)
Observations	3,857	3,632	3,405
R^2	0.138	0.130	0.131
Adjusted R^2	0.082	0.069	0.067
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 58

ROE FE - Robust

	Dependent variable:		
	ROE		
	(1)	(2)	(3)
Average Age (lag 1)	-13.221		
	(8.769)		
Gender Diversity – Blau (lag 1)	-2.275		
	(3.244)		
Board Size (lag 1)	0.265		
	(0.204)		
Average Age (lag 2)		-17.608**	
		(8.113)	
Gender Diversity – Blau (lag 2)		-1.214	
		(3.242)	
Board Size (lag 2)		0.255	
		(0.200)	
Average Age (lag 3)			-14.200*
			(8.516)
Gender Diversity – Blau (lag 3)			-2.384
			(3.341)
Board Size (lag 3)			0.132
			(0.207)
Firm Size	-4.000**	-3.754**	-3.679**
	(1.562)	(1.747)	(1.864)
Firm Age	0.167	1.334	4.572
	(2.598)	(3.108)	(3.481)
GDP	6.302**	7.056***	9.531***
	(2.539)	(2.612)	(2.568)
Quota	0.165	0.235	0.311
	(0.965)	(0.981)	(0.992)
Leverage (control)	-11.051*	-13.398**	-15.963**
	(6.218)	(6.623)	(6.743)
Cash	23.122***	22.034***	22.261***
	(7.586)	(8.373)	(8.229)
Observations	3,857	3,632	3,405
R^2	0.035	0.033	0.038
Adjusted R^2	-0.028	-0.034	-0.033
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 59

DE FE - Robust

	Dependent variable:		
	DE		
	(1)	(2)	(3)
Average Age (lag 1)	-0.748		
	(0.486)		
Gender Diversity – Blau (lag 1)	0.049		
	(0.138)		
Board Size (lag 1)	-0.002		
	(0.008)		
Average Age (lag 2)		-0.643	
		(0.527)	
Gender Diversity – Blau (lag 2)		-0.102	
		(0.144)	
Board Size (lag 2)		0.003	
		(0.008)	
Average Age (lag 3)			-0.466
			(0.528)
Gender Diversity – Blau (lag 3)			-0.167
			(0.144)
Board Size (lag 3)			0.004
			(0.009)
Firm Size	0.106	0.095	0.061
	(0.072)	(0.071)	(0.076)
Firm Age	0.171	0.240	0.444**
	(0.144)	(0.154)	(0.208)
GDP	-0.151	-0.135	-0.139
	(0.114)	(0.122)	(0.134)
Quota	-0.060	-0.035	-0.039
	(0.044)	(0.042)	(0.043)
Cash	0.128	0.133	0.352
	(0.267)	(0.275)	(0.280)
ROA	-0.017***	-0.017***	-0.020***
	(0.003)	(0.004)	(0.003)
Observations	3,857	3,632	3,405
R^2	0.037	0.035	0.044
Adjusted R^2	-0.026	-0.032	-0.027
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 60

Leverage FE - Robust

	Dependent variable:		
	Leverage		
	(1)	(2)	(3)
Average Age (lag 1)	-0.117		
	(0.095)		
Gender Diversity – Blau (lag 1)	0.014		
	(0.034)		
Board Size (lag 1)	-0.0001		
	(0.002)		
Average Age (lag 2)		-0.107	
		(0.104)	
Gender Diversity – Blau (lag 2)		-0.012	
		(0.033)	
Board Size (lag 2)		0.001	
		(0.002)	
Average Age (lag 3)			-0.070
			(0.109)
Gender Diversity – Blau (lag 3)			-0.015
			(0.032)
Board Size (lag 3)			0.002
			(0.002)
Firm Size	0.045***	0.046***	0.044**
	(0.016)	(0.017)	(0.018)
Firm Age	-0.014	0.009	0.027
	(0.034)	(0.037)	(0.039)
GDP	-0.031	-0.033	-0.031
	(0.030)	(0.031)	(0.031)
Quota	-0.008	-0.005	-0.005
	(0.010)	(0.010)	(0.009)
Cash	-0.056	-0.067	-0.023
	(0.070)	(0.066)	(0.067)
ROA	-0.006***	-0.006***	-0.007***
	(0.001)	(0.001)	(0.001)
Observations	3,857	3,632	3,405
R^2	0.104	0.106	0.112
Adjusted R^2	0.046	0.044	0.046
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 61

Beta FE - Robust

	Dependent variable:		
	Beta		
	(1)	(2)	(3)
Average Age (lag 1)	-0.343		
	(0.244)		
Gender Diversity – Blau (lag 1)	0.071		
	(0.086)		
Board Size (lag 1)	-0.002		
	(0.005)		
Average Age (lag 2)		-0.265	
		(0.244)	
Gender Diversity – Blau (lag 2)		0.041	
		(0.087)	
Board Size (lag 2)		-0.003	
		(0.005)	
Average Age (lag 3)			-0.223
			(0.279)
Gender Diversity – Blau (lag 3)			0.027
			(0.091)
Board Size (lag 3)			-0.001
			(0.005)
Firm Size	-0.036	-0.049*	-0.062**
	(0.029)	(0.030)	(0.031)
Firm Age	0.059	0.080	0.105
	(0.075)	(0.090)	(0.103)
GDP	-0.012	-0.005	-0.023
	(0.066)	(0.064)	(0.067)
Quota	-0.008	-0.004	-0.0004
	(0.027)	(0.026)	(0.027)
Leverage (control)	0.151	0.217**	0.279**
	(0.101)	(0.105)	(0.115)
Cash	0.434***	0.248	0.122
	(0.160)	(0.162)	(0.181)
ROA	-0.006***	-0.006***	-0.005***
	(0.002)	(0.002)	(0.002)
Observations	3,857	3,632	3,405
R^2	0.022	0.021	0.023
Adjusted R^2	-0.042	-0.047	-0.049
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 62

IT FE - Robust

	Dependent variable:		
	IT		
	(1)	(2)	(3)
Average Age (lag 1)	1.912**		
	(0.757)		
Gender Diversity – Blau (lag 1)	0.738***		
	(0.251)		
Board Size (lag 1)	0.025*		
	(0.013)		
Average Age (lag 2)		1.805**	
		(0.770)	
Gender Diversity – Blau (lag 2)		0.689***	
		(0.241)	
Board Size (lag 2)		0.030**	
		(0.013)	
Average Age (lag 3)			1.440**
			(0.718)
Gender Diversity – Blau (lag 3)			0.646***
			(0.241)
Board Size (lag 3)			0.023
			(0.014)
Firm Age	0.353**	0.346*	0.407*
	(0.170)	(0.190)	(0.216)
GDP	1.101***	1.003***	0.943***
	(0.166)	(0.166)	(0.163)
Quota	0.028	0.033	0.047
	(0.057)	(0.055)	(0.053)
Leverage (control)	1.530***	1.398***	1.297***
	(0.382)	(0.366)	(0.355)
Cash	-2.779***	-2.847***	-2.930***
	(0.538)	(0.526)	(0.516)
ROA	-0.010**	-0.008	-0.008
	(0.005)	(0.005)	(0.005)
Observations	3,857	3,632	3,405
R^2	0.311	0.291	0.277
Adjusted R^2	0.267	0.242	0.223
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 63

CR FE - Robust

	Dependent variable:		
	CR		
	(1)	(2)	(3)
Average Age (lag 1)	0.170		
	(0.257)		
Gender Diversity – Blau (lag 1)	-0.083		
	(0.089)		
Board Size (lag 1)	-0.007		
	(0.006)		
Average Age (lag 2)		-0.028	
		(0.242)	
Gender Diversity – Blau (lag 2)		-0.118	
		(0.098)	
Board Size (lag 2)		-0.007	
		(0.005)	
Average Age (lag 3)			-0.137
			(0.282)
Gender Diversity – Blau (lag 3)			-0.117
			(0.119)
Board Size (lag 3)			-0.008
			(0.005)
Firm Size	0.016	0.029	0.037
	(0.047)	(0.056)	(0.063)
Firm Age	0.015	0.034	0.031
	(0.069)	(0.087)	(0.112)
GDP	-0.119	-0.123	-0.122
	(0.090)	(0.086)	(0.087)
Quota	0.013	0.010	0.006
	(0.027)	(0.027)	(0.028)
Leverage (control)	-0.578**	-0.554**	-0.534**
	(0.241)	(0.227)	(0.218)
Cash	3.162***	3.240***	3.188***
	(0.291)	(0.272)	(0.272)
ROA	0.004	0.005	0.007*
	(0.003)	(0.004)	(0.004)
Observations	3,857	3,632	3,405
R^2	0.266	0.267	0.263
Adjusted R^2	0.218	0.216	0.208
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 64

Firm Size OLS

	Dependent variable:
	FS
Age Diversity (lag 1)	-2.364***
	(0.429)
Gender Diversity (lag 1)	0.931***
	(0.132)
Board Size (lag 1)	0.124***
	(0.003)
Firm Age	0.032
	(0.020)
GDP	0.130***
	(0.020)
Quota	0.362***
	(0.038)
Leverage (control)	1.150***
	(0.122)
Cash	-0.875***
	(0.205)
ROA	-0.049***
	(0.003)
Constant	13.989***
	(0.179)
Observations	3,857
R^2	0.454
Adjusted R^2	0.453
Note:	*p<0.1; **p<0.05; ***p<0.01

9 Appendix B – Figures

Figure 1

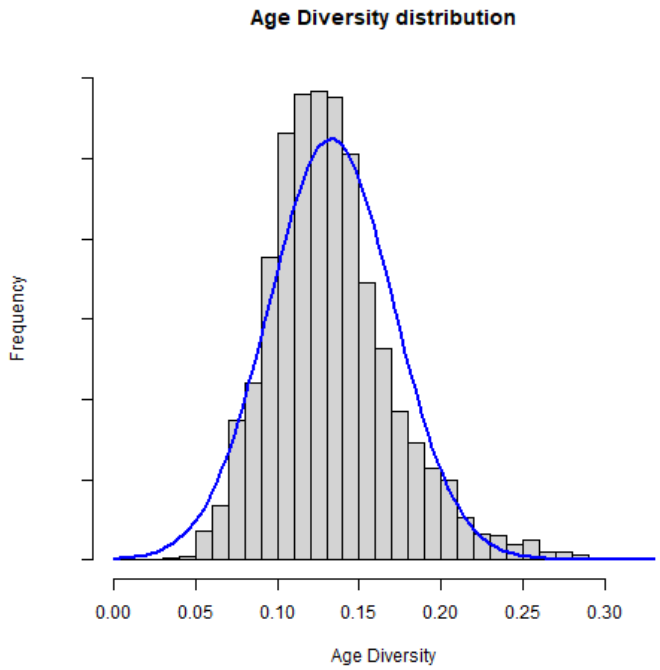


Figure 2

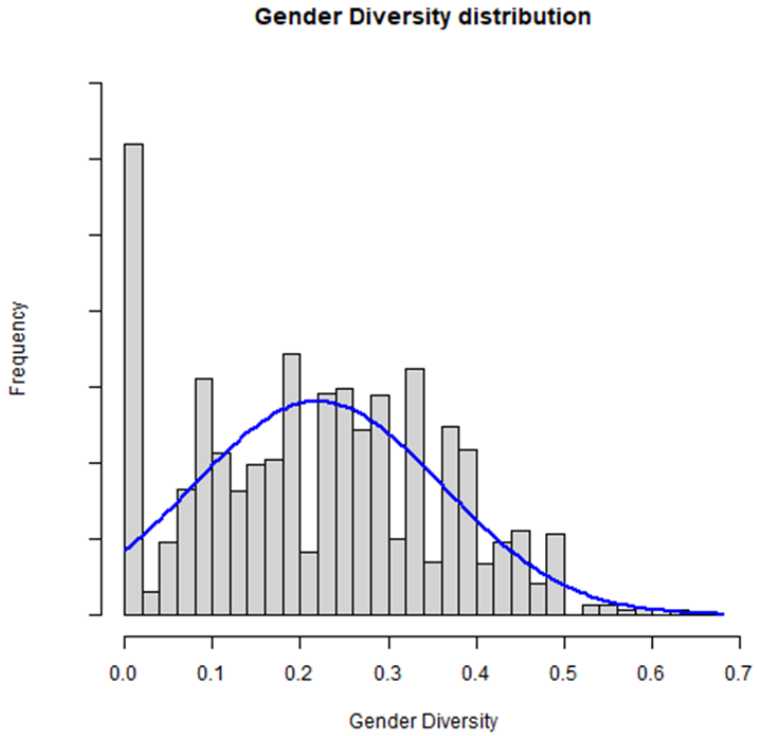


Figure 3

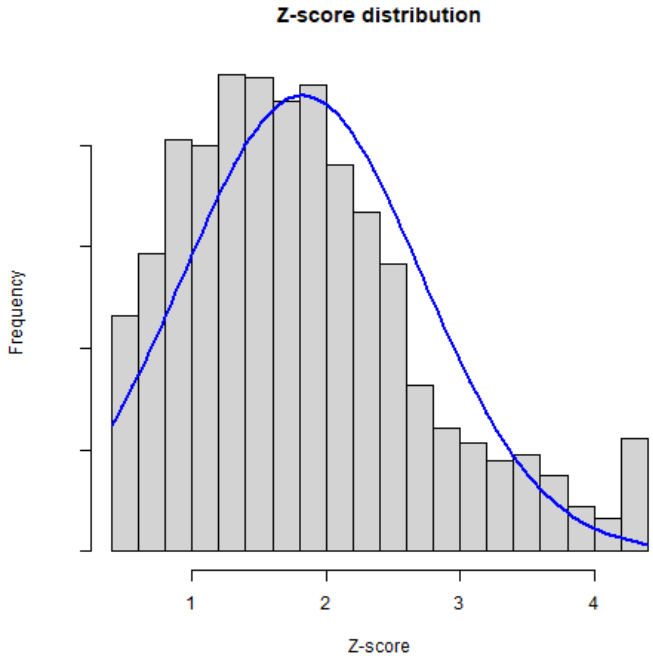


Figure 4

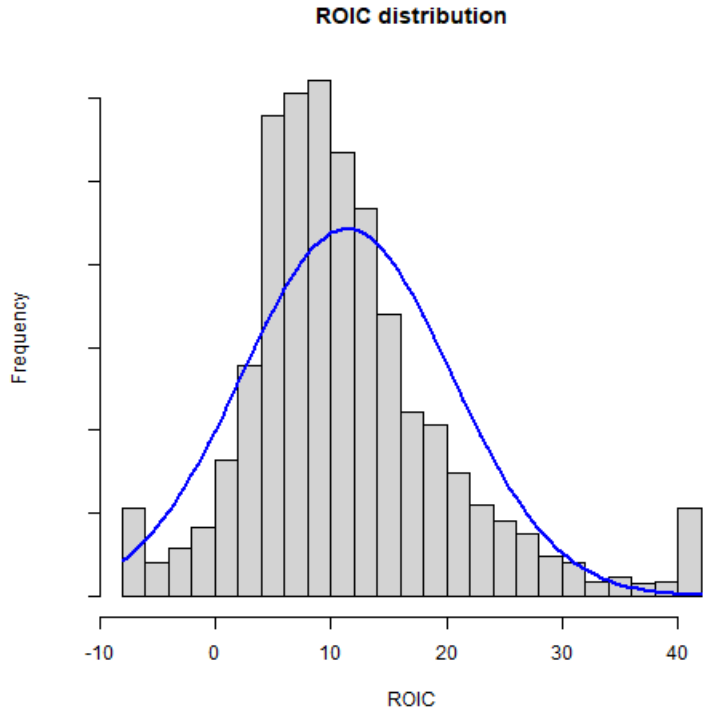


Figure 5

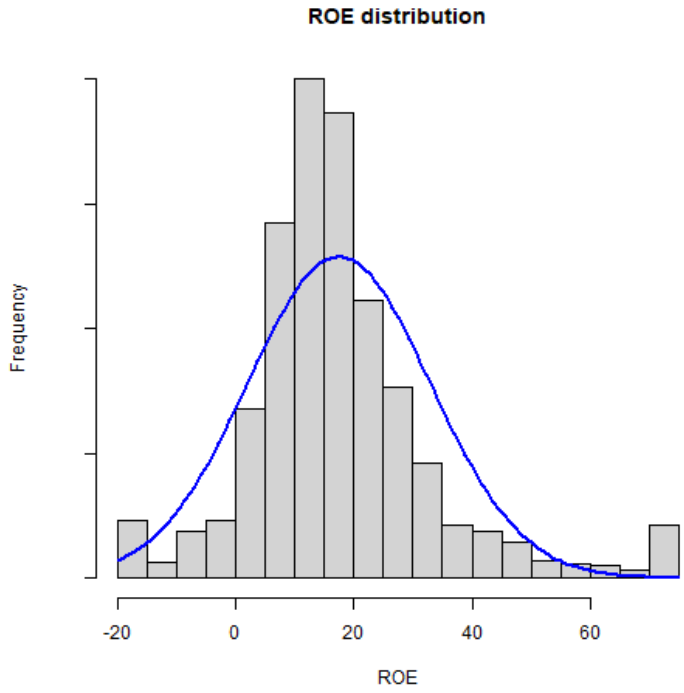


Figure 6

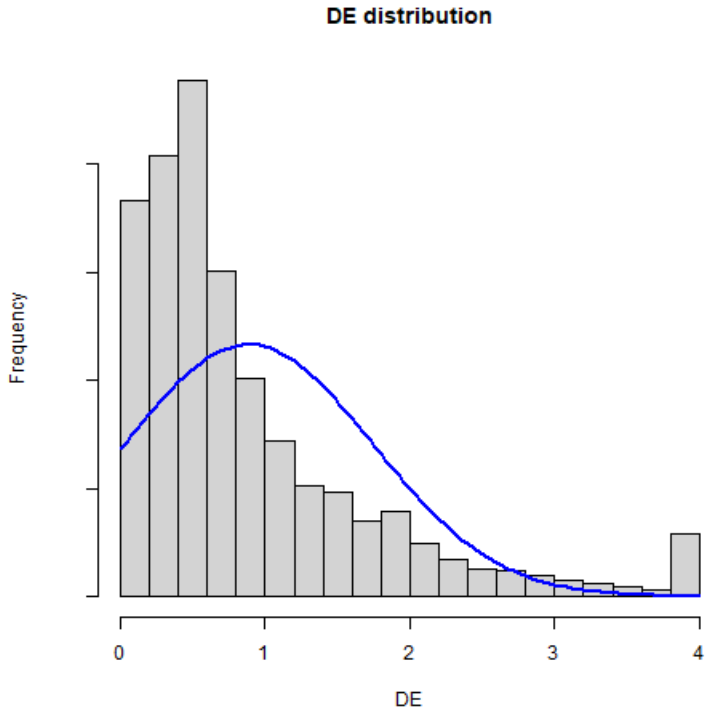


Figure 7

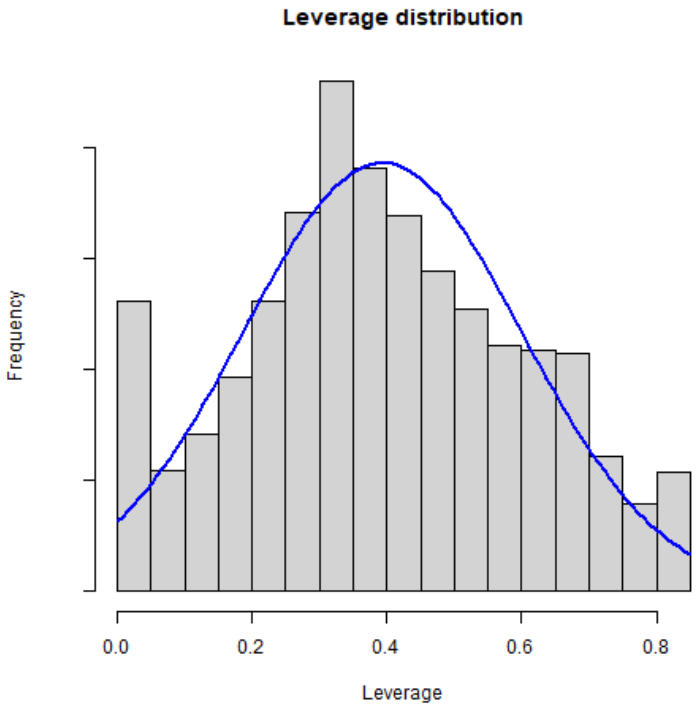


Figure 8

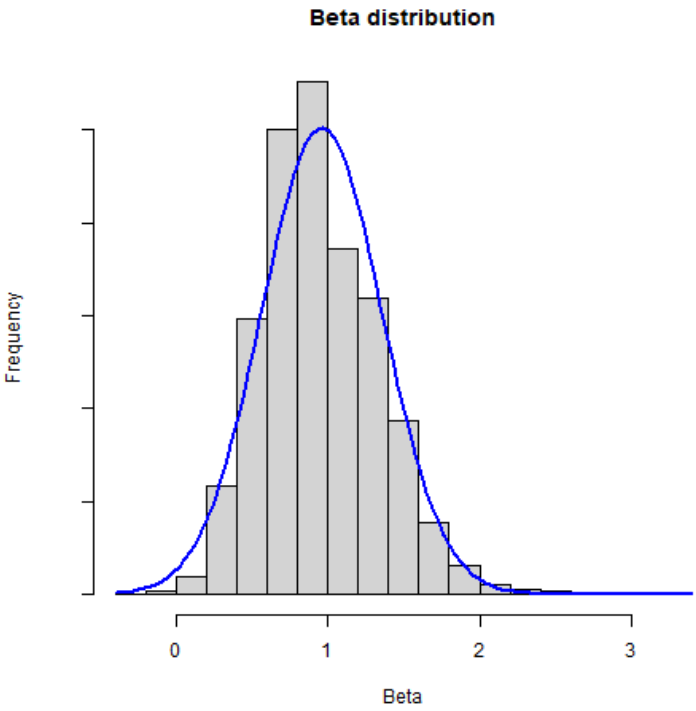


Figure 9

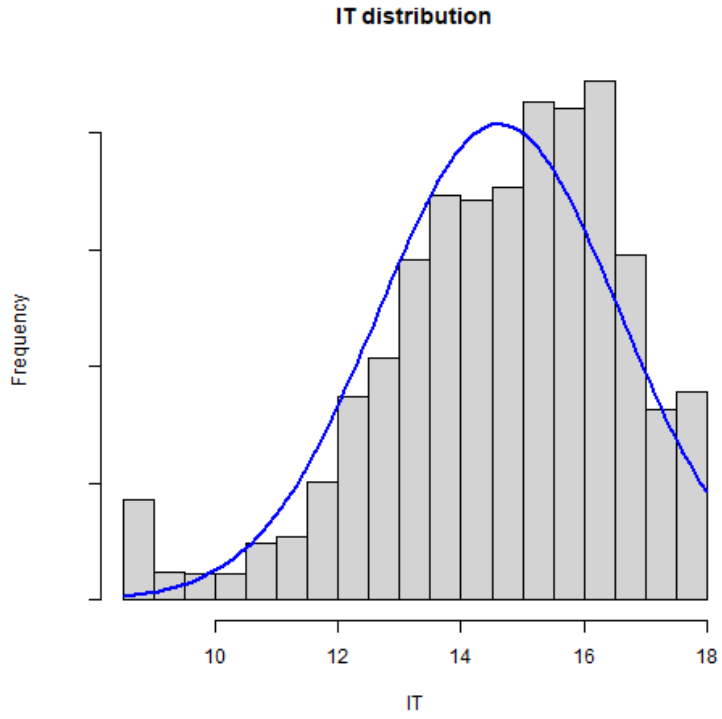


Figure 10

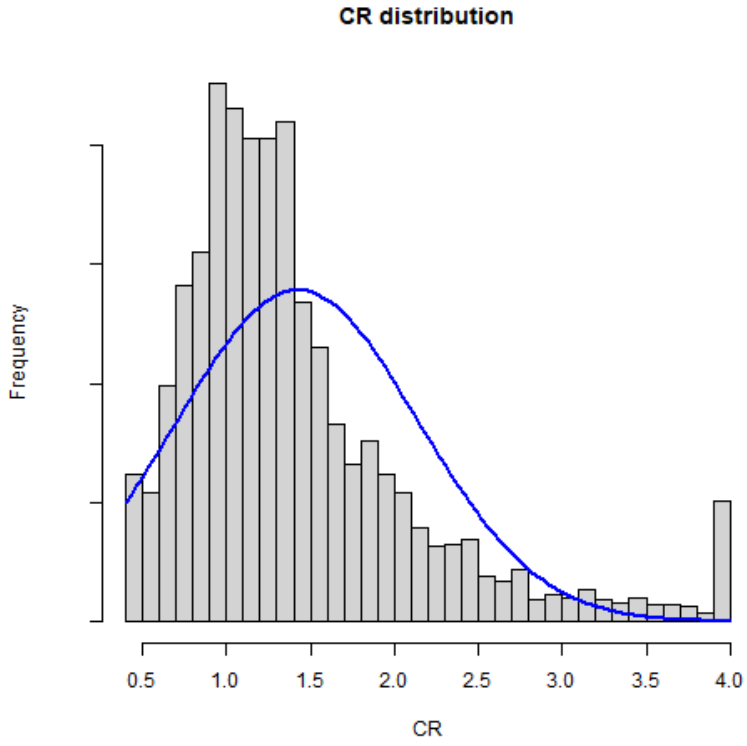


Figure 11

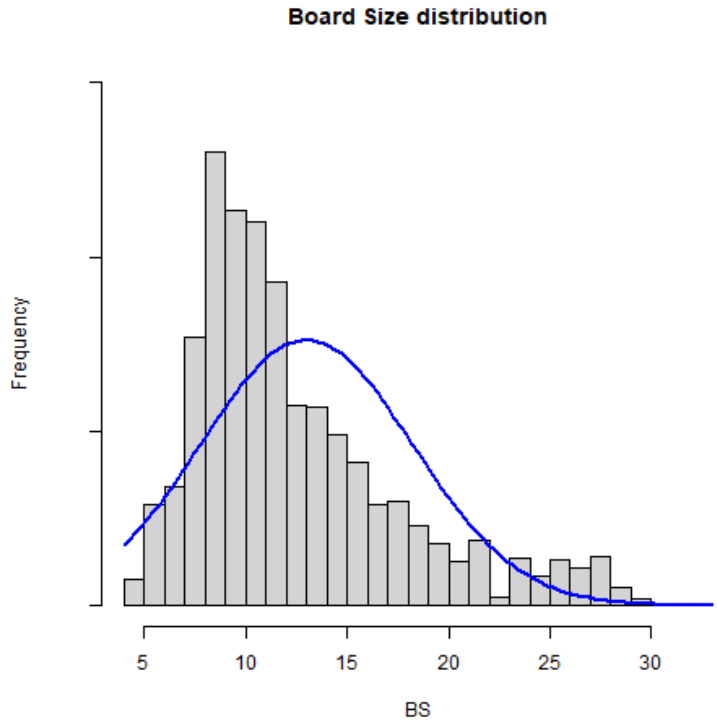


Figure 12

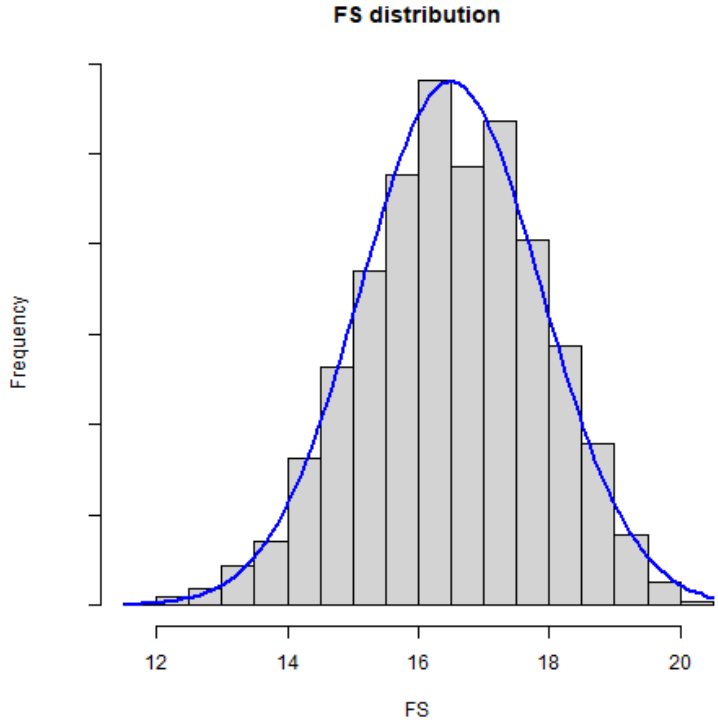


Figure 13

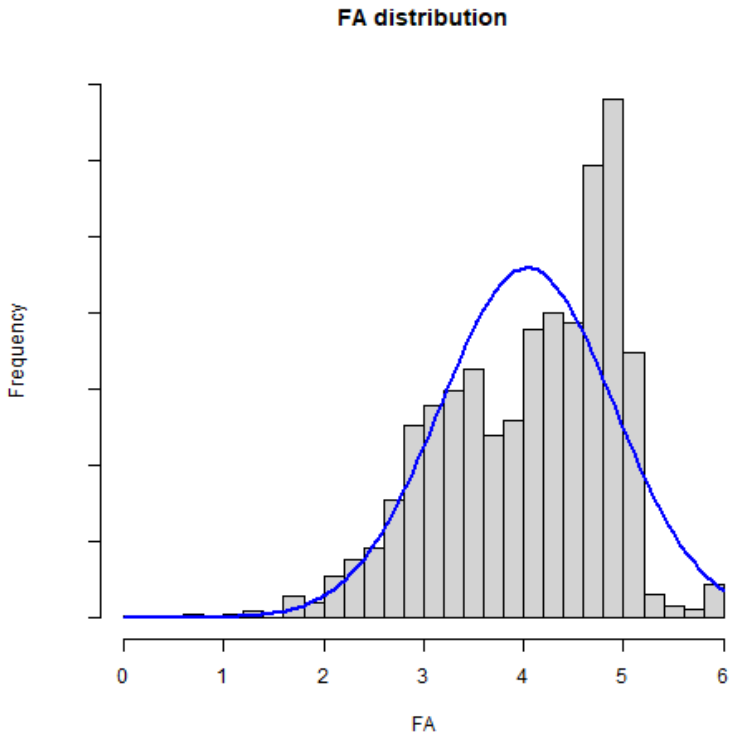


Figure 14

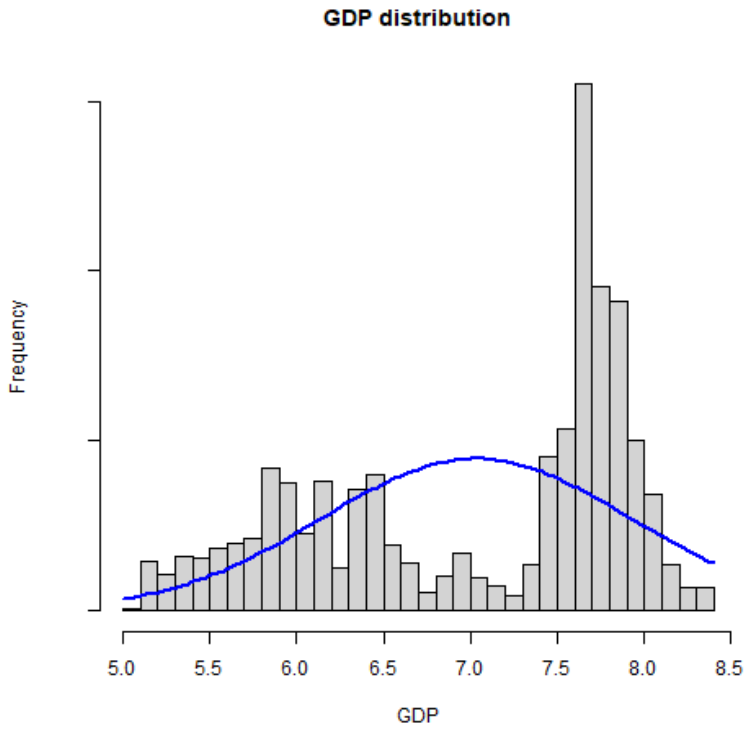


Figure 15

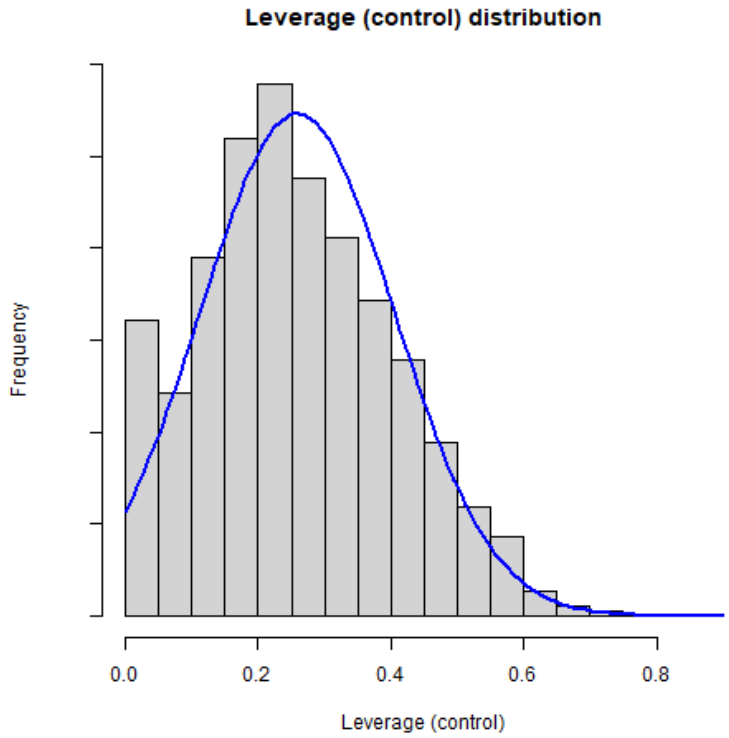


Figure 16

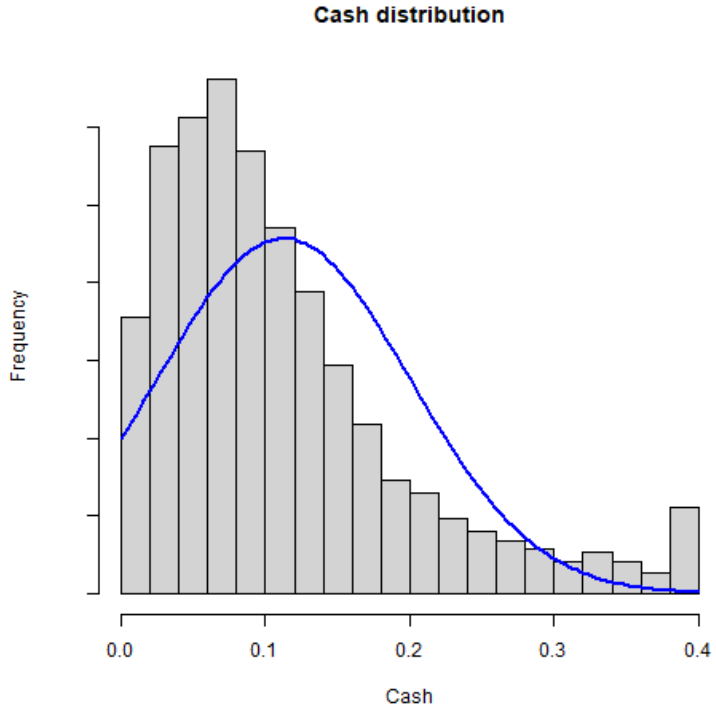


Figure 17

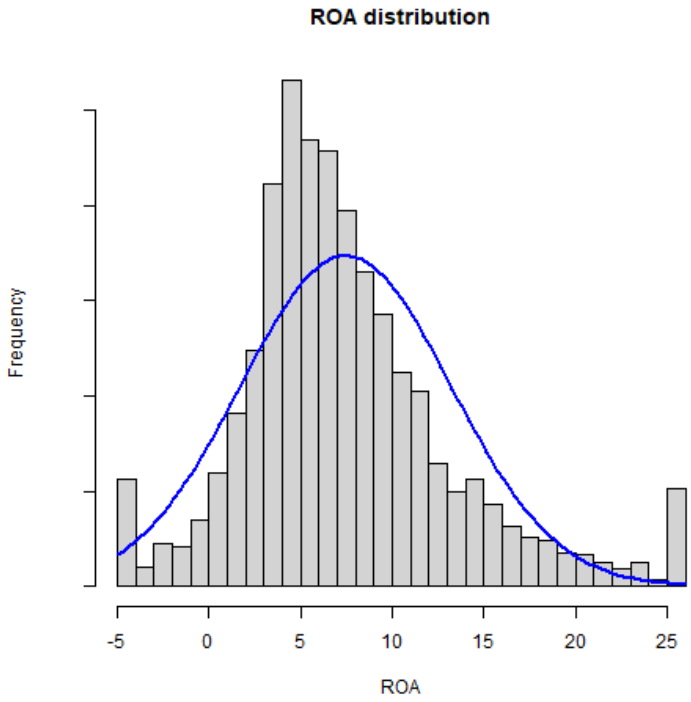


Figure 18

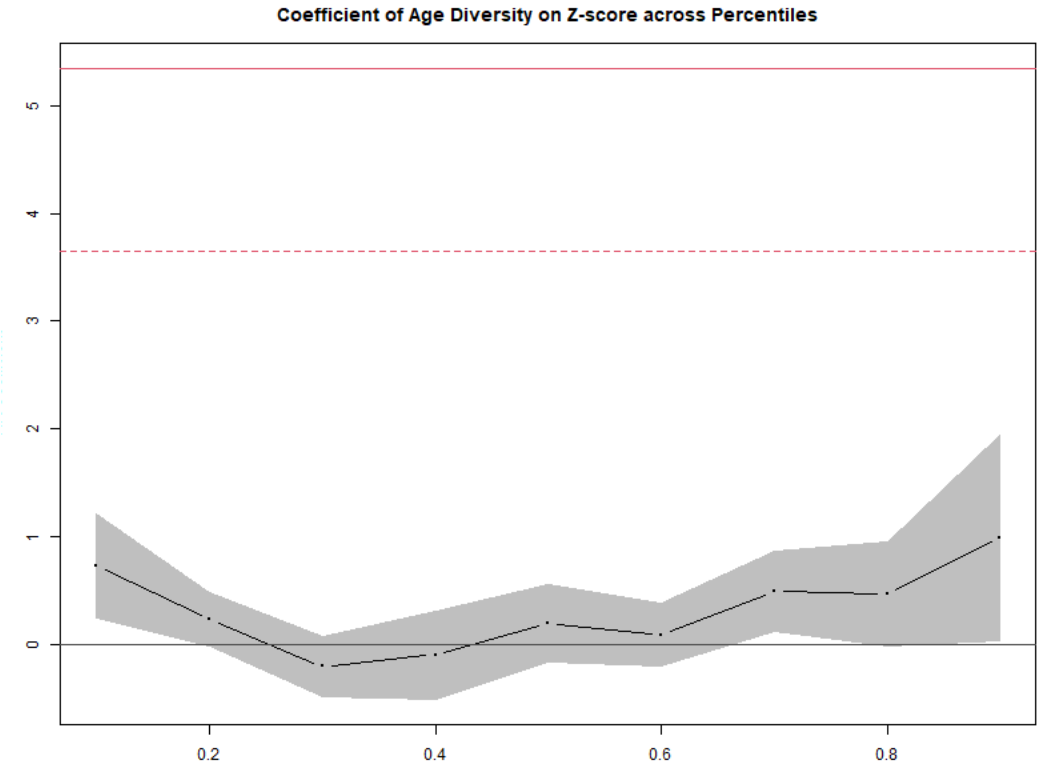


Figure 19

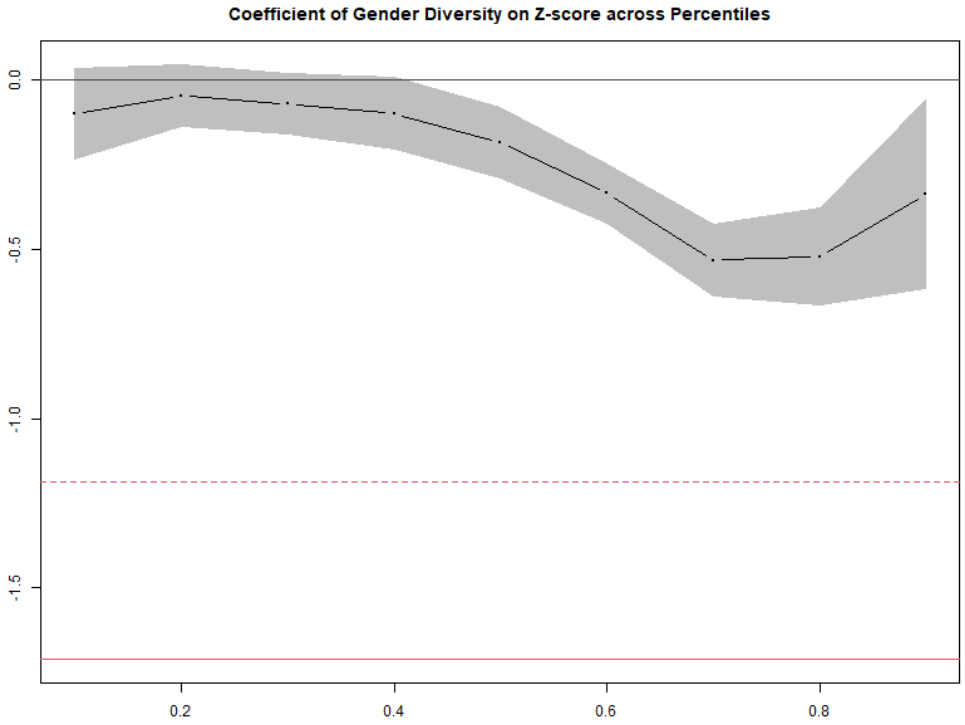


Figure 20

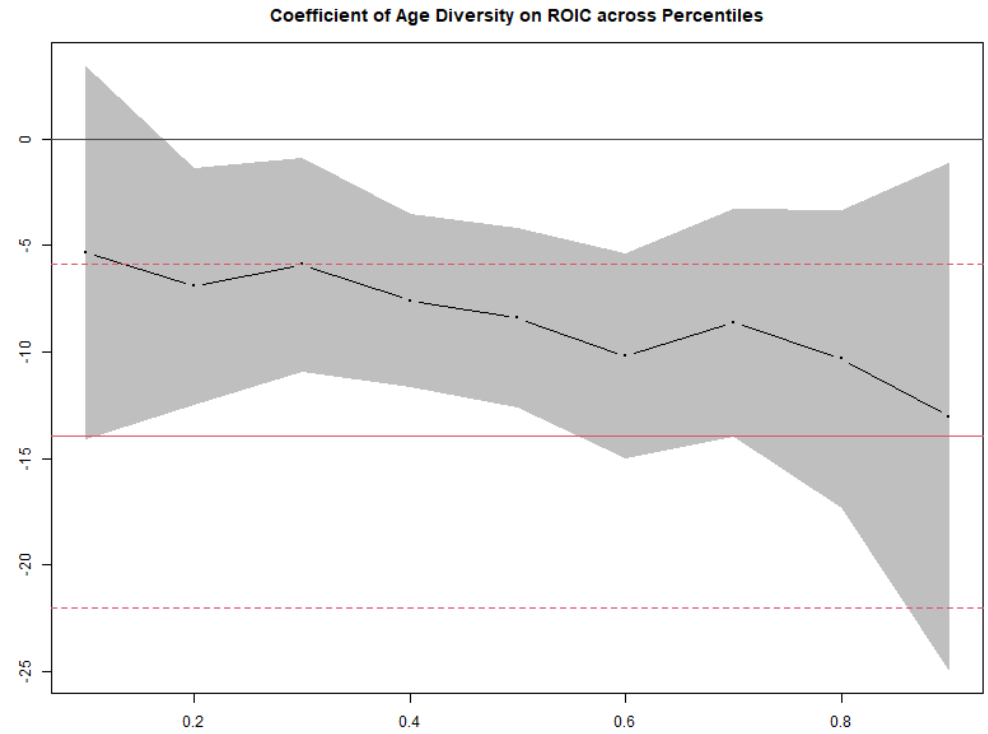


Figure 21

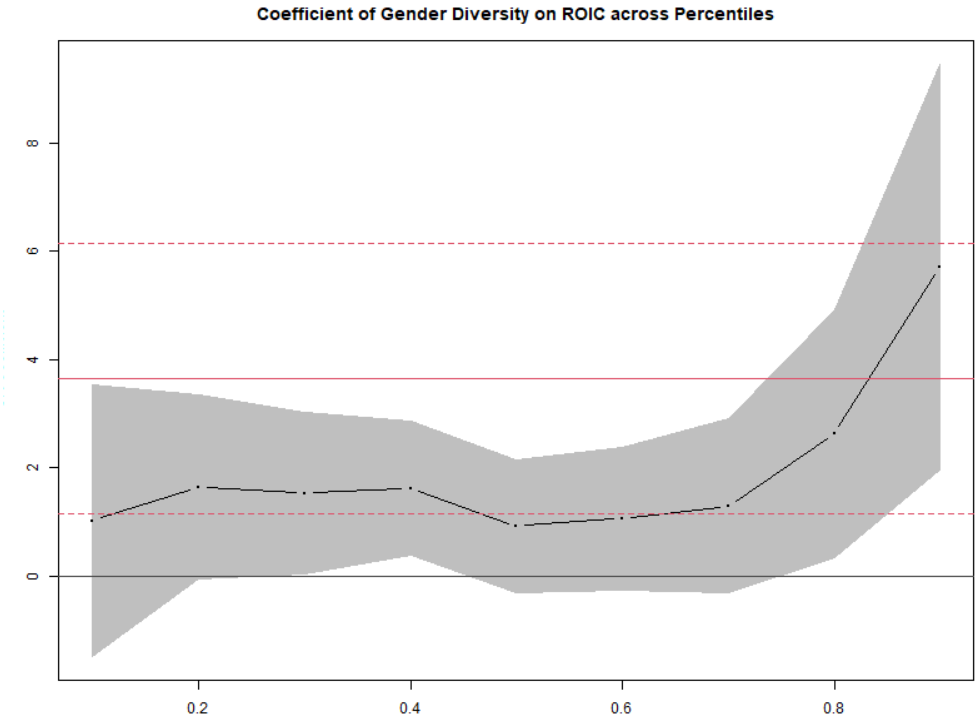


Figure 22

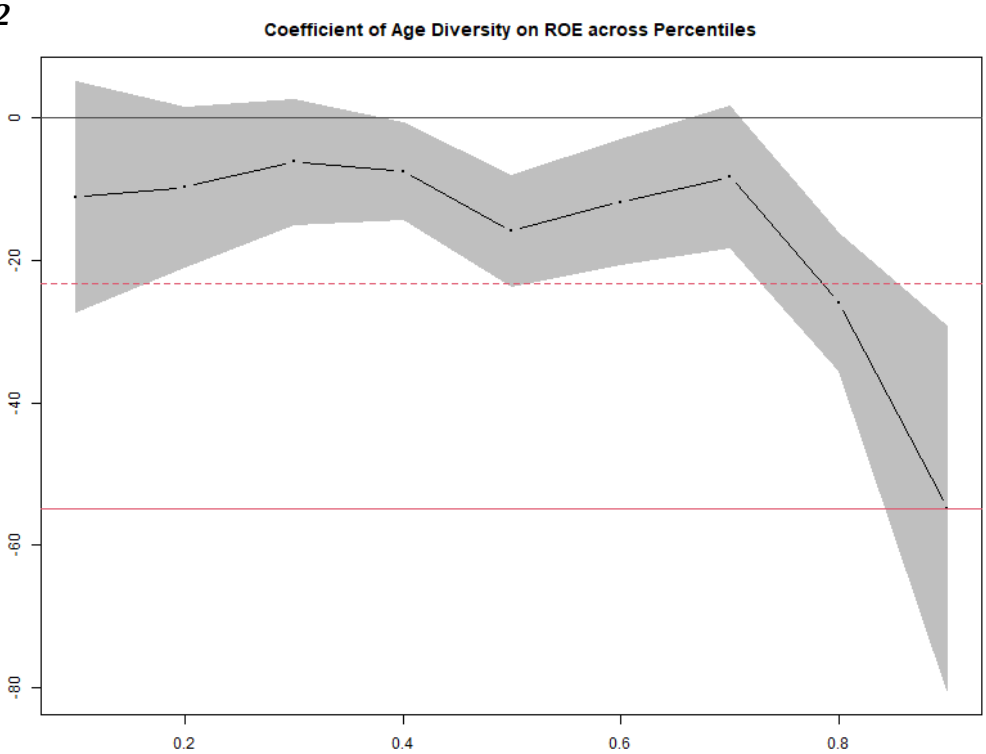


Figure 23

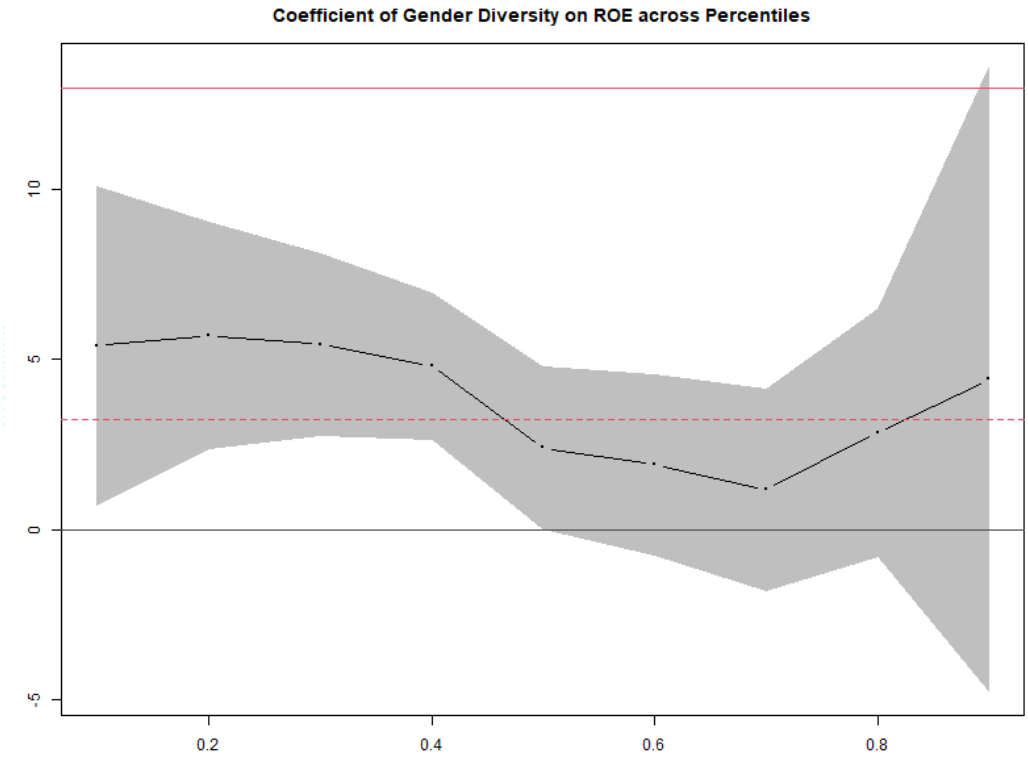


Figure 24

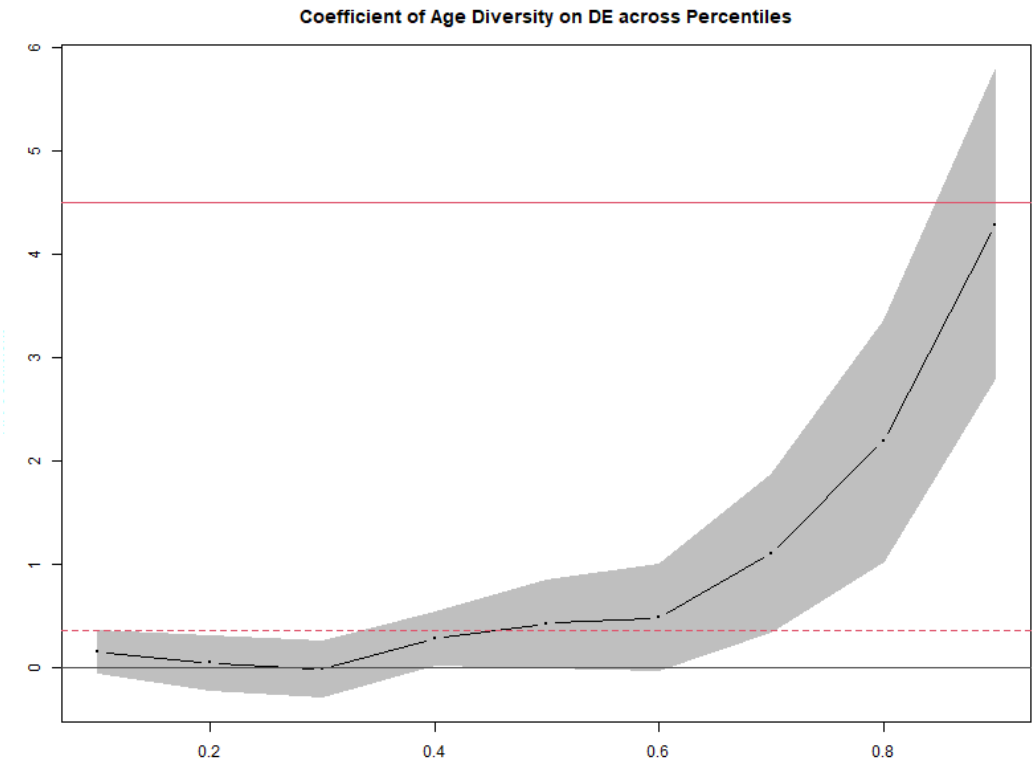


Figure 25

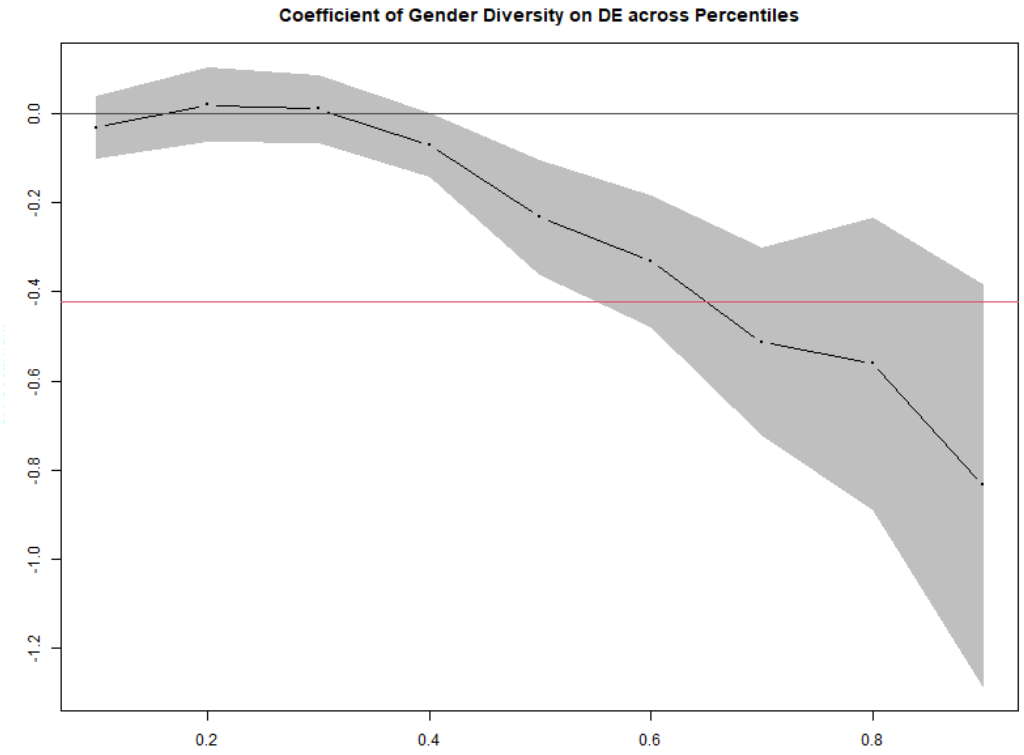


Figure 26

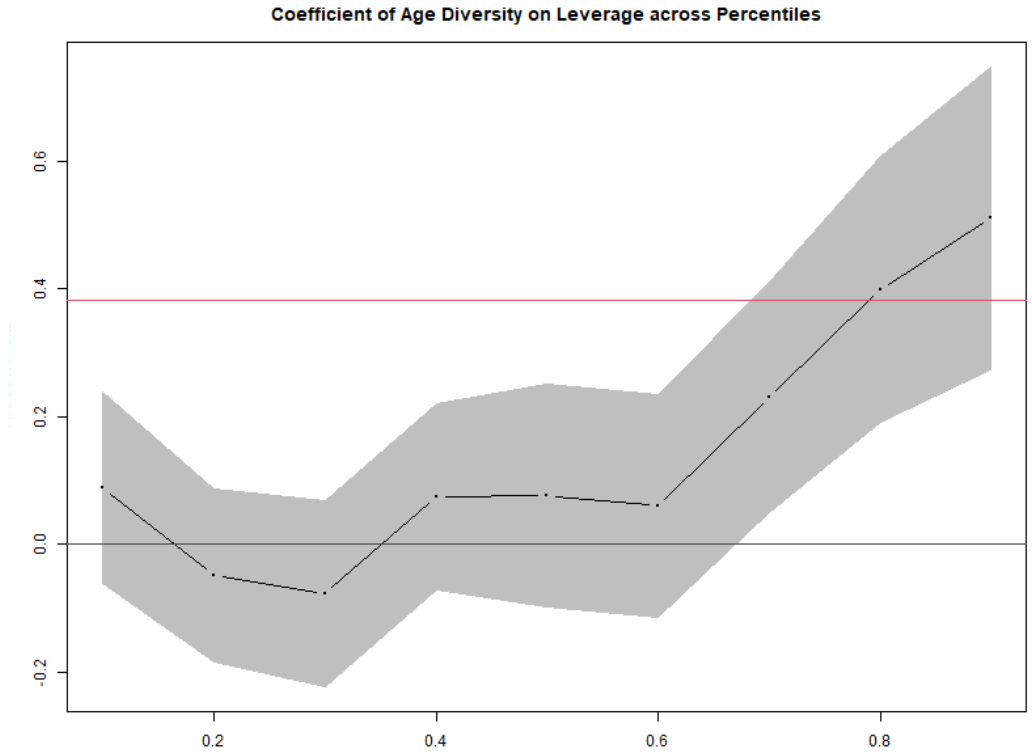


Figure 27

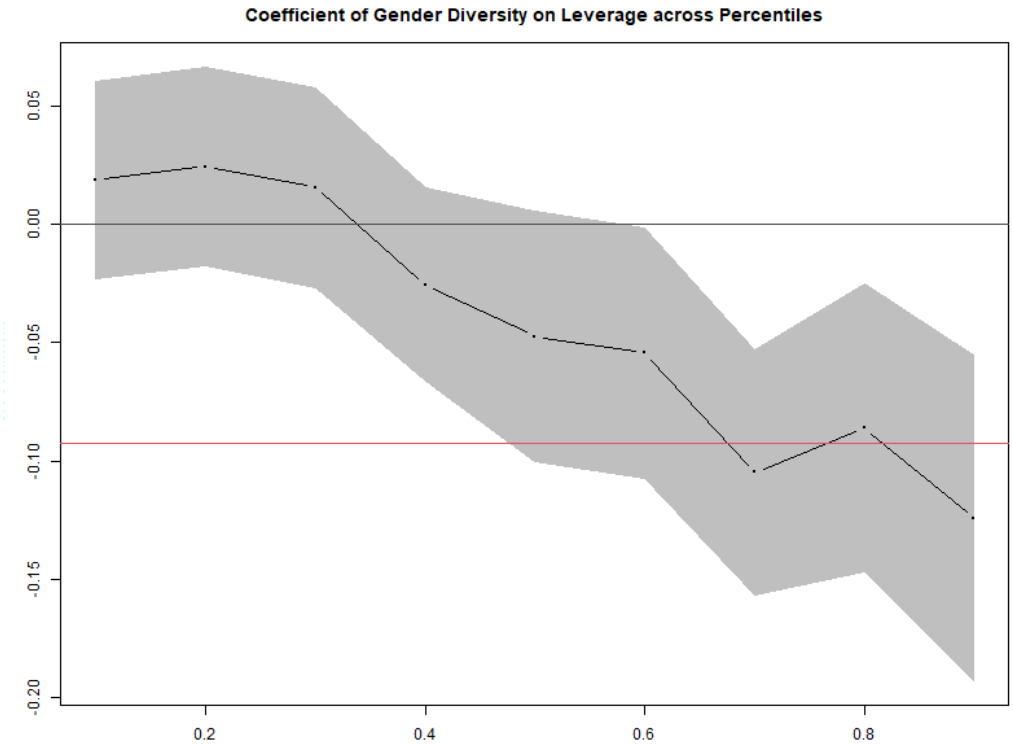


Figure 28

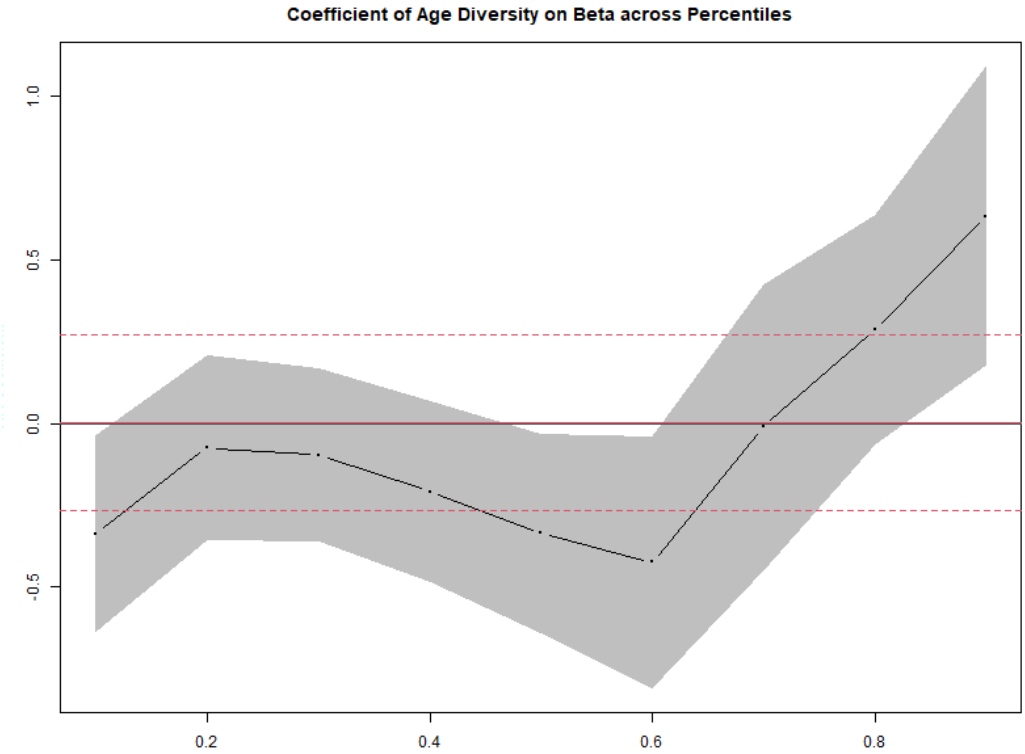


Figure 29

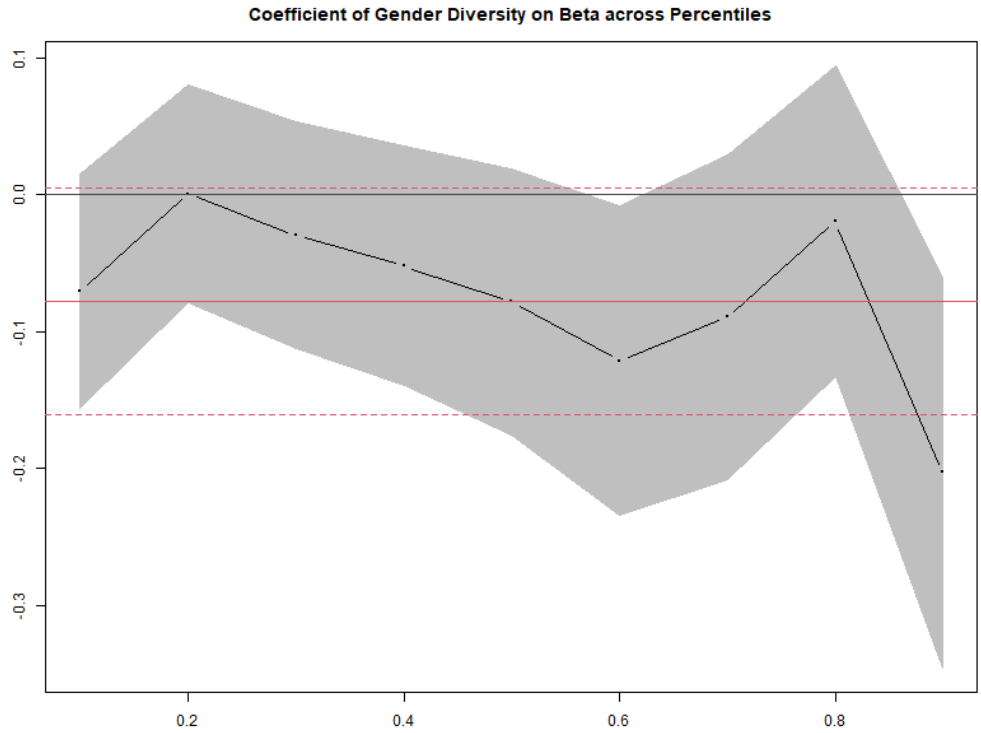


Figure 30

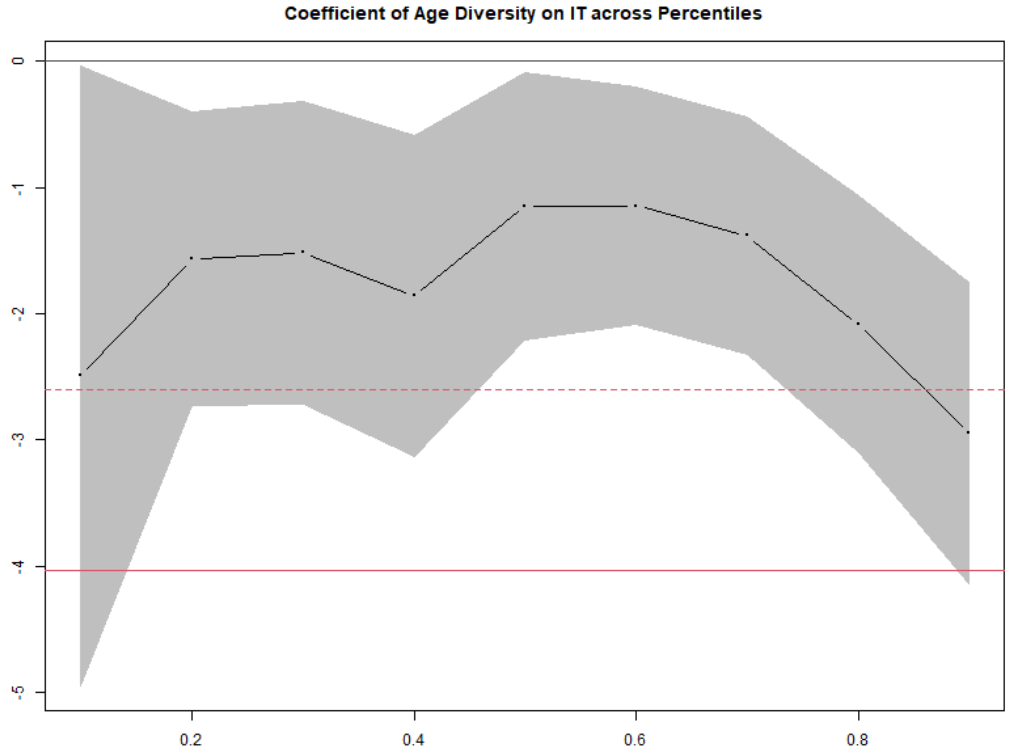


Figure 31

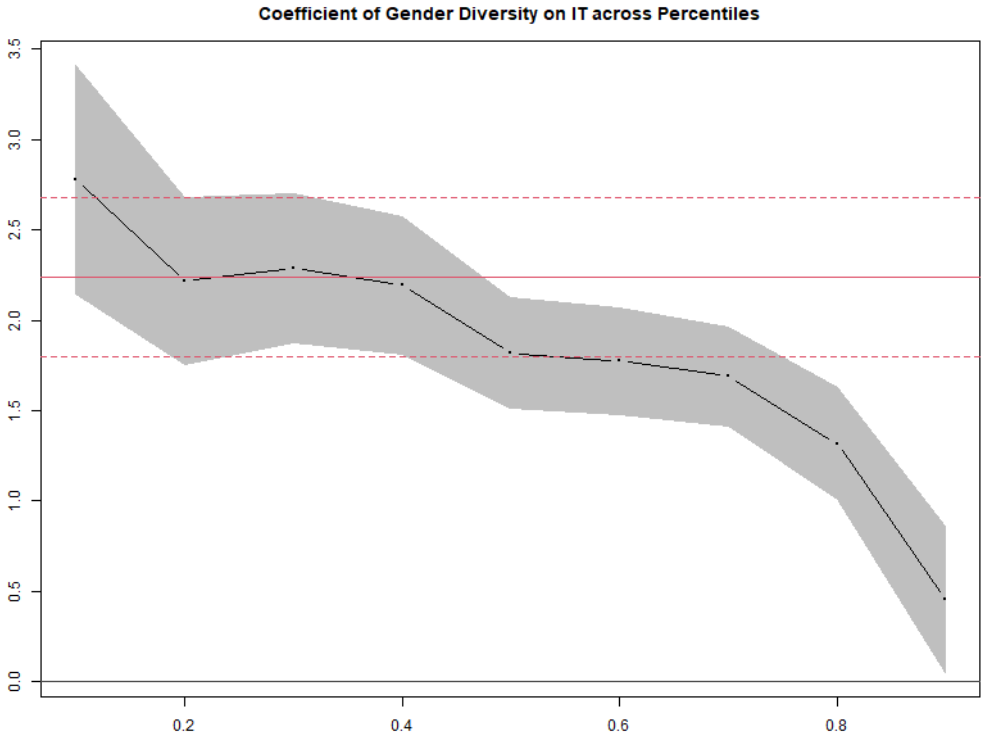


Figure 32

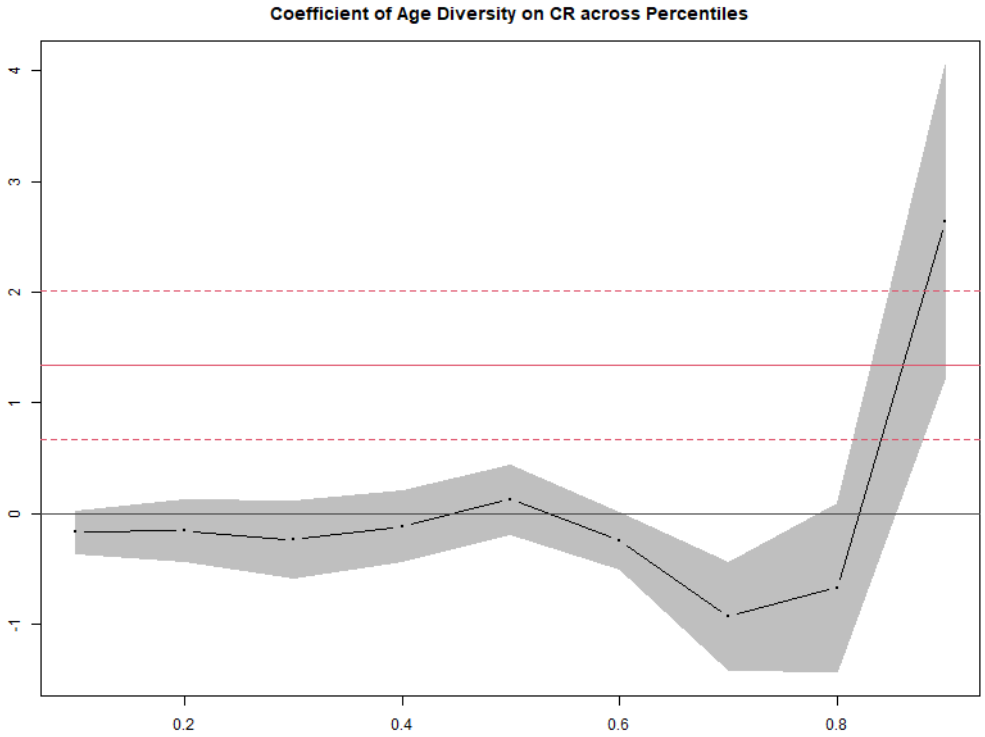
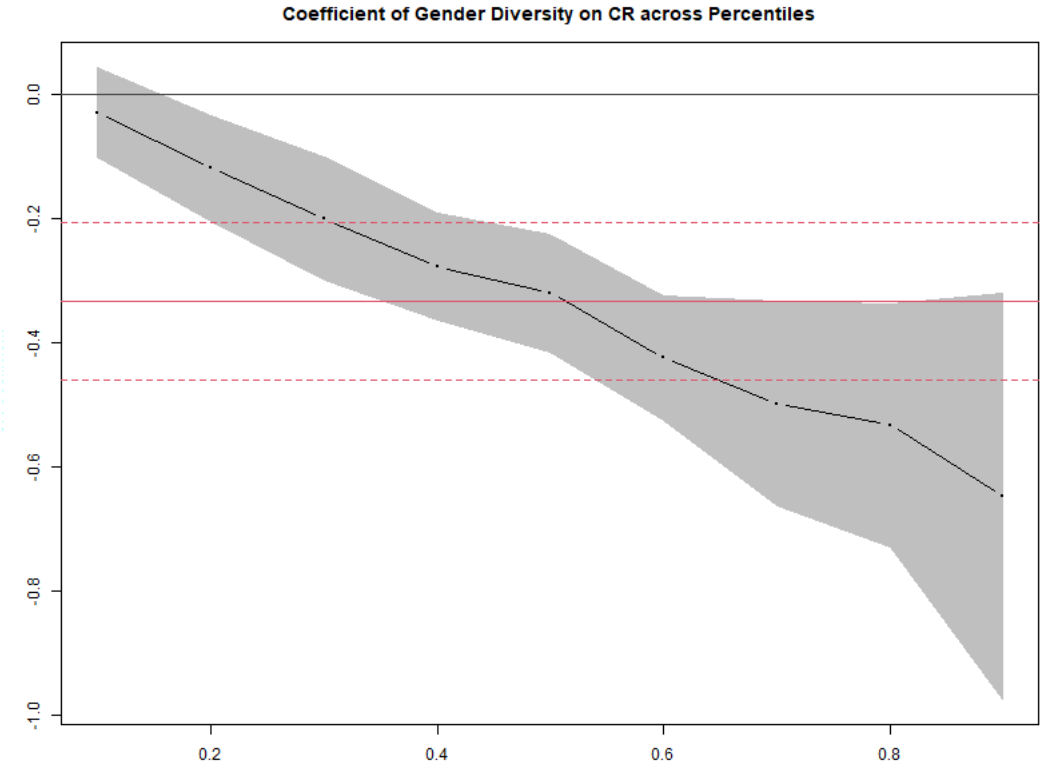


Figure 33


Coefficient of Gender Diversity on CR across Percentiles
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0.2
0.4
0.6
0.8

10 Appendix C – Variable Definitions

Variable	Definition	Formula
Independent		
Age diversity	A ratio measured via the coefficient of variation of age. Measured by dividing the standard deviation of board age by the mean of board age, obtained from BoardEx and online research*	Standard deviation board age / Mean board age
Gender diversity	A ratio of the total number of female board members compared to the total number of board members, obtained from BoardEX and online research*	Female board members / Total board members
Dependent		
Z-score	A measure to assess the likelihood of bankruptcy, obtained from Refinitiv	Z'-Score = 0.717A + 0.847B + 3.107C + 0.420D + 0.998E **
ROIC	Return on invested capital, obtained from Refinitiv	Net operating profit after tax / Invested Capital
ROE	Return on equity, obtained from Refinitiv	Net income / Average total equity
Debt-equity	The capital structure ratio of a company, measured as its debt divided by shareholder equity, obtained from Refinitiv	Debt / Equity
Leverage	The ratio of a firm's debt divided by total capital, obtained from Refinitiv	Debt / (Debt + Equity)
Historic beta	Proxy of risk appetite, which represents the risk as perceived by the market.	
Intangible assets	The natural logarithm of intangible assets, obtained from Refinitiv	ln(IT)
Current ratio	The financial ratio that measures the company's ability to meet its short-term obligations, and assess its liquidity.	Current assets / Current liabilities
Control		
Board size	The number of total board members	
Firm size	The natural logarithm of total assets, obtained from Refinitiv	ln(TA)
Firm age	The natural logarithm of firm age, obtained from BoardEX and online research	ln(FA)
GDP	Natural logarithm of GDP per country measured in million Euro, obtained from online research	ln(GDP)
Quota	A dummy variable equal to 1 when the firm is located in a country subject to a board gender quota	
Leverage	The ratio of a firm's debt divided by total assets	Debt / Total assets
Cash	The ratio of a firm's cash and cash equivalents divided by total assets	Cash and cash equivalents / Total assets
ROA	Return on assets	Net income / Total assets
*	Online research entails searching for age and gender of specific board members on the internet, annual reports and news articles.	
**	In which:	
A =	Working capital / Total assets	
B =	Retained earnings / Total assets	
C =	EBIT / Total assets	
D =	Book value of equity / Total liabilities	
E =	Sales / Total assets	