

Management and governance in the 21st century – Three essays on how the characteristics of executives and directors shape corporate decision-making

Von der Mercator School of Management, Fakultät für Betriebswirtschaftslehre, der

Universität Duisburg-Essen

zur Erlangung des akademischen Grades

eines Doktors der Wirtschaftswissenschaft (Dr. rer. oec.)

genehmigte Dissertation

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Tag der mündlichen Prüfung: 30.06.2022

Acknowledgments

This thesis was written during my time as a Ph.D. student at the Chair of Accounting and Auditing of the Mercator School of Management, University of Duisburg-Essen, and was accepted as a dissertation by the Mercator School of Management in June 2022.

In this context, my special thanks go to Prof. Dr. Annette G. Köhler, who accompanied me on my way with professional guidance and the greatest possible support in all matters. She encouraged my passion for conducting accounting research and created working conditions that enabled me to engage with ever-new and exciting topics. I would also like to thank Prof. Dr. Marc Eulerich for providing the second review report on my dissertation and Prof. Dr. Joachim Prinz and Prof. Dr. Jochen C. Theis for their participation in the examination committee during my disputation.

A significant contribution to the successful completion of my dissertation project was made by my current and former colleagues, on whose intellectual support and openness for professional exchange I could always rely. I would like to thank Birte Cremmer, Julia Gundlach, Christina Kowalski, Dr. Katharina Köhler-Braun, Dr. Katharina Kühn, Dr. Wing San Ma, Marco Meier, Christoph Püllmann, Yannick Rinne, and Yannis Weinem. In this regard, I would like to express my warmest thanks to Prof. Dr. Jochen Theis, who has supported me at all times in my efforts to write a cumulative dissertation, and who co-authored one of the papers of this dissertation.

Furthermore, I would like to thank my girlfriend Anna Reuther from the bottom of my heart, who stood by me with the utmost consideration throughout my Ph.D. and gave me the necessary support to successfully complete my dissertation. Finally, I would like to thank my family - first and foremost my parents Martina and Andreas Nipper - for their constant companionship along my private and professional path and their continuous support, also during my time as a Ph.D. student. I dedicate this thesis to my family.

Contents

Contents.....	I
List of Figures	III
List of Tables.....	IV
List of Abbreviations.....	V
1 Introduction	- 1 -
2 Board financial expertise and IPO performance – an analysis of U.S. public offerings and withdrawals	- 8 -
2.1 Introduction	- 9 -
2.2 Related research and hypotheses development	- 11 -
2.3 Data and methodology	- 13 -
2.3.1 Data sample	- 13 -
2.3.2 Variable definition.....	- 14 -
2.3.3 Descriptive statistics.....	- 16 -
2.4 Results	- 18 -
2.4.1 Multivariate regression analysis.....	- 18 -
2.4.2 Quantile regressions analysis	- 21 -
2.4.3 Probit-regression analysis of IPO withdrawals	- 24 -
2.4.4 Additional Analyses	- 26 -
2.5 Conclusion.....	- 28 -
Appendix	- 30 -
3 The role of audit committee chair tenure – a German perspective	- 36 -
3.1 Introduction	- 37 -
3.2 Related research	- 38 -
3.2.1 German audit committee chairs and reporting quality	- 38 -
3.2.2 The role of tenure for audit committee chairs	- 40 -
3.3 Research design.....	- 42 -
3.4 Data and sample selection	- 46 -
3.5 Results	- 51 -
3.6 Additional analyses	- 53 -
3.6.1 Robustness.....	- 53 -

3.6.2	Alternative dependent variables	- 58 -
3.7	Discussion	- 60 -
3.8	Conclusion.....	- 63 -
4	The impact of executives' gender, financial incentives, and shareholder pressure on corporate social and ecological investments	- 65 -
4.1	Introduction	- 66 -
4.2	Related research and hypotheses development	- 68 -
4.3	Method	- 74 -
4.3.1	Participants	- 74 -
4.3.2	Design and procedure	- 79 -
4.3.3	Dependent and explanatory variables.....	- 81 -
4.4	Results	- 82 -
4.4.1	Manipulation checks	- 82 -
4.4.2	Analysis and test of hypotheses	- 83 -
4.5	Conclusion.....	- 90 -
	Appendix	- 93 -
5	Conclusion.....	- 98 -
	References	VIII

List of Figures

Figure 2.1 Quantile regression analysis.	- 22 -
Figure 4.1 Structure of hypotheses.	- 74 -
Figure 4.2 Participant statistics.	- 78 -
Figure 4.3 Distribution of participants' allocation to dividend (short-term profit), social standards, and ecological standards in our experiment.	- 81 -
Figure 4.4 Linear prediction of CSR investment and the portion of financial goals in participants' incentive program for female and male executives.	- 84 -
Figure 4.5 Structural equation model (total effects) of gender specific character traits, external factors and CSR investment.	- 87 -
Figure 4.6 Linear prediction of CSR investment and risk propensity for high and low shareholder pressure.	- 90 -
Figure 4.7 Background information low shareholder pressure condition.	- 94 -
Figure 4.8 Background information high shareholder pressure condition.	- 95 -
Figure 4.9 Participants' decision about allocation to the three investment attributes.	- 96 -

List of Tables

Table 2.1	Industry distribution of sample firms.	- 14 -
Table 2.2	Variable descriptions.	- 15 -
Table 2.3	IPO summary statistics.	- 17 -
Table 2.4	OLS-regression results.	- 19 -
Table 2.5	Quantile regression results.	- 22 -
Table 2.6	Probit-regression results.	- 25 -
Table 2.7	Completed IPOs summary statistics.	- 30 -
Table 2.8	IPO withdrawals descriptive statistics.	- 31 -
Table 2.9	Correlation matrix for completed IPOs.	- 32 -
Table 2.10	Correlation matrix for completed and withdrawn IPOs.	- 34 -
Table 3.1	Variable descriptions.	- 43 -
Table 3.2	Descriptive statistics of AC chair tenure for the three professional background variables.	- 45 -
Table 3.3	Sample selection.	- 46 -
Table 3.4	Descriptive Statistics.	- 47 -
Table 3.5	Correlation matrix.	- 49 -
Table 3.6	The association of AC chair tenure and abnormal accruals.	- 52 -
Table 3.7	The association of AC chair tenure and the audit report lag.	- 53 -
Table 3.8	Single regression approach by Chen et al. (2018).	- 55 -
Table 3.9	The association of AC chair tenure, the likelihood of FREP error identification, and the likelihood of reporting small profits.	- 59 -
Table 4.1	Descriptive statistics for our sample of 123 participants.	- 77 -
Table 4.2	Mean distribution of financial goals over gender and shareholder pressure conditions.	- 83 -
Table 4.3	Regression-Model of CSR Investment.	- 85 -

List of Abbreviations

AC	–	Audit committee
ACC	–	Accounting
ADS	–	American Depositary Shares
AM	–	Accrual model
AMT	–	Amazon Mechanical Turk
AR	–	Accounts receivables
ARL	–	Audit report lag
Avg.	–	Average
BASF	–	Badische Anilin- und SodaFabrik
CEO	–	Chief executive officer
CFO	–	Chief financial officer
CorporateAcc	–	Corporate Accounting
CRSP	–	Center for research in security prices
CSR	–	Corporate Social Responsibility
CV	–	Curriculum vitae
DAX	–	Deutscher Aktien Index / German stock index
DCGK	–	Deutscher Corporate Governance Kodex / German Corporate Governance Codex
Dev.	–	Deviation
Dir.	–	Director
DOSPRT	–	Domain-Specific-Risk-Taking
EAS	–	Environmental Attitude Scale
EB	–	Earnings Benchmark
EDGAR	–	Electronic Data Gathering, Analysis, and Retrieval
e.g.	–	exempli gratia
et al.	–	et alii
etc.	–	et cetera
EU	–	European Union
EW	–	Equal weighted
EY	–	Ernst & Young
FF	–	Fama French
Fin.	–	Financial
FREP	–	Financial reporting enforcement panel
Html	–	HyperText Markup Language
https	–	Hypertext Transfer Protocol Secure
IB	–	Investment Bank
I/B/E/S	–	Institutional Brokers' Estimate System

ICTV	–	Impact threshold for a confounding variable
i.e.	–	it est
Ins.	–	Inside
IPO	–	Initial public offering
KPMG	–	Klynveld Peat Marwick Goerdeler
LBO	–	Leveraged buyout
Ln	–	Natural logarithm
M&A	–	Mergers and Acquisitions
Marg.	–	Marginal
Max.	–	Maximum
MDAX	–	Mid-Cap-DAX
Min.	–	Minimum
MV	–	Market value
NASDAQ	–	National Association for Securities Dealers for Automated Quotation
NYSE	–	New York stock exchange
Obs.	–	Observations
OLS	–	Ordinary least squares
OP	–	Offer price
Outs.	–	Outside
P/B	–	Price to book ratio
PDF	–	Portable Document Format
PPE	–	Property, plant, and equipment
PublicAcc	–	Public Accounting
PwC	–	PricewaterhouseCoopers
Receiv.-Inv.	–	Receivables to inventory
REIT	–	Real estate investment trust
ROA	–	Return on assets
RQ	–	Research Question
RQJ	–	Reporting Quality Jones accruals
RQMJ	–	Reporting Quality modified Jones accruals
RQPM	–	Reporting Quality performance matched accruals
S&P	–	Standard & Poor's
SDC	–	Securities Data Company
SEC	–	U.S. Securities and Exchange Commission
SEM	–	Structural Equation Model
SIC	–	Standard Industrial Classification
STD	–	Standard deviation
TA	–	Total accruals

U.K.	–	United Kingdom
UP	–	Underpricing
U.S.	–	United States of America
VC	–	Venture Capital
VIF	–	Variance inflation factor

Chapter 1

Introduction

Over the last decades, accounting scandals, societal movements, and developments in technology caused permanent changes in the way companies are structured and managed. Internationally, increased regulation has tightened the reins for companies' corporate governance mechanisms with the purpose of improving the alignment of shareholders' and managements' interests (Aguilera et al. 2019; Nyberg et al. 2010). While there has been a long-lasting debate about the relative distribution of power between top management and the oversight body (i.e. supervisory board or non-executive members of the board of directors), research unanimously supports that management and director characteristics are important determinants of corporate decision-making (Hoffmann & Meusburger 2018; Westphal & Zajac 1995). In this sense, corporate decision-making is established by individuals occupying certain roles in an organization and presents compromises among those individuals and their interpretation of the company's situation (Stagner 1969).

Upper echelons theory provides a conclusive foundation for how characteristics of individuals affect corporate decision-making and, thus, organizational outcomes. The focal point of upper echelons theory is that executives view their situations, which consist of various opportunities, threats, alternatives, and likelihoods of outcomes, through their own personalized lenses (Hambrick 2018). Hence, the theory suggests that executives' experiences, values, and personalities influence their interpretations of the situations they face and, in turn, affect their decisions (Finkelstein et al. 2009). Advocates of this theory posit that, if one wants to understand why organizations behave as they do, it is essential to consider how their most powerful actors, namely their top executives, think and make decisions (Hambrick & Mason 1984). Consequently, upper echelons theory proposes that the individual characteristics of executives affect their decisions, which in turn determines the behavior and performance of the entire organization.

And indeed, a wealth of prior empirical studies proves executives' personal characteristics, experiences, and beliefs affect organizational outcomes (e.g. Chin et al. 2013; Hoffmann & Meusburger 2018). Although considerable research has been devoted to examining the role of executive characteristics for organizations, new challenges arising from recent regulatory, societal, and capital market changes present a viable opportunity to analyze which characteristics and experiences equip corporate leaders to deal with the increasing complexity of today's business environment (Hambrick 2007; Wang et al. 2016). While upper echelons theory generally focuses on characteristics of the top management team and does not consider non-executive directors, research also finds rigorous evidence that characteristics of non-executive directors influence corporate decision making (e.g. DeFond et al. 2005; Huang &

Hilary 2018). Hence, members of the management board, as well as members of the board of directors, are uniformly treated as corporate leaders. The focal point of this dissertation is relevant individual characteristics of these corporate leaders that equip them with the necessary skillset to cope with the current challenges of today's business environment.

In recent years, the business world has seen a departure from the traditional shareholder value concept to a more holistic approach that also considers the interests of different stakeholders and generally focuses on long-term value maximization, as opposed to the short term profit maximization doctrine of the traditional shareholder value concept (Gelles & Yaffe-Bellany 2019; Inkpen & Sundaram 2021). As businesses are responsible for the majority of global CO₂ emissions, public and media attention about companies' social and environmental activities has been peaking (Haney et al. 2020). Consequently, companies are increasingly urged to commit to ethical, socially oriented, and sustainable business practices and to transform their business models accordingly (Çop et al. 2021). This creates new demands for companies' executives to understand the importance of societal well-being, the impact of climate change, and the importance of cooperation with a diverse set of stakeholders (Adams et al. 2011). Accordingly, scholars increasingly call for more research on how individual roles affect corporate social and environmental decision-making (Koh et al. 2014; Wang et al. 2016). In particular, Wang et al. (2016) highlight that research has not yet examined which individual motives and preferences lead executives to foster social and sustainable business activities and whether their behavior is profit-driven or reflects true benevolent values. Therefore, as climate change will continue to be the most relevant challenge in the near future, there is a great demand for research examining executives' decision-making in terms of ecological and social investments. This dissertation addresses this demand by examining the relationship between executive characteristics and corporate social and ecological investments.

Public companies face not only public pressure to become more sustainable but also experience increased regulatory pressure to establish comprehensive oversight and monitoring structures. Rooted in the famous accounting scandals of Enron and WorldCom, regulators have progressively tried to endorse corporate governance regulations that ensure qualified oversight to prevent such accounting scandals (Kirkpatrick 2009). But just recently, the Wirecard accounting scandal proved that failures of oversight bodies continue to occur, which brought the debate about appropriate oversight back into public focus (Browne 2020). Thus, there is an ongoing need for research on the effectiveness of oversight. One potential way of improving oversight that is frequently emphasized by regulators is the introduction of an audit committee (AC) (Spira 1999). As part of either a supervisory board or a board of directors, the AC is

primarily responsible for monitoring the financial reporting and audit process (Ghafran & O’Sullivan 2013). Again, scholars continue to express the need for research on the determinants that enable ACs to effectively carry out their work (Broye & Johannes 2021). While research has focused on how AC member characteristics affect the work of the AC, studies with a particular focus on characteristics of the AC chair, however, are rare. The AC chair has the greatest responsibility for overseeing the financial reporting and audit process, serves as a gatekeeper for both the AC and the board in general, and directs communication with the external auditor and management (Beattie et al. 2014; Ernstberger et al. 2019; Köhler 2005). Thus, this dissertation also examines how AC chairs affect the financial reporting and audit process in order to derive valid implications for how ACs can improve their monitoring effectiveness (Ghafran & Yasmin 2018; Schmidt & Wilkins 2013).

A third trend that emerged over recent years is increased investor scrutiny (Levit 2019). Large investors, in particular, are publicly expressing their thoughts about firms’ financial and ecological performances and often directly address the respective executives with their concerns (Henderson 2018). Notably, firms that go public and present themselves to investors for the first time are subject to heavy scrutiny by investors (Hanley & Hoberg 2010). In this particular context, the capabilities and characteristics of the issuing firms’ executives and directors can serve as a valid signal of value to potential investors. However, research has so far neglected some potential capabilities and characteristics of executives that may affect the outcomes of firms’ initial public offerings (Cohen & Dean 2005). While the top management team is mainly responsible for leading the firm through the process of going public, the board of directors is a viable resource of knowledge to the issuer and ultimately decides on the timing and pricing of the offering (Ettredge et al. 2021; Judge et al. 2015). Therefore, this dissertation also examines how director characteristics affect IPO outcomes.

In summary, these three challenges that executives currently face constitute the nucleus of this thesis which aims to address the abovementioned research gaps. Chapter two provides a comprehensive analysis of the association between director financial expertise and IPO outcomes focusing on both completed and withdrawn IPOs. Thus, it makes important contributions to the IPO and corporate governance literature by providing novel results on the association between director financial expertise and IPO outcomes. Moreover, this study also contributes to the IPO literature from a methodological perspective as it is among the first to employ quantile regressions in the IPO context.

Chapter three adds insights about the effect of AC chair tenure on financial reporting and audit quality by using a large sample of German-listed firms. It underlines that social bonding and organizational commitment potentially impair the monitoring effectiveness of AC chairs. While the results also indicate longer-tenured AC chairs foster timelier financial reporting and reduce the likelihood of accounting irregularities, this comes at the price of higher earnings management. Consequently, this study highlights the complexity of the role of AC chairs and provides relevant implications for the audit committee and reporting quality literature.

Chapter four experimentally analyzes gender differences in executives' CSR investment behavior and contributes to a growing stream of literature on CSR decision-making (Wang et al. 2016). This study expands the literature on the impact of female executives on corporate decision-making and on the association between female executives and CSR performance. It generally confirms a positive impact of female executives on firms' CSR performance and underlines that executives' real-world incentive programs play a key role in explaining executives' CSR decision-making.

In summary, this doctoral dissertation comprises three studies each of which has examined the relationship between executive or board characteristics and corporate decision-making within a specific context. Each study makes an important contribution to the respective literature. Short summaries of the studies presenting the contents of each chapter can be found below. After that, this dissertation proceeds as follows. Chapters 2, 3, and 4 each contain one of the studies summarized below. Lastly, chapter 5 concludes this dissertation.

Chapter 2 “Board financial expertise and IPO performance – an analysis of U.S. public offerings and withdrawals” empirically examines how members of the board of directors with financial expertise affect the process of an initial public offering (IPO). Potential investors examine governance characteristics prior to an IPO to assess the quality and prospects of the issuing firm. One important governance characteristic is board financial expertise, as it provides directors with the relevant knowledge for an IPO process and is valuable for the board's future monitoring duties. Therefore, the purpose of this paper is to examine whether and how board financial expertise affects IPO outcomes. To do so, this study employs a sample of 414 completed and 85 withdrawn IPOs that were filed from 2014–2017 at NYSE or NASDAQ. It documents that the ratio of directors with financial expertise on the board is negatively associated with the level of underpricing and the probability of IPO withdrawal. The results also suggest that particularly outside directors with financial expertise have a positive signaling effect and help reduce information asymmetry around initial public offerings, which

leads to less underpricing and a lower probability of involuntary withdrawal. Above that, using quantile regression, this study finds that director financial expertise is most valuable for issuances with high levels of investor uncertainty. Therefore, this study makes important contributions to the corporate governance and IPO literature by providing a comprehensive analysis of the effects of board financial expertise on IPO outcomes.

This chapter is single-authored and published in *Corporate Ownership & Control*, 18(3), 307–324.

Chapter 3 “The role of audit committee chair tenure – a German perspective” analyzes the association of audit committee chair tenure and various financial reporting and audit quality measures in a German setting. As the debate about the role of tenure has refueled since the German corporate governance codex first introduced an upper limit for director tenure in 2019, this topic is of particular importance. The findings show that longer-tenured audit committee chairs are positively associated with higher levels of earnings management and negatively associated with the audit report lag and the likelihood of error identification by the German financial reporting enforcement panel. The study draws upon social bonding to discuss these findings, which initially seem heterogeneous from a reporting quality perspective. It argues that social bonding between management and the AC chair drives the results for earnings management, while it does not impair the AC chair’s influence on the audit process. In summary, these findings are important from a regulatory and practical perspective and highlight the complexity of the role of AC chairs.

This chapter is single-authored and published in *International Journal of Auditing*, 25(3), 716-732.

Chapter 4 “The impact of executives’ gender, financial incentives, and shareholder pressure on corporate social and ecological investments” experimentally analyzes determinants of executives’ CSR investment behavior. Archival research suggests that female executives have an impact on corporate decision-making and generally finds positive associations between female board representation and Corporate Social Responsibility (CSR) performance. However, archival research does not reveal why female executives decide differently in the context of CSR. This is the starting point of this study. Using an experimental approach, the study examines executives’ decision-making when making social and ecological corporate investments. While female executives seem to be more oriented towards social and ecological practices, the results show strong evidence that participants’ real-world incentive program mainly drives their CSR decision-making. The study also examines if selected gender-

specific character traits (risk propensity, sustainability attitude, and empathy) cause gender differences in executives' CSR decision-making. Based on exploratory analysis, the results suggest that executives' risk propensity affects their CSR decision-making conditional on the level of shareholder pressure they face. In conclusion, this study contributes to the literature on executives' decision-making and to the CSR literature by enhancing our understanding of determinants of executives' CSR decision-making.

This chapter is joint work with Jochen C. Theis, associate professor at Southern Denmark University, and is published in *Schmalenbach Journal of Business Research*, 73(3), 307-338.

Chapter 2

Board financial expertise and IPO performance – an analysis of U.S. public offerings and withdrawals

2.1 Introduction

Since the 1970s, the underpricing of IPOs has been a well-observed phenomenon (Camp et al. 2006). Many issuers see their stock price rising sharply on the first day of trading, which means that the IPO firm could have realized higher proceeds from the offering (“money left on the table”). As a result, venture capitalists and Silicon Valley companies recently expressed their dissatisfaction with traditional IPOs, blaming underwriters for intentionally underpricing shares in new emissions (Levy & Wapner 2019). However, in recent years, the global IPO activity has generally kept a high momentum and quickly recovered from the initial impact of the Covid pandemic (EY 2020). As traditional IPOs are still the most common way for firms to go public, there is a need for further research on how firms can effectively reduce the level of underpricing.

One important factor during an IPO is the quality of the issuer’s corporate governance (Bertoni et al. 2014). Research finds that governance characteristics, such as board independence and size, are relevant determinants of the level of underpricing and the probability of IPO withdrawal (Certo et al. 2001; Helbing et al. 2019). During an IPO process, IPO firms shift from private to public status and transform their organization to conform with the scrutiny of the regulator and the investor community (Filatotchev & Bishop 2002). While inside directors, who are part of the management team, are mainly responsible for leading the firm through the process of going public (Latham & Braun 2010), outside directors are a viable resource of knowledge and provide advising to the issuer as internal resources of the issuer are limited (Clarysse et al. 2007; Kim et al. 2014; Ward 1989). Thus, both inside and outside directors are actively involved in the IPO process and can affect the IPO’s outcome. Furthermore, during an IPO, information asymmetries exist between the issuer, potential investors, and the underwriters. In this sense, board characteristics can serve as a signal that conveys the issuer’s value to underwriters and potential investors and reduces information asymmetries (Certo et al. 2001).

An important aspect of the board’s composition is financial expertise. First, financial expertise provides directors with the relevant knowledge for an IPO process and enables them to strengthen the issuer's position, e.g. towards the underwriters when evaluating financial information and discussing valuation assumptions (Ettredge et al. 2021; Judge et al. 2015). Second, financial expertise is valuable for the board’s monitoring duty, for instance, in terms of financial reporting (DeFond et al. 2005; Kim et al. 2014). Therefore, financial expertise can also signal future monitoring performance to potential investors. As a result, this study aims to provide a comprehensive analysis of how board financial expertise affects the IPO process.

To do so, this study uses the ratio of financial experts (in line with the SEC definition) on the board at the time of the IPO and analyzes the effect on the level of underpricing and the probability of IPO withdrawal. My sample consists of 414 completed and 85 withdrawn IPOs that were filed from 2014–2017 at NYSE or NASDAQ. I find that the ratio of financial experts on the board is negatively associated with IPO underpricing. However, I also document that my results are driven by financial experts among outside directors. Thus, my results suggest the importance of knowledge provided by outside directors and the positive signaling effect of future monitoring quality for an IPO process. Exploratory results of quantile regressions show that the effect of financial expertise is strongest for issues with higher levels of ex-ante-uncertainty¹. The analysis of IPO withdrawals reveals that outside director financial expertise is also associated with a reduced probability of IPO withdrawal.

This paper makes important contributions to the IPO and corporate governance literature. My study underlines that for a successful IPO, outside director financial expertise is extremely important, suggesting that it signals the value of the issuer to potential investors and equips outside directors with the relevant knowledge to advise the issuer during the IPO process. Thus, I expand the results of Judge et al. (2015) and Ettredge et al. (2021) on the relevance of financial expert directors for the IPO process. Applying quantile regression, I further elaborate on these findings and demonstrate that directors with financial expertise are most valuable for issuances that are related to higher levels of investor uncertainty. Besides, my study contributes to the IPO literature from a methodological perspective as it is among the first studies to employ quantile regressions in the IPO context. As underpricing follows a non-Gaussian distribution, quantile regression produces more consistent results compared to OLS while offering more insights into the association between dependent and independent variables. Finally, by analyzing the effect of the financial expertise of the board on the probability of withdrawal, this paper presents a comprehensive analysis of the role of board financial expertise during the IPO process.

The remainder of the paper proceeds as follows. The next section presents related research within the IPO and corporate governance context and develops testable hypotheses. Section 3 covers information about the sample and the variable descriptions, while section 4 presents the empirical results. Section 5 concludes.

¹ Ex-ante uncertainty describes the uncertainty of investors about the value of a company before it starts trading. A higher level of uncertainty means that investors demand higher first-day trading returns (e.g. Beatty & Ritter 1986).

2.2 Related research and hypotheses development

Firms conducting an initial public offering (IPO) are exposed to enormous challenges during the IPO process as they are confronted with preparing the offering, negotiating with underwriters, and shifting from private to public status. While inside directors are mainly responsible for transforming the issuing firm to become a public company and lead the firm through the IPO process (Latham & Braun 2010), outside directors have equally important responsibilities. They review and authorize key decisions and the registration documentation and advise the issuer on important aspects of the IPO process (Bertoni et al. 2014; Westenberg 2013). Therefore, IPO firms often select outside directors that provide business advice to the IPO firm and compensate for the lack of experience and network of their executives (Kroll et al. 2007; Shivdasani & Yermack 1999; Westphal 1998).

One challenge associated with an IPO is the level of underpricing. The level of underpricing is the difference between the offer price and the price at the end of the first trading day and presents a direct wealth transfer from the issuing firm and its initial shareholders to new investors (Filatotchev & Bishop 2002). Information asymmetry serves as a dominant explanation for the underpricing phenomenon (Carter & Manaster 1990; Connelly et al. 2011; Ritter & Welch 2002), as potential investors have only limited information about the issuer and judge IPOs based on a subjective probability of future success (Beatty & Ritter 1986; Rock 1986). In this sense, higher ex-ante uncertainty about the value of the issuer results in a higher level of underpricing (Beatty & Ritter 1986). However, also the relationship between the issuer and the underwriters creates agency costs through information asymmetries, as underwriters have informational advantages about the structure of the capital market and the demand for the issuer's shares (Baron 1982; Liu & Ritter 2010). IPO firms can employ mechanisms to overcome these information asymmetries and convey their (expected) value to underwriters and potential investors by sending signals that are costly to imitate (Michaely & Shaw 1994).

In this context, specific governance characteristics can serve as a signal, as potential investors examine the composition of the board before the IPO to assess the quality and prospects of the issuing firm (Baker & Gompers 2003; Da Silva et al. 2008). For example, Filatotchev and Bishop (2002) find a proportion of non-executive directors above the threshold of 33% to be negatively associated with underpricing, while Certo et al. (2001) document that board size is a favorable signal resulting in less underpricing.

Financial expertise constitutes one important aspect of the board composition. From a governance perspective, financial expertise equips directors, particularly outside directors, with

relevant knowledge to fulfill their monitoring duty, e.g. in the context of the financial reporting process (DeFond et al. 2005; Kim et al. 2014). In this sense, board monitoring activity is positively associated with firm value (Brick & Chidambaran 2010), while weak governance structures increase the likelihood of failure and involuntary delisting of newly publicly-listed firm (Djerbi & Anis 2015). Thus, directors with financial expertise might have a positive signaling effect that reduces investor uncertainty about the value of the issuer and leads to less underpricing.

Additionally, financial expertise also enables directors to evaluate financial information and challenge assumptions presented by external advisors or underwriters (Judge et al. 2015). Furthermore, financial expertise can positively affect the issuer's financial reporting and thus convey the value of the issuer to potential investors more credibly (Ettredge et al. 2021). In this sense, directors with financial expertise can strengthen the issuer's position towards the underwriter when it comes to negotiations about the appropriate valuation of the issuer and equally enhance the way the issuer is presented to potential investors, e.g. during road-shows. Consequently, director financial expertise might also reduce information asymmetries between the issuer, underwriters, and potential investors, which also lowers the uncertainty about the value of the issuer. Therefore, I expect a negative association of director financial expertise and IPO underpricing.

Hypothesis 1. The financial expertise of the board of directors is negatively associated with IPO underpricing.

Around 17% of companies filing for an IPO withdraw their registration at some point during the process. While withdrawing from an IPO is not necessarily a negative event if the issuing firm has a superior option (Busaba 2006)², research shows that most firms that withdraw do not return for a second try (Dunbar & Foerster 2008; Lian & Wang 2012). Additionally, an IPO process is costly, as expenses related to the filing, roadshows, and organizational transformation occur (Helbing et al. 2019). Withdrawing an IPO means that these expenses are not offset by any proceeds. Also, withdrawing from an IPO can be associated with bad publicity and a potential weakening of a firm's growth prospects (Latham & Braun 2010). It is the board's decision to continue or withdraw an IPO. Financial expertise provides directors with the relevant knowledge about an IPO process and qualifies them to determine an appropriate

² Some companies conduct a 'dual track' approach and simultaneously consider a trade sale or private placement during an IPO process (Helbing et al. 2019). I analyze the robustness of my findings to excluding (including) these 'dual track' IPOs in my empirical analysis.

valuation for the IPO firm. Therefore, directors with financial expertise are potentially better suited to decide whether completing or withdrawing the offering is best for the issuing firm.

Most firms that withdraw their IPO blame unfavorable market conditions, and indeed, research finds that the market environment is a valid determinant of IPO withdrawal (Helbing et al. 2019; Lowry 2003; Mayur 2018). Thus, it is possible that directors with financial expertise are better suited to observe capital market movements and make superior decisions about the timing of the offering. However, Helbing et al. (2019) also unveil that corporate governance characteristics, such as board independence and CEO-duality, are significantly associated with the probability of IPO withdrawal. They conclude that investors perceive these governance characteristics as positive because better governance limits future agency issues. Additionally, weak corporate governance structures increase the likelihood of failure and involuntary delisting of newly publicly listed firms (Djerbi & Anis 2015). As financial expertise is generally a positive governance characteristic, it should favorably affect investors' assessment of the issuer and reduce the probability that investor demand does not meet the issuer's expectations. In summary, a higher ratio of financial experts on the board should also be associated with a lower probability of IPO withdrawal.

Hypothesis 2. The financial expertise of the board of directors is negatively associated with the probability of IPO withdrawal.

2.3 Data and methodology

2.3.1 Data sample

I collect a sample of 617 IPOs that were issued at the NYSE or Nasdaq between January 2014 and December 2017 from the Thomson Reuters SDC database. In line with the empirical IPO literature (e.g. Bajo & Raimondo 2017; Ferdous et al. 2021; Loughran & Ritter 2002), I exclude real estate investment trusts (REITs), Unit Offerings, American Depositary Shares (ADS), offerings with an offer price below 5\$, and financial firms (with SIC codes between 6000 and 6999) from the sample and end up with a final sample size of 414 IPOs. I manually collect the characteristics of the board of directors from the S-1 filings and complement the data with information from Bloomberg and LinkedIn. Industry returns are obtained from Kenneth

French's³ website and firm age data is taken from Jay Ritter's website⁴. Company and issue-related data is obtained from Thomson Reuters and verified with the data from the S-1 filings, which are retrieved from EDGAR. I conduct the same procedure for withdrawn IPOs in the period 2014–2017 and collect data on 85 withdrawn IPOs.

Table 2.1 shows the sample distribution over key industries of the SIC classification code. Withdrawn and completed IPOs are distributed similarly. Within the manufacturing industry, firms producing pharmaceutical products account for 63% of the industry group. Many of these companies did not generate any revenue at the time of the IPO. 90 of 134 firms located in the service industry are related to software products.

Table 2.1 Industry distribution of sample firms.

SIC Codes	Industry name	With- drawn	%	Success- ful	%	Total	%	Avg. UP
10-14	Mining	7	8.2	19	4.6	26	5.2	2.65%
15-17	Construction	1	1.2	5	1.2	6	1.2	5.76%
20-39	Manufacturing	45	52.9	215	51.9	260	52.1	12.95%
40-49	Transp., Comm., Utilities	8	9.4	20	4.8	28	5.61	7.80%
50-51	Wholesale Trade	1	1.2	9	2.2	10	2.0	6.44%
52-59	Retail Trade	3	4.7	31	7.5	35	7.0	24.30%
70-89	Services	19	22.4	115	27.8	134	26.9	18.31%
Final sample size		84	100	414	100	499	100	

2.3.2 Variable definition

Following prior literature IPO, underpricing is computed as the difference between the closing price of the first trading day and the offer price (e.g. Bajo & Raimondo 2017; Butler et al. 2014). To capture the board's financial expertise, I apply the SEC rules for financial experts and use the percentage of directors with financial expertise on the board as an independent variable.

Butler et al. (2014) analyze the determinants of IPO underpricing and find 15 robust and meaningful variables that explain the level of underpricing. I follow Butler et al. (2014) and

³ Kenneth R. French is the Roth Family Distinguished Professor of Finance at the Tuck School of Business at Dartmouth College and provides industry return data via his website <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html>.

⁴ Jay R. Ritter is the Joseph B. Cordell Eminent Scholar Chair at the University of Florida and provides IPO data via his website <https://site.warrington.ufl.edu/ritter/ipo-data/>.

control for the list of variables they identify.⁵ Additionally, I account for firm age, the lockup period, Big4 auditors, venture capital financing, classification as a spinoff, and other board characteristics. For the analysis of IPO withdrawals, I also include a dummy variable that indicates that debt payment is the intended primary use of proceeds (Busaba et al. 2001).⁶ All variables with their respective descriptions are displayed in Table 2.2. All continuous variables are winsorized at the 1st and 99th percentiles to reduce the impact of outliers.

Table 2.2 Variable descriptions.

Variables	Description
Underpricing	Difference between the first-day closing price and the offer price divided by the offer price
Ratio of financial experts	Percentage of financial experts (SEC definition) on the board at the time of the IPO
Ratio of financial experts (Inside directors)	Percentage of financial experts (SEC definition) among inside directors on the board at the time of the IPO
Ratio of financial experts (Outside directors)	Percentage of financial experts (SEC definition) among outside directors on the board at the time of the IPO
Average tenure	Average years of service of all directors on the board at the time of the IPO
Other directorships	Average number of other board directorships at for-profit companies in the same industry held by the directors at the time of the IPO
Ratio of outside directors	Percentage of outside directors
CEO-Chairman duality	Dummy variable equal to 1 if the CEO is also Chairman of the board
Board size	Total number of directors
Ratio of women	Percentage of female directors
Avg. age of directors	Average age of all directors on the board
Big 4	Dummy variable equal to 1 if the issuer is audited by Big4 auditor
Lockup period	Number of days insiders are prevented from selling shares
Firm age	Number of years between founding and initial public offering of the firm
Offer price revision	Deviation of the offer price from the middle of the original filing range in %
News stories	Natural logarithm of 1+ number of news stories in the 6 months prior to the IPO; the number of news is retrieved from LexisNexis US News and Wire Database
Liabilities to assets	The ratio of total liabilities to total assets from last full-year income statement

⁵ Butler et al. (2014) identify Ln of firm sales, offer price revision, Ln of news stories, total liabilities to assets ratio, investment bank market share, average underpricing in previous 30 days, average offer price revision in previous 30 days, prior 30 day CRSP EW index, Ln of one plus the ratio of secondary shares retained to shares offered, offer revision from original filing date when negative, Ln of industry market value to sales ratio, Ln of the offer price to sales ratio, prior 30 day industry return, prior 30 Day standard deviation of industry return, and the prior 30 day Nasdaq return. I drop the natural logarithm of sales from my regressions, as the variance inflation factor significantly exceeds the critical value of 10 (O'Brien 2007) due to the high correlation with the offer price to sales ratio.

⁶ For the analysis of IPO withdrawals, the following variables are not included in the probit regressions as they are not available for IPO withdrawals: offer price revision, secondary shares, offer price revision when negative, offer price to sales.

Table 2.2 Variable descriptions – Continued.

Investment bank ranking	Investment bank ranking is the updated Carter/Manaster (1990) investment bank ranking
Avg. underpricing prior 30 days	Average IPO first trading day return in the 30 days prior to the IPO
Avg. offer price revision prior 30 days	Average offer price revision of IPOs in the 30 days prior to the IPO
CRSP performance	CRSP Equal Weighted Index Return in the 30 days prior to the issue date
Secondary shares	Natural logarithm of 1+ secondary shares offered divided by shares outstanding
Offer price revision neg.	Equals Offer Price Revision if Offer Price Revision < 0; otherwise = 0
MV/Sales S&P 1000	Natural logarithm of the average market value to sales ratio of S&P 1000 firms in the same FF-industries in the 12 months prior to the IPO
Offer price to sales	Natural logarithm of offering price multiplied with shares outstanding over sales
FF industry return	Prior 30 days Fama French industry return
FF industry return STD	Standard deviation of prior 30 days Fama French industry return
Nasdaq performance	Prior 30 days Nasdaq return
VC-Financing	Dummy variable equal to 1 if issuer is backed by a VC
Spinoff	Dummy variable equal to 1 if IPO is a spinoff or buyout.
Debt Payment	Dummy variable equal to 1 if debt payment is the primary use of proceeds

2.3.3 Descriptive statistics

The descriptive statistics in Table 2.3 show an average underpricing of 16.04% (16.68% without winsorizing), which is just slightly below the level of underpricing of 16.7% between 2001 and 2020 reported by Jay Ritter on his website. Thus, my sample is representative of the average IPO market of the past two decades. Approximately a third of the directors in my sample are financial experts. However, the ratio of financial experts for completed IPOs is significantly higher than the ratio for withdrawn IPOs (0.319 vs. 0.274, $p = 0.034$), which is largely due to outside directors (0.369 vs. 0.304, $p = 0.009$). There are eleven companies, which have no financial expert on their board. To comply with NYSE/NASDAQ rules regarding the mandatory financial expert on the audit committee, these companies have a financial expert among their director nominees.

Table 2.3 IPO summary statistics.

Variables	Completed IPOs		Withdrawn IPOs		Two-sample t-Test
	Mean	Std. Dev.	Mean	Std. Dev.	
Underpricing	15.855	28.976			
Ratio of financial experts	0.319	0.177	0.273	0.169	0.034
Ratio of financial experts (Inside directors) ¹	0.126	0.296	0.170	0.355	0.245
Ratio of financial experts (Outside directors) ²	0.369	0.204	0.304	0.181	0.009
Avg. board tenure (years)	4.014	2.381	4.118	2.547	0.738
Other directorships	0.768	0.757	0.567	0.732	0.029
Ratio of outside directors	0.764	0.195	0.718	0.245	0.200
CEO chairman duality	0.319	0.467	0.262	0.442	0.298
Board size	6.771	2.088	6.381	2.512	0.129
Ratio of women	0.081	0.112	0.074	0.103	0.603
Avg. age of directors	53.930	5.475	54.778	6.251	0.195
Big 4	0.785	0.411	0.690	0.465	0.063
Lockup period (days)	179.640	12.434	181.131	22.553	0.395
Firm age (years)	15.635	18.489	14.920	15.833	0.729
Offer price revision	-0.039	0.138			
News stories	2.016	0.979	2.029	1.037	0.929
Liabilities to assets	1.172	2.456	2.229	4.731	0.003
Investment bank ranking ³	7.892	2.024	7.203	2.621	0.025
Average underpricing	20.400	13.066	18.252	13.265	0.167
Average offer price revision	-0.025	0.062	-0.027	0.075	0.768
CRSP performance	0.895	2.553	0.525	2.648	0.227
Secondary shares	1.334	0.485			
Offer price revision negative	-0.070	0.098			
MV/Sales S&P 1000	0.991	0.485	0.938	0.460	0.363
Offer price to sales	10.951	4.579			
FF industry return	0.916	5.773	-0.947	6.060	0.008
FF industry return STD	1.148	0.447	1.220	0.472	0.184
Nasdaq performance	1.245	3.066	0.246	3.508	0.008
Debt Payment	0.235	0.021	0.333	0.474	0.058
VC-Financing	0.531	0.500	0.333	0.474	0.001
Spinoff	0.258	0.438	0.357	0.482	0.067

Note: All continuous variables are winsorized at the 1st and 99th percentiles.

¹Based on 404 completed and 83 withdrawn IPOs due to missing data.

²Based on 396 completed and 78 withdrawn IPOs due to missing data.

³P-value based on Chi-square test as the investment bank ranking is a categorical variable.

While approximately 75% of directors are outside directors, 8.2% are female. 248 firms in this sample are backed by a venture capitalist at the time of their IPO, with 220 representing successful IPOs and 28 withdrawn IPOs (0.531 vs. 0.333, $p = 0.001$). In contrast, 107 of the completed and 30 of the withdrawn IPOs are classified as spinoffs (0.258 vs. 0.357, $p = 0.067$).⁷ Tables 2.7 and 2.8 in the appendix present the detailed descriptive statistics for both the underpricing sample and the sample of both completed and withdrawn IPOs. Tables 2.9 and 2.10 show the correlation matrices for the respective samples.

2.4 Results

2.4.1 Multivariate regression analysis

Table 2.4 presents the results of different regressions. In contrast to model 1, model 2 introduces industry and year dummies, while model 3 show the effect of financial expertise for inside and outside director separately.

The results show a significant negative association between the ratio of financial experts and the underpricing of initial public offerings (-15.402, $p = 0.024$ for model 1; -17.619, $p = 0.009$ for model 2). The average board size for completed IPOs in his sample is 6.77. Thus, one additional director with financial expertise on the board can reduce underpricing by approximately 2.27% to 2.6%.⁸ As the average underpricing is 16.04%⁹, my results are also economically significant. Therefore, my results suggest that financial expertise equips directors with the necessary knowledge to strengthen the issuer's position during the IPO process and serves as a positive signal to potential investors, leading to less underpricing.

Inside and outside directors generally have different roles within the board, which also applies during an IPO process. While inside directors are part of the management team and are mainly responsible for the operational activities during an IPO (Latham & Braun 2010), outside directors advise the issuer on important aspects of the IPO process (Bertoni et al. 2014; Westenberg 2013). Thus, I also analyze whether the effect of financial expertise is different for

⁷ The SDC database classifies spinoffs as the initial public offering of shares by a company representing ownership in a division or subsidiary, which will trade separately from its parent. IPOs are classified as spinoffs when the parent owns at least 50% of the issuer before the issue. Spinoff classification was reviewed by manually checking the ownership structure in the S-1 filings.

⁸ These percentages are calculated as follows: On average, the board size is 6.77 directors. Thus, one board director with financial expertise equals 14.77%. The beta coefficient of financial expertise is -15.402 for model 1 and -17.619 for model 2. Thus, one additional director with financial expertise results in a reduction of the level of underpricing of $14.77\% * -15.402 (-17.619) = -2.27 (-2.6)$.

⁹ The level of underpricing ranges from -27.4 % to 147.06% (from -41.08% to 217% without winsorizing).

inside and outside directors. Model 3 of Table 2.4 shows that the ratio of financial experts among outside directors is driving my results (-15.218, $p = 0.010$), as the ratio of financial experts among inside directors, although negatively associated with underpricing, is not statistically significant (-3.732, $p = 0.209$). Thus, my results suggest that outside directors with financial expertise provide important advice to the issuer and serve as a valid signal to potential investors, presumably because of the high relevance of financial expertise for the board's monitoring activities. Overall, I find support for Hypothesis 1.

Concerning the control variables, I find a positive and statistically significant association of offer price revision, lockup period, investment bank ranking, Fama-French industry returns, and the level of underpricing. Additionally, offer price revision when negative has a negative and statistically significant association with underpricing. These results are in line with Butler et al. (2014).

Table 2.4 OLS-regression results.

Variables	Model 1	Model 2	Model 3
Ratio of financial experts	-15.402** (0.024)	-17.619*** (0.009)	
Ratio of financial experts (Inside directors)			-3.732 (0.209)
Ratio of financial experts (Outs. directors)			-15.218** (0.010)
Avg. board tenure (years)	0.256 (0.645)	0.342 (0.537)	0.606 (0.305)
Other directorships	-2.206 (0.377)	-1.844 (0.470)	-2.188 (0.416)
Ratio of outside directors	10.720 (0.102)	9.807 (0.146)	9.548 (0.499)
CEO chairman duality	3.556 (0.226)	4.158 (0.164)	4.287 (0.176)
Board size	-0.416 (0.520)	-0.435 (0.515)	-0.556 (0.524)
Ratio of female directors	-6.724 (0.526)	-2.893 (0.794)	-0.418 (0.971)
Avg. age of directors (years)	0.373 (0.119)	0.403 (0.107)	0.432 (0.130)
Big 4	-3.941 (0.197)	-3.354 (0.249)	-4.469 (0.142)
Lockup period	0.297* (0.061)	0.287* (0.060)	0.284* (0.050)
Firm age	0.012 (0.788)	0.009 (0.865)	0.011 (0.837)

Table 2.4 OLS-regression results – Continued.

Offer price revision	215.819*** (<0.001)	214.231*** (<0.001)	218.937*** (<0.001)
News stories	-0.275 (0.826)	-0.005 (0.997)	-0.422 (0.768)
Liabilities to assets	-0.117 (0.796)	-0.108 (0.822)	0.006 (0.992)
Investment bank ranking	1.513** (0.010)	1.557** (0.012)	1.733*** (0.008)
Avg. underpricing prior 30 days	0.096 (0.437)	0.047 (0.704)	0.050 (0.704)
Avg. offer price revision prior 30 days	-29.833 (0.312)	-1.416 (0.963)	3.848 (0.906)
CRSP performance	0.504 (0.608)	0.213 (0.831)	0.329 (0.749)
Secondary shares	2.733 (0.300)	1.939 (0.485)	1.631 (0.600)
Offer price revision neg.	-201.025*** (<0.001)	-201.956*** (<0.001)	-203.885*** (<0.001)
MV/Sales S&P 1000	1.610 (0.571)	5.928 (0.119)	6.569* (0.099)
Offer price to sales	0.259 (0.539)	0.588 (0.253)	0.763 (0.147)
FF industry return	0.886*** (0.007)	0.928*** (0.005)	0.980*** (0.005)
FF industry return STD	-5.539* (0.069)	-2.525 (0.451)	-0.344 (0.925)
Nasdaq performance	-1.063 (0.186)	-0.640 (0.436)	-0.729 (0.397)
VC-Financing	7.326** (0.042)	7.360* (0.052)	6.593* (0.097)
Spinoff	2.768 (0.425)	3.577 (0.302)	3.324 (0.381)
Constant	-97.073* (0.050)	-89.801** (0.005)	-93.860*** (0.005)
Year Dummies	No	Yes	Yes
Industry Dummies	No	Yes	Yes
N	414	414	388
R ²	35.12	37.12	37.71

Note: * $p<0.10$; ** $p<0.05$ *** $p<0.01$. All models use robust standard errors, as the Breusch-Pagan- and White-Tests indicate heteroscedasticity. The number of observations for Model 3 is 388, as some firms in my sample did not have either inside or outside directors on the board at the time of the IPO. P-values are in parentheses.

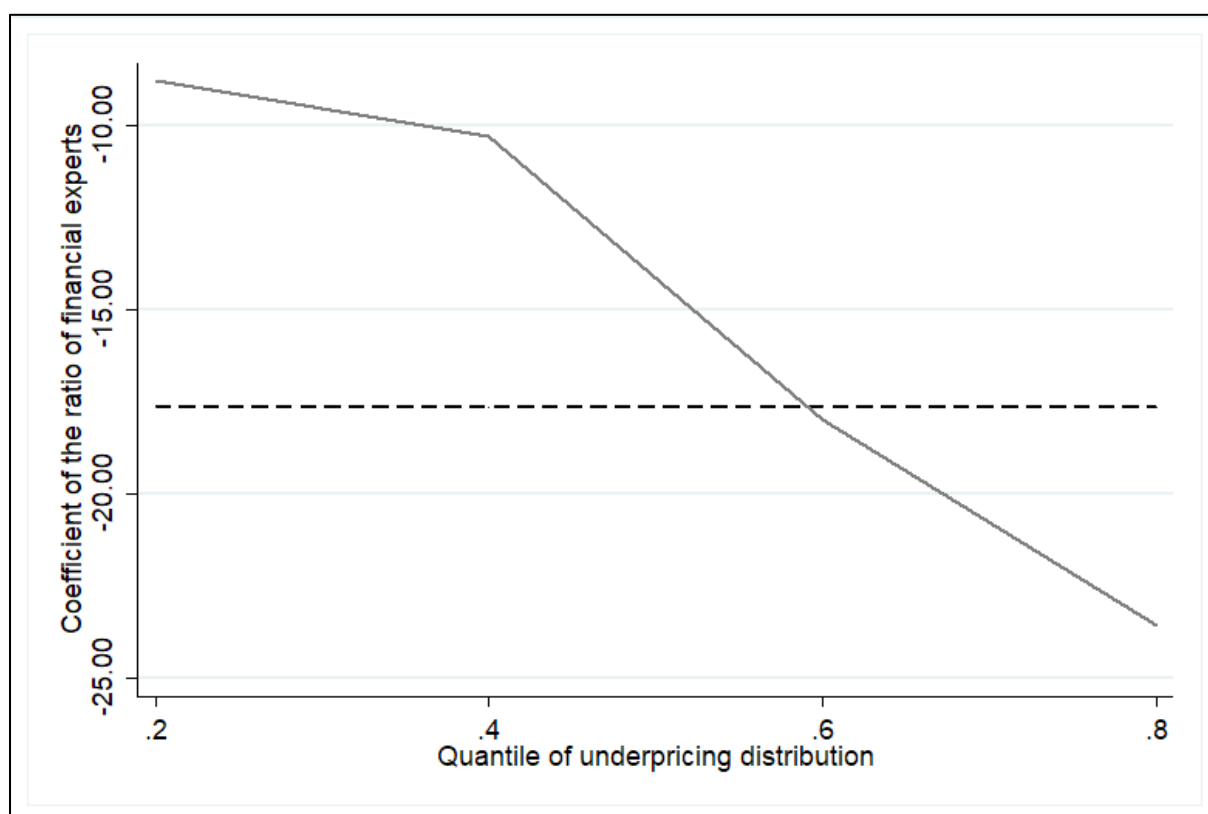
2.4.2 Quantile regressions analysis

Whereas OLS only estimates the average relationship between the dependent and independent variables (i.e. conditional mean), quantile regression results in estimates for specific quantiles of the dependent variable (Conyon & He 2017; Koenker & Bassett 1978, 1982). Above that, quantile regression is more robust to outliers and requires fewer assumptions about the conditional distribution of the dependent variable. As the distribution of the level of underpricing is positively skewed and multimodal, quantile regression is superior to basic OLS. Thus, quantile regressions can be applied in corporate governance research to demonstrate that governance characteristics have different effects on the dependent variable across the distribution of the dependent variable. For example, Ramdani and Witteloostuijn (2010) show that CEO-duality and board independence have different effects across the performance distribution of firms. They document a positive effect of board independence and CEO duality on firm performance for the average-performing firms, but not for low- or high-performing firms.¹⁰ Conyon and He (2017) demonstrate that the beneficial effect of female directors on the board increases in high-performing firms compared to low-performing firms. Consequently, quantile regression yields a comprehensive analysis of the relationship between the board's financial expertise and the level of underpricing.

I employ the regression design of model 2 from Table 2.4 for the quantile regressions. Figure 2.1 displays the effect of board financial expertise for the 20th, 40th, 60th, and 80th percentiles of the underpricing distribution. The dashed line presents the estimated coefficient from OLS. Table 2.5 provides the coefficients and p-values for the 20th, 40th, 60th, and 80th percentiles.

¹⁰ Because quantile regression offers a multidimensional view of the relationship between the dependent and independent variables, it has been widely applied in the economic literature. Further illustrative examples are Chen and Ying (2011) and Gallego-Álvarez and Ortas (2017). Ramdani and Witteloostuijn (2010) provide figures that illustratively explain the differences between OLS and quantile regression on page 616.

Figure 2.1 Quantile regression analysis.



Note: Figure 2.1 shows the coefficients of the quantile regressions of the ratio of financial experts on underpricing. The OLS coefficient is marked with a dashed line. Regressions are based on the 20th, 40th, 60th and 80th percentile of the underpricing distribution.

Table 2.5 Quantile regression results.

Variables	20th	40th	60th	80th
Ratio of financial experts	-8.782** (0.026)	-10.272*** (0.008)	-17.988*** (0.004)	-23.557** (0.032)
Avg. board tenure (years)	1.029*** (0.010)	0.826*** (0.003)	0.195 (0.686)	-0.099 (0.910)
Other directorships	-1.943 (0.170)	-1.051 (0.486)	-0.908 (0.600)	0.361 (0.926)
Ratio of outside directors	4.810 (0.435)	6.594 (0.132)	7.177 (0.340)	3.993 (0.730)
CEO chairman duality	-2.600 (0.127)	1.416 (0.382)	5.432** (0.031)	7.013** (0.048)
Board size	-0.107 (0.846)	0.165 (0.669)	-0.873 (0.104)	-0.710 (0.433)
Ratio of female directors	-13.619** (0.019)	-8.246 (0.408)	10.833 (0.352)	35.647** (0.044)
Avg. age of directors (years)	0.079 (0.592)	0.156 (0.308)	0.170 (0.387)	0.643 (0.119)
Big 4	-2.677 (0.208)	-2.636 (0.125)	-0.922 (0.666)	-6.760 (0.232)

Table 2.5 Quantile regression results – Continued.

Lockup period	-0.001 (0.999)	0.098 (0.758)	0.050 (0.446)	0.195 (0.333)
Firm age	0.079 (0.592)	0.025 (0.403)	0.030 (0.432)	-0.028 (0.698)
Offer price revision	146.300*** (<0.001)	185.179*** (<0.001)	196.123*** (<0.001)	293.406*** (<0.001)
News stories	0.678 (0.394)	-0.350 (0.615)	-0.545 (0.591)	-0.362 (0.861)
Liabilities to assets	0.016 (0.970)	-0.139 (0.346)	-0.227 (0.829)	0.008 (0.994)
Investment bank ranking	1.283*** (0.001)	1.294*** (0.009)	1.637*** (0.001)	2.005 (0.226)
Avg. underpricing prior 30 days	0.182** (0.037)	0.170 (0.070)	0.168 (0.121)	0.251 (0.207)
Avg. offer price revision prior 30 days	-50.804** (0.020)	-26.826 (0.182)	-28.520 (0.262)	-16.946 (0.725)
CRSP performance	1.057* (0.089)	0.286 (0.634)	0.841 (0.282)	1.365 (0.402)
Secondary shares	1.473 (0.300)	1.534 (0.313)	1.974 (0.370)	-1.409 (0.751)
Offer price revision neg.	-149.303*** (<0.001)	-180.783*** (<0.001)	-185.488*** (<0.001)	-283.129*** (<0.001)
MV/Sales S&P 1000	0.196 (0.940)	4.608** (0.032)	7.384** (0.018)	8.975 (0.131)
Offer price to sales	0.368 (0.147)	0.196 (0.440)	0.293 (0.343)	0.496 (0.517)
FF industry return	0.715*** (<0.001)	0.487*** (0.002)	0.684*** (<0.001)	0.999** (0.020)
FF industry return STD	-3.645* (0.126)	-2.164 (0.309)	-4.566* (0.059)	-4.658 (0.393)
Nasdaq performance	-1.310** (0.025)	-0.538 (0.293)	-1.051 (0.127)	-1.406 (0.260)
VC-Financing	-0.470 (0.816)	2.872 (0.163)	6.284* (0.043)	7.288 (0.162)
Spinoff	-2.488 (0.219)	-0.032 (0.984)	1.357 (0.576)	9.086** (0.045)
Constant	-24.924 (0.824)	-49.325 (0.402)	-28.960 (0.107)	-72.392 (0.128)
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
N	414	414	414	414
Pseudo R ²	16.52	18.98	23.45	28.85

Note: *p<0.10; **p<0.05 ***p<0.01. Table 2.5 presents the coefficients and p-values for the ratio of financial experts for the 20th, 40th, 60th and 80th percentiles of the quantile regressions. P-values are in parentheses.

The coefficient of financial expertise rises in magnitude with the level of underpricing and is statistically significant for the four percentiles. Initially, it might sound counterintuitive that the coefficient is higher in magnitude for higher levels of underpricing, as there is generally a negative effect of financial expertise on underpricing. However, higher percentiles capture highly underpriced IPOs (e.g. 80th percentile = 30.27% underpricing). The level of underpricing is related to investor's ex-ante uncertainty about the value of the issuer (Beatty & Ritter 1986; Clarkson 1994). Thus, IPOs with a higher level of underpricing presumably have a higher level of investor uncertainty about the value of the issuer. Consequently, for these IPOs that face higher levels of investor uncertainty, the signaling effect of directors with financial expertise is more important and should have a stronger impact on investors' assessment, resulting in higher coefficients for the upper percentiles. In contrast, for IPOs with low levels of underpricing, the coefficient of financial expertise is smaller in magnitude. Accordingly, for IPOs with low levels of investor uncertainty, the signaling effect of director financial expertise is less important and has a smaller effect on the level of underpricing. This seems plausible because if there is only little uncertainty about the value of the issuer, then there is less margin for the influence and the signaling effect of director financial expertise. Vice versa, if there is high uncertainty about the value of the issuer, director financial expertise has a potentially stronger impact on the investor's decision as there are fewer signals that convey the issuer's quality.

2.4.3 Probit-regression analysis of IPO withdrawals

In my sample, 17%¹¹ percent of all registered IPOs were withdrawn at some point in the process. Table 2.6 shows the results from probit-regressions, which estimate the effect of the independent variables on the probability of IPO withdrawal, accompanied by marginal effects.¹² Director financial expertise has a negative and statistically significant association with the probability of IPO withdrawal (-1.318, $p = 0.009$). Ceteris paribus, a 10% increase in financial experts on the board reduces the probability of withdrawal by about 2.67%. Again, this result is driven by outside directors with financial expertise, as inside directors with financial expertise are not significantly associated with the probability of IPO withdrawal (-1.466, $p = 0.001$ for outside directors; -0.105, $p = 0.697$ for inside directors). Consequently, these results also suggest that outside directors with financial expertise are useful advisers to the issuer during

¹¹ This compares to 11.89% of Helbing et al. (2019) and 14.3% of Busaba et al. (2001).

¹² Marginal effects represent the effect of a one-unit change of the respective variable on the probability that the dependent variable takes the value of 1 (IPO withdrawal) given that all other independent variables are constant (Aldrich & Nelson 1984; Helbing et al. 2019).

the IPO process and serve as a valid signal that conveys the issuer's value to potential investors. Overall, I find support for Hypothesis 2.¹³

Additionally, the liabilities to assets ratio and the performance of the CRSP index are positively and significantly associated with the probability of IPO withdrawal, while the average underpricing in the prior 30 days before the IPO and the NASDAQ performance is negatively and significantly associated with the probability of IPO withdrawal. The statistically significant coefficients of the CRSP performance and the NASDAQ performance confirm the importance of the timing of an IPO (see also Helbing et al. 2019; Mayur 2018).

Table 2.6 Probit-regression results.

Variables	Model 1		Model 2	
	Coefficient	Marg. Effect	Coefficient	Marg. Effect
Ratio of financial experts	-1.318*** (0.009)	-26.67%		
Ratio of financial experts (Inside directors)			-0.105 (0.697)	-2.06%
Ratio of financial experts (Outside directors)			-1.466*** (0.001)	-28.66%
Avg. board tenure (years)	0.008 (0.805)	0.16%	-0.009 (0.789)	-0.19%
Other directorships	-0.008 (0.961)	-0.15%	0.015 (0.927)	-0.29%
Ratio of outside directors	-0.213 (0.670)	-4.31%	0.474 (0.590)	9.26%
CEO chairman duality	-0.183 (0.303)	-3.71%	-0.155 (0.401)	-3.04%
Board size	0.019 (0.695)	0.37%	-0.014 (0.806)	-0.27%
Ratio of female directors	0.222 (0.759)	4.49%	0.276 (0.711)	5.39%
Avg. age of directors (years)	0.006 (0.713)	0.12%	0.013 (0.484)	0.25%
Big 4	-0.026 (0.901)	-0.53%	0.079 (0.733)	1.54%
Lockup period	0.002 (0.713)	0.04%	0.002 (0.744)	0.03%
Firm age	-0.004 (0.389)	-0.09%	-0.004 (0.476)	-0.07%

¹³ My results continue to hold when I delete 17 observations of firms that were sold in an M&A transaction (indicating a dual-track approach) within 1 year after withdrawing their IPO.

Table 2.6 Probit-regression results – Continued.

News stories	0.093 (0.257)	1.88%	0.128 (0.143)	2.51%
Liabilities to assets	0.056** (0.022)	1.13%	0.075*** (0.004)	1.47%
Investment bank ranking	-0.052 (0.216)	-1.05%	-0.070 (0.129)	-1.37%
Avg. underpricing prior 30 days	-0.019** (0.022)	-0.39%	-0.021** (0.017)	-0.41%
Avg. offer price revision prior 30 days	2.338 (0.236)	47.30%	2.881 (0.186)	56.33%
CRSP performance	0.218*** (0.001)	4.42%	0.217*** (0.003)	4.24%
MV/Sales S&P 1000	0.148 (0.563)	-2.99%	0.128 (0.621)	2.50%
FF industry return	0.001 (0.977)	0.01%	0.010 (0.560)	0.19%
FF industry return STD	0.199 (0.391)	4.03%	0.279 (0.260)	5.47%
Nasdaq performance	-0.215*** (<0.001)	-4.36%	-0.213*** (0.001)	-4.17%
Debt Payment	0.334 (0.116)	6.76%	0.391* (0.086)	7.65%
VC-Financing	-0.431* (0.067)	-8.72%	-0.467 (0.057)	-9.13%
Spinoff	0.009 (0.965)	0.18%	0.015 (0.943)	0.29%
Constant	-0.024 (0.986)		0.573 (0.697)	
Year Dummies	No		Yes	
Industry Dummies	No		Yes	
N	497		464	
Pseudo R ²	19.35		21.02	

Note: * $p < 0.10$; ** $p < 0.05$ *** $p < 0.01$. Marginal effects represent the effect of a one unit change of the respective variable on the probability that the dependent variable takes the value of 1 (IPO withdrawal) given that all other independent variables are constant (Aldrich & Nelson 1984; Helbing et al. 2019). One observation of the completed IPO subsample (414 observations) is dropped, as the variable Debt Payment is missing. Both models are robust to the exclusion of year- and industry-dummies. P-values are in parentheses.

2.4.4 Additional Analyses

I provide several analyses to examine the robustness of my results. First, this study uses a comprehensive set of control variables derived from Butler et al. (2014), who identify fifteen relevant determinants of IPO underpricing within their analysis of the IPO underpricing literature. My results are not sensitive to changes in the control variables. Second, many IPO-

related studies exclude spinoffs and leveraged-buyouts (LBOs) (e.g. Bajo & Raimondo 2017; Bradley et al. 2009; Demers & Lewellen 2003) due to their specific characteristics. My results remain largely unchanged when IPOs classified as spinoffs (this includes LBOs in my sample) are excluded. Third, I use winsorized data for my regressions. This shows that my results are not driven by outliers. However, my results continue to hold if I use my data without winsorizing. Fourth, I examine the impact of an omitted variables bias. I calculate the impact threshold for a confounding variable (ITCV) in accordance with Frank (2000). The ITCV calculates the minimum correlation required to invalidate the inference between dependent and independent variables. For the coefficient of the ratio of financial experts in model 2 from Table 2.4, the required threshold is 0.0365. Thus, an omitted variable would have to be at least correlated at ± 0.191 ($\sqrt{0.0365}$) with the ratio of financial experts and the level of underpricing to make the coefficient of the ratio of financial experts insignificant.¹⁴ For the vast majority of my control variables, the product of the partial correlations with the ratio of financial experts and the level of underpricing does not reach the above-mentioned threshold. Hence, it is very unlikely that my results are seriously biased by an omitted variable.

A pertinent concern in empirical finance and corporate governance research is endogeneity. In my case, one can argue that high-quality firms that generally would experience less underpricing attract expert directors so that the results are driven by a selection bias and cannot be attributed to the expertise of the directors. Other empirical finance and corporate governance papers use instrumental variables (IV) to address the issue of endogeneity (e.g. Bajo & Raimondo 2017). However, Larcker and Rusticus (2010) and Jiang (2017) show that IV approaches often produce misleading results as the magnitude of the IV estimate strongly exceeds the uninstrumented estimate regardless of the expected direction of the bias – positive or negative. Above that, identifying appropriate instruments is also fairly difficult. Still, some studies use an instrumental variable approach to address the endogeneity issue for financial expert directors. Ettredge et al. (2021) use the industry average director financial expertise as an instrument, while Badolato et al. (2014) employ a dummy variable that is equal to one if a firm's headquarter is in one of the ten largest metropolitan areas in the United States. However, in my sample both the industry average of director financial expertise and the metro area

¹⁴ For the probit-regression (Model 1 from Table 2.6), the threshold is 0.0274. An omitted variable would have to be at least correlated at ± 0.165 ($\sqrt{0.0274}$) with the ratio of financial experts and the level of underpricing to make the coefficient of the ratio of financial experts insignificant. Only one control variable reaches this threshold. Hence, also for the probit-regressions, it is very unlikely that my results are seriously biased by an omitted variable.

dummy variable are not significantly associated with the ratio of financial experts. Thus, I am not able to employ an instrumental variable approach to address endogeneity concerns.

2.5 Conclusion

The board of directors is mainly responsible for leading an issuer through the IPO process and potential investors examine the composition of the board prior to the IPO to assess the quality and prospects of the issuing firm (Baker & Gompers 2003; Bertoni et al. 2014). Thus, the quality of the issuer's corporate governance is an important factor during an IPO. In this sense, financial expertise potentially equips directors with relevant knowledge to engage in the IPO process more effectively and can also serve as a positive signal certifying the issuer's quality to investors.

Therefore, I examine the effect of director financial expertise on the level of IPO underpricing and the probability of IPO withdrawal. My sample consists of 414 completed and 85 withdrawn IPOs filed at NYSE or NASDAQ from 2014–2017. I find that the ratio of financial experts on the board is negatively associated with IPO underpricing. My results are driven by financial experts among outside directors, suggesting that outside board members with financial expertise provide useful advising to the issuer during the IPO process and serve as a positive signal to potential investors. Exploratory results of quantile regressions show that the effect of financial expertise is strongest for issues with higher levels of ex-ante uncertainty. The analysis of IPO withdrawals reveals that the financial expertise of the board is also associated with a reduced probability of IPO withdrawal, which underlines the value of financial experts on the board for the whole IPO process.

This paper study contributes to the IPO and corporate governance literature. Primarily, my results emphasize that directors with financial expertise are essential for firms that conduct an IPO. As this study considers both completed and withdrawn IPOs, it provides a comprehensive analysis of the association between director financial expertise and IPO outcomes. Thus, my study extends existing results on the effect of director financial expertise on IPO underpricing (Ettredge et al. 2021; Judge et al. 2015) and also documents that director financial expertise is negatively associated with the probability of IPO withdrawal. Above that, my study contributes to the IPO literature from a methodological perspective as it is among the first to employ quantile regressions in the IPO context. I demonstrate that directors with financial expertise are most valuable for issuances that are related to higher levels of uncertainty surrounding the

offering. From a practical point of view, firms preparing for an IPO should definitely consider financial expertise when (re)appointing directors to the board.

While my study offers important contributions, it also has its limitations. The number of IPOs and the level of underpricing are subject to specific market conditions which change over time (Loughran & Ritter 2004; Pástor & Veronesi 2005). Although the years 2014 – 2017 can be considered as moderate IPO years that capture the average IPO market of the last two decades, my sample covers only four years and neither shows typical characteristics of cold or hot market conditions. Also, the natural focus of this paper is on companies that go public, which are smaller and more dynamic than the average listed company. Above that, a large portion of the sample belongs to either the biotech or software industry. Thus, one should be careful in generalizing these findings for other firms or IPO market conditions. Although quantitative research can prove the beneficial effect of director financial expertise in the IPO context, it does not directly unveil through which channels directors affect the IPO's outcome. As the IPO process is complex and highly dynamic, future research could take a more in-depth view of the role of the board of directors during an IPO on a qualitative level.

Appendix

Table 2.7 Completed IPOs summary statistics.

Variables	Obs.	Mean	Std. Dev.	Min	Max
Underpricing	414	15.855	28.976	-27.4	147.06
Board characteristics					
Ratio of financial experts	414	0.319	0.177	0	0.833
Ratio of financial experts (Inside directors)	405	0.126	0.296	0	1
Ratio of financial experts (Outside directors)	397	0.369	0.204	0	1
Avg. board tenure (years)	414	4.014	2.381	0.3	12.5
Other directorships	414	0.768	0.757	0	3
Ratio of outside directors	414	0.764	0.195	0	1
CEO chairman duality	414	0.319	0.467	0	1
Board size	414	6.771	2.088	1	12
Ratio of women	414	0.081	0.112	0	0.429
Avg. age of directors	414	53.930	5.475	35.75	68
Control variables					
Big 4	414	0.785	0.411	0	1
Lockup period (days)	414	179.640	12.434	60	360
Firm age (years)	414	15.635	18.489	1	116
Offer price revision	414	-0.039	0.138	-0.385	0.214
News stories	414	2.016	0.979	0	4.875
Liabilities to assets	414	1.172	2.456	0.034	22.896
Investment bank ranking	414	7.892	2.024	0	9.001
Average underpricing	414	20.400	13.066	-3.650	54.231
Average offer price revision	414	-0.025	0.062	-0.200	0.083
CRSP performance	414	0.895	2.553	-5.613	8.985
Secondary shares	414	1.334	0.485	0.000	2.658
Offer price revision negative	414	-0.070	0.098	-0.286	0
MV/Sales S&P 1000	414	0.991	0.485	-0.350	1.643
Offer price to sales	414	10.951	4.579	4.623	20.307
FF industry return	414	0.916	5.773	-15.331	16.079
FF industry return STD	414	1.148	0.447	0.556	2.765
Nasdaq performance	414	1.245	3.066	-6.456	10.597
VC-Financing	414	0.531	0.500	0	1
Spinoff	414	0.258	0.438	0	1

Note: All continuous variables are winsorized at the 1st and 99th percentiles.

Table 2.8 IPO withdrawals descriptive statistics.

Variables	Obs.	Mean	Std. Dev.	Min	Max
Board characteristics					
Ratio of financial experts	84	0.273	0.169	0	0.833
Ratio of financial experts (Inside directors)	83	0.170	0.355	0	1
Ratio of financial experts (Outside directors)	78	0.304	0.181	0	0.727
Average board tenure (years)	84	4.118	2.547	0.300	12.500
Other directorships	84	0.567	0.732	0	3
Ratio of outside directors	84	0.718	0.245	0	1
CEO chairman duality	84	0.262	0.442	0	1
Board size	84	6.381	2.512	1	12
Ratio of female directors	84	0.074	0.103	0	0.429
Avg. age of directors	84	54.778	6.251	35.75	68
Control variables					
Big4	84	0.690	0.465	0	1
Lockup period (days)	84	181.131	22.553	90	365
Firm age (years)	84	14.92	15.833	1	88
News stories	84	2.029	1.037	0	4.875
Liabilities to assets	84	2.229	4.731	0.034	22.896
Investment bank ranking	84	7.203	2.621	0	9.001
Average underpricing	84	18.252	13.265	-3.65	54.231
Average offer price revision	84	-0.027	0.075	-0.200	0.083
CRSP performance	84	0.525	2.648	-5.613	8.985
MV/Sales S&P 1000	84	0.938	0.460	-0.350	1.512
FF industry return	84	-0.947	6.060	-15.331	16.079
FF industry return STD	84	1.220	0.472	0.573	2.765
Nasdaq performance	84	0.246	3.508	-6.456	10.597
Debt Payment	84	0.333	0.474	0	1
VC-Financing	84	0.333	0.474	0	1
Spinoff	84	0.357	0.482	0	1

Note: All continuous variables are winsorized at the 1st and 99th percentiles.

Table 2.9 Correlation matrix for completed IPOs.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Underpricing	1												
2 Ratio of financial experts	-0.097**	1											
3 Average tenure	0.060	-0.044	1										
4 Other directorships	0.010	-0.219***	-0.114**	1									
5 Ratio of outside directors	0.091*	0.030	0.071	0.222***	1								
6 CEO Chairman duality	0.064	0.061	0.0437	-0.110**	-0.154**	1							
7 Board size	0.063	-0.030	0.135**	0.138**	0.616***	-0.094*	1						
8 Ratio of women	-0.016	-0.085	0.030	0.127**	0.203***	-0.016	0.179***	1					
9 Avg. age of directors (years)	0.004	-0.190***	0.264***	0.050	0.020	-0.081	0.040	0.017	1				
10 Big 4	0.073	-0.057	0.030	0.068	0.175***	-0.021	0.185***	0.096*	-0.121**	1			
11 Lockup period	0.158	-0.025	0.114*	-0.005	0.008	-0.068	-0.003	-0.007	0.059	0.041	1		
12 Firm age	-0.058	0.130***	0.076	-0.305***	-0.024	-0.109*	0.042	-0.136***	0.064	0.063	0.017	1	
13 Offer price revision	0.409***	0.004	-0.076	-0.014	0.014	0.042	0.019	0.006	-0.116**	-0.004	0.039	-0.092*	1
14 News stories	0.033	0.037	0.043	0.030	0.057	0.100**	0.117*	0.039	-0.140***	0.156***	0.047	0.116**	0.028
15 Liabilities to assets	-0.068	-0.095	0.094*	-0.031	-0.123**	-0.025	-0.079	0.031	0.126*	-0.236***	-0.036	-0.054	-0.064
16 IB market share	0.152***	0.077	0.010	0.029	0.166***	-0.038	0.231***	-0.029	-0.181***	0.462***	0.010	0.155***	0.101**
17 Avg. UP prior 30 days	0.125**	0.001	0.011	-0.066	-0.092*	-0.040	-0.005	-0.098**	0.026	0.085*	0.009	0.001	0.179***
18 Avg. OP revision p. 30 days	0.074	-0.015	-0.003	-0.010	-0.071	-0.027	-0.019	-0.116**	0.050	-0.005	-0.011	-0.011	0.171***
19 CRSP performance	0.034	0.099**	0.060	-0.084*	0.006	0.101*	-0.025	-0.034	0.036	-0.065	0.117**	0.017	0.033
20 Secondary shares	0.154***	0.064	-0.005	-0.069	0.057	0.129**	0.060	0.080	-0.035	0.112*	0.070	0.028	0.218***
21 Offer price revision neg.	0.267***	-0.0003	-0.070	-0.015	-0.006	0.028	0.014	0.022	-0.082*	-0.056	0.041	-0.085	0.925***
22 MV/Sales S&P 500	0.108**	-0.233***	0.046	0.492***	0.141**	0.012	0.086*	0.072	0.087*	0.045	-0.022	-0.382***	0.069
23 Offer price to sales	0.0358	-0.266***	-0.275***	0.494***	0.098*	-0.035	0.037	0.084	0.064	-0.031	0.003	-0.411***	0.062
24 FF industry return	0.208***	0.059	0.055	-0.060	-0.045	0.00002	-0.028	-0.050	0.004	-0.003	0.062	-0.062	0.204***
25 FF industry return STD	-0.152***	-0.168***	-0.116**	0.323***	0.092	-0.102*	0.048	0.022	0.083*	-0.002	-0.055	-0.160***	-0.230***
26 Nasdaq performance	0.043	0.087	0.023	-0.083*	-0.037	0.074	-0.087	-0.051	0.035	-0.087*	0.124**	0.007	0.075
27 VC Dummy	0.179***	-0.307***	0.129**	0.508***	0.278***	0.009	0.238***	0.152**	-0.052	0.157**	0.055	-0.362***	0.063
28 Spinoff Dummy	-0.085	0.195***	-0.165***	-0.229***	-0.004	-0.084	-0.102*	-0.117*	-0.075	-0.013	-0.036	0.262***	-0.133***
29 Ratio of financial experts (inside directors)	-0.104**	0.427***	-0.027	-0.187***	-0.151***	0.044	-0.095*	-0.167***	-0.043	-0.140***	0.013	0.005	-0.021
30 Ratio of financial experts (outside directors)	-0.049	0.844***	-0.013	-0.238***	-0.169***	0.063	-0.130**	-0.081	-0.143***	-0.047	-0.039	0.157***	0.034

Table 2.9 Correlation matrix for completed IPOs – Continued.

Variables	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
14	1																
15	-0.084*	1															
16	0.185***	-0.332***	1														
17	-0.098**	-0.004	0.003	1													
18	-0.062	-0.012	0.044	0.586***	1												
19	-0.018	-0.003	-0.037	-0.158***	-0.134***	1											
20	-0.009	-0.100**	0.048	-0.010	-0.079	0.042	1										
21	0.025	-0.039	0.038	0.133***	0.156***	0.060	0.177***	1									
22	0.047	0.034	-0.101**	0.019	0.030	0.001	-0.015	0.053	1								
23	-0.077	0.126**	-0.220***	-0.016	0.060	-0.064	-0.091*	0.085	0.487***	1							
24	-0.047	0.067	-0.051	0.102**	0.173***	0.426***	0.002	0.210***	0.054	0.080	1						
25	-0.005	0.105**	-0.084	-0.038	-0.152***	-0.144***	-0.112**	-0.219***	0.256***	0.374***	-0.194***	1					
26	-0.037	0.016	-0.055	-0.170***	-0.088	0.893***	0.030	0.091*	0.041	-0.039	0.485***	-0.186***	1				
27	0.089*	-0.081	0.086*	0.070	0.031	-0.079	-0.040	0.043	0.474***	0.366***	0.030	0.181***	-0.100**	1			
28	-0.009	0.020	0.127***	-0.077	-0.090*	0.020	0.002	-0.132***	-0.236***	-0.262***	-0.104**	-0.104**	0.010	-0.474***	1		
29	-0.049	0.038	-0.091*	-0.114**	-0.134***	0.075	-0.041	0.030	-0.129	-0.106**	-0.0005	-0.088*	0.087*	-0.235***	0.145***	1	
30	0.011	-0.060	0.010**	0.055	0.033	0.080	0.097*	-0.003	-0.190***	-0.246***	0.066	-0.154***	0.081	-0.301***	0.159***	0.044	1

Note: *p<0.10; **p<0.05 ***p<0.01. N=414.

Table 2.10 Correlation matrix for completed and withdrawn IPOs.

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 IPO withdrawal	1											
2 Ratio of financial experts	-0.095**	1										
3 Average tenure	0.015	-0.024	1									
4 Other directorships	-0.098**	-0.191***	-0.104**	1								
5 Ratio of outside directors	-0.084*	0.04	0.032	0.223***	1							
6 CEO Chairman duality	-0.047	0.052	0.039	-0.091**	-0.161***	1						
7 Board size	-0.068	-0.011	0.102**	0.122***	0.636***	-0.097**	1					
8 Ratio of women	-0.023	-0.064	-0.008	0.132***	0.188***	-0.039	0.159***	1				
9 Avg. age of directors (years)	0.058	-0.211***	0.277***	0.019	0.007	-0.013	0.037	-0.028	1			
10 Big 4	-0.084*	-0.05	0.041	0.088*	0.231***	-0.066	0.212***	0.109**	-0.140***	1		
11 Lockup period	0.038	-0.01	0.048	-0.007	0.011	-0.058	-0.001	0.018	0.081*	-0.026	1	
12 Firm age	-0.016	0.138***	0.0883**	-0.289***	0.007	-0.098**	0.063	-0.129***	0.061	0.086*	-0.01	1
13 News stories	0.004	0.013	0.072	0.055	0.105**	0.079*	0.154***	0.031	-0.07	0.179***	0.004	0.145***
14 Liabilities to assets	0.133***	-0.039	0.072	-0.064	-0.102**	-0.035	-0.092**	0.084	0.083*	-0.215***	-0.025	-0.069
15 IB market share	-0.120***	0.073	0.029	0.059	0.182***	-0.048	0.239***	-0.006	-0.205***	0.467***	-0.058	0.123***
16 Avg. UP prior 30 days	-0.062	-0.028	-0.014	-0.062	-0.061	-0.025	0.024	-0.101**	0.012	0.072	0.05	0.033
17 Avg. OP revision prior 30 days	-0.013	-0.044	-0.012	-0.033	-0.047	-0.003	-0.001	-0.096**	0.04	0.013	0.012	0.011
18 CRSP performance	-0.054	0.08*	0.044	-0.064	0.021	0.072	-0.014	-0.031	0.027	-0.008	0.068	-0.027
19 MV/Sales S&P 500	-0.041	-0.208***	0.03	0.480***	0.116***	0.001	0.080*	0.060	0.087*	0.05	-0.02	-0.361***
20 FF industry return	-0.119***	0.082*	0.043	-0.046	0.014	0.007	0.014	-0.049	-0.014	0.034	0.042	-0.059
21 FF industry return STD	0.06	-0.159***	-0.118***	0.286***	0.029	-0.073	-0.02	-0.008	0.083	-0.028	-0.070	-0.152***
22 Nasdaq performance	-0.119***	0.087*	0.033	-0.058	-0.007	0.051	-0.062	-0.048	0.019	-0.011	0.043	-0.024
23 Debt Payment	0.085*	0.275***	-0.047	-0.283***	-0.027	-0.108**	-0.016	-0.115***	-0.125***	-0.001	-0.024	0.376***
24 VC Dummy	-0.149***	-0.281***	0.101**	0.505***	0.289***	-0.007	0.261***	0.163***	-0.046	0.175***	0.024	-0.341***
25 Spinoff Dummy	0.082*	0.153***	-0.136***	-0.215***	-0.003	-0.102**	-0.087*	-0.104**	-0.077*	0.029	-0.06	0.260***
26 Ratio of financial experts (inside directors)	0.044	0.401***	-0.005	-0.171***	-0.105**	-0.004	-0.07	-0.155***	-0.046	-0.090*	0.048	0.059
27 Ratio of financial experts (outside directors)	-0.113**	0.848***	-0.012	-0.213***	-0.095**	0.08*	-0.083*	-0.055	-0.160***	-0.048	-0.031	0.142***

Table 2.10 Correlation matrix for completed and withdrawn IPOs – Continued.

Variables	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
13 News stories	1														
14 Liabilities to assets	-0.100**	1													
15 IB market share	0.165***	-0.365***	1												
16 Avg. UP prior 30 days	-0.065	-0.066	0.006	1											
17 Avg. OP revision prior 30 days	-0.04	-0.065	0.037	0.604***	1										
18 CRSP performance	0.0004	-0.044	0.009	-0.189***	-0.148***	1									
19 MV/Sales S&P 500	0.049	0.068	-0.091**	-0.016	0.001	0.001	1								
20 FF industry return	-0.052	0.007	-0.009	0.069	0.136***	0.447***	0.035	1							
21 FF industry return STD	0.007	0.075*	-0.07	-0.035	-0.133***	-0.148***	0.256***	-0.222***	1						
22 Nasdaq performance	-0.014	-0.021	0.002	-0.198***	-0.091**	0.893***	-0.035	0.511***	-0.190***	1					
23 Debt Payment	-0.01	-0.092**	0.148***	-0.026	0.002	0.011	-0.388***	-0.05	-0.184***	0.009	1				
24 VC Dummy	0.089**	-0.093**	0.126***	0.069	0.021	-0.035	0.446***	0.033	0.140***	-0.055	-0.514***	1			
25 Spinoff Dummy	0.018	0.003	0.145***	-0.073	-0.069	0.035	-0.219***	-0.048	-0.051	0.027	0.472***	-0.463***	1		
26 Ratio of fin. experts (ins. dir.)	-0.04	0.005	-0.09*	-0.047	-0.088*	0.024	-0.123**	0.012	-0.076	0.031	0.159***	-0.227***	0.147***	1	
27 Ratio of fin. experts (outs. dir.)	-0.006	0.024	0.08*	0.016	0.016	0.077	-0.161***	0.09	-0.151**	0.089*	0.251***	-0.278***	0.122***	0.016	1

Note: *p<0.10; **p<0.05 ***p<0.01. N=497

Chapter 3

The role of audit committee chair tenure – a German perspective

3.1 Introduction

Just recently, the Wirecard accounting scandal brought the debate about appropriate oversight back into public focus (Browne 2020). In recent years through various corporate governance changes, the audit committee (AC) has been established as an essential monitoring body for the financial reporting and audit process (Vera-Munoz 2005). While the audit committee as a whole is responsible for fulfilling this monitoring task, the AC chair plays a crucial role in ensuring that the audit committee effectively carries out its duties and leads the dialog with management and the external auditor (Ghafran & Yasmin 2018; Köhler 2005). Therefore, research has increasingly focused on the role of AC chairs lately (e.g. Free et al. 2021; Ghafran & Yasmin 2018; Khemakhem & Fontaine 2019).

The introduction of an upper limit for tenure on supervisory boards of 12 years in the recently published new version of the German corporate governance codex has refueled the discussion about the appropriateness of tenure limits for board members in Germany. While empirical research provides comprehensive studies that analyze how increased board tenure affects various corporate decisions for regular board members (e.g. Huang & Hilary 2018), evidence for the effect of increased tenure on AC chairs monitoring effectiveness is limited. Therefore, this paper aims to provide a comprehensive analysis of the association between AC chair tenure and reporting quality using a broad German data set for the years 2011-2018. My findings show that AC chair tenure is positively associated with earnings management and negatively associated with the audit report lag and the likelihood of error identification by the German financial reporting enforcement panel (FREP). I draw upon social bonding to discuss these findings, which seem to be heterogeneous from a reporting quality perspective. I argue that social bonding between management and the AC chair drives the results for earnings management, while it does not undermine the AC chair's influence on the audit process and its outcomes. Instead, as management and particularly the CFO naturally also favor a faster audit process resulting in timelier financial reporting and the avoidance of accounting irregularities, I conclude that longer-tenured AC chairs can both exploit their firm-specific knowledge unrestrictedly and take advantage of their collegial relationship with the management to effectively reduce the likelihood of accounting irregularities and to support the external auditor during the audit process resulting in timelier financial reporting.

This study adds important insights about the effect of tenure on AC chairs' monitoring effectiveness and contributes to the literature on reporting quality. My sample covers a wide range of German listed firms, making my findings applicable to AC chairs of large and small

publicly listed firms. My results show that longer-tenured AC chairs foster timelier financial reporting and reduce the likelihood of material misstatements. However, this comes at the price of higher earnings management, underlining the relevance of social bonding for the monitoring effectiveness of the AC. Consequently, my findings highlight the complexity of the role of AC chairs and show that social bonding might be an issue that regulators should be concerned about.

The remainder of the paper proceeds as follows. Section two describes the role of AC chairs in the reporting process and discusses the related literature. The following two sections cover the research design and the data and sample selection. Section five presents the main results, while section six covers additional analyses addressing the robustness of the main results and introduces alternative dependent variables. Section seven discusses the findings of sections five and six. Section seven concludes.

3.2 Related research

3.2.1 German audit committee chairs and reporting quality

Due to the complexity of financial reporting, regulators have generally increased the AC's responsibilities and strengthened the role of the AC in monitoring the financial reporting process (e.g. EU 2014; Ghafran & O'Sullivan 2013). An effective AC plays a pivotal role in monitoring a firm's financial reporting by supervising accounting choices, mitigating earnings management, and contributing to the audit process by coordinating internal and external audits and ensuring the auditor's independence (Köhler 2005; McMullen 1996; Piot & Janin 2007). The AC is the primary contact for the auditor (Köhler 2005) and works closely with management and internal audit to safeguard the financial reporting process (Tanyi & Smith 2015). In Germany, particularly the German Corporate Governance Code (Deutscher Corporate Governance Kodex [DCGK]) underlines the aforementioned responsibilities of ACs and provides specific guidelines for ACs concerning the monitoring of the financial reporting and audit process.¹⁵ In section D.II. the DCGK states that the AC is responsible for "monitoring [...] the accounting process, the effectiveness of the internal control system, the risk management system, the internal audit system, the audit of the financial statements and compliance".¹⁶ In this context, a large body of research finds that the composition of the audit committee is

¹⁵ The application of DCGK is mandatory for all German listed companies and works on a comply or explain basis. Compliance among these companies is generally very high (von Werder & Danilov 2018).

¹⁶ The DCGK also states in section D.II. that "the Chair of the Audit Committee shall have specific knowledge and experience in applying accounting principles and internal control procedures, shall be familiar with audits, and shall be independent".

associated with various proxies for financial reporting and audit quality (e.g. Badolato et al. 2014; Baumann & Ratzinger-Sakel 2020; Bédard et al. 2004; Dhaliwal et al. 2010; Krishnan & Visvanathan 2008), which underlines that the AC has a major role in monitoring the financial reporting and audit process and that specific characteristics of the AC determine its effectiveness.

However, the AC chair serves as a gatekeeper for the AC and the board in general and directs the communication with the external auditor and management (Beattie et al. 2014; Ernstberger et al. 2019). Because the AC chair is the committee member with the greatest responsibility for overseeing the financial reporting and generally determines the AC's effectiveness (Tanyi & Smith 2015), the effect of the AC chair on the financial reporting process is of particular interest (Ghafran & Yasmin 2018; Schmidt & Wilkins 2013).

Several studies have examined how different AC chair characteristics affect financial reporting and the audit process. Ghafran and Yasmin (2018) focus on AC chairs' financial, experiential, and monitoring expertise. They find that AC chairs with experiential and monitoring expertise are more effective in improving financial reporting timeliness. Also, Schmidt and Wilkins (2013) report that companies with AC chairs who have accounting financial expertise (as opposed to non-accounting financial expertise) provide timelier disclosures, which is confirmed by Abernathy et al. (2014). Therefore, as the AC chair is heavily involved in important issues related to the monitoring of the financial reporting and, as the primary contact of the external auditor, contributes to the audit process, the AC chair is able to affect (positively or negatively) financial reporting and audit quality (Baumann & Ratzinger-Sakel 2020; Quick et al. 2008; Tanyi & Smith 2015).

While financial reporting quality and audit quality are generally two different constructs, they are related, often intertwined, and employ the same proxies (Gaynor et al. 2016). Gaynor et al. (2016) emphasize that measuring either financial reporting or audit quality with observable archival outcomes is problematic, as the difference between pre-audit and post-audit quality is generally unobservable. For example, within a high pre-audit financial reporting quality setting, audit quality is difficult to observe as the post-audit financial reporting quality will inevitably be high (Gaynor et al. 2016). However, as the AC in general and, in particular, the AC chair are involved in both the financial reporting process and the audit process, they affect both pre-audit and post-audit financial reporting quality. Therefore, employing an archival setting using observable outcomes (audited financial statements), this study utilizes the term 'reporting quality' to emphasize that ACs generally affect both pre-audit and post-audit reporting quality.

3.2.2 The role of tenure for audit committee chairs

Germany provides a particularly interesting setting to examine the effect of board tenure. Historically, board interlocks and cross-ownership were very common for most publicly listed German firms, resulting in multiple directorships and long tenure for supervisory board members (Faccio & Lang 2002; Kaplan 1994). While the internationalization of the capital market and limits for the maximum number of simultaneous directorships led to a decline of cross-ownership and board interlocks (Höpner & Krempel 2006), Germany did not have a limit on board tenure until just recently. Only since December 16th, 2019, the German corporate governance codex recommends a maximum tenure of 12 years (DCGK Section C.II).¹⁷ During a consultation process in 2019, this newly introduced threshold caused vivid debate among the codex's stakeholders. While investors and proxy advisors generally expressed their support for the proposed recommendation of an upper limit for board tenure, arguing that increased tenure might impair directors' independence¹⁸, other stakeholders, especially large German firms, expressed their disapproval, arguing that longer tenure equips directors with the necessary experience for appropriately fulfilling their tasks on the supervisory boards.¹⁹

The debate about tenure capturing the tradeoff between board independence and board knowledge has also been prominent in the empirical literature (Huang & Hilary 2018; Hwang & Kim 2009). In the context of audit committees, longer tenure equips AC members with the necessary knowledge about a firm's reporting process, internal control system, and external and internal environment to effectively fulfill their monitoring tasks (Sharma & Iselin 2012; Vafeas 2003). In this sense, various studies find beneficial effects of firm-specific knowledge for AC's monitoring effectiveness (e.g. Bédard et al. 2004; Ghafran & Yasmin 2018; Yang & Krishnan 2005).

On the contrary, directors' independence might deteriorate with increased tenure, as the ongoing association with management leads to social bonding. Social identity theory explains that social bonds resulting from interpersonal associations, such as those between management and AC members, increase organizational identification and can lower the propensity to question others' behavior (Ashforth et al. 2008; Kachelmeier & Van Landuyt 2017). Thus,

¹⁷ This compares to a limit of 12 years in France and 9 years in the U.K. Similar to Germany, for directors with tenure beyond these limits, firms have to explain why the extended engagement with the organization does not compromise the director's independence. In the U.S., however, a tenure limit has not yet been introduced, although the topic continues to receive considerable attention (Huang and Hilary 2018).

¹⁸ See for example the responses of Blackrock, Fidelity, and Glass Lewis. <https://www.dcgk.de/en/consultations/archive/consultation-2018/19.html>

¹⁹ See for example the responses of BASF, Evonik, and Ulrich Lehner (Chair of the supervisory board of Deutsche Telekom).

social bonding with the management and particularly the CFO evolves during a board member's tenure and potentially fosters the ratification of management's decisions (Vafeas 2003; Wade et al. 1990). Several studies document a negative effect of social bonding on critical judgment, especially in the auditing context (e.g. Bamber & Iyer 2007; He et al. 2017). For example, according to Koch and Salterio (2017), auditors with greater client affinity suggest lower adjustments when facing aggressive accounting. Research also emphasizes that relationships between the CFO and AC members are particularly susceptible to mutual influence (Badolato et al. 2014; Beck & Mauldin 2014). However, Bruynseels and Cardinaels (2014) show that also social ties between AC members and the CEO undermine the AC's monitoring performance. Consequently, social bonding between the AC chair and management in general and particularly the CFO might pose a serious threat to the independence of the AC chair.

In summary, due to the double-edged role of tenure, it is not surprising that empirical research yields heterogeneous results. For example, Sharma and Iselin (2012) document a positive association between AC members' tenure and financial misstatements. They conclude that the continuous association with management compromises the oversight effectiveness of longer-tenured AC members. Also, Rickling (2014) reports that AC members' tenure is positively associated with the likelihood of firms just meeting or beating analyst forecasts. He and Yang (2014) find a moderating role of industry regulation when examining the effect of tenure on earnings management. For regulated industries (such as utilities, telecommunications, transportation, etc.), they find a negative association between AC members' tenure and earnings management, while the association is positive for unregulated industries.

However, other studies find beneficial effects of longer tenure. Beasley (1996) reports that increased tenure of outside directors reduces the likelihood of financial statement fraud. Also, Bédard et al. (2004) find that increased tenure of AC members leads to less aggressive earnings management, which is supported by Yang and Krishnan (2005). Similarly, Abernathy et al. (2014) find evidence that AC tenure is positively associated with financial reporting timeliness. In a recent study, Ghafran and Yasmin (2018) confirm this association for AC chairs. Huang and Hilary (2018) also add insights to the debate providing evidence that the association between board tenure and reporting quality follows an inverted U-shape.

In summary, evidence for the association between tenure and reporting quality for the board in general and the audit committee is inconclusive, while studies focusing on the role of AC chair tenure are scarce. Consequently, due to the influential position of the AC chair and the

ambivalent but important role of tenure, this study aims to provide a comprehensive analysis of the association between AC chair tenure and reporting quality.

3.3 Research design

To analyze the association of AC chair tenure and reporting quality, I employ accrual models (AM) previously used in European settings (e.g. Baumann & Ratzinger-Sakel 2020; Lesage et al. 2017). I control for industry and year fixed effects and cluster standard errors at the firm level. All continuous variables are winsorized at the 1st and 99th percentiles.

$$\begin{aligned} AM = & \beta_0 + \beta_1 * Tenure + \beta_2 * PublicAcc + \beta_3 * CorporateAcc + \beta_4 * AddDirectorshipsChair + \\ & \beta_5 * AddDirectorshipsRest + \beta_6 * \%OtherExperts + \beta_7 * ACSIZE + \\ & \beta_8 * ACMeetings + \beta_9 * FirmSize + \beta_{10} * Loss_{t-1} + \beta_{11} * CashFlow + \beta_{12} * Leverage + \\ & \beta_{13} * SalesGrowth + \beta_{14} * PPEGrowth + \beta_{15} * Big4 + \beta_{16} * Switch + \beta_{17} * P/B + \\ & \beta_{18} * Issuance + \text{fixed effects} + \varepsilon_1 \end{aligned}$$

Additionally, similar to Ghafran and Yasmin (2018), I also analyze if AC chair tenure is associated with the audit report lag (ARL) by employing the following model.

$$\begin{aligned} ARL = & \lambda_0 + \lambda_1 * Tenure + \lambda_2 * PublicAcc + \lambda_3 * CorporateAcc + \lambda_4 * AddDirectorshipsChair + \\ & \lambda_5 * AddDirectorshipsRest + \lambda_6 * \%OtherExperts + \lambda_7 * ACSIZE + \\ & \lambda_8 * ACMeetings + \lambda_9 * FirmSize + \lambda_{10} * Leverage + \lambda_{11} * Big4 + \lambda_{12} * ROA + \\ & \lambda_{13} * Subsidiaries + \lambda_{14} * Receiv.-Inv. Ratio + \lambda_{15} * Acquisitions + \text{fixed effects} + \\ & \varepsilon_2 \end{aligned}$$

All variables are defined in Table 3.1.

Table 3.1 Variable descriptions.

Variable	Description
RQJ	Abnormal accruals based on the model by Jones (1991)
RQMJ	Abnormal accruals based on the model by Dechow et al. (1995)
RQPM	Abnormal accruals based on the model by Kothari et al. (2005)
ARL	Natural logarithm of the number of days between a firm's fiscal year-end and audit report date
Tenure	The number of years since AC chair joined the board
PublicAcc	Indicates (=1) if AC chair has a recent background in public accounting
CorporateAcc	Indicates (=1) if AC chair has a recent background in corporate accounting
AddDirectorshipsChair	Number of additional directorships of AC chair
AddDirectorshipsRest	The average number of additional directorships of regular AC members
%OtherExperts	Number of other accounting experts serving on the AC divided by the number of regular AC members
ACSize	Number of AC members
ACMeetings	Number of AC meetings
FirmSize	Natural logarithm of total assets
Loss _{t-1}	Indicates (=1) if the firm has reported a loss in the previous year; 0 otherwise
CashFlow	Operating cash flow divided by total assets
Leverage	The ratio of total debt at year-end to total assets
SalesGrowth	Percentage of annual growth in sales
PPEGrowth	Percentage of annual growth in property, plants, and equipment
Big4	Indicates (=1) if the firm is audited by either Deloitte, EY, KPMG, or PwC in the respective year; 0 otherwise
Switch	Indicates (=1) if auditor changed compared to the previous year; 0 otherwise
P/B	The ratio of book value to market value of equity.
Issuance	Indicates (=1) if the firm issued equity in the respective year; 0 otherwise
Subsidiaries	Natural logarithm of the number of subsidiaries
Receiv.-Inv. Ratio	Ratio of trade receivables and inventory to total assets
Acquisition	Indicates (=1) if the firm made an acquisition; 0 otherwise
Blockholding	The proportion of equity held by block-holders

For the accrual models, I use three different measures of signed abnormal accruals based on cross-sectional versions of the Jones model (Jones 1991) (RQJ), the modified Jones model (Dechow et al. 1995) (RQMJ), and performance-matched accruals (Kothari et al. 2005) (RQPM). For the dependent variable audit report lag (ARL), I use the natural logarithm of the number of days between a firm's fiscal year-end and the audit report date (Ghafran & Yasmin 2018).

In line with previous research (e.g. Ghafran & Yasmin 2018; Sharma & Iselin 2012) the variable tenure captures the number of years an AC chair has served on the respective board. Potential effects from firm-specific knowledge or social bonding generally originate from the length of service on the board and are not limited to the length of service as AC chair (Bruynseels & Cardinaels 2014; Ghafran & Yasmin 2018; Sharma & Iselin 2012). Therefore, my tenure variable captures the number of years the AC chair has served on the board instead of the years as AC chair. However, I examine modifications to my test variable in the robustness section. AC chair tenure varies depending on the AC chair's professional background. For example, AC chairs with a background in public accounting can generally only accept board positions after retiring from their career in public accounting, as independence concerns would arise otherwise. This does not apply to AC chairs with corporate accounting or other backgrounds. Thus, some AC chairs pursue their main career (e.g. as CEO or CFO) while also serving on a supervisory board (potentially as AC chair) in another firm. Therefore, it is necessary to control for the AC chair's recent professional background, as AC chairs with a corporate accounting or other backgrounds might generally accept board positions earlier in their career. Therefore, following Abernathy et al. (2014), I distinguish between AC chairs with a recent background in public accounting (PublicAcc), AC chairs with a recent background in corporate accounting (CorporateAcc), and AC chairs with other backgrounds, like academic, banking, or legal (Other).²⁰ Table 3.2 presents the average tenure for the three professional background variables.

²⁰ Abernathy et al. (2014) find a significant association between AC members' professional background and financial reporting timeliness. I follow their distinction of professional backgrounds and assign AC chairs to either public accounting, corporate accounting, or other backgrounds based on their most recent position. Public accounting includes AC chairs with a position in the public accounting sector (i.e. auditing). Corporate accounting includes AC chairs that have or had a position as CFO, senior vice president accounting, or similar. Other captures AC chairs with other backgrounds, which are mainly academic (i.e. professor), banking, or legal.

Table 3.2 Descriptive statistics of AC chair tenure for the three professional background variables.

Variables	N	Mean	Std. Dev.	Min	Max	t-test	p-value
(1) Public Accounting	133	5.34	4.71	0	20	(1) vs. (2)	0.252
(2) Corporate Accounting	468	5.90	5.05	0	25	(2) vs. (3)	<0.001***
(3) Other	363	8.09	5.41	0	24	(1) vs. (3)	<0.001***
Total Sample	964	6.65	5.27	0	25		

Note: *p<0.10; **p<0.05; ***p<0.01. Data is not winsorized.

Additionally, I control for AC members' additional directorships (e.g. Baccouche et al. 2013; Sharma & Iselin 2012). However, I separately control for AC chair's additional directorships and the additional directorships of the other AC members (AddDirectorshipsChair and AddDirectorshipsRest). Furthermore, in line with the relevant research (e.g. Bédard & Gendron 2010; Lin & Hwang 2010), I also control for the number of other accounting experts on the AC, the size of the AC, and the AC's meeting frequency (%OtherExperts, ACSIZE, and ACMeetings).

Previous studies found that Big4 audit firms provide higher quality audits in some settings (e.g. Lin & Hwang 2010; van Tendeloo & Vanstraelen 2008). Thus, I control for whether a company is audited by a Big4 auditing firm (Big4). Additionally, a control variable for whether it is a first-time audit (Switch) is included (Chen et al. 2008; Lin & Hwang 2010). In line with prior literature (DeFond & Zhang 2014; Lesage et al. 2017; Poitras et al. 2002; Yoon & Miller 2002), I also control for various company characteristics (FirmSize, Loss_{t-1}, Leverage, CashFlow, SalesGrowth, PPEGrowth, P/B, Issuance). For the ARL model, I control for the above mentioned AC characteristics and, following Ghafran and Yasmin (2018), I also control for a Big4 audit (Big4), block-holding (block-holding), total assets (FirmSize), return on assets (ROA), the number of subsidiaries (Subsidiaries), leverage (Leverage), the receivables and inventory ratio (Receiv.-Inv. Ratio), and include a dummy that is equal to one when a firm made an acquisition during the fiscal year (Acquisition).²¹

²¹ Unlike Ghafran and Yasmin (2018), I do not control for executive ownership and the ratio of independent non-executive directors. German firms do not report executive ownership in their annual reports and I am not aware of any other source that provides executive ownership data. Additionally, corporate governance statements are no longer available online for many firms in previous years, so that it is not possible to collect the exact number of independent board members. However, within the German two-tier system, there are no executive directors on the supervisory board and many firms consider all of their shareholder representatives independent (the independence status of worker representatives on German supervisory boards is controversial; von Werder & Danilov 2018).

3.4 Data and sample selection

My initial sample is based on the Prime Standard market segment of the Frankfurt Stock Exchange for the years 2011-2018 and comprises 2,622 firm-year observations. Companies included in the Prime Standard market segment need to comply with the highest transparency standards and being listed in the Prime Standard is a prerequisite for inclusion in the major German stock indices, such as the DAX (Deutsche Boerse 2021). I exclude observations of firms that are not domiciled in Germany (212) and thus, might utilize different governance systems while not being subject to German governance rules and the DCGK. Also, I drop firms from the financial industry (278), firms with missing accounting or AC data (401), and firms that did not have an AC in the respective year (767). Therefore, I end up with a final sample of 964 firm-year observations.²² Table 3.3 displays the sample selection in detail.

AC data is hand collected from firms' annual reports and supplemented with information from Online-CVs if relevant data is missing. Accounting data is obtained from the Worldscope Database using Thomson Reuters Datastream. Table 3.4 provides descriptive statistics for my sample.²³

Table 3.3 Sample selection.

	Number of Observations
All firm-year observations in the Prime Standard from 2011 - 2018	2622
- Observations in the financial industry (SIC 6000-6799)	278
- Observations related to firms not domiciled in Germany	212
- Observations with missing data	401
- Observations related to firms which did not have an AC in the respective year	767
Final sample	964

The means of the abnormal accruals measures RQJ, RQMJ, and RQPM are -0.0049, -0.0046, and 0.0019, which is in line with prior studies (Baumann & Ratzinger-Sakel 2020; Menon & Williams 2004). The audit report lag is on average 65 days and ranges from 30 to 119 days, which is very close to the numbers reported by Ghafran and Yasmin (2018). The average AC chair has been a member of the respective supervisory board for approximately 6.6 years. While 13.8% of the AC chairs have a background in public accounting, 48.5% have a background in

²² The number of observations for the ARL regression is 908, as there are additional missing observations due to the variables Acquisition, Receiv.-Inv. Ratio, and ARL.

²³ Descriptive statistics are based on the winsorized data (1st and 99th percentiles).

corporate accounting. The average tenure of 6.6 years for German AC chairs in my sample compares to 4.53 years for the U.K. in 2007 - 2010 (Ghafran & Yasmin 2018) and 7.6 years for the U.S. in 2004 - 2008 (Tanyi & Smith 2015). Thus, compared internationally, the average board tenure for German AC chairs seems to rank in the upper mid-range.²⁴

Table 3.4 Descriptive Statistics.

Variables	Mean	Std. Dev.	Min	Max
RQJ	-0.0049	0.0571	-0.2189	0.1509
RQMJ	-0.0046	0.0565	-0.2062	0.1543
RQPM	0.0019	0.0819	-0.2404	0.2441
ARL ¹	4.1421	0.2559	3.4012	4.7791
ARL (in days) ¹	65.0077	16.7048	30.0000	119.0000
Tenure (Years)	6.6328	5.2166	0.0000	21.0000
PublicAcc	0.1380	0.3450	0.0000	1.0000
CorporateAcc	0.4855	0.5000	0.0000	1.0000
AddDirectshipsChair	1.6950	1.7473	0.0000	8.0000
AddDirectshipsRest	1.1274	0.9915	0.0000	4.5000
%OtherExperts	0.1963	0.2363	0.0000	1.0000
ACSize	4.1483	1.3371	2.0000	8.0000
ACMeetings	4.3610	1.5320	1.0000	9.0000
FirmSize (million €)	14,483.61	36,005.29	19.249	213,882
Loss _{t-1}	0.1732	0.3786	0.0000	1.0000
CashFlow	0.0599	0.1148	-0.5268	0.2906
Leverage	0.2057	0.1595	0.0000	0.8082
SalesGrowth	0.0557	0.1720	-0.5337	0.8156
PPEGrowth	0.0725	0.2474	-0.4180	1.6309
Big4	0.8766	0.3291	0.0000	1.0000
Switch	0.0498	0.2176	0.0000	1.0000
P/B	2.5613	2.0740	0.2860	13.4068
Issuance	0.0851	0.2791	0.0000	1.0000
Subsidiaries ¹	3.9551	1.5037	0.0000	7.1884
Reiceiv.-Inv. Ratio ¹	0.2811	0.1498	0.0070	0.6318
Acquisition ¹	0.5264	0.4996	0.0000	1.0000
Blockholding ¹	0.3984	0.2642	0.0000	0.9500

Note: Continuous variables are winsorized at the 1st and 99th percentiles. For the definition of the variables, please see Table 3.1. ¹Based on 908 observations.

Table 3.5 presents the correlation matrix of the dependent and independent variables. The variable tenure is significantly and positively correlated with the accruals measures (RQJ, RQMJ, and RQPM) and significantly and negatively with the audit report lag (ARL). Additionally, tenure is also significantly and negatively correlated with both the public

²⁴ For general average board tenure, also SpencerStuart (2019) ranks Germany in the upper mid-range.

accounting background (PublicAcc) and the corporate accounting background (CorporateAcc). Thus, also the correlation coefficients highlight that the category 'Other' contains AC chairs with the highest average tenure (cf. Table 3.2).

Table 3.5 Correlation matrix.

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 AQJ	1											
2 AQMJ	0.975***	1										
3 AQPM	0.640***	0.625***	1									
4 Tenure	0.115***	0.116***	0.104**	1								
5 PublicAcc	-0.0456	-0.0475	0.0154	-0.0993**	1							
6 CorporateAcc	0.109***	0.120***	0.0535	-0.140***	-0.389***	1						
7 AddDirectorshipsChair	-0.0113	-0.00217	-0.0286	0.00616	-0.116***	0.121***	1					
8 AddDirectorshipsRest	0.00678	0.0128	0.0278	0.0601	-0.0542	0.107***	0.245***	1				
9 %OtherExperts	-0.0724*	-0.0622	-0.0551	0.0660*	0.0534	0.0272	0.0605	0.108***	1			
10 ACSize	0.0683*	0.0656*	0.0241	0.0584	-0.0332	0.0770*	0.131***	-0.0448	-0.149***	1		
11 ACMeetings	-0.0676*	-0.0585	-0.0255	0.00140	-0.0334	0.119***	0.0365	-0.0686*	0.0426	0.248***	1	
12 FirmSize	0.0399	0.0315	0.00880	0.0944**	-0.0685*	0.0913**	0.327***	0.0542	-0.139***	0.567***	0.278***	1
13 CashFlow	-0.222***	-0.203***	-0.181***	0.0216	0.0219	0.0426	0.0150	-0.129***	-0.00819	0.125***	0.0718*	0.264***
14 SalesGrowth	0.0186	0.0601	0.0234	0.00469	-0.0273	0.00823	0.0375	0.0796*	0.00501	-0.129***	-0.0999**	-0.0760*
15 PPEGrowth	0.00829	0.0285	0.0604	-0.000569	-0.00290	0.0315	0.0440	-0.00803	-0.0720*	-0.0780*	-0.0369	-0.0122
16 Big4	-0.0371	-0.0288	0.00919	0.112***	-0.0145	0.0995**	0.104**	0.152***	0.0409	0.271***	0.288***	0.344***
17 Switch	-0.0203	-0.0188	-0.0702*	-0.0882**	0.0191	0.0162	-0.0146	-0.000727	-0.0469	-0.0361	0.0332	-0.0698*
18 Leverage	-0.0191	-0.0248	-0.0210	0.0280	0.119***	-0.0608	0.104**	0.00230	-0.0537	0.137***	-0.0207	0.287***
19 Issuance	-0.0573	-0.0616	-0.0489	-0.102**	-0.00338	-0.0283	-0.00211	0.0345	0.0668*	-0.115***	-0.0840**	-0.225***
20 P/B	-0.100**	-0.0759*	-0.00397	-0.0468	0.0702*	0.112***	-0.0441	0.0609	0.124***	-0.161***	-0.0111	-0.182***
21 Losst-1	-0.124***	-0.136***	-0.0602	-0.133***	0.0156	-0.0278	-0.0535	0.0739*	0.0753*	-0.176***	-0.00946	-0.282***
22 ARL	-0.0386	-0.0446	-0.0137	-0.120***	0.0549	-0.210***	-0.167***	-0.0724*	0.0124	-0.319***	-0.314***	-0.480***
23 Acquisition	-0.0504	-0.0472	-0.0416	-0.0780*	0.0219	0.0769*	0.143***	0.137***	-0.0125	0.111***	0.0366	0.253***
24 Receiv.-Inv. Ratio	0.00759	0.0108	-0.0514	-0.0153	-0.0219	-0.0605	-0.104**	-0.131***	-0.0143	-0.0785*	-0.0299	-0.125***
25 Subsidiaries	0.0166	0.0151	-0.0192	0.0671*	-0.0645	0.0832*	0.305***	0.0662*	-0.0840*	0.521***	0.191***	0.865***
26 Blockholding	0.0371	0.0348	0.0216	-0.0127	-0.131***	0.0200	-0.0546	-0.0668*	0.0224	0.0208	-0.00520	-0.149***

Table 3.5 Correlation matrix – Continued.

Variables	13	14	15	16	17	18	19	20	21	22	23	24	25	26
13 CashFlow	1													
14 SalesGrowth	0.0165	1												
15 PPEGrowth	0.0805*	0.308***	1											
16 Big4	0.159***	-0.0695*	-0.0360	1										
17 Switch	0.0367	0.00313	-0.0148	-0.0591	1									
18 Leverage	-0.0195	0.0303	0.0206	0.0191	0.0492	1								
19 Issuance	-0.353***	0.102**	0.0599	-0.168***	-0.0185	-0.00470	1							
20 P/B	0.0549	0.235***	0.186***	-0.0225	0.0174	-0.105**	0.0348	1						
21 Losst-1	-0.494***	-0.0499	-0.111***	-0.0532	0.0464	-0.0853**	0.303***	0.0021	1					
22 ARL	-0.237***	0.0876**	-0.00608	-0.248***	0.0232	0.00276	0.180***	-0.0109	0.2140***	1				
23 Acquisition	0.149***	0.0599	0.107**	0.100**	-0.0222	0.116***	-0.0755*	0.0144	-0.1596***	-0.1631***	1			
24 Receiv.-Inv. Ratio	0.160***	-0.0263	-0.0659*	0.00264	-0.0170	-0.241***	-0.154***	-0.1154***	-0.1584***	0.0772*	-0.0741*	1		
25 Subsidiaries	0.269***	-0.0696*	-0.0101	0.261***	-0.0956**	0.296***	-0.241***	-0.1547***	-0.2975***	-0.3657***	0.3680***	0.0063	1	
26 Blockholding	-0.000600	-0.00924	-0.0188	-0.0727*	0.0522	0.00784	-0.0831*	-0.0143	-0.0140	0.0280	-0.0662*	-0.0099	-0.1091***	1

Note: *p<0.05; **p<0.01; ***p<0.001

3.5 Results

Table 3.6 presents the results of my regressions for the three different earnings quality measures. AC chair tenure is positively and significantly associated with all three accruals measures (0.0012, $p = 0.012$ for RQJ; 0.0012, $p = 0.011$ for RQMJ; 0.0015, $p = 0.005$ for RQPM). A one standard deviation increase in tenure translates to an increase of 0.0063 in accruals calculated according to Jones (1991). Considering the mean (-0.0049) and range (from -0.2189 to 0.1509) of the Jones (1991) accruals and the range of tenure (0 to 21), the effect of tenure is also economically significant. Also, as reported in Table 3.7, I find a marginally significant association between AC chair tenure and ARL (-0.0055, $p = 0.092$). This finding is in line with Ghafran and Yasmin (2018), who also report a negative association between AC chair tenure and the audit report lag. Taken together, while longer-tenured AC chairs seem to be associated with timelier financial reporting, they also allow higher levels of abnormal accruals.

I also analyze if the threshold of 12 years, which is recommended as maximum tenure by the German corporate governance codex since 2019, is associated with reporting quality. The results show that AC chairs with tenure above 12 years are significantly associated with higher abnormal accruals (0.0117, $p = 0.043$ for RQJ; 0.0124, $p = 0.028$ for RQMJ; 0.0219, $p = 0.002$ for RQPM; untabulated), but not with timelier financial reporting (-0.0562; $p = 0.139$ for ARL; untabulated). However, this is also true for a threshold of 8 years (0.0125, $p = 0.006$ for RQJ; 0.0130, $p = 0.004$ for RQMJ; 0.0205, $p = 0.001$ for RQPM; -0.0181, $p = 0.470$ for ARL; untabulated). Table 3.6 also shows that the variable CorporateAcc, which indicates that an AC chair has a recent background in corporate accounting (e.g. CFO), is positively and significantly associated with all accruals measures (0.0202, $p = 0.001$ for RQJ; 0.0207, $p = 0.001$ for RQMJ; 0.0185, $p = 0.010$ for RQPM). However, I also find a negative and statistically significant association of AC chairs with a recent background in corporate accounting and the audit report lag (-0.0892, $p = 0.006$ for ARL). This is somewhat contrary to the findings of Abernathy et al. (2014), who observe a positive effect of AC chairs with a background in public accounting on the timeliness of financial reporting, while they do not find an effect for AC chairs with a background in corporate accounting. Consequently, while AC chairs with a background in corporate accounting facilitate timelier financial reporting in my setting, they also allow higher levels of abnormal accruals.

Tables 3.6 and 3.7 also present variance inflation factors (VIF). The VIFs show that there is no severe issue with multicollinearity, as no variable exceeds the threshold VIF of 10 (O'Brien 2007).

Table 3.6 The association of AC chair tenure and abnormal accruals.

Variables	RQJ			RQMJ		RQPM	
	β	p-value	VIF	β	p-value	β	p-value
Constant	-0.0087	0.716		-0.0083	0.726	-0.0130	0.645
Tenure	0.0012**	0.012	1.16	0.0012**	0.011	0.0015***	0.005
PublicAcc	0.0115	0.107	1.34	0.0116	0.103	0.0205*	0.050
CorporateAcc	0.0202***	0.001	1.35	0.0207***	0.001	0.0185**	0.010
AddDirectshipsChair	-0.0012	0.316	1.27	-0.0008	0.500	-0.0021	0.196
AddDirectshipsRest	-0.0012	0.676	1.20	-0.0011	0.705	0.0003	0.930
%OtherExperts	-0.0076	0.474	1.16	-0.0064	0.544	-0.0155	0.226
ACSize	0.0028	0.184	1.65	0.0032	0.131	0.0017	0.493
ACMeetings	-0.0026	0.108	1.29	-0.0021	0.199	-0.0011	0.576
FirmSize	0.0014	0.424	2.27	0.0007	0.677	0.0011	0.585
Losst-1	-0.0389***	<0.001	1.54	-0.0389***	<0.001	-0.0323***	0.001
CashFlow	-0.2134***	<0.001	1.63	-0.2038***	<0.001	-0.2249***	<0.001
Leverage	-0.0280	0.121	1.23	-0.0282	0.118	-0.0234	0.308
SalesGrowth	0.0139	0.235	1.23	0.0251**	0.023	0.0049	0.772
PPEGrowth	0.0052	0.604	1.22	0.0068	0.505	0.0256	0.133
Big4	-0.0040	0.656	1.32	-0.0027	0.761	0.0032	0.748
Switch	0.0065	0.395	1.05	0.0064	0.406	-0.0152	0.268
P/B	-0.0031	0.120	1.33	-0.0027	0.164	-0.0007	0.743
Issuance	-0.0200**	0.028	1.26	-0.0210**	0.014	-0.0270**	0.030
Year Dummies		Yes			Yes		Yes
Industry Dummies		Yes			Yes		Yes
N		964			964		964
Adj. R ²		0.2056			0.1970		0.1133

Note: *p<0.10; **p<0.05; ***p<0.01

Table 3.7 The association of AC chair tenure and the audit report lag.

Variables	ARL		
	β	p-value	VIF
Constant	5.1649***	<0.001	
Tenure	-0.0055*	0.092	1.18
PublicAcc	-0.0528	0.184	1.39
CorporateAcc	-0.0892***	0.006	1.35
AddDirectshipsChair	0.0007	0.922	1.28
AddDirectshipsRest	-0.0122	0.340	1.23
%OtherExperts	-0.0317	0.513	1.17
ACSize	-0.0130	0.303	1.67
ACMeetings	-0.0286***	0.002	1.28
FirmSize	-0.0634***	<0.001	5.94
ROA	-0.2590**	0.018	1.36
Switch	-0.0114	0.687	1.05
Big4	0.0101	0.835	1.32
Leverage	0.1634	0.149	1.38
Subsidiaries	0.0356	0.127	5.19
Acquisition	-0.0360	0.136	1.33
Receiv.-Inv. Ratio	0.1426	0.302	1.88
Blockholding	-0.0548	0.424	1.11
Year Dummies		Yes	
Industry Dummies		Yes	
N		908	
Adj. R ²		0.3695	

Note: *p<0.10; **p<0.05; ***p<0.01. The number of observations for the ARL regression is 908, as there are additional missing observations due to the variables Acquisition, Receiv.-Inv. Ratio, and ARL.

3.6 Additional analyses

3.6.1 Robustness

First, I provide additional analyses to examine the robustness of the results from the main analysis. Second, I employ different alternative variables to shed some more light on the effects of tenure on reporting quality proxies.

Single regression approach by Chen et al. (2018)

Chen et al. (2018) find that two-step procedures to calculate abnormal accruals tend to produce biased results. They suggest a single regression approach to overcome this bias. Thus, I follow Chen et al. (2018) and employ a single-regression approach to check the robustness of my results.

To do so, I employ the following model:

$$\begin{aligned}
TA = & \sigma_0 + \sigma_1 * (1/\text{Total Assets}) + \sigma_2 * (\Delta\text{Sales} - \Delta\text{AR})/\text{Total Assets} + \sigma_3 * \text{PPE}/\text{Total Assets} + \\
& \sigma_4 * \text{Tenure} + \sigma_5 * \text{Age} + \sigma_6 * \text{PublicAcc} + \sigma_7 * \text{CorporateAcc} + \\
& \sigma_8 * \text{AddDirectorshipsChair} + \sigma_9 * \text{AddDirectorshipsRest} + \sigma_{10} * \% \text{OtherExperts} + \\
& \sigma_{11} * \text{ACSize} + \sigma_{12} * \text{ACMeetings} + \sigma_{13} * \text{FirmSize} + \sigma_{14} * \text{Loss}_{t-1} + \\
& \sigma_{15} * \text{CashFlow} + \sigma_{16} * \text{Leverage} + \sigma_{17} * \text{SalesGrowth} + \sigma_{18} * \text{PPEGrowth} + \\
& \sigma_{19} * \text{Big4} + \sigma_{20} * \text{Switch} + \sigma_{21} * \text{P/B} + \sigma_{22} * \text{Issuance} + \\
& \sigma_q \text{ Interactions} + \text{fixed effects} + \varepsilon_3
\end{aligned}$$

The dependent variable TA captures total accruals which are defined as net income before extraordinary items minus operating cash flows scaled by total assets. Interactions represent the interactions between the year dummies and 1/Total assets, $(\Delta\text{Sales} - \Delta\text{AR})/\text{Total Assets}$, and PPE/Total Assets. Table 3.8 presents the results from the single regression approach. AC chair tenure is significantly and positively associated with total accruals (0.0011, $p = 0.018$ for TA). Thus, the single regression approach confirms the results from my main analysis. Additionally, both PublicAcc and CorporateAcc are positively and significantly associated with total accruals (0.0200, $p = 0.005$; 0.0190, $p = 0.001$, respectively). Consequently, the single regression approach also confirms that AC chairs with a corporate accounting background are associated with higher levels of accruals. However, the approach also attributes a positive and significant effect on total accruals to AC chairs with a background in public accounting, which is rather surprising. As the variable PublicAcc is not significant in the two models of the main analysis, I do not find consistent evidence for a positive association between AC chairs with a background in public accounting and accruals.

Table 3.8 Single regression approach by Chen et al. (2018).

Variables	TA	
	β	p-value
Constant	-0.0388	0.238
1/Total Assets _{t-1}	-3905.349**	0.043
(Δ Sales - Δ AR)/Total Assets _{t-1}	0.0564**	0.016
PPE/Total Assets _{t-1}	-0.0078	0.814
Tenure	0.0011**	0.018
PublicAcc	0.0200***	0.005
CorporateAcc	0.0190***	0.001
AddDirectshipsChair	-0.0015	0.236
AddDirectshipsRest	-0.0004	0.560
%OtherExperts	-0.0029	0.372
ACSize	0.0007	0.728
ACMeetings	-0.0004	0.775
FirmSize	0.0032*	0.081
Losst-1	-0.0512***	<0.001
CashFlow	-0.3885***	<0.001
Leverage	-0.0516***	0.003
SalesGrowth	0.0157	0.484
PPEGrowth	-0.0030	0.799
Big4	-0.0132	0.181
Switch	0.0002	0.976
P/B	0.0007	0.787
Issuance	-0.0183*	0.090
Interactions		Yes
Year Dummies		Yes
Industry Dummies		Yes
N		964
Adj. R ²		0.3564

Note: *p<0.10; **p<0.05; ***p<0.01.

Modifications of the Tenure variable

In the main analysis, the variable AC chair tenure captures the length of service on the board, which not necessarily corresponds to the number of years the AC chair has had the position of AC chair. Therefore, I also examine an alternative tenure variable that captures the number of years the AC chair has served as AC chair. First of all, the average tenure on the board for the AC chairs in my sample is 6.63 years, while the average tenure as AC chair is 4.34 years. The difference is statistically significant ($p < 0.001$) and thus, AC chairs spend on average more than two years on the respective board before being promoted to the position of AC chair. For the accruals measures, I find that using the alternative measure results in insignificant results for the Jones and modified Jones accruals (0.0009, $p = 0.195$ for RQJ; 0.0008, $p = 0.241$ for

RQMJ). However, the results for the performance-matched accruals continue to be significant (0.0019, $p = 0.016$ for RQPM). Also, for the audit report lag, the result is insignificant (-0.0011, $p = 0.764$ for ARL). Consequently, I am not able to reproduce my results using the alternative AC chair tenure variable, which is based solely on the tenure as AC chair. Nevertheless, potential effects from firm-specific knowledge or social bonding generally originate from the length of service on the board and are not limited to the length of service as AC chair (Bruynseels & Cardinaels 2014; Ghafran & Yasmin 2018; Sharma & Iselin 2012). Most AC chairs spent a few years as regular AC members before being promoted to the position of AC chair (Myers et al. 2021). Hence, it is not surprising that the alternative measure only captures effects from social bonding and firm-specific knowledge to a much smaller degree.

The results from the main analysis show that longer-tenured AC chairs are associated with higher levels of abnormal accruals. This might be driven by a social bonding between the AC chair and the CFO. However, the CFO can change during the AC chair's tenure, which would reset a potential social bonding with the CFO. Therefore, to elaborate on this, I replace my tenure variable with a variable that captures the number of years the AC chair and the CFO have worked together through their service on the supervisory/management board of the respective firm and examine the effect on abnormal accruals.²⁵ I find that the variable capturing the years of collaboration between AC chair and CFO is positively associated with the three accruals measures (0.0013, $p = 0.034$ for RQJ; 0.0012, $p = 0.044$ for RQMJ; 0.0005, $p = 0.571$ for RQPM; untabulated). However, the variable is only significant for the Jones and modified Jones accruals and not significant for the performance-matched accruals. Thus, it seems that the results from the main analysis are partially driven by the social bonding between the AC chair and the CFO. However, social bonding is not only limited to the relationship of the AC chair and the CFO, but applies to relationships with management in general and fosters organizational commitment (Bruynseels & Cardinaels 2014; Buchanan 1974; Wilbanks et al. 2017). Hence, it is plausible that the variable capturing the years of collaboration between AC chair and CFO does not fully reproduce the findings of the main analysis.

Similar to Ghafran and Yasmin (2018), I subtract the minimum value of the audit report lag (30 days) from each audit report lag observation to emphasize audit reports that are relatively late. Doing so yields an insignificant coefficient for tenure (-0.0131, $p = 0.102$), underlining

²⁵ For example, if the AC chair was appointed in 2011 and the CFO in 2013, the variable equals 5 for the year 2018.

that my findings for the association between AC chair tenure and the audit report lag (ARL) are not robust.

Impact of controlling for AC chair age

Most empirical studies that examine the effects of director tenure do not consider director age (e.g. Rickling 2014; Sharma & Iselin 2012; Vafeas 2003), possibly because of the strong correlation with tenure. However, age generally serves as a proxy for experience and thus could potentially affect the results from the main analysis (Xu et al. 2018). Therefore, I rerun the regression from the main analysis using AC chair age as an additional control variable. My results for the accruals measures continue to hold (0.0009, $p = 0.062$ for RQJ; 0.0009, $p = 0.043$ for RQMJ; 0.0012, $p = 0.043$ for RQPM). However, the negative association of tenure and ARL becomes insignificant (-0.0043, $p = 0.180$ for ARL).

Robustness to a correlated omitted variable bias

In addition, I calculate the impact threshold for a confounding variable (ITCV) following Frank (2000) to investigate the impact of a correlated omitted variable. The ITCV is the product of the correlations between the confounding variable and the dependent variable and the confounding variable and the independent variable, which just makes the coefficient of the independent variable statistically insignificant (Frank 2000). The approach yields ITCVs of 0.0202 (for RQJ as dependent variable), 0.0216 (for RQMJ as dependent variable), and 0.0313 (for RQPM as dependent variable).²⁶ Consequently, in the case of RQJ, a confounding variable would have to be correlated at ± 0.142 ($=\sqrt{0.0202}$) with RQJ and AC chair tenure to make the coefficient of AC chair tenure insignificant. For all of my control variables, the product of the partial correlations does not reach this threshold. Above that, for RQJ, the threshold of 0.0202 implies that 22.88% (221) of the observations would have to be replaced with cases for which there is an effect of 0 to invalidate the association of tenure and RQJ. Thus, concerning the results for the accruals measures, a potential bias caused by correlated omitted variables is very unlikely. However, for ARL, the coefficient of AC chair tenure is only marginally significant (as reported in Table 3.7; -0.0055, $p = 0.092$). Thus, the ITCV for the association between AC chair tenure and ARL is just 0.0085. Some of my control variables exceed this threshold, which means that the association is not robust to a potential bias caused by a correlated omitted variable.

²⁶ As tenure is not significantly associated with ARL, calculating an ITCV does not yield a meaningful result.

3.6.2 Alternative dependent variables

To provide further evidence on the relevance of tenure for the AC chair's monitoring effectiveness, I examine accounting irregularities. Among the factors that determine such irregularities are weak governance structures and earnings management incentives (Beneish 1999; Dechow et al. 1996). Accounting irregularities suggest a breakdown of the internal governance mechanisms and clearly acknowledge that the accounts were incorrect. Thus, research views them as an objective measure of reporting quality (Sharma & Iselin 2012). Therefore, I collect the error findings of the German financial reporting enforcement panel, which are comparable to the SEC accounting and auditing enforcement releases, for my sample (Ecker et al. 2013; Hitz et al. 2012). The FREP examines financial statements of German publicly listed companies on a risk-based selection that is combined with stratified sampling (FREP 2018).²⁷ If the FREP finds an error in a firm's financial statements, an error announcement must be published by the respective firm. In my sample, 16 firms had to publish such an error notification in a specific year. As shown in Table 3.9, a probit model using the same specification as the accruals models yields a negative and statistically significant association between AC chair tenure and the likelihood of error identification by the FREP (-0.0454, $p = 0.014$). Hence, this result suggests that longer-tenured AC chairs are more effective in preventing accounting irregularities.

In line with Carey and Simnett (2006), I also calculate earnings benchmark tests that measure the likelihood of reporting small profits. These benchmark tests represent a different way to capture earnings management. The earnings benchmark variable (EB1) is equal to 1 if a company's earnings deflated by total assets is between 0% and 2% and 0 otherwise. Of the total of 964 firms in my sample, 117 report small earnings according to the approach by Carey and Simnett (2006).

²⁷ The FREP examines 100% of the financial statements of publicly listed firms when there is a concrete indication of an error (Group 1). Based on abstract risks, which include but are not limited to IPO, unusual transactions, a firm's economic position, etc., the FREP assigns firms to the risk group of which 40% are randomly selected each year (Group 2). A stratified sampling approach is applied to the third group of firms, which consists of all publicly listed firms that have not been selected in the risk-based selection procedure. Firms included in the major stock indices (DAX, MDAX, etc.) are subject to an examination within a 4 to 5-year cycle. All other firms are examined within an 8 to 10-year cycle. All remaining firms are assigned to the fourth group. A random sample of 10 firms is selected from the fourth group each year.

Table 3.9 The association of AC chair tenure, the likelihood of FREP error identification, and the likelihood of reporting small profits.

Variables	FREP		EB1		EB2		EB3		EB4	
	β	p-value	β	p-value	β	p-value	β	p-value	β	p-value
Constant	-1.402*	0.078	-1.7042**	0.011	-1.6309**	0.012	-1.8663	<0.001	-1.6383	<0.001
Tenure	-0.0454**	0.014	0.0088	0.490	0.0168	0.208	0.0215**	0.024	0.0256***	0.004
PublicAcc	0.0331	0.910	-0.3390	0.118	-0.2439	0.307	0.2198	0.216	0.2878	0.119
CorporateAcc	-0.5541*	0.051	-0.0597	0.687	-0.1831	0.215	0.0774	0.493	0.1473	0.177
AddDirectshipsChair	-0.0095	0.891	0.0575	0.146	0.0250	0.547	-0.0076	0.819	-0.0046	0.889
AddDirectshipsRest	-0.1623	0.176	-0.0574	0.453	-0.0045	0.956	0.0167	0.778	-0.0086	0.879
%OtherExperts	0.0719	0.839	0.5451*	0.059	0.5735**	0.029	0.0787	0.723	0.0586	0.799
ACSize	-0.1138	0.201	0.0141	0.825	0.0506	0.380	0.0885*	0.090	0.0456	0.378
ACMeetings	-0.0293	0.622	-0.0090	0.837	0.0550	0.173	-0.0467	0.201	-0.0862**	0.015
FirmSize	0.0260	0.721	0.0051	0.900	-0.0061	0.889	0.0762**	0.028	0.1019***	0.003
Losst-1	-0.1154	0.701	0.3461**	0.051	0.0911	0.571	-0.7241***	<0.001	-0.5785***	0.001
CashFlow	-2.1600**	0.035	-0.0722	0.921	0.0734	0.929	1.7924***	0.006	1.9417***	<0.001
Leverage	-0.5857	0.300	1.2331***	0.009	1.8003***	0.002	0.9371**	0.013	0.5240	0.159
SalesGrowth	0.6409	0.237	-0.5496	0.156	-0.0621	0.850	0.6799**	0.015	0.7682**	0.010
PPEGrowth	0.2872	0.316	0.0856	0.689	-0.3692	0.180	0.0653	0.734	0.0545	0.777
Big4	0.7638**	0.022	0.0922	0.678	0.2043	0.326	-0.2265	0.182	-0.1383	0.398
Switch ¹			-0.1056	0.680	-0.2028	0.377	-0.0605	0.769	-0.0340	0.860
P/B	-0.0639	0.264	-0.1777***	0.008	-0.2532***	<0.001	-0.0299	0.272	0.0123	0.644
Issuance	-0.3590	0.259	-0.4312*	0.089	-0.4129	0.105	0.1917	0.286	0.2326	0.191
Year Dummies	Yes		Yes		Yes		Yes		Yes	
Industry Dummies ¹	No		Yes		Yes		Yes		Yes	
N	964		964		964		964		964	
Pseudo R ²	0.1547		0.1263		0.1625		0.1278		0.1295	

Note: *p<0.10; **p<0.05; ***p<0.01. ¹Switch and some Industry Dummies predict FREP error identification perfectly and are dropped from the regression. The results continue to hold when the observations that perfectly predict error identification are not used in the probit-model.

Employing a probit-model using the same specification as the accrual models from the main analysis with EB1 as the dependent variable yields a positive but non-significant effect of AC chair tenure on the likelihood of reporting small profits as shown in Table 3.9 (0.0088, $p = 0.490$ for EB1). However, Carey and Simnett (2006) also use a threshold of 3% to identify firms reporting small profits in their sensitivity analysis (EB2) and employ a second benchmark that captures firms that just beat last year's profit. For the second benchmark, the dependent variable is equal to 1 when a firm's profit exceeds last year's profit by 0% to 2% of total assets (EB3; EB4 captures the 0% to 3% range). I also find a positive but non-significant association between AC chair tenure and firms that report small profits between 0% and 3% of total assets (0.0168; $p = 0.208$ for EB2). However, for the second benchmark that captures firms just beating last year's earnings, I find significant results for the range of 0% to 2% (0.0215, $p = 0.024$ for EB3) and also for the range 0% to 3% (0.0256; $p = 0.004$ for EB4).²⁸ Consequently, these results provide some additional evidence that longer-tenured AC chairs are associated with increased earnings management which leads to firms just beating earnings benchmarks.

3.7 Discussion

In summary, I find significant evidence for a positive association between AC chair tenure and abnormal accruals, which is supported by a positive association between AC chair tenure and the likelihood of beating earnings benchmarks. However, I also find marginal evidence that longer-tenured AC chairs facilitate timelier financial reporting and strong evidence for a significant negative association between AC chair tenure and the likelihood of accounting irregularities.

While from a reporting quality perspective, these findings seem heterogeneous at first, they might be attributable to social bonding. Some studies show that particular accruals are influenced by personal connections between members of the audit committee and management (Badolato et al. 2014; Bruynseels & Cardinaels 2014; Wilbanks et al. 2017). According to social identity theory, social bonding increases organizational identification and lowers the propensity to question the behavior of others. Consequently, increased tenure might impair the independence of the AC chair, especially within the relationship with management and

²⁸ I also collect I/B/E/S earnings forecasts for my sample and generate dummy variables capturing firms that just beat their earnings forecasts (actual earnings per share are 0% to 2% or 0% to 3% higher than the mean earnings forecast for the respective fiscal year). I find a positive but non-significant coefficient of tenure for the 0% to 2% range (0.0251, $p = 0.109$) and a positive and significant association for the 0% to 3% range (0.0360, $p = 0.004$).

particularly with the CFO, resulting in higher levels of earnings management. In this sense, Ernstberger et al. (2019) report from their extensive interview survey of German AC chairs that AC chairs generally do not expect the external auditor to actively restrict earnings management. Instead, according to Ernstberger et al. (2019), AC chairs instruct the auditor to provide a profound assessment of the legally permitted and potential range of earnings management, the actual level of earnings management realized by the management, and a comparison with peers. Thus, it is solely up to the AC chair to consider the extent to which this information is used and to constrain earnings management. Thus, social bonding might undermine AC chairs' independence preventing them from effectively using their position and information to constrain earnings management. In the robustness analysis, I find some support for the impairing role of social bonding between AC chairs and CFOs concerning earnings management. Still, as the robustness analysis also shows, social bonding between AC chairs and CFOs only partially explains the positive association between AC chair tenure and earnings management found in this study. Bruynseels and Cardinaels (2014) underline that also social ties between AC members and CEOs can undermine the AC's independence, leading to more earnings management. Thus, it is plausible that not only social bonding with the CFO explains my results, but that social bonding with management in general poses a threat for AC chairs' independence. Another aspect that potentially fosters longer-tenured AC chairs allowance of higher levels of earnings management is organizational commitment. With higher tenure and more social ties, the strength of identification with and pride towards an organization increases (Buchanan 1974). Therefore, longer-tenured AC chairs might also allow higher levels of earnings management because they feel a stronger identification with the respective company and its goals.

In contrast, the negative association of AC chair tenure and the audit report lag, also reported by Ghafran and Yasmin (2018), suggests that AC chairs are more effective in influencing the reporting process with more firm-specific knowledge (see also Chan et al. 2013). For example, firm-specific knowledge might help the AC chair to support the auditor in identifying high-risk audit areas, shortening the planning of the audit. This finding is supported by the negative association between AC chair tenure and the likelihood of accounting irregularities found in this study. However, managements and especially CFOs naturally also favor a faster audit process resulting in timelier financial reporting and the avoidance of accounting irregularities because the timely provision of accounting information reduces information asymmetries and an accounting irregularity causes additional costs and reputational damages (Hitz et al. 2012; Lee et al. 2009). Consequently, AC chairs' social bonding with management in general and

particularly with CFOs does not negatively affect the timeliness of financial reporting and the likelihood of error identification. Instead, it is also possible that social bonding has beneficial effects on the timeliness of financial reporting and the likelihood of error identification, as the cooperation between the AC chair and management is more collegial and potentially more efficient. Hence, longer-tenured AC chairs might be able to exploit their firm-specific knowledge unrestrictedly and take advantage of their collegial relationship with management to effectively reduce the likelihood of accounting irregularities and to support the external auditor during the audit process resulting in timelier financial reporting.

In summary, these results highlight the complexity of the role of AC chairs in monitoring reporting quality. However, in the case of AC chairs, these results also show that a strict upper limit for tenure does not seem suitable in capturing the complexity of the role of AC chairs since there are both positive and negative effects on reporting quality related to longer-tenured AC chairs. Consequently, regulators should be more concerned about how organizational commitment and social bonding affect the AC chairs' monitoring ability.

Regarding the professional background of AC chairs, this study also delivers novel results. While AC chairs with a recent background in corporate accounting are associated with higher levels of abnormal accruals, they are also associated with timelier financial reporting. However, Abernathy et al. (2014) argue that AC chairs with a background in public accounting possess greater accounting competency, as compared to AC chairs with a background in corporate accounting, because of their homogeneous experience focused on accounting- and auditing-related issues. In contrast, they claim that accounting functions are only a minor part of a CFO's duties as their role increasingly focuses on strategical planning and managing associations with the capital market. Accordingly, Abernathy et al. (2014) predict and find that AC chairs with a background in public accounting, as compared to AC chairs with a background in corporate accounting, are associated with timelier financial reporting. In this context, it also seems plausible that AC chairs with a background in corporate accounting are less effective in constraining earnings management due to their inferior accounting knowledge.²⁹ Another explanation is that AC chairs with a background in corporate accounting are more likely to build a social bond with the CFO because they share similar experiences. However, concerning the audit report lag, I find that AC chairs with a background in corporate accounting foster timelier financial reporting, which is in contrast to Abernathy et al. (2014). But again, it is also

²⁹ Still, in some regressions also AC chairs with a background in public accounting are positively and significantly associated with abnormal accruals. This implies that AC chairs with other backgrounds, such as banking, CEO, or academic are most efficient in constraining earnings management.

possible that the social bonding between the CFO and the AC chair with a background in corporate accounting has beneficial effects on the timeliness of financial reporting, as the cooperation between them is more collegial and potentially more efficient. However, this result might also be caused by AC chair-firm selection. AC chairs with a background in corporate accounting serve on the board of larger firms compared to the remaining sample of AC chairs and larger firms are significantly associated with timelier financial reporting.³⁰ Also, there is a difference between Abernathy et al. (2014) and my study concerning the way AC chairs' professional backgrounds are defined. I use each AC chair's most recent professional background to ensure that tenure does not capture effects that arise from the different backgrounds of AC chairs, as these backgrounds are connected to significant differences with regard to tenure (cf. Table 3.2). In contrast, Abernathy et al. (2014) focus on AC chair's total experience when categorizing their AC chair sample. Therefore, they do not solely focus on AC chairs' most recent position and AC chairs can be categorized as having both public accounting and corporate accounting experience.

3.8 Conclusion

The debate about tenure capturing the tradeoff between board independence and board knowledge has been prominent in previous research. In Germany, the introduction of an upper limit of 12 years in the recently published new version of the German corporate governance codex has refueled this debate. As the AC chair plays a crucial role in ensuring effective monitoring of the financial reporting and audit process, this study investigates the effect of AC chair tenure on reporting quality.

Using a sample of 964 firm-year observations for German companies included in the Prime Standard at the Frankfurt Stock exchange, I find evidence for a positive association between AC chair tenure and higher levels of earnings management, indicating that the continuous association with management compromises AC chair's oversight effectiveness. However, in line with Ghafran and Yasmin (2018), I also find marginally significant evidence that longer-tenured AC chairs are associated with timelier financial reporting. Additionally, I find that AC chair tenure is also negatively associated with the likelihood of accounting irregularities. I confirm these results using various robustness tests. I draw upon social bonding to discuss these

³⁰ The variable natural logarithm of total assets (Firmsize) is 14.64 for AC chairs with a background in corporate accounting and 14.24 for the remaining sample of AC chairs. The difference is significant ($p = 0.004$; two-tailed t-test).

findings, which at first seem heterogeneous from a reporting quality perspective, and argue that the positive association of AC chair tenure and earnings management is driven by social bonding between the AC chair and management and increased organizational commitment. However, as timelier financial reporting and the avoidance of accounting irregularities is also in the best interest of the management, social bonding does not negatively affect or constrain AC chairs' influence on the audit process. Thus, longer-tenured AC chairs might be able to exploit their firm-specific knowledge unrestrictedly and take advantage of their collegial relationship with management to effectively reduce the likelihood of accounting irregularities and to support the external auditor during the audit process resulting in timelier financial reporting.

By adding insights about the effect of AC chair tenure on various reporting quality measures, this paper contributes to the literature on reporting quality and the monitoring effectiveness of AC chairs. As my sample covers a wide range of German-listed firms, the findings of this study are applicable to AC chairs of large and small publicly listed firms. This study also offers relevant implications for regulators and researchers. It underlines that social bonding and organizational commitment potentially impair the monitoring effectiveness of the AC. While my results also indicate that longer-tenured AC chairs foster timelier financial reporting and reduce the likelihood of accounting irregularities, this comes at the price of higher earnings management. Consequently, my findings highlight the complexity of the role of AC chairs but neither fully support nor oppose an upper limit of board tenure in the context of AC chairs. Still, my study underlines that social bonding and organizational commitment might be an issue that regulators should be concerned about.

My study is not without limitations. First, although I conduct several additional analyses, I cannot entirely rule out endogeneity concerns. Second, I manually collected the data for this study and relied on publically available data, especially concerning the CVs of the AC members in annual reports and on the internet. Thus, I cannot guarantee that the public data and CVs are complete and correct. Additionally, as the trilateral relationship between the auditor, AC, and CFO is not publicly observable, it is not fully unveiled through which particular channels ACs affect the financial reporting process and the external audit. Thus, I encourage more qualitative research on this topic. Above that, I encourage replication from other geographic settings and corporate governance systems to further validate my findings.

Chapter 4

The impact of executives' gender, financial incentives, and shareholder pressure on corporate social and ecological investments

4.1 Introduction

Just recently, 181 members of the Business Roundtable, a nonprofit association whose members are chief executive officers of major U.S. companies, signed a “Statement on the Purpose of a Corporation”, which represents a shift from a strong shareholder orientation to a more modern stakeholder capitalism (Business Roundtable 2019; Gartenberg & Serafeim 2019). Two of the five pillars described in the statement are a commitment to socially-oriented and sustainable business practices. The statement follows on peaked public concern about climate change and its effects on society and increased pressure of shareholders and governments demanding firms to be socially responsible and to lower their ecological footprint (Basu & Palazzo 2008; Lin-Hi & Müller 2013; Luo et al.2017; Henderson 2018).

While management is generally responsible for the implementation of a firm’s CSR activities (Petrenko et al. 2016), the board also has a fundamental role in serving as a link to the external environment by representing a broad range of stakeholders and considering CSR issues in a firm’s strategic agenda (Hillman et al. 2000; Wang & Dewhirst 1992). In this context, a substantial body of archival research suggests that female board members and female managers are more willing to encourage firms’ stakeholder orientation and CSR performance than their male counterparts (Francoeur et al. 2019; Francoeur et al.2008; Glass & Cook 2018; Glass et al. 2016; Hafsi & Turgut 2013; Harjoto et al. 2015).³¹ However, CSR research has not yet delivered conclusive evidence for a causal inference between female board and management representation and CSR performance (Smith 2018). Also, there is a lack of insights into which character traits and factors influence executives’ CSR decision-making and why archival research finds differences between female and male executives (Wang et al. 2016). While some studies suggest that executives’ incentive programs and the level of shareholder pressure are relevant determinants of firms’ CSR activities (e.g. Beddewela & Fairbrass 2016; Dam & Scholtens 2013; Flammer et al. 2019), their effect on executives’ individual CSR decision-making has not yet been examined by empirical studies.

Thus, we create an experimental investing scenario in which we observe executives’ CSR decision-making on short-term profit maximization versus improvement of social/ecological standards under a restrained budget. We naturally measure participants’ gender, record

³¹ Archival research either analyzes the association between female members of the board of directors or female members of the top management team and CSR performance. We employ the term “executives” because we generally examine gender-specific effects on CSR investment decisions and address both directors and managers as both the board of directors and top management are involved in a firm’s CSR activities. Therefore, our results and implications apply to executives in general, which includes managers and directors.

participants' real-world incentive structure, and manipulate shareholder pressure. Additionally, we capture participants' risk propensity, attitude towards sustainability, and empathy as these character traits are used as an explanation in many archival studies that find positive effects of female executives' on CSR performance. Our resulting experimental design enables us to examine gender differences in CSR decision-making while observing the role of incentives, shareholder pressure, and relevant character traits.

We draw upon psychological concepts and, in line with the large body of archival research, predict that female executives are generally more willing to sacrifice short-term financial return to improve social/ecological standards when making investment decisions than male executives (Hypothesis 1a). We find weak statistical evidence that this relationship holds. We complement our analyses with a structural equation model (SEM) explicitly considering individual character traits (risk propensity, attitude towards sustainability, and empathy) as potential mediators, which allows a more nuanced analysis (Hypotheses 1b1–1b3). We find a strong effect of gender on the considered character traits but no statistically significant effect of these character traits on CSR decision-making. Furthermore, as we capture participants' real-world incentive programs, we are able to analyze how this affects their CSR decision-making in our experiment. We find strong statistical evidence that, as the relevance of achieving financial goals in participants' real-world incentive program increases, participants focus more on short-term profit maximization in our experimental setting (Hypothesis 2). Therefore, we conclude that a certain type of behavior, which is promoted through participants' real-world incentive program, also transfers to the decisions made by participants in our experiment.

Additionally, since there is an ongoing debate in the empirical research about whether a firm's financial performance determines its CSR efforts (Arora & Dharwadkar 2011; Flammer & Ioannou 2021; Nelling & Webb 2009), we manipulate shareholder pressure (high vs. low) through shareholder satisfaction and the relative financial performance of our hypothetical firm in our experiment and observe if this affects executives' CSR decision-making (Hypothesis 3). We find that our manipulation does not affect executives' CSR decision-making. Finally, in additional exploratory analysis, we find that risk propensity in connection with our shareholder pressure manipulation affects executives' CSR decision-making (Research Question 1).

Our study makes important contributions to the CSR literature and the literature on executives' decision-making by advancing our understanding of gender effects in managerial decision-making in the CSR context. With our experimental analysis, we can generally confirm a positive impact of female executives on firms' CSR performance. Although we find that the character

traits, which are used extensively in archival studies to explain the positive effects of female executives on firms' CSR performances, are gender-dependent, we do not find any effects of these character traits on executives' CSR investment decisions. Our analyses provide further interesting insights that might help to explain inconclusive findings of prior archival studies. As we find that executives' real-world incentive program plays a key role in explaining executives' CSR decision-making, we contribute to a growing stream of literature on CSR decision-making (Wang et al. 2016) by outlining that it is essential to control for executives' incentive programs to derive valid inferences. Additionally, our study is of practical importance. By emphasizing the positive impact of female executives on firms' CSR performance, our study also offers implications for policymakers and for firms themselves, which will continue to face public and investor pressure to expand their social and ecological activities and, therefore, must adapt their corporate decision-making to address all stakeholder concerns. The results of our study imply that firms that intend to transform their business to adapt to the increased challenges of sustainability and social compliance need to make sure that their incentive programs sufficiently emphasize the achievement of sustainability goals.

Our paper proceeds as follows. In Section 2, we discuss related research and develop our hypotheses. Section 3 describes our methodology, while Section 4 discusses our results. Section 5 concludes our paper.

4.2 Related research and hypotheses development

Over the past two decades, there has been a vivid debate about women's representation in top executive teams and its effect on a firm's decision-making (Dezsö & Ross 2012; Terjesen et al. 2009). Research has examined the impact of female executives on corporate decisions, such as financing, investment, reporting, and mergers and acquisitions (e.g., Francis et al. 2015; Huang & Kisgen 2013; Ibrahim et al. 2009; Levi et al. 2008; Mohan & Chen 2004). Evidence shows that decisions made by female executives can differ from those made by male executives.

Due to high levels of investor, public, and media attention, a firm's decision regarding its involvement in socially and environmentally responsible business practices is currently one of the most critical it must make and introduces new challenges to its leadership (Haney et al. 2020). Studies find that addressing social issues and the improvement of corporate social performance entails positive investor reactions and is perceived as a competitive advantage (Cordeiro & Tewari 2015; Flammer 2018; Kunz 2020; McWilliams et al. 2006). As CSR is therefore a highly relevant topic for almost all firms, research has also examined the role of

gender diversity on CSR performance. Archival research linking female board and/or top management representation and CSR performance generally finds a positive association (e.g. Francoeur et al. 2019; Francoeur et al. 2008; Glass & Cook 2018; Glass et al. 2016; Hafsi & Turgut 2013; Harjoto et al. 2015).

However, archival studies on the relationship between female board and management representation and CSR are subject to some methodological challenges. Kato and Kodama (2018) find a delayed but positive effect of firms' CSR performance on workplace gender diversity, which indicates a possible reverse causality in the connection between gender diversity and CSR. It seems plausible that firms with a strong CSR performance also focus more on their public reputation and thus foster a higher female representation on management and oversight board (Brieger et al. 2019). Also, both the trend for more women in executive positions and the increased awareness of firms' social and ecological responsibility arose simultaneously. Therefore, archival studies might also just capture this simultaneous and continuous increase of female executives and CSR awareness. Consequently, archival CSR research has not yet delivered conclusive evidence for a causal inference between female board and management representation and CSR performance (Smith 2018). Above that, research has not yet empirically examined which specific character traits are responsible for the gender differences when it comes to CSR decision-making.

Prior studies show that executives' personal characteristics and beliefs affect their decision-making, also with respect to CSR activities (e.g. Agle et al. 1999; Chin et al. 2013; Hoffmann & Meusburger 2018; Wally & Baum 1994). Research focusing on gender differences often draws on the work of Eagly (1987) and Eagly and Wood (1991) to explain differences between men and women and their respective roles in a corporate environment. According to their social role theory, women, through their role induced by society, develop more communal qualities (they are generous, social-oriented, concerned with others, etc.). This means that they are more socially skilled, emotionally sensitive, value personal relationships more, and are more oriented to others' welfare. In contrast, men display more agentic qualities (they are ambitious, self-directed, aimed at personal development, etc.) and focus on their own rewards, as they are assigned to social roles that demand these character traits. Consequently, through this societal selection, women's and men's social behaviors differ.

Also, Gilligan (1977, 1982) argues that based on their early childhood experiences, women and men utilize different procedures for making moral decisions and that women have a higher care orientation, which is characterized by a focus on long-term relations and responsiveness to the

needs of others. However, empirical evidence of the differences between women and men regarding moral reasoning is ambiguous. Jaffee and Hyde (2000) find only sparse evidence in their meta-analysis that men and women differ in terms of care reasoning or justice reasoning, a finding supported by Forte (2004). In contrast, there is empirical evidence that women have a more long-term orientation (Fetchenhauer & Rohde 2002), which is supported by Embrey and Fox (1997) and Stewart (2018) in an investment context, and a higher social orientation (Croson & Buchan 1999).

Hence, as executives' personal characteristics and beliefs affect their decision-making, it may not be mere gender affiliation that explains gender differences in CSR decision making, but rather specific character traits. Inter alia, Glass and Cook (2018) use risk aversion to explain gender differences in business practices related to CSR. There is a large body of prior research that finds women to be more risk-averse than men (e.g. Croson & Gneezy 2009; Eckel and Grossman 2002), which also holds for financial decision-making and for C-level executives (Faccio et al. 2016; Huang & Kisgen 2013; Powell & Ansic 1997). In contrast, Adams and Funk (2012) document that female directors are more risk-loving than their male counterparts and highlight that this finding differs from studies of the general population. We analyze executives' decision-making in an investment context. Therefore, we identify risk propensity as one of our gender-dependent character traits possibly affecting executives' decision-making in terms of CSR. More specifically, related insights from prior research would imply that individuals with lower (higher) risk propensity are more (less) willing to invest in CSR. This is because CSR may function as reputation insurance against management lapses (e.g., Werther & Chandler 2005; Minor & Morgan 2011) and can lead to greater organizational resilience to systematic shocks (e.g., Sajko et al. 2021; Shiu & Yang 2017). However, explicit theory or empirical evidence regarding the association between risk propensity and executives' decision-making in terms of CSR is largely missing.

Archival research on female board and/or top management representation and CSR performance often draws on the works of Eagly (1987), Eagly and Wood (1991), and Gilligan (1977, 1982) to motivate gender differences in terms of CSR, highlighting that women are more long-term and socially orientated than men (see for example Boulouta 2013; Francis et al. 2015; Francoeur et al. 2019; Glass & Cook 2018). From this line of research, we derive empathy and the attitude towards sustainability as two possible mediators of a gender effect on CSR decision-making. Eagly and Wood (1991) and Gilligan (1977, 1982) describe that, based on their childhood experiences and social roles, women are more concerned with the welfare of others

and have a more long-term orientation than men (see also Croson & Gneezy 2009; Fetchenhauer & Rohde 2002). Investments in sustainability are generally considered long-term (Porter & Miles 2013), and the attitude towards sustainability explains executives' CSR decision-making (Adomako et al. 2021). As long-term orientation seems to be more prominent in women, the attitude towards sustainability might also be gender-dependent. Thus, we examine if the attitude towards sustainability affects executives' CSR decision-making. Additionally, CSR investments result in welfare for others (Dickson & Chang 2015). As empathy constitutes the concern for others' welfare and, according to the literature, seems to be gender-dependent, we also capture executives' empathy and examine the impact of empathy on executives' CSR decision-making.

Consequently, we expect that the three outlined character traits rather than mere gender affiliation influence executives' CSR decision-making. However, these character traits might only partially capture the effects of gender affiliation on CSR decision making, as there might be other character traits that are gender-dependent and related to CSR decision making. Hence, to begin with, we formulate the following baseline Hypothesis 1a (H1a), which is derived from the archival evidence of a positive association between gender and CSR performance, and reads as follows:

Hypothesis 1a. Female executives are more willing to sacrifice short-term financial return to improve social/ecological standards when making investment decisions than male executives.

Furthermore, as already argued, we expect that risk propensity, attitude towards sustainability, and empathy are gender-dependent and related to CSR decision-making because specific character traits rather than mere gender affiliation should affect executives' CSR decision-making. More specifically, based on the above-mentioned literature, we predict that female executives are more risk-averse, have a stronger attitude towards sustainability, and are more empathetic compared to male executives. We also expect that more empathy and a higher attitude towards sustainability lead to executives spending more on CSR. Yet, as we are not able to formulate a directed hypothesis for risk propensity based on the literature, we formally state our three Hypotheses 1b1-1b3 (H1b1-H1b3) for risk propensity, attitude towards sustainability, and empathy uniformly undirected, as follows:

Hypothesis 1b1. Risk propensity mediates the effect of gender on the investment decision to sacrifice short-term financial return to improve social/ecological standards.

Hypothesis 1b2. Attitude towards sustainability mediates the effect of gender on the investment decision to sacrifice short-term financial return to improve social/ecological standards.

Hypothesis 1b3. Empathy mediates the effect of gender on the investment decision to sacrifice short-term financial return to improve social/ecological standards.

Incentive programs play a pivotal role in today's business world (Antón et al. 2020). Bonner et al. (2000) underline the prevalent importance of incentives not only for management accounting in general but also for experimental research. Furthermore, incentives are widely used to direct management's efforts to comply with stakeholders' interests and the inclusion of CSR criteria in executives' compensation schemes has recently become more prevalent (Flammer et al. 2019). Research has found various effects of incentives on executives' decision-making, for example, with regard to innovation, performance, and earnings management (Bergstresser & Philippon 2006; Bonner et al. 2000; Makri et al. 2006). In a CSR context, Fabrizi et al. (2014) find that the split between monetary and non-monetary incentives of CEOs affects a firm's CSR efforts, while Boone et al. (2020), within their theoretical framework, explain that CEOs social values and the incentivizing context play an important role when explaining CSR decision-making. Hence, incentive programs should have a significant influence on executives' CSR decision-making. Specifically, we expect that programs with a stronger focus on financial goal achievement lead to executives focusing on short-term financial performance, while programs with a stronger focus on sustainable goal achievement encourage executives' CSR spending (Flammer et al. 2019). Furthermore, we argue that, due to spillover effects, executives' real-life incentive program affects their general CSR decision-making, which then also translates to our experiment (Huang & Murad 2020; Pierce et al. 2016). Applied to our experiment, this would mean that greater relevance of financial goals achievement in executives' incentive program leads executives' to focus more on short-term financial return when making the experimental CSR investment decisions. Consequently, we formally state the following Hypothesis 2 (H2):

Hypothesis 2. Greater relevance of financial goals achievement in executives' incentive program reduces executives' willingness to sacrifice short-term financial return to improve social/ecological standards when making investment decisions.

In recent years, public attention to firms' involvement in socially and environmentally responsible business practices has risen, while investors with a focus on socially and ecologically responsible investments have gained prominence and increased their activism (Boiral et al. Testa 2017; Michelon & Rodrigue 2015). Research shows that external pressure, such as shareholder concentration or regulatory and institutional pressure, can influence a firm's CSR activities (Beddewela & Fairbrass 2016; Bryant et al. 2020; Dam & Scholtens 2013). More specifically, studies suggest that firms tend to respond to shareholder activism on sustainability issues with an increase in sustainability performance (Grewal et al. 2016; Harvey & Pearson 2018); this association is, however, conditional on the shareholder activists' status and their reputation to threaten the firm (Perrault & Clark 2015).

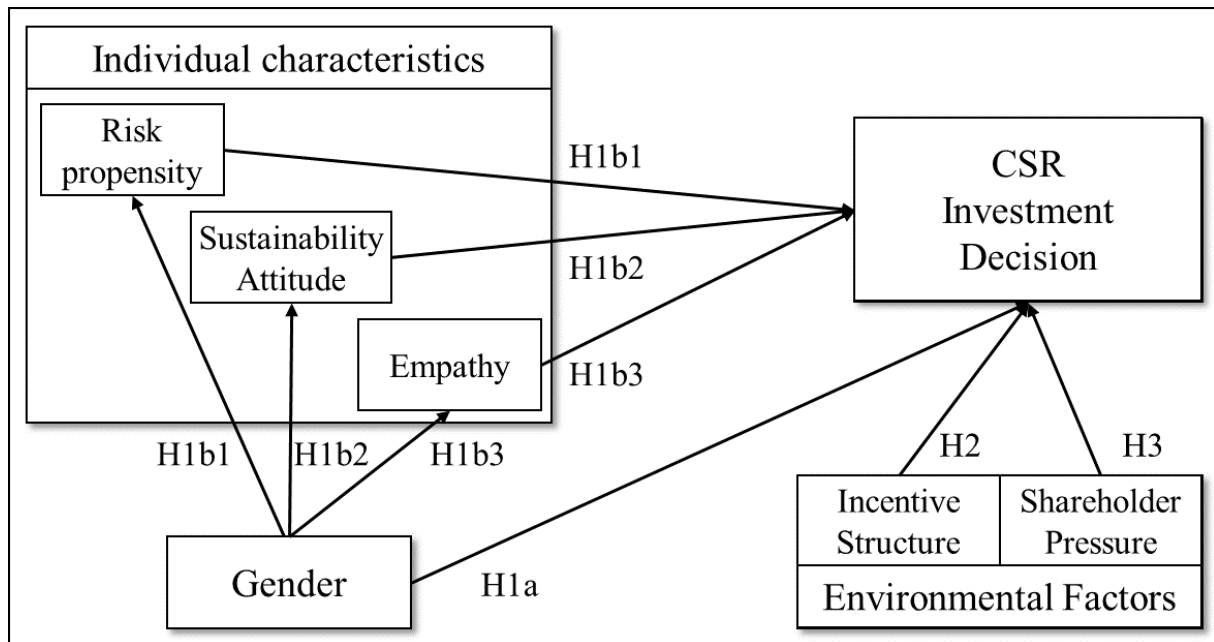
In our study, we want to investigate a different type of shareholder pressure where a firm's response in terms of executive CSR decision-making seems less intuitive: shareholder pressure that originates from a firm's financial performance. While it may seem reasonable to assume that a firm's financial performance has an influence on its ability and willingness to engage in (potentially costly) CSR, evidence in this regard is inconclusive. On the one hand side, Arora and Dharwadkar (2011) document that firms that exceed their aspired performance targets show increased CSR efforts. In this regard, Nelling and Webb (2009) find some evidence for a positive association between a firm's stock returns and specific aspects of CSR performance, such as employee relations. On the other hand side, Flammer and Ioannou (2021) report that firms that were adversely affected by the sharp increase in the cost of credit during the financial crisis maintained their CSR investments. Thus, they do not find an effect of decreased financial performance on CSR efforts.

In order to contribute to the debate about the effect of financial performance on CSR efforts, we manipulate shareholder pressure (high vs. low) through shareholder satisfaction and the relative financial performance of our hypothetical firm (see following sections for details). While we recognize the findings of Flammer and Ioannou (2021), we use the findings of Nelling and Webb (2009) and, in particular, Arora and Dharwadkar (2011) to posit a positive association between financial performance and CSR performance, leading to the following Hypothesis 3 (H3):

Hypothesis 3. Under high shareholder pressure, executives are less willing to sacrifice short-term financial return to improve social/ecological standards when making investment decisions.

Figure 4.1 illustratively summarizes our hypotheses.

Figure 4.1 Structure of hypotheses.



4.3 Method

4.3.1 Participants

We analyze the decision-making of executives in an experimental setting recruiting participants from a private survey company.³² Survey companies have been used to recruit high-level business managers in a number of prior studies (e.g. Arnold et al. 2012; Hannah et al. 2014; Johnson et al. 2020; see also Brandon et al. 2014 for a comparison of participant recruitment services) and Walter et al. (2019) find that results drawn from commercial online panel data are generally suitable for applied psychological research.

We specified to the survey company that we wanted to recruit experienced executives residing and working for companies in the United States (U.S.). To ensure that participants met our criteria, we implemented several screening questions in our survey. We asked participants whether they work for a for-profit organization and only participants that affirmed continued with the survey. Also, we asked participants in which industry they work. Participants who selected “Finance (Banks, Insurances, etc.)” automatically exited the survey. We also asked

³² The survey company is EMPanel Online (see <https://empanelonline.com/>) located in Flowery Branch, Georgia. The data from our survey is available upon request. Our experimental design meets the requirements for using human subjects in experiments at the university where the corresponding author is located and was approved.

participants in which domain they primarily work and accepted only participants with the following backgrounds: Governance, Strategy, Finance, Accounting, Operations/Production.³³ We also asked participants if they are a member of the board of directors, executive board, senior management, mid- or lower-level management of their organization. Without further screening, we only accepted participants that belong to either board of directors, executive board, or senior management. Participants that belong to mid- or lower-level management were additionally asked how frequently they are involved in significant investment decisions (e.g. about opening a new factory, production line, office, store or alike) and only passed this screening question if they answered “sometimes”, “often” or “very often”. Additionally, to ensure that participants who generally met our criteria paid attention to our survey questions, we included one attention check later in the experiment and asked participants to select the response option “strongly disagree” if they paid attention.³⁴ Participants who failed to answer the attention check correctly were also screened out, automatically exited the survey, and did not receive compensation. In total, 533 participants entered our survey and 123 passed all our screening questions.³⁵ Thus, our final sample consists of responses from 123 participants.³⁶ These participants were randomly assigned to one of our experimental conditions.

We paid \$25 per completed survey to the survey company, of which participants earned a fixed portion based on what they agreed on with the survey company. Based on their decisions during our experiment, participants could earn up to \$3.00 as markup. Table 4.1 summarizes relevant statistics about our participants and their backgrounds. While 4.07 percent of our participants have a doctoral degree and 8.94 percent have a professional degree, 34.96 percent have a master’s and 38.21 percent have a bachelor’s degree. Thus, 13.82 percent of our participants have less than a bachelor’s degree. Concerning education, there is no statistically significant difference between female and male participants. However, our female participants work less often for listed companies compared to our male participants. Consequently, our male participants work for employers with higher revenues and more employees compared to our female participants (untabulated). In addition, for our female participants, financial targets account for a higher portion of their incentive programs, while sustainability goals account for

³³ The other options were Marketing, Sales, Human Resources, Research and Development, and Other domain not mentioned. Participants who selected one of these domains automatically exited the survey.

³⁴ This attention check was predetermined by the private survey company.

³⁵ Participants who did not meet our screening criteria or did not pass the attention check automatically exited the survey. Thus, we only have fragmentary data about these participants.

³⁶ Of our participants, 46 are a member of the board of directors, 39 belong to an executive board, 57 belong to senior management, and 21 belong to mid- or lower management. Multiple choices were possible and some participants indicated that they belong to e.g. board of directors and executive board or senior management and board of directors.

a smaller portion of their incentive programs compared to our male participants. Also, our female participants have held their current professional roles longer than our male participants. However, there are no statistically significant differences between our low and high shareholder pressure conditions in terms of participants' gender, education, salary, and incentive program and in terms of employer characteristics such as revenue and number of employees (untabulated).

Table 4.1 and Figure 4.2 Panel A-C show relevant participant and firm characteristics. On average, our participants have been with their respective companies for approximately nine years and 76 percent of our participants earn an annual fixed salary above \$100,000. Additionally, 71 percent of our participants' employers generate more than \$11 million per year in revenues and have more than 100 employees. Therefore, we are confident that our participants' decisions can be generalized and represent executive decision-making adequately.

Table 4.1 Descriptive statistics for our sample of 123 participants.

N = 123 Participants	Females (N=43)				Males (N=80)				t-test
	Mean	StD	Min	Max	Mean	StD	Min	Max	p-value
CSR Investment	18.65	7.00	0	30	19.04	4.61	0	30	0.714
Duration (Seconds) ^a	755.71	386.15	261	2022	683.53	392.03	194	2824	0.351
Age (Years)	43.37	13.18	23	79	40.68	7.73	23	66	0.155
Tenure (Years)	10.09	9.60	1	43	8.48	5.15	1	28	0.233
Listed (%)	0.44	0.50	0	1	0.73	0.45	0	1	0.002***
Financial Goals (%)	46.35	27.95	0	100	36.15	18.15	0	100	0.016**
Sustainab. Goals (%)	18.16	16.99	0	75	26.56	15.53	0	100	0.007***
Pers. Dev. Goals (%)	25.56	20.58	0	90	24.3	12.70	0	70	0.676
Tenure in current Role ^b	9.16	10.18	1	45	5.70	4.31	1	28	0.011**
Risk propensity ^c	2.58	0.78	1.25	5	3.50	0.90	1.5	5	<0.001***
Sustainability attitude ^c	3.35	0.57	1.97	4.53	3.04	0.34	2.53	4.09	<0.001***
Empathy ^c	3.64	0.52	1.93	4.86	3.46	0.36	2.57	4.71	0.021**

Note: * $p < .10$; ** $p < .05$; *** $p < .01$, p-values are based on a two-tailed test.

Tenure captures how many years' participants have been with their current company. Listed indicates what percentage of participants' employers are public companies. The variable Financial Goals shows what percentage of participants' real-life yearly salary is attributable to achieving financial goals, while the variable Sustainability Goals shows the corresponding percentage that is attributable to achieving sustainability goals and the variable Personal Development Goals shows the respective percentage attributable to participants' personal development goals.

^a Our survey tool has recorded five female- and one male participant with a duration of -1 seconds. We excluded these observations from the duration statistics.

^b Four male participants did not answer our question about their tenure in their current professional role, leaving us with 43 responses of female participants and 76 responses of male participants.

^c Risk propensity, sustainability attitude, and empathy are based on the risk-taking propensity subscale of the domain-specific risk-taking (DOSPERT) scale (Markiewicz & Weber 2013), the Environmental Attitudes Scale (EAS) (Ebenbach et al. 1998), and the empathy subscales developed by Davis (1980) respectively. These instruments use Likert-scales with different ranges. Thus, we linearly transformed each scale to the range of 1 to 5, with 1 indicating low-risk propensity, sustainability attitude, and empathy and 5 indicating high-risk propensity, sustainability attitude, and empathy.

Figure 4.2 Participant statistics. Panel A displays the annual revenues of participants' employers. Panel B shows the number of employees for participants' employers and Panel C presents participants' annual fixed salary.



Note:
[†]One participant decided not to answer this question.
[‡]Fifteen participants answered that they only receive a variable compensation and thus, were not asked to indicated the range of their annual fixed salary.

4.3.2 Design and procedure

Participants assume the role of an executive belonging to the management board of fictitious Firm Y. Participants view the background information and financial information of Firm Y, which is a hypothetical global manufacturer based in the United States. The financial information is adapted from a real-world example and comprises income statements for the years 2018 and 2019. Our experiment observes participants' allocation of money to three attributes of an investment – markup in short-term-profit/upcoming year dividend per share, improvement in ecological standards and/or improvement in social standards. We test our hypotheses using an experimental design. We manipulate shareholder pressure by varying Firm Y's relative financial performance to its peers as well as resulting shareholder satisfaction with Firm Y's performance (high vs. low shareholder pressure; similar to Espahbodi et al. 2019). In the low shareholder pressure condition, Firm Y's sales and earnings increase by 10 percent from 2018 to 2019, while those of industry peers only grow by 2 percent on average, and shareholders are satisfied with Firm Y's performance. In the high shareholder pressure condition, Firm Y's sales and earnings decrease by 10 percent from 2018 to 2019, while those of industry peers only experience an average decrease of 2 percent, and Firm Y's shareholders are unsatisfied with Firm Y's performance. Nevertheless, in both conditions, Firm Y is profitable and generates over \$4 billion in revenues, with a return on sales of approximately 4.7 percent.³⁷

Our study begins by asking participants to assume the role of an executive on Firm Y's management board. Next, participants view background information on Firm Y and either the low or high shareholder pressure income statement. Information is adapted from a real manufacturing firm and comprises a comparative income statement for the years 2018 and 2019. Additionally, participants learn that they, in their role as executives, are personally invested in Firm Y and participate in its dividend payout. We then explain that the variable compensation of participants depends on the upcoming dividend per share of Firm Y. Subsequently, participants learn that Firm Y plans to invest \$100 million in a new production facility to increase growth and profitability. We also explain that if Firm Y chooses to maximize profits and the upcoming dividend per share, participants will earn \$3 as variable pay (10x their allocation to dividend per share), but social and ecological standards at the new production

³⁷ In the base year of 2017, Firm Y generates \$4,494 million in annual revenues and \$211 million in profits. In our low shareholder pressure condition, Firm Y generates \$4,943 million in revenues and earns \$231 million in profits in 2018, while in our high shareholder pressure condition, Firm Y generates \$4,045 million in revenues and earns \$190 million in 2018.

facility will then not exceed minimum legal requirements. However, Firm Y can also improve social (e.g., working conditions and the benefit to the local community) and/or ecological standards (e.g., greenhouse gas emissions and waste reduction), which will reduce the markup in the upcoming dividend per share. Next, we explain that the management board of Firm Y leaves it up to the participant acting as a member of management to decide if Firm Y focuses on maximizing the upcoming dividend per share or improves social and/or ecological standards at the new production facility. Using sliders, participants allocate 30 cents of the earnings per share to the three attributes of the project. To not only incentivize participants with their personal compensation, which is linked to the upcoming dividend per share of Firm Y, we also explain to them that we donate money allocated to improving ecological and social standards to respective U.S. charities after our experiment is finished.³⁸ After deciding on the allocation of money to the specific features of the project, participants answer post-experimental questions. To measure participants' risk propensity, we employ the 8-item gambling and investing risk-taking propensity subscale of the domain-specific risk-taking (DOSPERT) scale (Markiewicz & Weber 2013; Weber et al. 2002), which captures the specific risk propensity of individuals in the investment decision-making domain. The DOSPERT scale is a proven and reliable scale used for measuring risk propensity in specific domains (Breuer et al. 2016; Wu and Cheung 2014) and Highhouse et al. (2017) highlight the scale's usefulness for predicting real-world outcomes. A Cronbach's alpha of .643 indicates acceptable internal validity. We use the 17-item Environmental Attitudes Scale (EAS) (Ebenbach et al. 1998; Kortenkamp & Moore 2001) to measure participants' attitude towards sustainability. A Cronbach's alpha of .873 indicates strong internal validity. In addition, the EAS has a high correlation with other environmental attitude scales (e.g. Dunlap & Van Liere 1978). Therefore, we are convinced that we adequately capture participants' attitude towards sustainability. To measure participants' empathy, we use two 7-item empathy subscales developed by Davis (1980), the perspective-taking scale and the empathic-concern scale, which assess participants' ability to "adopt the perspective [...] of other people" and the "ability to experience feelings of [...] compassion and concern for others undergoing negative experiences" (Dietz & Kleinlogel 2014). A Cronbach's alpha of .643 indicates acceptable internal validity. We also include further post-experimental questions capturing participants' real-life salary structure. Specifically, we ask participants what proportion of their salary is variable and what percentage of their total compensation is attributable to the achievement of financial goals, sustainability

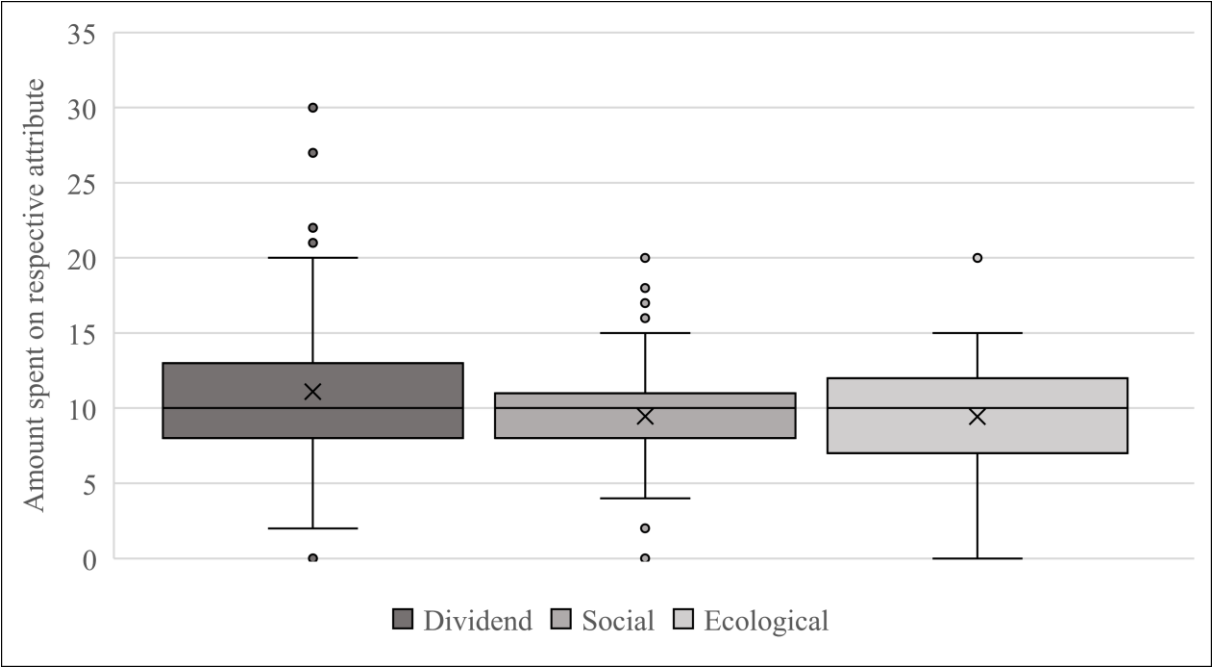
³⁸ Following participants' decisions, we donated a total of \$115.36 to The Nature Conservancy and \$111.00 to Scholarship America.

goals, personal development goals, or other goals. We capture participants' real-life incentive programs because we expect that participants' decisions in our experiment are influenced by how participants are incentivized in their everyday business environment. A more detailed description of our experimental material can be found in the Appendix.

4.3.3 Dependent and explanatory variables

We ask participants to allocate 30 cents to either the markup in short-term profits, i.e., the markup in the upcoming year dividend per share, the improvement in social standards and/or the improvement in ecological standards. The distribution must add up to 30 cents, but any allocation to the three attributes is possible. Our main dependent variable, hereafter labeled CSR investment, is the sum of participants' allocation of money to improve social standards and ecological standards, as both attributes are considered beneficial for society, are subsumed under the term CSR and represent a voluntary investment of Firm Y (Carroll 1999). As shown in Figure 4.3, participants' allocation to the improvement of social and ecological standards is rather similar. Additionally, we focus on executives' general investment behavior regarding investments in CSR and do not differentiate between the ecological and social dimensions when deriving our hypotheses. Therefore, from a theoretical standpoint, it is also consistent to sum up participants' investment in improving ecological and social standards.

Figure 4.3 Distribution of participants' allocation to dividend (short-term profit), social standards, and ecological standards in our experiment.



In our experiment, a participant's decision only affects dividends per share for the upcoming year, as we do not address years beyond that point. However, we explain to participants that improving social and ecological standards is generally beneficial for workers of Firm Y and the local community and helps in protecting the environment. Definitions of CSR usually emphasize firms' contributions to society and a cleaner environment and underline the inherent long-term relationship between business and society (Ackerman 1975; Bowen 2013). Generally, CSR activities focus on long-term success rather than short-term profit (Hang et al. 2019; Porter & Miles 2013). Both the improvement in working conditions and the protection of the environment are sustainable actions that can be seen as prudent and responsible management (Carroll 1999; Dickson & Chang 2015). Therefore, with our CSR investment variable, we capture participants' long-term orientation and their focus on the improvement of sustainable business practices and future earnings, while the counterpart, participants' investment in the profitability and dividend per share of Firm Y in the upcoming year, displays their short-term profit orientation.

We capture our first explanatory variable "gender" by asking participants to indicate their gender during our post-experimental questions. We also measure participants' incentive programs and capture what percentage of participants' salary is attributable to financial goals.³⁹ Thus, our second explanatory variable "financial goals" can range from 0 to 100. The third explanatory variable "shareholder pressure" captures participants' random distribution to the low or high shareholder pressure condition.

4.4 Results

4.4.1 Manipulation checks

To assess the effectiveness of our shareholder pressure manipulation, we ask participants to agree (disagree) with the following statement: "The case description said that Firm Y's shareholders were very satisfied with Firm Y's performance". Participants answered on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". Participants in the low shareholder pressure condition perceived a significantly lower shareholder pressure than

³⁹ We asked participants to indicate what portion of their total annual salary is attributable to achieving financial goals, sustainability goals, personal development goals, or other goals.

participants in the high shareholder pressure condition (means 4.178 and 3.164, respectively; $t_{123} = 4.50, p < .001$, two-tailed).⁴⁰ Thus, we conclude that our manipulation works.

4.4.2 Analysis and test of hypotheses

Regression results

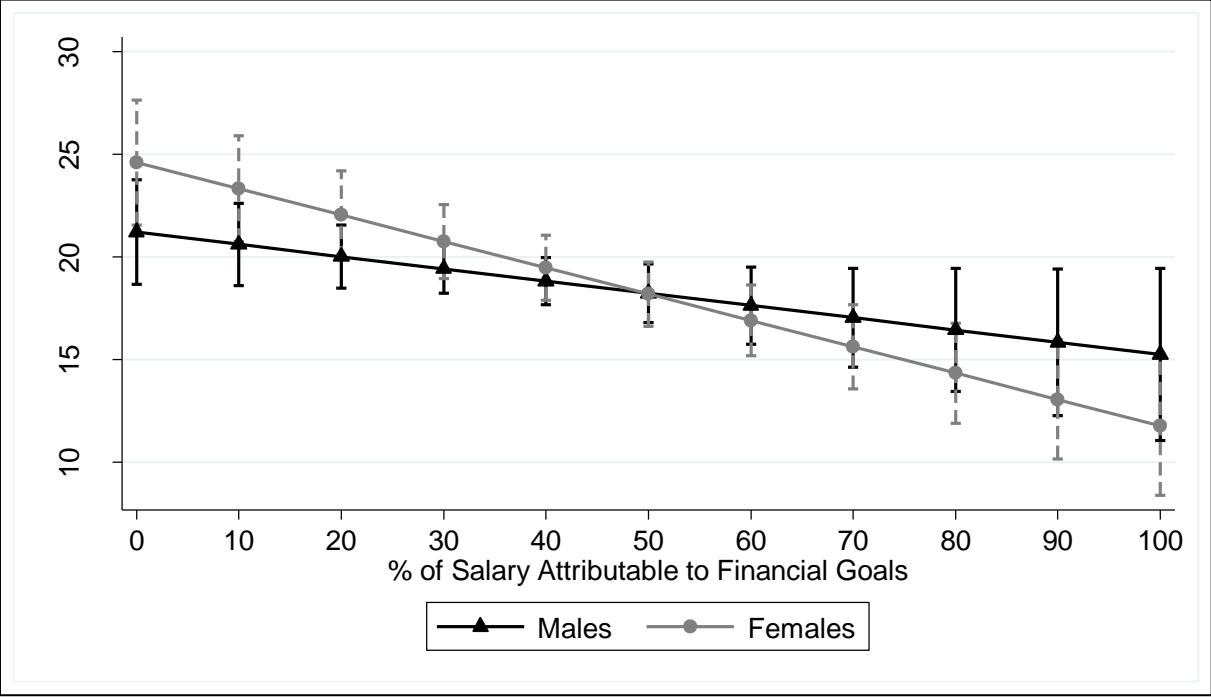
To test our hypotheses, we use a regression model with shareholder pressure as our manipulated variable, participants' gender, financial goals, and the interaction term of gender and financial goals. We include the interaction term of gender and financial goals, as we have an uneven distribution of financial goals over shareholder pressure and gender (see Table 4.2) and the effect of financial goals on CSR investment is stronger for female executives (see Figure 4.4).

Table 4.2 Mean distribution of financial goals (% of salary attributable to achieving financial goals) over gender and shareholder pressure conditions.

Shareholder Pressure		Gender		Total
		Males	Females	
Low	Mean	34.53	51.39	39.95
	Std. Dev.	16.73	28.84	22.55
	N	38	18	56
High	Mean	37.62	42.72	39.522
	Std. Dev.	19.433	27.30	22.62
	N	42	25	67
Total	Mean	36.15	46.35	39.72
	Std. Dev.	18.15	27.95	22.50
	N	80	43	123

⁴⁰ The result for our other statement "The case description said that Firm Y's financial performance was very good" is similar (means 4.25 and 3.373 respectively; $t_{123} = 4.319, p < .001$, two-tailed) and also shows that our manipulation worked.

Figure 4.4 Linear prediction of CSR investment and the portion of financial goals in participants’ incentive program for female and male executives.



In Hypothesis 1a, we predict that female executives are more willing to sacrifice short-term financial return to improve social/ecological standards when making investment decisions than male executives. As indicated in Table 4.3, we find a significant and positive association between gender and CSR investment (3.394; $p = .047$, one-tailed).⁴¹ Thus, we can provide some evidence that female executives are more oriented towards social and sustainable practices per se. This finding is in line with many archival studies that find a positive association between board gender diversity and CSR performance. However, the structural equation model described later on will add nuances to this conclusion with interesting further implications.

In Hypothesis 2, we predict that the orientation towards financial goals in executives’ incentive programs negatively affects their CSR investment. Table 4.3 shows our financial goals variable, which indicates what percentage of participants’ salary is attributable to financial goals, is statistically significant and negatively associated with CSR investment (-0.060; $p = .032$, one-tailed). Also, Figure 4.4 emphasizes that, for both genders, executives’ CSR investment decreases with increasing relevance of financial goals in executives’ incentive programs. Therefore, we find evidence that greater relevance of financial goals achievement in executives’

⁴¹ We present our results with a one-tailed p-value when we have formulated a directed hypothesis, and with the two-tailed p-value if that is not the case. In our OLS regression, the coefficient of gender is 3.39. Thus, ceteris paribus, female executives spent 3.39 Cents more on CSR than male executives in our experiment. As male executives spent on average 19.04 Cents on CSR, this means that female executives spent approximately 18% more on CSR than male executives.

incentive programs reduces their willingness to invest in CSR. Consequently, we find support for Hypothesis 2.⁴²

Table 4.3 Regression-Model of CSR Investment.

Variables	CSR Investment		
	β	Two-tailed p-value	One-tailed p-value
Constant	21.069***	<0.001	<0.001
Gender	3.394**	0.094	0.047
Financial Goals	-0.060**	0.064	0.032
Gender x Financial Goals	-0.069	0.111	0.056
Shareholder Pressure	0.236	0.801	0.401
N		123	
Adj. R ²		0.1436	

Note: *p < .10; **p < .05; ***p < .01.

We report the one-tailed p-value where we have formulated a directed hypothesis and the two-tailed p-value if that is not the case. Gender is equal to 1 for female participants. Shareholder pressure is equal to 1 for the high shareholder pressure condition.

In Hypothesis 3, we predict that shareholder pressure affects executives' willingness to sacrifice financial return to improve social/ecological standards when making investment decisions. Table 4.3 shows that our binary shareholder pressure variable, which indicates whether participants were assigned to the low (value of variable = 0) or high (value of variable = 1) shareholder pressure condition, is not statistically significant (0.236; p = .401, one-tailed).

Thus, we do not find support for Hypothesis 3. Therefore, we show that, in our case, a firm's relative performance to the industry average and resulting shareholder (dis)satisfaction do not affect executives' CSR decision-making. This finding is consistent with Nelling and Webb (2009), who do not find a direct causal link between a firm's performance and aspects of CSR related to the community or environment. Our results continue to hold when we control for specific participant- or employer characteristics that significantly differ between our male and female participants, such as tenure in their current corporate role, revenue or number of employees of the employer or the variable that indicates if participants' employer is a listed firm.

⁴² Our results for executives' incentive programs continue to hold if we exclude participants with unconventional incentive programs, like programs with a ratio of sustainability goals above 30% or a ratio of financial goals below 50%.

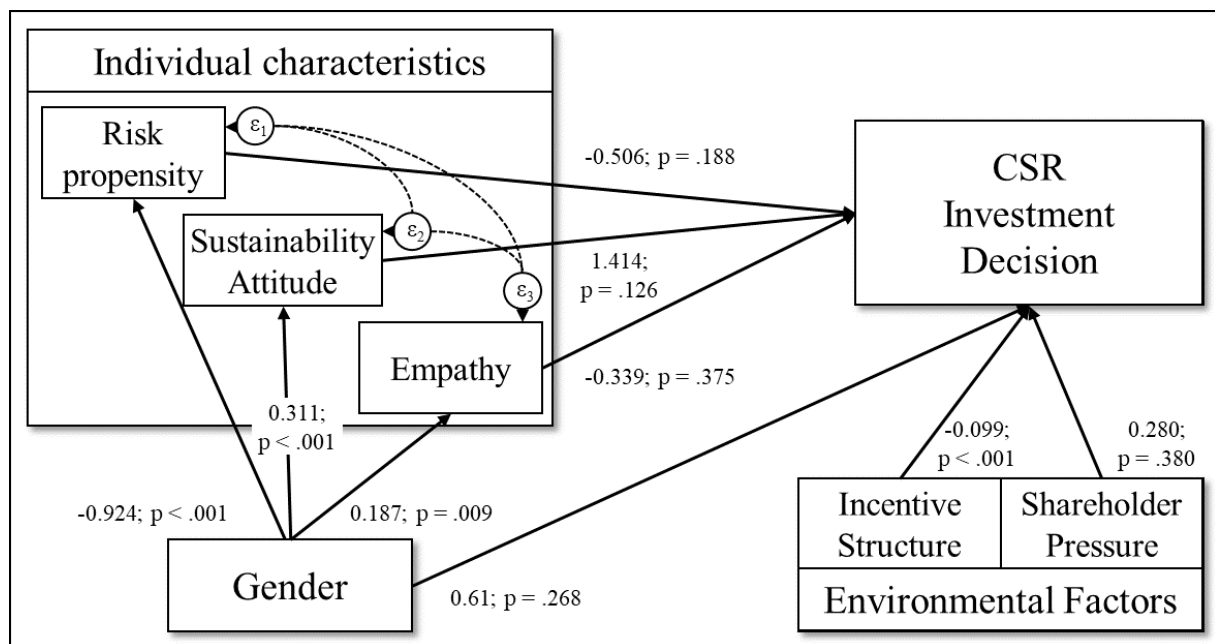
Structural equation model

Our main analysis provides some evidence for a positive association between participants' gender and CSR investment. However, prior studies show that executives' personal characteristics and beliefs affect their investments in CSR activities (Agle et al. 1999; Chin et al. 2013; Hafenbrädl & Waeger 2017). Gender as a variable captures different character traits, which in turn might influence CSR investment. Based on the research focusing on gender differences, including archival research analyzing the effect of gender diversity in governance and management boards on CSR performance, we identify three possible character traits that might drive CSR investment: risk propensity, attitude towards sustainability, and empathy.

Figure 4.5 shows the design and corresponding results of our maximum likelihood structural equation model. The traditional Chi-square test indicates a good fit of our model ($\chi^2 = 4.491$; $p = .611$), which is supported by the Comparative Fit Index (1.000; above the generally accepted minimum of 0.95; Byrne 2013). Also, the Root Mean Square Error of Approximation (.000; below the .05 rule of thumb) indicates a good fit (MacCallum et al. 1996).⁴³ In Hypothesis 1a, we predict that female executives are more willing to sacrifice short-term financial return to improve social/ecological standards when making investment decisions than male executives. We find only minimal support for Hypothesis 1a in our regression. Our SEM, as displayed in Figure 4.5, shows that gender is significantly associated with the character traits risk propensity, attitude towards sustainability, and empathy. According to our SEM, female participants are risk-averse (-0.924; $p < .001$), have a stronger attitude towards sustainability (0.311; $p < .001$) and are more empathetic (0.187; $p = .009$) compared to male participants. However, we do not find that these character traits have a statistically significant association with CSR investment (-0.506; $p = .188$, 1.414; $p = .126$ and -0.339; $p = .375$ respectively), and hence do not find evidence for a mediating effect as proposed in Hypotheses 1b1–1b3. This is surprising as studies on gender differences often use these character traits as an explanation for differences between females and males (e.g. Cabeza-García et al. 2018; Francis et al. 2015; Francoeur et al. 2019; Glass and Cook 2018).

⁴³ With sample size requirements being an important question in studies using SEM (Westland 2010), it is necessary to acknowledge that we had to satisfy with a quite small sample of 123 observations, as recruiting executives for experimental research is rather costly. Yet, we generally meet existing rules of thumb for minimum sample sizes in SEM (e.g., 10 observations per indicator, aggregating to a minimum sample size of 70 in our case) (e.g., Nunnally 1967; Kahai & Cooper 2003; Wolf et al. 2013). Furthermore, other studies using SEM have worked with sample sizes much smaller than the sample size in this study (van Raaij and Schepers 2008; So & Bolloju 2005; Venkatesh & Davis 2000; Yoo & Alavi 2001; Ratzinger-Sakel & Theis 2019), and sample sizes as small as 50 can produce reliable results under certain conditions (Hoyle & Gottfredson 2015). Especially when the estimation converges – as in the present case – concerns rather shift to the evaluation of fit (Hoyle & Gottfredson 2015; Ratzinger-Sakel & Theis 2019).

Figure 4.5 Structural equation model (total effects) of gender-specific character traits, external factors, and CSR investment.



Note: P-values based on one-tailed tests.

In our context, however, it seems that participants' incentive program overrides the relation between their character traits and CSR investment, as the ratio of financial goals within participants' incentive programs is strongly associated with participants' CSR investment (-0.099; $p < .001$), which further supports Hypothesis 2.⁴⁴ This finding is highly interesting as it adds further insights to findings of prior studies investigating the association between board gender diversity and CSR performance. While our results confirm gender differences regarding character traits which are seen as important drivers of CSR investments, our findings suggest that it is essential to control for executives' incentive program to arrive at valid conclusions.⁴⁵ In line with the results from our regression, we do not find a significant effect of our shareholder pressure variable on executives' CSR investment (0.280; $p = .759$) in the SEM.

⁴⁴ Prior to conducting our experiment with participants from a private survey company, we conducted a previous version of our experiment with participants from Amazon's Mechanical Turk (AMT) platform. The participants from AMT were used to gather some initial evidence and displayed a sample of the general public rather than executives. We found that risk propensity and attitude towards sustainability affect AMT participants' CSR investment. As risk propensity and attitude towards sustainability do not affect executives' CSR investment, we conclude that executives' real-world incentive programs may override the impact of personal character traits on their CSR investment decisions.

⁴⁵ The scales we use to capture the three character traits risk propensity, sustainability attitude, and empathy (see section 3.2 for details) constitute self-report measures, i.e. measures relying on individuals' own reports of their attitudes and beliefs. Self-report measures have several fundamental limitations (e.g., Morgado et al. 2017). Measurement quality may for example be impaired if individuals hold implicit beliefs that do not translate to explicit responses to the stated questions (Axt 2018). It is, therefore, possible that the lack of evidence for a mediating effect of the three character traits is due to limitations inherent in the underlying scales.

In our SEM, we also capture a direct effect of gender on CSR investment, which corresponds to our Hypothesis 1a. As displayed in Figure 4.5, this effect is not significant (0.61; $p = .536$), as some part of a potential direct effect of gender on CSR investment is likely captured by the three distinguished character traits we included in our SEM. Thus, it is not surprising that the statistically weak significant effect of gender on CSR investment vanishes in our SEM, as other gender-dependent character traits are included and may mediate a direct effect to some degree.

Additional exploratory analysis

Bryant et al. (2020) show that external pressure (in the form of direct regulatory and stakeholder pressure on firms that primarily contribute to greenhouse gas emissions) influences how firms engage in environmental actions to reduce climate change. However, they also find that this relationship is positively moderated by a firm's attitude towards risk. We use these insights as the departure point for additionally investigating the following Research Question 1 (RQ1):

Research Question 1: Does shareholder pressure moderate the effect of risk propensity on the investment decision to sacrifice short-term financial return to improve social/ecological standards?

For this rather exploratory analysis, we expand our SEM by also including the interaction between risk propensity and shareholder pressure.⁴⁶ We find that our risk propensity variable then has a negative and marginally significant association with CSR investment (-1.41; $p = .056$, two-tailed, untabulated), just as our shareholder pressure variable (-5.34; $p = .093$, two-tailed, untabulated). In contrast, the interaction term of risk propensity and shareholder pressure is positively associated with CSR investment and marginally significant (1.75; $p = .065$, two-tailed, untabulated). Figure 4.6 displays the linear predictions of participants' spending for our low and high shareholder pressure conditions and the risk propensity scale. In our high shareholder pressure condition, in which Firm Y's performance is below the industry average and shareholders express that they are unsatisfied with the performance, participants with a higher risk propensity invest more in CSR.

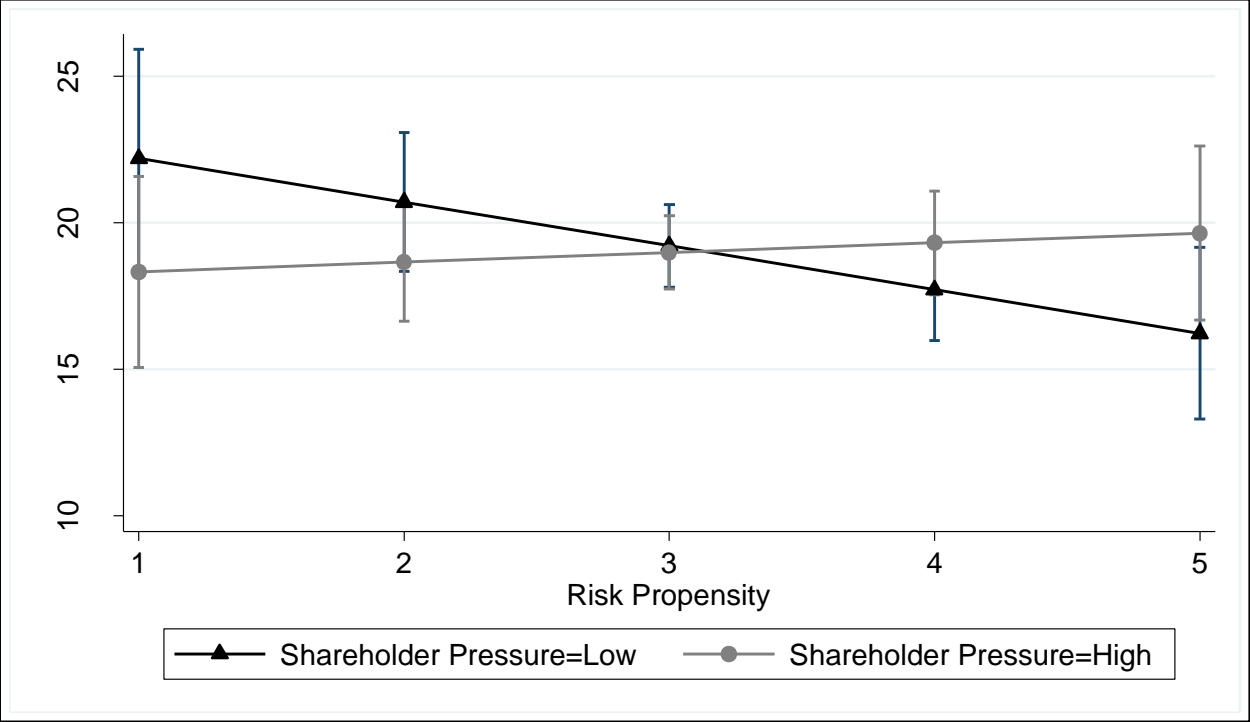
While the specific type of pressure analyzed in our experiment differs from Bryant et al. (2020), our findings are still in line with that study. Bryant et al. (2020) find that firms with a high-risk propensity are more likely to engage in beyond-compliance environmental actions under high external pressure. They conclude that those firms are more willing to hedge risks arising from

⁴⁶ Interaction terms for either empathy or attitude towards sustainability and shareholder pressure do not produce significant and meaningful results and are thus not included in our exploratory analysis.

climate change, as they view climate change risk differently than financial risk. In our high shareholder pressure condition, shareholders are unsatisfied as Firm Y's financial performance is below the industry average. Consequently, risk-averse participants invest more into short-term profitability. In contrast, participants with a high-risk propensity invest more into CSR in our experiment so that the social and ecological standards exceed minimum legal requirements.

In our low shareholder pressure condition, in which Firm Y performs above the industry average and shareholders are satisfied, the response pattern is opposite. Participants with a high risk-propensity invest less in CSR (more in short term-profit) and increase their own profit. As indicated by the slope of the two functions in Figure 4.6, the difference in CSR investment between high and low-risk propensity participants is higher for the low shareholder pressure condition. In this condition, Firm Y performs above the industry average and shareholders are satisfied and thus, managers should have greater discretion in allocating resources than in the high shareholder pressure condition (Arora & Dharwadkar 2011). Some studies find that risk propensity is connected to greed in specific settings (Li et al. 2019), which corroborates our finding that, in our low shareholder pressure condition, participants with a high-risk propensity invest more in short term-profit and increase their own profit. This is in line with Sajko et al. (2021), who find that greedy CEOs invest less in CSR. Interestingly, Bryant et al. (2020) also show that firms that are not subject to regulatory pressure are less likely to engage in beyond-compliance environmental actions if they have a high-risk propensity. Again, this matches our findings and underlines that executives with a high-risk propensity cut CSR investments to increase their own profits when having discretion in allocating resources.

Figure 4.6 Linear prediction of CSR investment and risk propensity for high and low shareholder pressure.



4.5 Conclusion

The public demand for sustainable corporate behavior is omnipresent and firms intensively invest in CSR activities (Johnson et al. 2020; Moser & Martin 2012). Archival research linking female board and management representation with CSR performance generally finds positive associations (e.g. Francoeur et al. 2019; Glass & Cook 2018; Hafsi & Turgut 2013; Harjoto et al. 2015) but does not provide conclusive evidence for why gender impacts CSR performance.

We experimentally examine executives’ consideration of sustainable and social attributes in investment decisions. In line with social theory (Eagly 1987; Eagly & Wood 1991) and based on the positive evidence of most archival studies on the association between female board representation and CSR performance, we predict that female executives are more willing to sacrifice financial return to improve social/ecological standards when making investment decisions than male executives (H1a). We find weak statistical support for this prediction. However, we observe participants’ incentive programs and, consistent with our prediction, find that the relevance of achieving financial goals in participants’ real-world incentive programs significantly affects their CSR investment (H2). Additionally, we manipulate shareholder pressure and examine how executives’ CSR investments differ between a high and low

shareholder pressure condition (H3). We do not find significant evidence for an effect of shareholder pressure on executives' CSR investment.

We also employ a structural equation model and find that gender is significantly associated with the character traits risk propensity, attitude towards sustainability, and empathy. However, we do not find that these character traits have a statistically significant association with the CSR investment (H1b1–1b3). This is surprising as studies on gender differences often use these character traits as an explanation for differences between females and males (e.g. Cabeza-Garcia et al. 2018; Francis et al. 2015; Francoeur et al. 2019; Glass & Cook 2018). However, in our additional exploratory analysis in relation to RQ1, we find that risk propensity in connection with our shareholder pressure manipulation affects executives' CSR decision-making.

Our study makes important contributions to the CSR literature and the literature on executives' decision-making. To the best of our knowledge, our study is the first to explicitly, experimentally analyze gender differences in executives' CSR investment behavior. We expand the literature on the impact of female executives on corporate decision-making (e.g. Francis et al. 2015; Huang & Kisgen 2013; Levi et al. 2008; Mohan & Chen 2004) and on the association between female executives and CSR performance (e.g., Francoeur et al. 2019; Glass & Cook 2018; Harjoto et al. 2015). With our experimental analysis, we can generally confirm a positive impact of female executives on firms' CSR performance. However, although we do find that the character traits often used in archival are gender-dependent, we do not find evidence that these character traits affect executives' CSR decision-making. Additionally, in line with Fabrizi et al. (2014) and Flammer et al. (2019), we find that executives' real-world incentive programs play a key role in explaining executives' CSR decision-making. Thus, we contribute to a growing stream of literature on CSR decision-making (Wang et al. 2016). By outlining that it is essential to control for executives' real-world incentive programs to derive valid inferences when examining executives' decision-making. Finally, our study offers important practical implications. As we find that executives' incentive program strongly affects their CSR decision-making, we encourage firms that want to increase their CSR activities to consider redesigning their executives' incentive programs. By emphasizing the positive impact of female executives on firms' CSR performance, our study also offers implications for policymakers and for firms themselves, which will continue to face public and investor pressure to expand their social and ecological activities and, therefore, must adapt their corporate decision-making to address all stakeholder concerns.

While our study offers important contributions, it also has its limitations and provides avenues for future research. First, we manipulate shareholder pressure with the relative performance of a company to its peer group as well as shareholder satisfaction and do not find an impact on executives' decision-making. Retrospectively, our manipulation might have been insufficiently strong to trigger different decisions of executives. Second, with sample size requirements being an important question in studies using SEM, we acknowledge that we had to satisfy with a quite small sample of 123 observations, as recruiting executives for experimental research is rather costly. In addition, the small sample size may reduce the generalizability of our results. Third, we are naturally not able to manipulate participants' real-life incentive programs. Thus, we cannot completely rule out that a portion of our results with respect to participants' incentive programs can be attributed to more altruistic participants choosing jobs with lower proportions of financial performance targets (Buurman et al. 2012).

Future research should further examine if shareholder pressure, induced by a firm's financial performance, affects executives' CSR decision-making. Also, there are other reasons why shareholders might be dissatisfied with a company's activities or performance, which might affect executives' behavior differently. Consequently, future research could explore how executives react to different types of shareholder pressure and how this affects their investment decisions. Furthermore, although we do not find significant effects for our three character traits on CSR investment, we encourage future experimental research to further examine specific character traits and their effects on executives' decision-making in terms of gender differences, CSR, and in other contexts.

Appendix

Appendix A: Detailed description of our experiment:

Our experiment was conducted online using the Unipark software (<https://www.unipark.com/en/>). This allows participants to complete our experiment on their own device of their choice. First, participants read a consent form explaining their compensation, confidentiality rights, and other generic information. After that, participants answer several screening questions. The first screening question asks if participants work for a for-profit organization. Only participants that answer “yes”, continue with the survey, while the answer “no” leads to an exit screen that tells participants that they are not eligible for the study. Our next screening question asks to which industry the organization participants work for belongs. The answers “Consumer Nondurables”, “Consumer Durables”, “Manufacturing”, “Energy”, “Chemicals and Allied Products”, “Business Equipment”, “Telephone and Television Transmission”, “Utilities”, “Wholesale, Retail, Laundries, Repair Shops”, “Healthcare, Medical Equipment, and Drugs”, and “Other – not mentioned” are accepted, while participants that select “Finance” automatically exit the survey via the exit screen. The third screening question asks participants in which domain they primarily worked. The answers “Governance”, “Strategy”, “Finance”, “Accounting”, and “Operations/Production” are accepted, while participants answering “Marketing”, “Sales”, “Human Resources”, “Research and Development” or “Other domain not mentioned” automatically exit the experiment. The next screening question asks participants to indicate what role they have in their organization. The answers “I am a member of the board of directors of my organization”, “I am a member of the executive board of my organization”, and “I am a member of the senior management of my organization” are accepted. Participants that answer “I am a member of mid- or lower-level management of my organization” are additionally asked how frequently they are involved in significant investment decisions. Of these participants, only the ones answering “very often”, “often”, or “sometimes” pass the screening. Participants that select “never” or “rarely” exit, which also applies to participants who select “I am not a member of management of my organization” in the previous question.

After the screening questions, participants were randomly assigned to either our low or high shareholder pressure conditions, which are presented below.

Figure 4.7 Background information low shareholder pressure condition.

Background Information

The purpose of this study is to examine how executives make judgments and decisions. Your participation should take less than 15 minutes.

For the success of this research, IT IS CRITICAL THAT YOU PAY ATTENTION to the information presented to you.

In this study, please assume that you are an executive serving on Firm Y's management board. The management board is responsible for the overall strategy of Firm Y and decides on the realization of investment options. Those options define the future success of Firm Y and range from investments in new production facilities to investments in staff development. Firm Y is a mature, global manufacturer and distributor based in the United States. Below is an excerpt from Firm Y's income statement for the past two years 2018 and 2019. The increase of approximately 10% in Firm Y's revenue, net income and earnings per share (EPS) from 2018 to 2019 is significantly higher than the average growth of 2% between 2018 and 2019 among firms in Firm Y's industry. At the last annual general meeting, shareholders generally expressed that they are very satisfied with Firm Y's performance.

Furthermore, please assume that you own shares in Firm Y. That means that you participate in the share price development of Firm Y and can expect a regular dividend payout, which is a portion of the earnings per share (EPS). In the last years, Firm Y paid out 50% of the earnings per share (EPS) as the dividend per share.

	Fiscal Years	
	2018	2019
	(in millions, except per share data)	
Revenue	\$ 4,494	\$ 4,943
Cost of revenue	(2,225)	(2,448)
Gross profit	2,269	2,495
Operating expenses	(1,837)	(2,021)
Other income (expenses)	(221)	(243)
Net income	\$ 211	\$ 231
Earnings per share (EPS)	\$ 1.66	\$ 1.82
Dividend per share	\$ 0.83	\$ 0.91

In addition to your flat compensation for participating in this study, you can earn a variable compensation of up to \$3.00. Your variable compensation depends on Firm Y's projected dividend per share for 2020, which depends on the decisions that you make in the following. The variable compensation of up to \$3.00 will be paid out to you in the form of an Amazon voucher. At the end of this survey, we provide you with a URL to a website where you can download the voucher after May 31st.

30%

CONTINUE

Figure 4.8 Background information high shareholder pressure condition.

Background Information

The purpose of this study is to examine how executives make judgments and decisions. Your participation should take less than 15 minutes.

For the success of this research, IT IS CRITICAL THAT YOU PAY ATTENTION to the information presented to you.

In this study, please assume that you are an executive serving on Firm Y's management board. The management board is responsible for the overall strategy of Firm Y and decides on the realization of investment options. Those options define the future success of Firm Y and range from investments in new production facilities to investments in staff development. Firm Y is a mature, global manufacturer and distributor based in the United States. Below is an excerpt from Firm Y's income statement for the past two years 2018 and 2019. The decrease of approximately 10% in Firm Y's revenue, net income and earnings per share (EPS) from 2018 to 2019 is significantly higher than the average negative growth of 2% between 2018 and 2019 among firms in Firm Y's industry. At the last annual general meeting, shareholders generally expressed that they are very unsatisfied with Firm Y's performance.

Furthermore, please assume that you own shares in Firm Y. That means that you participate in the share price development of Firm Y and can expect a regular dividend payout, which is a portion of the earnings per share (EPS). In the last years, Firm Y paid out 50% of the earnings per share (EPS) as the dividend per share.

Information from Firm Y's Income Statement

	Fiscal Years	
	2018	2019
	(in millions, except per share data)	
Revenue	\$ 4,494	\$ 4,045
Cost of revenue	(2,225)	(2,003)
Gross profit	2,269	2,042
Operating expenses	(1,837)	(1,653)
Other income (expenses)	(221)	(199)
Net income	\$ 211	\$ 190
Earnings per share (EPS)	\$ 2.46	\$ 2.22
Dividends per share	\$ 1.23	\$ 1.11

In addition to your flat compensation for participating in this study, you can earn a variable compensation of up to \$3.00. Your variable compensation depends on Firm Y's projected dividend per share for 2020, which depends on the decisions that you make in the following. The variable compensation of up to \$3.00 will be paid out to you in the form of an Amazon voucher. At the end of this survey, we provide you with a URL to a website where you can download the voucher after May 31st.

4%

CLOSE PREVIEW

After reading the background information, participants are introduced to the investment decision, which is presented below.

Figure 4.9 Participants’ decision about allocation to the three investment attributes.

Additional Information

To increase growth and profitability in the future, Firm Y plans to invest \$100 million in a new production facility for a new product. If Firm Y chooses to invest the \$100 million in a manner that maximizes Firm Y’s short-term profits, the projected dividend per share for 2020 increases from \$1.00 by \$0.30 to the maximum of \$1.30. This can only be achieved if the social and ecological standards at the new production facility do not exceed minimum legal requirements.

However, Firm Y can also choose to improve social and ecological standards at the new production facility so that they exceed minimum legal requirements. Doing so is generally beneficial for workers, the local community and the environment. Furthermore, it is assumed that firms generally benefit from improving social and ecological standards in the long-term. The costs associated with improving social and ecological standards at the new production facility reduce the projected maximum dividend per share of \$1.30 for 2020, and hence your compensation.

The other members on Firm Y’s management board leave it up to you to decide whether Firm Y focuses on short-term profit-maximization, or improves social and/or ecological standards at the new production facility.

You can indicate your decision by using the sliders below. You can allocate in total 30 Cents (entirely or partially) to increase the dividend per share for 2020, and/or to improve the social and/or ecological standards.

The amount you allocate to increase the dividend per share for 2020 multiplied by 10 will be your variable compensation.

The amounts you allocate to improve the social and/or ecological standards at the new production facility of Firm Y multiplied by 10 will be donated in reality to a US charity with a respective focus.

Hence, if you, for example, allocated \$0.10 to increase the dividend per share, \$0.10 to improve the social standards, and \$0.10 to improve the ecological standards, your variable compensation would equal \$1.00, and we would, in reality, donate \$1.00 to a US charity with a social focus as well as \$1.00 to a US charity with an ecological focus.

When data collection for this study is over, we will add up the amounts allocated by individual participants to improve the social and/or ecological standards and donate the total amounts. At the end of this survey, we provide you with a URL to a website where you can download the proof for the charitable donations after May 31st.

Please allocate in total 30 Cents (entirely or partially) to increase the dividend per share for 2020, and/or to improve the social and/or ecological standards.

Additional dividend per share	<input type="range" value="0"/>	Cents <input style="width: 40px;" type="text" value="0"/>
Improvement of ecological standards	<input type="range" value="0"/>	Cents <input style="width: 40px;" type="text" value="0"/>
Improvement of social standards	<input type="range" value="0"/>	Cents <input style="width: 40px;" type="text" value="0"/>
Total (needs to equal 30)		Cents 0

30%

CONTINUE

After the investment decision, participants answer post-experimental questions. The first two questions assess participants’ comprehension of the case by asking them to indicate their agreement with the following statements on a scale from 1 – strongly disagree to 5 – strongly agree: “The case description said that Firm Y’s financial performance was very good” and “The case description said that Firm Y’s shareholders were very satisfied with Firm Y’s performance”. After that, the 8-item gambling and investing risk-taking propensity subscale of the domain-specific risk-taking (DOSPRT) scale (Markiewicz & Weber, 2013; Weber et al.2002), the 17-item Environmental Attitudes Scale (EAS) (Ebenbach et al. 1998; Kortenkamp & Moore, 2001), and the two 7-item empathy subscales developed by Davis (1980), the

perspective-taking scale and the empathic-concern scale follow. Within these questions, one attention check asks participants to select “strongly disagree” on a five-point scale ranging from “strongly agree” to “strongly disagree”.⁴⁷ Participants that do not select “strongly disagree” exit the survey. After the above-mentioned scales, questions about participants’ educational background, their age, their salary, their current professional role, and their employer conclude our post-experimental questions. After that, participants see a screen with their completion code and links to their variable pay and our donations to charitable organizations.

⁴⁷ This attention check was predetermined by the private survey company.

Chapter 5

Conclusion

If one wants to understand why organizations behave as they do, it is essential to consider how their most powerful actors think and make decisions. This is the guiding principle for upper echelons theory, which presents one theoretical foundation for the relationship between individual characteristics of corporate leaders and corporate decision-making. This thesis, consisting of three individual research papers, has examined how management and board characteristics affect corporate decision-making using both experimental and archival evidence and provides valuable contributions and implications for practitioners and the academic literature on corporate governance and management characteristics. The three papers can be summarized as follows:

The first paper empirically examines how members of the board of directors with financial expertise affect the outcomes of an initial public offering (IPO). To assess the quality and prospects of the issuing firm, prospective investors examine specific governance characteristics prior to an IPO. A very important governance characteristic is board financial expertise, as it equips directors with the relevant knowledge for an IPO and future monitoring duties. To examine whether and how board financial expertise affects IPO outcomes, this study utilizes a sample of 414 completed and 85 withdrawn IPOs that were filed from 2014–2017 at NYSE or NASDAQ. The results of this paper show that the ratio of directors with financial expertise on the board is negatively associated with the level of underpricing and the probability of IPO withdrawal. Additional evidence suggests outside directors with financial expertise particularly have a positive signaling effect and help to reduce information asymmetry around initial public offerings, which leads to less underpricing and a lower probability of involuntary withdrawal. Above that, using quantile regression, this study finds that director financial expertise is most valuable for issuances with high levels of investor uncertainty. By providing novel results on the association between director financial expertise and IPO outcomes, this study makes important contributions to the IPO and corporate governance literature. Furthermore, this study also contributes to the IPO literature from a methodological perspective as it is among the first to employ quantile regressions in the IPO context.

The second paper studies the importance of audit committee chairs for improving financial reporting and audit quality. As the debate about the role of tenure has refueled since the German corporate governance codex first introduced an upper limit for director tenure in 2019, this topic is of particular relevance. The study shows that longer-tenured audit committee chairs are positively associated with higher levels of earnings management and negatively associated with the audit report lag and the likelihood of error identification by the German financial reporting

enforcement panel. While these results initially seem inconsistent from a reporting quality perspective, this study draws upon social bonding to argue that social bonding between management and the AC chair drives the results for earnings management, while it does not impair the AC chair's influence on the audit process. In summary, these findings are important from a regulatory and practical perspective and highlight the complexity of the role of AC chairs.

The third paper experimentally analyzes determinants of executives' CSR investment behavior. Archival research suggests that female board, as well as management representation, and CSR performance are positively associated. However, archival research generally has some methodological drawbacks and, thus, has not yet delivered conclusive evidence for a causal inference between female board and management representation and CSR performance. In addition, it also does not reveal why female board members and executives supposedly decide differently in the context of CSR. This is the starting point of this study, which uses an experimental approach to examine executives' decision-making in terms of CSR investment. While female executives seem to be more oriented towards social and ecological practices, the results show strong evidence that participants' real-world incentive program mainly drives their CSR decision-making. Based on exploratory analysis, the results of this study also suggest that executives' risk propensity affects their CSR decision-making conditional on the level of shareholder pressure they face. With these findings, this study contributes to the literature on executives' decision-making and to the CSR literature by enhancing our understanding of determinants of executives' social and ecological decision-making.

Of course, these studies are not without limitations. A pertinent concern in the archival accounting and finance literature is endogeneity, which refers to potential biases that arise from correlations between the error term and the explanatory variable (such as selection bias, omitted variable bias, or simultaneity). While both archival studies provide several robustness tests, they cannot entirely rule out endogeneity concerns. Although experimental studies generally do not face endogeneity concerns, they have other drawbacks. Because recruiting executives for experimental research is rather costly, the study in chapter 4 utilizes a small sample of 123 observations, which naturally reduces the generalizability of the results.

However, these limitations also point out avenues for future research. Due to the limited generalizability of the experimental results in chapter 4, additional studies are needed to fully unveil how gender affects executives' social and ecological decision making. Above that, future experimental research should further examine specific character traits and their effects

on executives' decision-making, in terms of gender differences, CSR, and in other contexts. While archival studies provide generalizable results based on larger data sets, they mostly provide only quantitative evidence on observable outcomes. Hence, as both the trilateral relationship between the auditor, AC, and CFO and the role of board members during the IPO process are not publicly observable, it is not fully unveiled through which particular channels AC chairs and board members affect the financial reporting process and IPO outcomes respectively. Thus, there is a need for more qualitative research on these topics.

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DOI: 10.17185/duepublico/76437

URN: urn:nbn:de:hbz:465-20220811-144425-4

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