

Master's Programme in Finance

A Safe Pair of Hands?

Executives' legal expertise and firm risk behaviour — a European perspective

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Title of thesis A Safe Pair of Hands? Executives' legal expertise and firm risk behaviour – a European perspective		
Degree Master's degree (M.Sc.) in Economics and Business Administration		
Major Finance		
Thesis advisor(s) Prof. Matti Keloharju		
Year 2023	Number of pages 71+8	Language English

Abstract

This thesis studies the relation between lawyer CEOs and various proxies for firm risk behaviour. To the best of our knowledge, the study is novel in its use of a sample made up of European-listed companies. Using OLS regressions, we estimate the relationship between lawyer CEOs and variables related to a firm's investment policies, liquidity, capital structure, and credit ratings.

Lawyers, due to their educational background and prior careers, which place a strong emphasis on comprehending, managing, and limiting risks, are typically thought of as exhibiting less risky behaviour. The purpose of this thesis is to determine empirically whether this perceived risk aversion is associated with corporate policies, and whether it is recognized by third party credit assessments. In our analysis, we sample European-listed firms which are part of the STOXX 600 index, between the years 1998 and 2022.

Our most significant finding is that we document firms led by lawyer CEOs to associate with 0.89 rating increments higher credit ratings. Additionally, we document firms led by lawyer CEOs to associate with lower liquidity measured by a firm's cash-to-assets ratio. Further analysis shows our credit rating-related results to be time dependent, and stronger following the Global Financial Crisis. Additionally, we find results for both credit ratings and liquidity to be confined to less risky firms.

We contribute to existing literature by enhancing the cumulative understanding regarding specific CEO characteristics and their association with certain firm behaviour, specifically lawyer CEOs' association with types of risk behaviour. Future research can further explore the avenues by which lawyer CEOs attract better credit ratings to uncover underlying causal links. The wider topic can further be explored by extending the lawyer CEO lens to other traditional areas of finance such as stock returns, stock volatility, IPO underpricing, or corporate governance topics. Our findings have practical implications for boards hiring CEOs, investors responding to CEO appointments and to CEOs themselves in aiding awareness regarding potential biases impacting their decision-making.

Keywords Lawyer CEO, risk behavior, risk aversiveness, credit rating, Europe

Tekijät Aarni Arola ja Jesse Juntunen

Työn nimi Toimitusjohtajan lakitaustan yhteys yrityksen riskikäyttäytymiseen Euroopassa

Koulutusohjelma Kauppätieteiden maisterin tutkinto-ohjelma

Pääaine Rahoitus

Vastuuopettaja/valvoja Prof. Matti Keloharju

Vuosi 2023

Sivumäärä 71+8

Kieli Englanti

Tiivistelmä

Tässä tutkielmassa tutkitaan juristitoimitusjohtajien ja yritysten riskikäyttäytymisen eri mittareiden välistä suhdetta. Sikäli kuin tiedämme, tämä tutkimus on ainutlaatuinen siinä, että sen otos koostuu eurooppalaisista yrityksistä. Arvioimme OLS-regressioiden avulla juristitoimitusjohtajien ja yrityksen investointipolitiikkaan, likviditeettiin, pääomarakenteeseen ja luottoluokitukseen liittyvien muuttujien välistä suhdetta.

Koska juristien koulutustausta ja aiemmat urat painottavat vahvasti riskien ymmärtämistä, hallintaa ja rajoittamista, heidän ajatellaan tyypillisesti käyttäytyvän vähemmän riskialttiisti. Tämän tutkimuksen tarkoituksena on selvittää empiirisesti, välittykö tämä havaittu riskin välttäminen yrityskäyttäytymiseen ja lisäksi, että tunnistetaanko se kolmansien osapuolten luottokelpoisuusarvioinneissa. Analyysissämme käytämme STOXX 600 -indeksiin kuuluvia eurooppalaisia pörssiyrityksiä vuosien 1998 ja 2022 välisenä aikana.

Tutkimuksemme merkittävin havainto on se, että juristitoimitusjohtajien johtamat yritykset saavat keskimäärin 0,89 luokitusastetta korkeamman luottoluokituksen. Lisäksi lakimiesjohtajien johtamat yritykset ovat yhteydessä alhaisempaan likviditeettiin, yrityksen kassavarojen suhteella omaisuuteen mitattuna. Tarkempi analyysi osoittaa, että luottoluokitukseen liittyvät tulokset ovat aikariippuvaisia ja että ne ovat voimakkaampia globaalien finanssikriisien jälkeen. Lisäksi havaitsemme, että sekä luottoluokitusta että likviditeettiä koskevat tulokset rajoittuvat vähemmän riskialttiisiin yrityksiin.

Tuemme olemassa olevaa tutkimusta lisäämällä kumulatiivista ymmärrystä toimitusjohtajien erityispiirteistä ja niiden yhteydestä tiettyyn yrityskäyttäytymiseen, erityisesti lakimiesjohtajien yhteydestä riskikäyttäytymiseen. Tulevaisuudessa tutkimuksissa voidaan tutkia tarkemmin keinoja, joiden avulla juristitoimitusjohtajat saavat parempia luottoluokituksia, jotta voidaan kartoittaa taustalla olevia syy-yhteyksiä. Laajempaa aihetta voidaan tutkia laajentamalla juristitoimitusjohtajien tarkastelua muille perinteisille rahoituksen tutkimusaloille, kuten osaketuottoihin, osakkeiden volatilitettiin, listautumisantien alihinnoitteluun tai omistajaohjaukseen liittyviin aiheisiin. Tuloksillamme on käytännön merkitystä toimitusjohtajia palkkaaville hallintoelimille, toimitusjohtajien nimityksiin reagoiville sijoittajille ja toimitusjohtajille itselleen, sillä ne auttavat heitä tiedostamaan päätöksentekoonsa mahdollisesti vaikuttavat harhat.

Avainsanat Juristitoimitusjohtaja, riskikäyttäytyminen, riskiaversio, luottoluokitus, Eurooppa

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Preface and acknowledgements

We want to thank our thesis advisor Professor Matti Keloharju and our opponents for valuable feedback throughout the semester.

Otaniemi, 31 July 2023

Aarni Arola & Jesse Juntunen

1 Introduction

The debate regarding to which extent single actors, even at the chief position in an organization, affect the outcomes and behaviours of a firm as a whole is ongoing. In mainstream media CEOs are often praised for the great successes a firm experiences and likewise scorned for behaviour and outcomes that do not meet expectations. Following the upper echelons theory introduced by Hambrick and Mason in 1984, and the seminal paper into individual managers' effects on corporate behaviour and performance by Bertrand and Schoar in 2003, the topic of managerial fixed effects as variables forming and driving corporate behaviour has been studied with increasing interest. These fixed managerial effects include traits such as educational and social background, age, height, and various other personal characteristics of the CEO. The studies into this topic explore the links between these various CEO traits and the behaviour and outcomes of the firms they lead.

CEOs are central to the strategic direction of organizations, and their leadership style and decision-making can shape the culture, performance, and outcomes of the firms they lead (Hambrick & Quigley, 2013; Mackey, 2008). Therefore, understanding the relationship between CEO characteristics and firm behaviour is beneficial for academia, investors, and firms themselves seeking to enhance their performance and effectiveness, or to simply understand change.

The wider topic has been extensively studied in the fields of management, organizational behaviour, and strategy, and has important implications for organizational theory and practice. The relevance of the topic is further underlined when considering the vast heterogeneity that is left unexplained by more standard models that rely only on for example firm- and industry-level factors to explain firm behaviour (Bertrand & Schoar, 2003). Borrowing Bertrand & Schoar (2003): "Research on the cross-sectional determinants of capital structure by e.g., Titman & Wessels (1988), Smith and Watts (1992), and Bradley et al. (1984) show that a large amount of variation remains unexplained after controlling for the usual firm-level characteristics such as

market-to-book-ratios, the type of assets a firm operates, non-debt tax shields or industry fixed effects”. Including CEO characteristics increases the explanatory power of these models.

Our topic of lawyer CEOs as an explanatory variable for firm riskiness is a relatively sparsely studied subject, and for us motivated mainly by the findings of a paper by Pham, Merkoulova, and Veld (2022), a paper by Lewis, Walls, and Dowell (2013), as well as a 2018 master’s thesis by Joel Kaidesoja. Pham et al. study whether companies led by CEOs with law degrees have different credit ratings and costs of debt compared to other firms using Standard & Poor’s 1500 (S&P 1500) firms between 1992 to 2020 as their sample. They find better credit ratings and a significantly lower cost of debt of -10% for firms with lawyer CEOs compared to firms with non-lawyer CEOs. Lewis et al. (2013) document differences in behaviour, specifically regarding firm environmental disclosures, between CEOs who hold a law degree and CEOs who hold an MBA. The researchers add to the mounting evidence of lawyer CEOs’ association with less risky behaviour, in studies conducted with US firms.

The goal, and novel aspect of our study is to replicate the findings of previous research done on US data with a sample of European listed companies. We try to replicate the findings of multiple studies to be able to come to a more robust conclusion on whether European firms led by lawyer CEOs exhibit the associations documented in the US. Additionally, we hope to address some perceived weaknesses present in previous studies, by including a diverse set of dependant variables and controls, as well as robustness tests examining our results’ dependence on time or their environments riskiness.

The primary research question of our study is: Do firms with Lawyer CEOs exhibit less risky behaviour compared to their peers? We add to existing literature by providing a first look at the topic from a European perspective.

The scope of our study in the wider realm of managerial fixed effects is limited specifically to examining the links between lawyer CEOs and their association with firm risk behaviour, markedly in a European context. Our sample consists of the Euro Stoxx 600 firms which encompasses the 600

largest listed firms in Europe that we argue constitutes a representative sample of all European public companies covering 92% of the free-float market cap of the total European stock market (Stoxx Europe 600 Index factsheet, 2023). Control variables used are based mainly on previous literature and dependant on data availability. Our study presents the usual limitations of endogeneity and data imperfectness that are common in these types of studies. Limitations are thoroughly discussed in chapter 4.1. as they relate to data, and chapter 4.7. as they relate to our empirical methods and their various shortcomings.

The structure of our study is as follows: We first introduced the topic, its larger context, as well as scope and limitations. We then review the existing literature to outline the documented findings and debates relevant to the topic. We then explicitly outline our research hypotheses and introduce our data and methods of analysis followed by the results of our study. Finally, we conclude our research by highlighting key findings and takeaways as well as discuss potential further avenues of research.

2 Literature review

This section introduces existing research in the field of managerial fixed effects and firm behaviour. First, we lay out the theoretical basis of the wider topic of managerial fixed effects and their links with certain corporate behaviour. We then, as context, look at key elements of the market for executives at large. Additionally, we take a comprehensive look at existing literature regarding this topic to give background and motivation for our later hypotheses. Finally, we discuss results of studies closely adjacent to ours, ones of lawyer executives and their links with various firm behaviour and outline our motivation, as well as how our study contributes to existing cumulative knowledge on the topic.

2.1 Upper echelons theory

The theoretical basis of this thesis rests on the so-called upper echelons theory coined by Donald Hambrick and Phyllis Mason in their Academy of Management Review article in 1984. The core of the theory is built by two interconnected parts. First, executives choose actions based on their unique perceptions of the circumstances they face. Second, the executive's experiences, values, and personality all play a role in these unique interpretations. (Hambrick & Mason, 1984; Hambrick, 2007). The theory therefore rests on the assumption of bounded rationality (March & Simon, 1958; Cyert & March 1963), meaning situations are not knowable in an objective sense, but rather merely interpretable. To understand why organizations do what they do we must therefore consider the biases of the people in charge, in this case company executives. Given the difficulty of obtaining psychometric data for particular CEOs, demographic data, functional background, and education are used proxies to develop predictions. This allows finding links between CEO characteristics, certain behaviour and ultimately outcomes but brings us no closer to confidently uncovering the underlying causal mechanics by which these links are driven.

The questions of whether CEOs influence the firms they lead, are there links between certain CEO characteristics and certain firm behaviour, and how large this effect is, have after Hambrick & Mason's (1984) article gathered vigorous scholarly attention. For example, in a 2016 meta-analysis, Wang et al. looked at the cumulative empirical research built on the upper echelons theory and found CEO characteristics to be significantly related with certain strategic actions, which in turn were significantly related to future firm performance (Wang et al., 2016) and a direct relationship between particular CEO characteristics and future firm performance.

2.2 Key elements and general developments in the market for executives

Executive compensation has risen dramatically over the last couple of decades. The rising compensation has coincided largely with the escalation in the share of stock options as part of executive compensation packages (Hall & Murphy, 2000; 2003). CEO compensation measured in pay ratio, which compares a chief executive's total annual pay to that of the median employee of the same company, was a record-breaking 399-to-1 in 2021 (Bivens & Kandra, 2022). This begs the question whether CEOs are now more important than before, the value of CEOs has suddenly been discovered, or whether this phenomenon is explained by something else entirely. Another trend in the market for executives is the rising mobility of CEOs.

A pronounced trend in the executive market that could explain the rise in both executive compensation and their increased mobility is the rising prevalence of recruiting external CEOs instead of hiring them through internal promotions. The rate of external CEO hires has risen from 15% in the 1970s, 26% in the 1990s, to 22% of the CEO hires during 2012-2015 (Forbes annual surveys; PwC study). Researchers hypothesize that this change results from the skills required to being an effective CEO having changed in recent decades. CEOs have become more focused on external constituencies in place of internal operations. This has happened after shareholder rights have

strengthened after the 1980s and the rise of institutional ownership has led CEOs to have to focus more on investor relation efforts through utilizing networks and communicating with shareholders. Additionally, around-the-clock news organizations and social media require the CEO to be an expert in communication, both implicit and explicit, and with all kinds of media.

The CEO role is hypothesized to have shifted more to an external relationship management role from the days of managing operations and industry-specific strategic undertakings. These external relationship skills are largely generally applicable and not specific to one organization, and therefore boards looking for these skills will unsurprisingly look for outsiders to fill CEO openings. Both phenomena, the rising CEO pay, and the prevalence of external hires are in congruence as more companies compete for CEOs with more generalizable abilities. The CEOs with general ability are able to extract all of the marginal product created by their transferrable abilities, while only being able to extract a fraction of firm specific abilities due its lack of alternative uses (Murphy & Zabojnik, 2004; 2007). This is referred to as the rent extraction theory of increasing CEO pay. The number of CEOs holding MBA degrees, which can be seen as a proxy for transferrable ability, has also coincided with the compensation increase.

2.3 CEO characteristics

Literature and publications outside of academia often describe traits, skills, personalities and other characteristics of successful leaders and CEOs. What they posit is that successful CEOs exhibit certain traits, have learned certain skills, and have a certain type of personality. These traits combined are then seen as necessary, although not necessarily sufficient, antecedents for their success. Some researchers and industry voices though (Pfeffer, 2015;2016), have pointed out that people often confuse what ought to be true with what actually is. Studies have for some time now concluded that CEOs do matter for the outcomes of firms, and specific CEO characteristics do make a difference (Bertrand & Schoar, 2003; Adams et al., 2005; Bennedsen et al., 2020).

The debate is still ongoing as to how large this CEO effect is with researchers not aligned on what the appropriate empirical methods are (Mackey, 2008; Fitza, 2014; Quigley & Graffin, 2016) and thus the magnitude of the implications of this effect and which characteristics matter. Nevertheless, there are certain characteristics that seem to be linked with better performance. Malmendier and Tate (2005, 2009, 2011) studied overconfidence, early-life experiences, and military experience of CEOs and found links between these characteristics and certain CEO behaviour. Overconfident managers are found to overestimate the returns of their investment projects and thus find the financing for said projects unduly costly and therefore use less external financing. Overconfident CEOs are also found to engage more in value-destroying mergers and acquisitions. CEOs who experienced their formative years during the great depression are found to be more risk averse and thus prefer internal financing over external funding, and CEOs with military experience are found to pursue more aggressive policies.

To look at this from another perspective, Datta and Guthrie (1994) studied the organizational antecedents of CEO characteristics and found certain firm conditions to have a link with certain CEO characteristics. Lower firm profits are linked with the selection of an outsider CEO, and R&D intensity is linked with the selection of a CEO with a technical background. The intuitive conclusion seems to be that certain CEO characteristics are on average linked with certain behaviour and outcomes, but these findings cannot be universally applied as firm characteristics need to be considered as part of the equation. This raises the need to control for various fixed effects such as industry, firm and temporal fixed effects.

2.4 Risk behaviour

While CEO characteristics and their link to firm performance has gathered the most scholarly attention, the link between particular characteristics and risk-taking behaviour has also been studied in various contexts. Kish-Gephart and Campbell (2015) examined the influence of a CEO's social class during their formative years on their risk-taking attitude and preferences.

Both CEOs from upper social class origins and lower social class origins are found to engage in higher levels of risk-taking than their middle-class counterparts. Ho et al. (2014) find that companies led by female CEOs report accruals more conservatively compared to their male led counterparts. Cain and McKeon (2016) look at CEO personal risk-taking in the form of holding a private pilot's license and are able to link it with a penchant for riskier corporate policies.

A large body of literature also looks at the early-life experiences of CEOs and posit a monotonic relation between exposure to a certain event or environment and corporate policies (e.g., Malmendier et al., 2011; Malmendier & Nagel, 2011). Bernile et al. (2017) expanded on this literature and considered the intensity of the exposure as well and posit that this might have a non-linear effect on subsequent risk behaviour. They examined whether CEOs who experienced early-life disasters behaved in a different manner compared to their counterparts. They find a link between a CEOs exposure to fatal disasters without extremely negative consequences and various corporate risk-related policies such as leverage, cash holdings, stock volatility, and acquisitiveness. They hypothesize that the early-life exposure to fatal disasters desensitizes CEOs to the negative consequences of risk therefore increasing the attractiveness of higher risk policies *ceteris paribus*. CEOs who witnessed the extreme downsides of the disasters they experienced where on the other hand found to act more cautious.

2.5 CEO professional and educational background

In addition to demographic factors and exposure to certain environments and experiences, a significant body of literature studies links between more formal CEO characteristics and firm behavior, mainly education and professional background. Following the upper echelons theory presented earlier, CEOs are hypothesized to view their decision-making situations through the lens of their earlier experiences and learning, in this case previous professional roles and through formal education.

Studies looking into links between a CEO's prior work experience and subsequent policies and behaviour are scarce but have been successful in finding significant associations. Bamber et al. (2010) look at military service among others as a form of career experience that likely affects the CEOs subsequent behaviour. They find military-experienced CEOs to favour a more precise financial disclosure style where even unfavourable information is promptly disclosed. The disclosure style of CEOs promoted from accounting and finance roles is found to be more conservative and is found to signify a clear distaste for ambiguity. CEOs from legal backgrounds favour downward earnings guidance, consistent with a hypothesized aim to minimize litigation risk. Particular work experience also exposes the CEO to a particular network of people, which may inadvertently guide behaviour or provide certain explicit perks. Güner et al. (2008) study the effect in a slightly different but closely related context by looking at the financial expertise and networks of board directors and their effect on firm behaviour. The researchers find that when commercial bankers join boards, firm external funding increases and sensitivity to investment cash flow decreases. At the same time bankers on boards are associated with larger bond issues and worse acquisitions. Funding increases for firms with good credit but bad investment opportunities (Güner et al., 2008).

Custódio and Metzger (2014) study CEOs with a career background in finance and find that firms led by these so called financial expert CEOs hold less cash, more debt, and engage in more share repurchases. Financial expert CEOs are also found to be unsurprisingly more financially sophisticated, which is visible in them managing firm financial policies more actively, by for example using project-specific discount rates instead of a general firm-wide rate, and their investments seem to be less cash-flow sensitive.

2.6 CEO legal expertise

This thesis expands on the priorly discussed topic by looking at CEOs' legal expertise as a hypothesized explanatory factor associated with certain behaviour, in this case risk-taking behaviour. The number of CEOs with legal

education has increased significantly over the previous decades (Litov et al., 2014). As previously discussed, theory and prior empirical research suggest that CEOs' formal education leading to learned attitudes and explicit knowledge affect subsequent CEO behaviour.

Pham et al. (2022) study whether firms that are led by CEOs with law degrees have different credit ratings and cost of debt compared to their peer firms. They find firms led by lawyer CEOs to exhibit higher credit ratings, 10% lower cost of debt, and 5% lower auditing fees. They explicitly outline two ways in which CEO expertise in law translates to higher credit ratings. First, lawyer CEOs are associated with a lower future volatility of stock returns, and second, a meaningful reduction in information risk.

Bamber et al. (2010) in turn show that firms with lawyer CEOs give more conservative guidance reflecting higher risk aversion, at least when it comes to litigation risk. Henderson et al. (2017) find firms led by lawyer CEOs to associate with a lower frequency of litigation and lower litigation charges when faced with litigation. They also document lower stock return volatility, which is often used as a proxy for managerial risk-taking. Firms led by lawyer CEOs are also associated with a greater future presence of directors with legal expertise as well as more conservative investment policies in the form of less R&D, less tangible asset, and lower stock return volatility (Henderson et al., 2017).

Conclusively, the research into links between lawyer CEOs and firm behaviour is still fairly sparse. The limited research points to lawyer CEOs being associated with value-adding firm behaviour when operating in an environment with heightened litigation risk or high compliance standards. Research also points to lawyer CEOs generally exhibiting less risky behaviour reaping its benefits in the form of a lower risk assessment by market participants resulting in a lower cost of debt (Pham et al., 2022).

Much of the prior research studying CEO characteristics and firm behaviour based on the tenants of upper echelon theory have been based on US data, not due to a lack of interest in other markets, but because high quality data for studies on US executives is readily available. Our analysis looks at

the CEOs of the largest European listed companies with an aim to replicate the results found in previous research done on US companies. We add to the very limited pool of research on CEO characteristics in European-listed companies, and to the best of our knowledge, we are the first ones to analyse CEO legal education and its behaviour-related links in European-listed companies. Additionally, our research adds to the cumulative knowledge on the wider topic enabling the drawing of more robust meta-analytic conclusions.

3 Research hypotheses

In this chapter, we present three distinct hypotheses which we then empirically test in this thesis. Each hypothesis, which broadly pertains to the perceived risk aversion of lawyer CEOs, is constructed based on existing academic material.

In general, following the findings of Pham et al. (2022) we expect CEOs with legal education to exhibit less risky behaviour, as well as appear as less risky stewards of their companies to external stakeholders. These together translate to more conservative investment policies, higher liquidity, a less risky capital structure, and better credit ratings.

Henderson et al. (2017) are among the first to empirically quantify lawyer risk aversion in an executive setting by showing that companies with lawyer CEOs spend less on R&D and tangible assets and have lower stock return volatility. In line with risk-averse practices, it has also been demonstrated that lawyer CEOs are positively associated with conservative earnings guidance (Bamber et al. 2010) and cautious earnings management, especially when the possibility of litigation is high (Henderson et al. 2017). According to Henderson et al. (2017), high-growth companies and the pharmaceutical sector are two examples of industries where having a lawyer as the CEO increases company value due to the significant lawsuit risk. Lawyer CEOs are associated with worse firm value in other types of businesses, which, according to the authors, is caused by more conservative firm practices that have a detrimental impact on future cash flows and growth. We anticipate that firms in our sample with lawyer CEOs have more conservative investment policies than their peers, considering both tangible and intangible investments separately, supporting the findings of Henderson et al. (2017). Our first hypothesis is formulated as:

H1: Firms with lawyer CEOs have lower capital expenditures and R&D spending.

Research into managerial fixed effects and their association with firm behaviour often also examine capital structure as a measure of riskiness (Bernile et al., 2017; Graham et al., 2011; 2015). Bernile et al. (2017) for example look at CEOs who experienced early-life extreme downside disasters and the relationship this experience had on their later behaviour as an executive. They use low leverage as one proxy for conservative behaviour. A higher cash-to-assets ratio is another measure used to proxy for less risky behaviour. Considering our general theory of lawyer CEOs exhibiting less risky behaviour on aggregate, we expect lawyer CEOs to employ lower leverage and to have a higher cash-to-assets ratio. Our second hypothesis is formulated as:

H2: Firms with lawyer CEOs have lower leverage and higher cash-to-asset ratios.

In congruence with a lawyer CEOs hypothesized more conservative investment policies resulting in less volatile future cash flows as well as the hypothesized penchant for a less risky capital structure is a reduction in overall firm risk and thus default risk. Additionally, CEOs with legal expertise are potentially less likely to illegally exploit private information for their own gain (Jiang et al., 2021). Finally, Pham et al. (2022) found companies led by lawyer CEOs to exhibit better credit ratings, a lower cost of capital, and lower auditing fees in line with our general expectation of less risky behaviour. Better credit ratings and lower cost of debt are hypothesized to result from lower firm risk translating into lower default risk. Lower auditing fees are hypothesized to result from auditors considering the firm's lower business risk in their pricing. Our third and final hypothesis is formulated as:

H3: Debt securities from firms with lawyer CEOs have better credit ratings.

4 Research material and methods

4.1 Data and sample description

Our data is comprised of executive and financial data sourced from Refinitiv Datastream. Our original sample consists of 25,594 firm year observations of STOXX 600 companies between 1998 and 2022 for which at least the CEO's name is available. Executives' education data from Refinitiv Datastream is lacking in terms of the specific major subject of their degrees so missing data-points were collected manually from online sources such as biographies, appointment announcements, news articles, miscellaneous public databases, or various other publications. Additionally, in cases where there is no education data of any type, neither school, degree name, degree abbreviation, nor major, we exclude the firm year. This approach is taken due to data limitations, as our source does not describe whether a lacking education data point is due to a CEO not having a post-high-school education or whether the data is simply missing. Therefore, potential CEOs who do not have a formal higher education are excluded from our sample. Following this exclusion, our sample is then comprised of 1,393 firms, or 14,535 firm-year observations from which we further exclude companies operating in the financial sector as well as regulated utilities following the logic of Pham et al. (2022) and Cheng & Subramanyam (2008) to name a few. This results in a sample of 12,182 firm-year observations. We further exclude observations for which key financial data relating to our control variables is not available. After these exclusions we are left with a total of 825 companies producing 10,226 firm-year observations, of which 681 observations, or 6.7%, are with a lawyer CEO. Figure 1 visualizes the sample filtering and formation process.

Figure 1 Sample formation

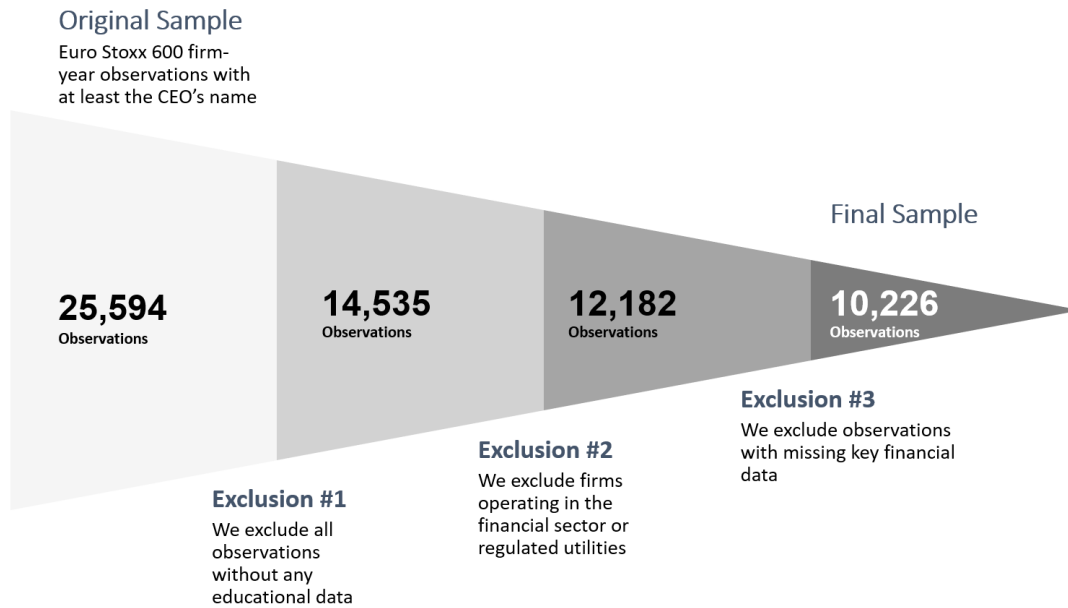


Figure 2 presents how the sample is split between years, as well as the fraction of lawyer CEOs present in each year. Noteworthy the percentage of lawyer CEOs decreases relatively steadily and by a significant amount from the earlier years compared to the later years, from 12% in 1998 to 5% in 2022. The data is also noticeable sparser in the earlier years of our sample.

Figure 2 Number of firm-year observations and fraction of lawyer CEOs over sample period

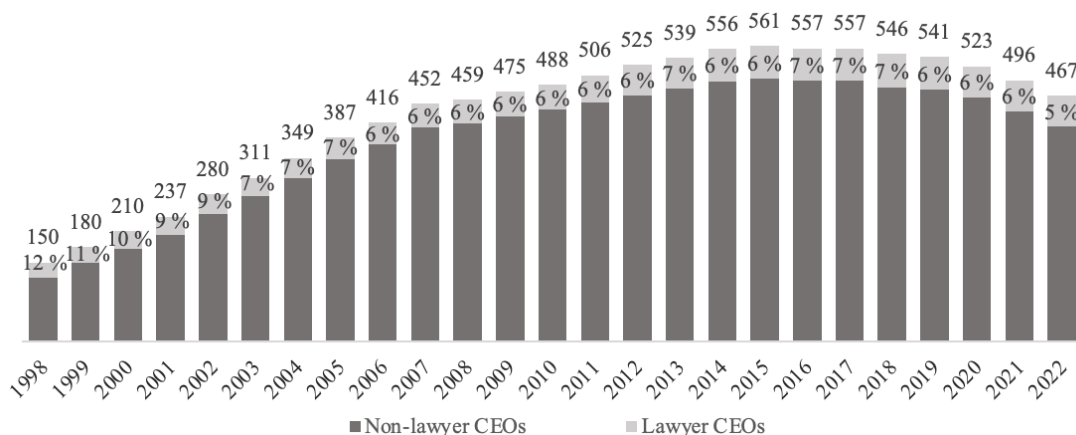


Table 1 presents the descriptive statistics for both executive level and firm level variables. For each variable, we provide information regarding the total

number of observations, mean and median values, as well as the standard deviation and t-test for the significance of the differences between the means. The sample of 10,226 firm-year observations consists of 1,229 unique CEOs leading 825 unique firms. Variables are divided into two panels, one for CEO characteristics, and one for firm-level characteristics. Variable descriptions are presented in Table 16 in the Appendix. Of the 1,229 unique CEOs in our sample, 156, or 12.7% have a law degree. The average firm has a natural logarithm of firm size of 22.42 and a leverage ratio of 29.9%. In 46.8% of firm-years the company in question pays a dividend. Companies cover their interest 14.3 times on average and achieve a return-on-assets of 4.5%. In 3.7% of the firm-year observations the company is led by a female CEO. 23.9% of firm-year observations are led by a CEO with formal financial education. The average tenure of a CEO in the sample is 5.43 years. The average credit rating is 13.95 which equals BBB+ (S&P and Fitch) or a Baa1 (Moody's). Overall, the descriptive statistics of our dependant and control variables are intuitively plausible and in line with figures found in similar literature which substantiates our data's validity.

Table 1 Descriptive statistics

Variable	Observations	Mean	SD	<u>Lawyer CEOs</u>		<u>Non-lawyer CEOs</u>		<u>Mean difference</u>	
				Mean	SD	Mean	SD	Difference	t-Test
CEO characteristics (total of 1229 unique CEOs)									
<i>MBA</i>	10,226	0.180	0.384	0.091	0.288	0.186	0.389	0.095	-19.856***
<i>PHD</i>	10,226	0.093	0.291	0.103	0.304	0.092	0.290	-0.011	2.503***
<i>FEMALE</i>	10,226	0.037	0.190	0.021	0.142	0.039	0.193	0.018	-7.609***
<i>FIN_EDUC</i>	10,226	0.239	0.427	0.000	0.000	0.256	0.437	0.256	-59.342***
<i>TENURE</i>	10,226	5.427	5.006	5.689	5.377	5.395	4.977	-0.294	6.545***
Firm level characteristics (total of 825 unique firms)									
<i>INT_COV</i>	10,226	14.299	24.392	12.841	23.964	14.403	24.418	1.562	-4.619***
<i>LNSIZE</i>	10,226	22.420	1.696	22.602	1.576	22.407	1.703	-0.195	8.493***
<i>TOBINSQ</i>	10,226	1.365	1.978	1.154	1.200	1.380	2.021	0.226	-9.746***
<i>ROA</i>	10,226	0.045	0.098	0.050	0.111	0.045	0.097	-0.005	3.673***
<i>LNMTB</i>	10,226	-0.139	0.924	-0.312	1.009	-0.126	0.917	0.186	-13.749***
<i>CAP_INTEN</i>	10,226	0.472	0.499	0.462	0.593	0.473	0.492	0.011	-1.452*
<i>RETVOL</i>	10,226	2.194	6.249	2.144	2.656	2.198	6.429	0.054	-0.776
<i>LEVERAGE</i>	10,226	0.257	0.189	0.308	0.205	0.253	0.187	-0.055	20.02***
<i>CASH_TO_ASSETS</i>	10,226	0.095	0.094	0.088	0.084	0.095	0.095	0.007	-5.387***
<i>RND</i>	3,457	0.028	0.087	0.017	0.041	0.029	0.089	0.012	-12.708***
<i>CAPEX</i>	10,226	0.051	0.050	0.054	0.076	0.051	0.048	-0.003	3.908***
<i>DIVPAYING</i>	10,226	0.468	0.499	0.471	0.499	0.468	0.499	-0.003	0.528
<i>ASSET_TANGIBILITY</i>	10,226	0.589	0.208	0.604	0.207	0.588	0.222	-0.016	5.430***
<i>CREDIT_RATING</i>	1,010	13.950	1.624	14.728	1.351	13.871	1.629	-0.857	12.862***

Table 2 presents the division of lawyer CEOs across industries in our sample. Industry classifications are done according to Refinitiv’s proprietary The Reuters Business Classification’s (TRBC) economic sector classification, as we believe this provides enough granularity while simultaneously being digestible. Our sample companies are made up of companies from 8 different economic sectors. Industrials and Technology are the largest sectors in absolute number of observations. Consumer Cyclical and Industrials are the two sectors with the largest lawyer CEO representations. Consumer Cyclical and Real Estate are the only two sectors with a double-digit percentage of lawyer CEOs, 11% and 16% respectively. Consumer Non-Cyclical surprisingly include zero firm-years where a lawyer CEO was at the helm of the company.

In other sectors, excluding technology where only 3% of firm-years are led by a lawyer CEO, the percentage of lawyer CEO firm-years is fairly in line with the whole sample's level of 6.7%.

Table 2 Firm sample sectors

This table reports the number and fraction of lawyer CEOs in each TRBC Economic Sector present in our sample. Observations are at the firm-year level.

Economic Sector (TRBC)	Lawyer CEOs	Total observations	Lawyer CEOs as % of total
Basic Materials	80	1338	6 %
Consumer Cyclical	189	1659	11 %
Consumer Non-Cyclical	0	859	0 %
Energy	46	755	6 %
Healthcare	88	1096	8 %
Industrials	163	2411	7 %
Real Estate	59	372	16 %
Technology	56	1736	3 %

4.2 Executive level variables

We match CEO data to firm-years by looking at year-end financial data. If a CEO held the position in the calendar year end, he is deemed to have held it for the whole year. Therefore, the timing of a change in CEO during the year is not shown in our data, and in some rare instances where a late change in the year occurs our results might be biased, namely, attributing changes made during the previous CEO to the new CEO. Our firm data has some lack of consistency as the figures reported are per financial year and not calendar year, meaning that for some firms our financial data is not at year end, which can pose an issue for variables when controlling for year fixed effects. Some industry standards could also make this issue appear in a systematic manner.

Lawyer CEOs (*LAWYER*) are CEOs with a major in law, be it a doctorate, a master's degree, or a bachelor's degree. Additionally, law specific degree abbreviations such as LL.B., LL. M., and J.D. are automatically counted as lawyer CEOs. Our data set does not provide us consistent information of additional or double degrees and therefore combinations of for example, a law degree and an MBA are a rarity, occurring only in instances such as where a

CEO's data includes MBA as a degree but law as a major. As only one degree is reported, a CEO with more than one degree is categorized based on which ever degree is reported by our source. Furthermore, this means that some potential lawyer CEOs might be missing from our sample, given the lack of double-degree data. Our post-graduate degree variable (*PHD*), which includes firm-years led by CEOs with a doctorate level degree, is on the other hand a degree with which we can see potential overlap with lawyer CEOs as degree level is a separate field from the major subject. Our other educational variables are *MBA*, a master's degree in business administration, and *FIN_EDUC*, which includes all CEOs with a major in accounting, economics, or finance in a broad sense. CEOs with double degree majors are included in this variable, as long as one degree belongs to one of the above-mentioned areas of study. Table 15 in Appendix B exhaustively presents all major subjects included in the variable.

Although an MBA is less common in Europe and thus a graduate degree variable could be useful to determine the effect of the level of education, we choose not to include it for two reasons: 1. our data quality is lacking when it comes to the level of education and would drastically reduce our sample size if included. 2. Given the wide variety of different education systems and thus standards between countries for what is considered the baseline level for university education, the effect of a graduate degree variable would likely not be extremely evident since the CEOs level of education is more likely to depend on the educational system and a specific society's standards rather than reflecting some underlying personal characteristics. Additionally, we control for the gender of the CEO with the variable *FEMALE*, which equals 1 if the CEO's gender is listed as female. Lastly, we include *TENURE* as a control variable, which is a whole number equal to the number of years the CEO has spent as a CEO in the current company, during the years 1998 – 2022.

A common variable in the existing literature on CEO characteristics, age, has been excluded as our data set is inadequate when it comes to CEOs' dates of births. Around 30% of our sample lacks the data, and manually collecting date of births is both too time-consuming and at times impossible, as the data

is simply not publicly available in many cases. Considering that age has been found to correlate moderately with tenure by e.g., Kaidesoja (2018) who found the correlation between the two variables to be 0.47, we hypothesize that our lack of an age control variable does not meaningfully affect the merits of the analysis.

4.3 Firm level variables

Our chosen firm level variables are based on their prevalence in similar literature. Regarding choosing control variables, we largely follow Pham et al. (2022). As control variables we include interest coverage (*INT_COV*), return-on-assets (*ROA*), capital intensity (*CAP_INTEN*), leverage (*LEVERAGE*), cash-to-assets (*CASH_TO_ASSETS*), as well as annualized daily stock return volatility (*RETVOL*) to capture a firm's growth prospects and risk reflected in its equity returns. Additionally, we control for the natural logarithm of firm size (*LNSIZE*) since larger firms are deemed less risky on average (e.g., Bonsall et al., 2016), the natural logarithm of firm market-to-book ratio (*LNMTB*), and Tobin's q (*TOBINSQ*) following Henderson et al. (2017). Finally, as investment policy variables, associated with risk-aversiveness if deemed relatively conservative, we use firm annual R&D spending (*RND*) as well as annual capital expenditures (*CAPEX*). For our credit rating (*CREDIT_RATING*) variable we use all available S&P, Fitch, and Moody's long-term ratings. Following Pham et al., (2022) We lag all independent variables by one year, relative to the credit rating variable, to avoid reverse causality issues.

Noteworthy, data for firms' annual R&D spending is surprisingly sparse. In our sample, 67% of firms did not report any R&D spending, or the data was missing. We hypothesize the former to be the main culprit as our lack of R&D spending figures is relatively in line with prior studies, as well as in congruence with the findings of Koh & Reeb (2015), who found 42% of the firms in their sample of over 104,500 NYSE-listed firm-year observations between 1980-2006 to not report any R&D spending. There should not exist major difference between the practices of US-listed and EU-listed companies as US

GAAP and IFRS require the same treatment of R&D spending, expensed annually. Nevertheless, unlike US GAAP, IFRS also has additional guidance that requires companies to capitalize certain development spending resulting in less R&D spending expensed in the Income statement, which is in line with our data. Additionally, the existence of a significant R&D spending gap between US and European firms, where US firms invest more in R&D, (Moncada-Paternò-Castello & Grassano, 2022) further substantiates the fairly low level of available R&D data to be feasibly in-line with what is in fact reported in companies' official financial reports.

A somewhat similar issue arises regarding our credit rating sample. There exists a major discrepancy in the preference between corporate bank loans versus corporate bonds in Europe compared to the US market. For instance, in 2009, bonds represented 35% of US firms' total debt while the same figure in Europe was 13% (Darmouni & Papoutsis, 2021). This is hypothesized to be driven by a wide variety of factors, such as the existence of Chapter 11 bankruptcy in the US, differences in the informational environment, as well as far-rooted attitude differences. Europe is by some researchers described as "bank-based", while referring to the US instead as "market-based" when it comes to corporate financing (Darmouni & Siani, 2021). The relative lack of available credit rating data, as well as various exclusions made based on the lack of other data result in us amassing a relatively small sample of credit ratings that can be matched with our other firm-year observations. We find 120 out of 825, or 14.5% of our unique companies to have an S&P, Fitch, or Moody's long-term credit rating. This results in a sample of 1,010 firm-year observations with an issuer credit rating.

To mitigate the effect of possible spurious outliers in our data, we winsorize all firm financial data. We chose a 90% winsorization based on its prevalence in similar literature, as well as the fact that a tested 98% and 95% winsorization did not sufficiently deal with outliers in some variables. Our choice of a 90% winsorization sets values below the 5th-percentile and above the 95th-percentile to the values representing the percentiles respectively.

Multicollinearity, in other words strong correlation between two variables which decreases the reliability of results for one of the variables could be a potential issue. If for example the lawyer CEO variable was strongly correlated with another variable, this would decrease the reliability of any interpretations of the results. Table 17 in Appendix B presents all variables and their correlations with the lawyer CEO (*LAWYER*) variable. Correlations between the lawyer CEO variable and control variables are between the interval of -0.1 and 0.1 except for the *FIN_EDUC* variable which has a negative correlation of -0.15. This suggests that there is no meaningful bias caused by multicollinearity in the regressions. Some firm-level variables are weakly or moderately correlated with each other, and thus should not be interpreted individually but rather as a whole. An example of this is a negative correlation of -0.34 between interest coverage and leverage, which makes intuitive sense as higher leverage associates with higher interest payments. These variables, however, serve solely as controls and do not undermine the intended analysis.

4.4 Risk measures

As risk measures, and as our models' dependant variables, to uncover links between a CEOs legal expertise and their risk behaviour and to answer our explicit hypotheses we look at the lawyer CEO variable's association with a firm's intangible and tangible investment policies, leverage, liquidity, and credit rating. We split our analysis into five separate regression models, one per dependant variable. Specifically, we employ regressions with *R&D*, *CAPEX*, *LEVERAGE*, *CASH_TO_ASSETS*, and *CREDIT_RATING* as dependant variables. Precise definitions of the dependant variables can be found in Table 18 in Appendix B. Motivations for choosing certain variables are laid out in Chapters 4.2 and 4.3, for CEO and firm characteristics respectively.

4.5 Empirical methods

We examine the links between lawyer CEOs and the previously mentioned five different proxies for risk behaviour using OLS regressions following Pham et al. (2022) and other previous studies on CEOs' links with firm behaviour. First, we examine whether and to what extent a lawyer CEO associates with a firm's investment policies. We regress both annual capital expenditure divided by total assets (*CAPEX*) as well as annual R&D spending divided by annual revenue (*R&D*). We then examine to what extent a lawyer CEO associates with a firm's capital structure by regressing both cash-to-asset and leverage ratios. Finally, we employ a regression with credit rating as the dependant variable. We regress the capital expenditures divided by total assets, our *CAPEX* variable, of company *i* during year *t* with CEO *j* by using the following regression formula:

$$CAPEX_{ijt} = \beta_0 + \beta_1 LAWYER_j + X_{ijt} + \epsilon_{ijt}$$

Where *LAWYER* is a dummy variable equalling 1 if the company's CEO has a law degree and 0 otherwise. X_{ijt} is a group of executive level and firm level control variables and ϵ_{ijt} are errors between firms. We conduct similar regressions for our other analyses.

We control for both firm and year fixed effects. To control for year fixed effects, we assign dummy variables for our 24 years, which corresponds to 23 dummies. To control for firm fixed effects, we assign dummy variables to each of our 825 unique companies, corresponding to 824 dummies. In our later split sample robustness tests, in Chapters 5.3 and 5.4, our sample is split in several ways. For each of the subsamples the dummy variables are adjusted to fit the corresponding subsample, by only including dummy variables of the years and firms in the given subsample.

In our baseline analysis, we present three regression specifications: a model with only the lawyer CEO variable, a model with other CEO-specific control variables, and a model with all control variables. We control for firm

and year fixed effects in all model specifications, and cluster standard errors by firm.

By clustering standard errors by firm, we control for intra-firm fixed effects as observations of individual firms over the years are likely to be highly correlated and treating them as independent observations would likely significantly underestimate our error terms (Abadie et al. 2023). Clustering standard errors is used in cases where observations within a sample are not independent and can be grouped into clusters, such as firms in our case. Clustering standard errors accounts for potential correlation or heterogeneity within clustered data and adjusts standard errors of the regression coefficients to account for intra-cluster correlation or heterogeneity. The expected outcome is that clustering standard errors by firm will reduce the precision of coefficient estimates i.e., increase standard errors. Increased uncertainty introduced by the clustering will result in some level of increase in p-values potentially resulting in loss of statistical significance for otherwise statistically significant results.

For our credit rating models, we follow Pham et al. (2022) in variable selections as far as our data allows us. We use year dummies to control for year fixed effects. However, we decide against using firm dummy variables due to our limited sample size to avoid model overfitting issues. This likely leaves our credit rating model vulnerable to firm fixed effects and therefore likely somewhat reduces the preciseness of our credit rating model.

4.6 Robustness tests

While panel regressions with a lawyer CEO as a binary independent variable serves as the baseline analysis in this study, we as a form of testing our results' robustness to various conditions, to ultimately assess the reliability, stability, and generalizability of our results, and to gain additional insights into of some of our documented results, employ various robustness tests. As robustness tests are used to verify and bolster uncovered results, we employ these tests solely on dependent variables which present significant results in our baseline analysis.

As our first robustness test, we repeat our analyses on sub samples formed based on time period. Specifically, we split our data into a subsample consisting of the years preceding the Global Financial Crisis, and a subsample consisting of the years following the Global Financial Crisis. We completely exclude from our analysis the main year of the crisis, 2008. The split sample analysis is further discussed and motivated in Chapter 5.3. As our second test, we test whether uncovered associations, in both strength and accuracy, depend on firm riskiness. We divide our sample firms into groups based on two riskiness factors, into a high risk and low risk sample for each factor, following methods employed by Pham et al. (2022). Specifically, we proxy firm riskiness with a firm's level of financial constraint and past variability. Our method is further outlined in Chapter 5.4.

4.7 Limitations of the study

The study has a number of possible drawbacks. As is typical for most executive research, this study's approach makes it impossible to definitively establish causality. Instead, the correlations in the results point to potential causality, which is then further assessed by employing robustness tests. The hypothesized causal relationships are based on generally accepted theory and the findings of prior literature but should nevertheless be taken with a healthy amount of scrutiny.

Furthermore, CEO-firm matching raises endogeneity issues because CEOs are not put into organizations at random. The observed effects can be the consequence of CEOs choosing themselves to implement particular policies or selection by boards who want to see particular policies carried out in the organization.

Additionally, rather than the lawyer-effect per se, it's also plausible that unobserved variables that correlate with both the chosen dependent variables and lawyer CEOs are what's causing the observed relationships. These endogeneity issues are addressed by integrating a sizable collection of control variables that are consistent with prior research and by doing additional robustness tests. Nevertheless, endogeneity cannot definitively be ruled out.

Furthermore, endogeneity restrictions are factors to consider when interpreting the data rather than systematic bias or errors. Regardless of whether lawyers are expressly chosen as CEOs owing to their experience or whether an omitted variable is the primary cause of the observed relationships, boards should be aware of the various corporate policies that may be impacted.

Finally, executive research relies heavily on available data, which is often incomplete, inaccurate, combined from multiple sources, and categorized using at least some level of subjectivity. This is also the case regarding our data, as we made various exclusions, mainly due to imperfect available data, discussed further in Chapter 4.1.

5 Empirical results

In this section, we report our empirical findings and discuss their implications. First, we present our baseline analyses in the form of panel regressions for our fundamental risk measures, followed by a regression examining the association between issuer credit ratings and the lawyer CEO variable. After our baseline analysis we employ various robustness tests. First, we present analysis where we split our sample into time periods preceding and following the Global Financial Crisis to examine our results' time dependence, and to investigate whether the relationship between lawyer CEOs and our selected risk measures is different between the two periods. Second, we examine whether the strength of our documented associations is dependent on the riskiness of the firm.

5.1 Lawyer CEOs and fundamental risk measures

In our analysis regarding lawyer CEOs and fundamental risk measures, we present three regression specifications: a model with just the lawyer CEO variable, a model with CEO-level control variables, and finally, a model with all additional firm-level controls. We outline and discuss the results following each separate analysis. Control variables' associations not outlined in text are deemed too insignificant to provide a reliable or useful interpretation. As is standard practice ***, **, and * notations signify statistical significance at the 1% level, 5% level, and 10% level respectively.

We present regression results for *RND* as a dependant variable in Table 3. We find no statistically significant association between the lawyer CEO variable and the dependent variable. Regarding control variables, we observe R&D spending to be higher for firms with higher capital expenditures, and for firms with higher liquidity measured by their ratio of cash-to-assets. Conversely, we find R&D spending to be lower for firms with a higher return-on-assets ratio.

Table 3 Lawyer CEOs and intangible investments

The table below presents the results of OLS regressions of R&D spending on a set of independent variables. The observations are at the firm-year level. The variable "Lawyer CEO" is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable: RND		
	(1)	(2)	(3)
LAWYER	-0.003 (-0.84)	-0.003 (-0.87)	-0.002 (-0.50)
PHD		0.001 (0.16)	0.001 (0.12)
MBA		0.001 (0.71)	0.001 (0.62)
FEMALE		-0.002 (-0.84)	-0.004 (-1.24)
FIN_EDUC		0.000 (0.04)	0.002 (0.80)
TENURE		0.000 (0.80)	0.000 (0.64)
INT_COV			0.000 (-1.30)
LNSIZE			0.005 (0.74)
TOBINSQ			0.000 (-0.18)
ROA			-0.065*** (-2.61)
LNMTB			0.004 (1.35)
RETVOL			0.000 (1.15)
CAP_INTEN			0.002 (0.94)
LEVERAGE			-0.001 (-0.04)
CAPEX			0.029** (2.11)
CASH-TO-ASSETS			0.113* (1.91)
ASSET_TANGIBILITY			0.004** (2.03)
DIVPAYING			0.017 (1.47)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
S.E. clustered by	Firm	Firm	Firm
Adjusted R-squared	0.643	0.643	0.654
Observations	10226	10226	10226

In Table 4 we present regression results for the dependant variable *CAPEX*. We find no statistically significant association between the lawyer CEO variable and the dependent variable. Regarding control variables, we observe firms' capital expenditures to total assets ratio to be positively associated with a CEO holding a doctorate level degree, and a firm's interest coverage ratio. We find the *CAPEX* dependent variable weakly negatively associated with the CEO's tenure.

Results from firm investment policy-related regressions, R&D spending and capital expenditures, present limited insights due to contradictory results. The sign of the lawyer CEO coefficient in the R&D spending regression, translating into lawyer CEOs being linked with lower R&D spending, is in line with the findings of e.g., Henderson et al., (2017) and Kaidesoja (2018) who also document the same association with similar strength in their analysis based on US data. They find the lawyer CEO coefficients in a similar regression to be -0.027 and -0.024 respectively. The results of our regression model with capital expenditure as a dependant variable are in contrast with the results of Henderson et al., (2017) and Kaidesoja (2018) who find lawyer CEOs to exhibit a negative association with annual capital expenditures.

Table 4 Lawyer CEOs and tangible investments

The table below presents the results of OLS regressions of capital expenditures on a set of independent variables. The observations are at the firm-year level. The variable "Lawyer CEO" is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable: CAPEX		
	(1)	(2)	(3)
LAWYER	0.011 (1.08)	0.012 (1.18)	0.011 (1.09)
PHD		0.012* (1.87)	0.011* (1.76)
MBA		0.006 (1.29)	0.007 (1.46)
FEMALE		-0.001 (-0.14)	0.000 (0.09)
FIN_EDUC		0.000 (-0.12)	-0.001 (-0.22)
TENURE		0.000 (-1.25)	-0.0004* (-1.69)
INT_COV			0.0001*** (2.97)
LNSIZE			-0.001 (-0.55)
TOBINSQ			0.000 (-0.43)
ROA			0.01 (0.89)
LNMTB			0.011 (5.45)
RETVOL			0.000 (-0.48)
CAP_INTEN			0.009 (1.92)
LEVERAGE			0.009 (0.96)
CASH-TO-ASSETS			0.002 (0.12)
RND			0.016 (1.70)
DIVPAYING			0.001 (1.06)
ASSET_TANGIBILITY			0.026 (2.28)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
S.E. clustered by	Firm	Firm	Firm
Adjusted R-squared	0.409	0.411	0.428
Observations	10226	10226	10226

In conclusion, regarding firm investment policies, we are unable to replicate earlier results documented by e.g., Kaidesoja (2018) on US-listed firms.

We thus reject our first hypothesis of lawyer CEOs exhibiting both lower R&D spending as well as capital expenditures. Noteworthy, Kaidesoja (2018) employs less stringent controls in the form of less control variables, but more importantly by not clustering standard errors by firm. OLS assumes observations are independent, but firm panel data requires clustering standard errors at the firm-level to account for the firm-dependence of the observations. It is possible, if not feasible, that previously documented results without clustering standard errors by e.g., Kaidesoja (2018) would lose their statistical significance if the control was added.

In Table 5 we present regression results for the dependant variable *CASH_TO_ASSETS*. We find the *LAWYER* variable negatively associated with the cash-to-assets ratios of our observed firms. Firms led by lawyer CEOs are found to associate with 2.1 percentage points lower cash-to-assets ratios. This result is in contrast with our hypothesis, but in line with the findings of e.g., Kaidesoja (2018). Results are statistically significant at the 5% level, but only after adding all our firm and CEO specific control variables. Regarding control variables, we find the liquidity of firms to be positively associated with a firm's market-to-book ratio, leverage, and research and development spending. Conversely, we find the liquidity of firms to be negatively and strongly related with dividend paying. This is in line with what has been previously documented by Bates et al. (2009) who find the cash ratios of their sampled firms, when overlapping with our sample period, to be significantly higher for firms that do not pay a dividend. One hypothesized explanation for this is the so-called precautionary demand for cash theory which suggests that firms hold cash as a buffer against adverse cash flow shocks. Combining this with the notion that since dividend paying firms are on average more established and operate in more mature industries, they are less likely to face significant adverse cash flow shocks and thus need less of a liquidity buffer compared to non-dividend-paying firms (Bates et al., 2009)

Table 5 Lawyer CEOs and liquidity

The table below presents the results of OLS regressions of cash-to-assets on a set of independent variables. The observations are at the firm-year level. The variable "Lawyer CEO" is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable: CASH-TO-ASSETS		
	(1)	(2)	(3)
LAWYER	-0.017 (-1.57)	-0.016 (-1.47)	-0.021** (-2.07)
PHD		-0.005 (-0.71)	-0.006 (-1.3)
MBA		0.002 (0.34)	0.000 (-0.03)
FEMALE		0.000 (0.04)	0.006 (0.75)
FIN_EDUC		0.001 (0.25)	0.001 (0.19)
TENURE		0.000 (-0.03)	0.000 (0.36)
INT_COV			0.000 (0.52)
LNSIZE			0.006 (1.54)
TOBINSQ			-0.001 (-0.49)
ROA			0.024 (1.52)
LNMTB			0.007** (2.33)
RETVOL			0.000 (-1.51)
CAP_INTEN			0.005* (1.68)
LEVERAGE			0.033*** (2.78)
CAPEX			0.004 (0.12)
RND			0.143** (2.48)
DIVPAYING			-0.284*** (-12.8)
ASSET_TANGIBILITY			-0.002 (-0.76)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
S.E. clustered by	Firm	Firm	Firm
Adjusted R-squared	0.541	0.541	0.628
Observations	10226	10226	10226

Although in line with previous research done with a sample of US-listed firms, our results are against the general hypothesis of lawyer CEOs exhibiting less risky behaviour in the form of higher liquidity. We reject our second hypothesis of lawyer CEOs exhibiting both a higher cash-to-assets ratio as well as leverage. Next, we examine the second component of our second hypothesis, leverage, and its association with lawyer CEOs.

In Table 6 we present regression results for the dependant variable *LEVERAGE*. We find no statistically significant association between the *LAWYER* variable and the leverage-ratios of our observed firms. Regarding control variables, we observe the leverage ratios of firms to positively associate with the size of the firm, a higher Tobin's q ratio, stock volatility, capital intensity, R&D spending, and paying dividends. Conversely, leverage is negatively associated with a firm's interest coverage ratio, return-on-assets ratio, and market-to-book ratio. Prior to clustering standard errors by firm, we are able to replicate the results of Kaidesoja (2018), which studied US-listed firms. After employing our stricter controls, we lose statistical significance.

Table 6 Lawyer CEOs and leverage

The table below presents the results of OLS regressions of leverage on a set of independent variables. The observations are at the firm-year level. The variable "Lawyer CEO" is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

Dependent variable: LEVERAGE			
	(1)	(2)	(3)
LAWYER	0.040 (1.48)	0.043 (1.49)	0.040 (1.58)
PHD		0.006 (0.50)	0.011 (0.97)
MBA		0.000 (-0.03)	0.002 (0.14)
FEMALE		-0.015 (-0.87)	-0.017 (-1.11)
FIN_EDUC		0.005 (0.48)	0.011 (1.03)
TENURE		0.000 (0.48)	0.001 (0.86)
INT_COV			-0.001*** (-11.15)
LNSIZE			0.018** (2.51)
TOBINSQ			0.007*** (3.62)
ROA			-0.132*** (-2.87)
LNMTB			-0.044*** (-7.20)
RETVOL			0.001*** (6.88)
CAP_INTEN			0.035*** (2.70)
CAPEX			0.068 (0.97)
CASH-TO-ASSETS			0.111*** (2.70)
RND			-0.002 (-0.04)
DIVPAYING			-0.001 (-0.28)
ASSET_TANGIBILITY			0.094*** (2.91)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
S.E. clustered by	Firm	Firm	Firm
Adjusted R-squared	0.647	0.647	0.689
Observations	10226	10226	10226

Overall, the results of the panel regressions with R&D spending, capital expenditures, cash-to-assets ratios, and leverage as dependant variables

result in us rejecting our first and second hypothesis. Additionally, three out of four of our models do not present statistically significant results regarding the lawyer CEO variable.

In the R&D spending regression, the lawyer CEO coefficient has the expected sign, but the association is weak and statistically insignificant. In the capital expenditure regression, the sign of the lawyer CEO coefficient is against our hypothesis and while the association is moderate, the results are statistically insignificant. In the cash-to-assets regression, the sign of the lawyer CEO coefficient is negative, which is in contrast with our hypothesis. The association is moderate, and statistically significant at the 5% level. In the leverage regression the sign of the lawyer CEO coefficient is in contrast with our hypothesis as we expected lawyer CEOs to exhibit a lower leverage ratio, and while the association is stronger, the results are not statistically significant.

Although the results of the analysis with cash-to-assets as a dependent variable, our only statistically significant results in this chapter, are against our explicit hypothesis and at least the simplest interpretation of the role of liquidity when it comes to a firm's riskiness, they do raise questions regarding other possible interpretations. First, taking the view that excess cash positively associates with the riskiness of a firm's cash flows, due to more investment optionality and thus outcome volatility, supported by the findings of Bates et al. (2009), lowering excess liquidity can be seen as a risk-reducing act. Second, companies facing risk of litigation are shown to increase cash reserves in anticipation of litigation costs and settlements (Arena & Julio, 2015). Since firms led by lawyer CEOs are apt in avoiding litigation as shown by Henderson et al. (2017), firms led by lawyer CEOs do not need as high of a cash buffer as their peers. Therefore, it is possible that litigation-risk-aversion drives our liquidity-related results instead of the originally hypothesized general risk aversion exhibited by a higher cash buffer. Third, from a reverse causality perspective, taking the opposite view, boards seeking risk-averse behaviour from their firm's leadership might want to hire lawyer CEOs who

are thought of as being well-equipped to lead riskier firms, in this case firms with less of a liquidity buffer, due to their hypothesized risk-averse nature.

5.2 Lawyer CEOs and credit ratings

In this chapter we examine whether at all, and if so, to which extent lawyer CEOs associate with issuer credit ratings. We regress the lawyer CEO variable against our credit rating variable constructed from long-term entity ratings by S&P, Fitch, and Moody's. We again follow a similar regression formula as presented in chapter 4.5.

We present regression results for *CREDIT_RATING* as a dependant variable in Table 7. We find the lawyer CEO variable to positively and strongly associate with a firm's credit rating. Specifically, in our final model specification we find lawyer CEOs to associate with 0.89 rating increments higher credit ratings than their peers. Results are significant at a 5% level. Our results are in line with the findings of Pham et al. (2022), who document a similar although weaker association.

These results suggest that firms led by lawyer CEOs do in fact receive better credit ratings, confirming our third hypothesis. One plausible explanation for the better ratings are the findings of Henderson et al. (2017) who find that lawyer CEOs are associated with the implementation of more cautious risk management policies, including management of analyst and investor expectations and careful earnings management. Bambier et al. (2010) further showed that personal dimensions of managers have a significant role in explaining corporate voluntary disclosure choices. It could be then argued that the figures published by firms with lawyer CEOs at the helm are more trustworthy and leave less uncertainty to interpret for the of credit rating agencies. These in turn lead to better credit ratings, given there exists, or at least is argued to exist less asymmetric information between a firm led by a lawyer CEO and a credit rating agency. Finally, Henderson et al. (2017) document that CEOs with legal training reduce the risk and severity of legal action against the firms they lead, which again if visible to and acknowledged by rating agencies, lends credence to these firms receiving higher credit ratings.

Table 7 Lawyer CEOs and credit risk

The table below presents the results of OLS regressions of credit rating on a set of independent variables. The observations are at the firm-year level. The variable "Lawyer CEO" is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable: CREDIT_RATING		
	(1)	(2)	(3)
LAWYER	0.878** (2.07)	0.959** (2.29)	0.892** (2.28)
PHD		0.456 (0.80)	0.710 (1.63)
MBA		0.619 (1.31)	0.532 (1.24)
FEMALE		0.961*** (3.22)	0.932** (2.30)
FIN_EDUC		0.124 (0.41)	0.008 (0.03)
TENURE		0.045* (1.84)	0.026 (1.21)
INT_COV			0.014*** (2.59)
LNSIZE			0.119 (1.16)
TOBINSQ			0.194 (0.96)
ROA			1.088 (0.80)
LNMTB			-0.041 (-0.15)
RETVOL			-0.082 (-0.46)
CAP_INTEN			-0.117 (-0.44)
LEVERAGE			-0.482 (-0.57)
CAPEX			-8.857 (-1.54)
CASH-TO-ASSETS			-1.816 (-0.72)
RND			0.677 (0.40)
ASSET_TANGIBILITY			0.028 (0.04)
DIVPAYING			0.407 (2.03)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	No	No	No
S.E. clustered by	Firm	Firm	Firm
Adjusted R-squared	0.021	0.055	0.164
Observations	1010	1010	1010

Regarding control variables, we interestingly document a strong positive association between female CEOs and credit ratings. Females are found to associate with nearly a whole rating increment higher credit rating. MBAs and PhDs are also associated with better credit ratings, although their coefficients are not statistically significant at even a 10% level. These results are in line with some prior research, as e.g. King et al. (2016) document a CEOs education to associate positively with a firm's profitability in the banking sector. Nevertheless, a credit rating process is not solely concerned with a firm's profitability but rather focuses on the defensiveness of its cash flows to pay back creditors. Nevertheless, there also exists literature supporting the opposite conclusions, that education level does not play a role in firms' performance, which calls for vigilance in drawing any solid conclusions. Khan and Vieito (2013) on the other hand study a panel of US firms over a time period overlapping with our sample and document female CEOs to associate with a lower firm risk level. This supports our findings, as a lower average risk level would plausibly translate to better average credit ratings.

Noteworthy, minor scrutiny towards our documented results is warranted considering less stringent controls regarding firm fixed effects due to limitations related to our sample size. Furthermore, given the lack of firm fixed effects and a smaller sample size, our adjusted R-squared score for our final model is relatively low, compared to findings of Pham et al. (2022). Also, what needs to be kept in mind is that credit assessments are done, at least at the time of the writing of this thesis, still by human interpreters, and no matter how convincing of a rational explanation is found for the documented results, it is always possible that irrational psychological bias from a human credit assessor is what is driving a relationship.

5.3 Time dependence, and the Global Financial Crisis as a catalyst for change

Researchers use the financial crisis of 2007-2008 (Global Financial Crisis) as a natural setting to test whether the shock, which was exogenous when it

comes to a single firm, and the following drastically changed economic, regulatory, and social environment influenced an association being studied. To highlight a few examples, Bouslah et al. (2016) study firms' social performance and its relation to firm risk. In their analysis they split their sample into pre-crisis, crisis, and post crisis subsamples and find significant differences in the relation between a firm's social performance and firm risk between said time periods. Ho et al. (2016) study interest rate passthrough, the response of interest rate spreads to shocks, and by splitting their sample into a pre- and post-crisis period subsample find differences in the completeness of said passthrough between the subsamples. Shah et al. (2017) look for differences between banks' CEO compensation driven risk behaviour pre and post Global Financial Crisis. Their results show clear differences between the effect and significance of various risk measures between the pre-crisis and post-crisis subsamples.

Considering these results among others, we aim to analyse whether there exist differences in the associations between a lawyer CEO and our employed risk measures pre- and post-Global Financial Crisis. The Global Financial Crisis presents an attractive natural setting to test whether the realization of the many risks involved, and whether the following dire economic environment affected the association of lawyer CEOs with firm risk behaviour. We also simultaneously test whether our previously documented results are consistent over time variant subsamples of our full sample, or whether the results are time dependant. Due to our general hypothesis of lawyer CEOs exhibiting less risky behaviour, we hypothesize that lawyer CEOs are more strongly associated with less risky behaviour following the Global Financial Crisis, compared to the pre-crisis period. We expect the economically difficult environment following the crisis as well as the added focus towards risk in the minds of executives and the public at large to increase both the absolute coefficient and the preciseness of the lawyer CEO variable's association with our risk measures. We hypothesize the external shock to essentially highlight the need and effect of risk behaviour-related characteristics of managers, at least for a period following the crisis, if not for longer. An alternative

but supportive hypothesis to a strengthening association is that firms' hiring practices after the crisis would focus more on individual characteristics and the background of the CEO, than before the crisis. Once risks had realised during the crisis, a safe pair of hands at the helm of the company would seem like a favourable choice for a company seeking lower risk levels in the new more challenging environment.

As a form of a robustness test, and as additional standalone analysis, we examine the effect of the Global Financial Crisis on the association between the lawyer CEO variable and our dependent risk variables by splitting our sample into two subsamples, a pre-crisis subsample, and a post-crisis subsample. We exclude the main year of the crisis, 2008, and split our sample into the years preceding 2008 and the years following 2008. In our case into samples encompassing 1998-2007 and 2009-2022 respectively. Considering that our sample's data is sparser during the earlier period, as visualized in Figure 1, and that the earlier period includes fewer years, the post-crisis sample ends up significantly larger. The post-crisis subsample consists of 6,957 firm-year observations, while the pre-crisis subsample consists of 2,826 firm-year observations. We again employ a similar regression formula as presented in Chapter 4.5. We control for firm and year fixed effects, and cluster standard errors by firm. Split sample regression results for dependant variables that showed significant results in our main analysis, *CASH-TO-ASETS*, and *CREDIT_RATING*, can be found under this chapter, while results for other dependant variables, ones which did not show statistically significant in our baseline analysis, are presented in Appendix A.

In Table 8 we present regression results for the dependant variable *CASH-TO-ASSETS*, comparing results for pre- and post-crisis subsamples. Interestingly, we find no statistically significant association between the lawyer CEO variable and firm cash-to-asset ratios in either subsample.

Table 8 Time dependence analysis, liquidity

The table below presents the results of OLS regressions of cash-to-assets ratio on a set of independent variables for subsamples pre- and post-Global Financial Crisis. The Lawyer CEO variable is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : CASH-TO-ASSETS	
	1998-2007	2009-2022
	(1)	(2)
LAWYER	0.012 (0.80)	-0.003 (-0.31)
PHD	-0.003 (-0.25)	-0.005 (-0.65)
MBA	-0.012 (-1.30)	0.004 (0.50)
FEMALE	-0.054 (-1.63)	0.005 (0.67)
FIN_EDUC	-0.017* (-1.93)	-0.001 (-0.29)
TENURE	-0.002* (-1.81)	0.000 (0.31)
INT_COV	0.000 (-0.73)	0.000 (0.69)
LNSIZE	0.018*** (4.19)	-0.001 (-0.11)
TOBINSQ	-0.004*** (-3.54)	0.000 (-0.23)
ROA	0.042*** (2.66)	0.004 (0.18)
LNMTB	0.009** (2.39)	0.010*** (2.77)
RETVOL	0.000** (-2.22)	0.002 (1.49)
CAP_INTEN	0.007* (1.95)	0.004 (1.11)
LEVERAGE	0.023* (1.91)	0.019 (1.26)
CAPEX	0.063*** (2.64)	-0.054 (-1.3)
RND	-0.053 (-1.23)	0.109** (2.24)
DIVPAYING	-0.002 (-0.58)	0.000 (-0.12)
ASSET_TANGIBILITY	-0.290*** (-21.02)	-0.327*** (-12.11)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
Clustered S.E.	Firm	Firm
Adjusted R-squared	0.666 2826	0.708 6957

Noteworthy though, we document a noteworthy discrepancy between the lawyer CEO coefficients, in both size and direction. We find the lawyer CEO

coefficient to be negative for the post-crisis subsample, but positive for the pre-crisis subsample. Nevertheless, based on our analysis we cannot draw any robust conclusion as to whether our documented baseline analysis result of lawyer CEOs exhibiting lower liquidity is time-dependent or if the Global Financial Crisis influenced the association. The results are not in line with our expectation of a higher absolute coefficient post-crisis, and although post-crisis results are more precise, possibly due to a larger sample size, they do not breach the threshold of statistical significance after including all controls.

In Table 9, we present results for subsample regressions with the dependant variable *CREDIT_RATING*. The results are in line with our expectations. The lawyer CEO coefficient is significantly larger in the post-crisis subsample, and the results are more precise, statistically significant at the 5% level. Meanwhile, results for the pre-crisis sample are not statistically significant. The results point to time dependence of our baseline analysis findings regarding credit ratings.

There is little debate that the Global Financial Crisis was caused by excessive risk taking by large financial institutions. Although financial institutions are completely excluded from our sample, as explained in Chapter 4.1., there is an argument to be made that increased regulation and aversion towards risk-taking following the crisis in the financial sector would have shaped behaviour in a way that could have spilled to firms operating in other sectors, and into risk-linked behaviour as a whole. Even more so, industry independent aspects such as a market-wide recession and a gloomy economic outlook can feasibly be expected to affect an individual's attitude towards forms of risk-behaviour. Findings from Jetter et al., (2020) point to just that, the fact that the economically dire environment following the crisis, resulting in shifts in local economic environments such as increased unemployment rates, increased general risk aversion among males especially. The researchers indicate that this relationship has essentially emerged after the Global Financial Crisis as no such association can be found in their analysis done on the time period before the crisis.

Table 9 Time dependence analysis, credit risk

The table below presents the results of OLS regressions of credit rating on a set of independent variables for subsamples pre- and post-Global Financial Crisis. The Lawyer CEO variable is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : CREDIT_RATING	
	1998-2007	2009-2022
	(1)	(2)
LAWYER	0.096 (0.13)	1.050** (2.14)
PHD	0.346 (0.85)	0.892* (1.67)
MBA	0.967** (2.12)	0.308 (0.56)
FEMALE	0.648 (0.69)	0.886** (2.33)
FIN_EDUC	0.075 (0.22)	0.081 (0.26)
TENURE	0.090* (1.90)	0.020 (0.90)
INT_COV	0.005 (0.86)	0.029*** (4.28)
LNSIZE	-0.069 (-0.54)	0.212* (1.80)
TOBINSQ	-0.106 (-0.40)	0.282 (1.14)
ROA	2.979 (1.52)	-0.470 (-0.35)
LNMTB	0.498 (1.41)	-0.207 (-0.68)
RETVOL	-0.091 (-1.09)	0.023 (0.12)
CAP_INTEN	-0.111 (-1.55)	-0.103 (-0.32)
LEVERAGE	-1.489 (0.32)	0.785 (0.64)
CAPEX	1.071 (0.32)	-13.924** (-2.02)
CASH-TO-ASSETS	-3.988 (-1.49)	-1.721 (-0.57)
DIVPAYING	0.418 (1.41)	0.384 (1.37)
ASSET_TANGIBILITY	-0.063 (-0.08)	-0.866 (-0.95)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
S.E. clustered by	Firm	Firm
Adjusted R-squared	0.219	0.259
Observations	314	649

A change in the association between an individual and risk-related behaviour is also what our results point to. However, our regression models exhibit

results of varying statistical significance, and the models do not point to a single unified conclusion. For example, models with firm investment policy-related risk measures as dependant variables, RND and CAPEX, show weak associations without statistical significance in the split-sample analysis, just as in our baseline analysis, and we do not recommend drawing any conclusion from said results. The model with firm leverage as a dependant variable, points to similar conclusions. Although there is a stark contrast between the coefficients, as the results from the pre-crisis sample show a negative association between the lawyer CEO variable and firm leverage and the post-crisis sample points to the opposite association, results are not statistically significant. The regression tables for dependant variables RND, CAPEX, and LEVERAGE are presented in Appendix A.

Regarding the robustness of our documented statistically significant baseline analysis results, the analysis of this chapter points to the conclusion that the results for firm liquidity as a dependant variable are time dependent. Another possible explanation, although unlikely in our view, is that the subsamples are simply too small to be able to detect as precise results as with the full sample. We find similar results for the split sample credit rating regression. We find no statistically significant association with the lawyer CEO variable and credit ratings for the pre-crisis sample, but compared to the full sample baseline analysis, we document an even stronger and statistically significant association in our post-crisis sample. Nevertheless, it cannot be ruled out that statistical significance in our pre-crisis sample results is lost due to a more limited sample size.

There are many ways to interpret these results. Some possible speculative explanations in addition to a preference towards general risk-aversiveness post-crisis include: 1) Increased regulatory scrutiny and regulatory reforms following the Global Financial Crisis resulting in a heightened focus on regulatory compliance which lawyer CEOs may be better equipped to navigate, resulting in better credit ratings. 2) Greater emphasis on corporate governance after the crisis had exposed weaknesses in governance practices that were previously in place. Lawyer CEOs, with their deeper understanding of

legal responsibilities may have been more attuned to improving corporate governance practices resulting in higher transparency and risk oversight ultimately translating into better credit ratings. 3) Heightened investor preference towards legal expertise following the crisis for firms to better navigate potential legal challenges such as dispute resolution and restructurings. Lawyer CEOs with their knowhow and familiarity with legal issues and said processes are seen by creditors as less risky stewards of their capital, thus achieving better credit ratings.

Furthermore, it could also be argued that the importance of the trustworthiness of financial reporting became evident during the Global Financial Crisis, as for example window-dressing by certain financial institutions was prevalent. Following the findings of Henderson et al. (2017), who found that lawyer CEOs have more prudent earnings management approaches, and the fact that the Global Financial Crisis exposed the importance of trustworthy financial figures, it can plausibly be argued that the positive association of lawyer CEOs with credit ratings should be, as it is, more prevalent in the post-crisis subsample.

5.4 Cross-sectional analysis

Given that riskier firms or firms confronted with substantial risks would reap greater benefits from risk avoidance, it is reasonable to anticipate that the presumed risk aversion of lawyer CEOs would be highly desirable particularly for riskier firms. Consequently, this would result in a more pronounced association between lawyer CEOs and specific risk indicators within the context of riskier firms, as compared to the average firm. Whether this is then considered as part of a credit rating agency's credit assessment is another question altogether.

Following Pham et al. (2022) we test whether there is a meaningful difference between the previously documented associations in our baseline analysis based on firm riskiness. We use two measures of riskiness: 1) firms facing relatively high and low financial constraints, and 2) firms with higher and lower levels of past variability. Pham et al. (2022) additionally employ a third

measure, competition, which we leave out due to insufficient data. Specifically, because European-listed firms do not publish the SEC mandated 10-K, and to the best of our knowledge, there does not exist an equivalent report containing a thorough standardized business description for European-listed firms.

First, we examine the effect of the level of financial constraints by employing the Kaplan and Zingales (1997) index as described by Lamont et al. (2001) to categorize companies into two subsamples, the bottom and top half of our sample measured by their index value, representing low and high levels of financial constraint, respectively. We then run OLS regressions on the two subsamples.

Second, we examine whether the association between lawyer CEOs and our proxies for risk behaviour is affected by how uncertain of an environment the company operates in. We proxy uncertainty with stock return volatility by splitting our sample into two based on the standard deviation of monthly stock returns during the previous fiscal year. We then run OLS regressions on the two subsamples made up of the bottom and top half of the observations, representing low and high levels of uncertainty, respectively. We control for year fixed effects as in previous analyses and cluster standard errors by firm.

While our proxy for uncertainty, stock return volatility, is rather self-explanatory, the proxy for level of financial constraint, the Kaplan and Zingales index, as it was coined by Lamont et al. (2001), is a bit more elaborate. Kaplan and Zingales (1997) originally wanted to categorize firms based on their financial constraints and utilized an ordered logit regression to establish a connection between their classifications and certain accounting variables. Lamont et al. (2001) then produced the so-called Kaplan and Zingales index, a composite index utilizing the regression coefficients of Kaplan and Zingales (1997) as weights for the metrics included in the formula used to calculate the index. Higher index values signify higher levels of constraint. Five accounting ratios are combined linearly to create the Kaplan and Zingales index: the cash flow to total capital (negative coefficient), the market to book

ratio (positive coefficient), the debt to total capital (positive coefficient), the dividend to total capital (negative coefficient), and the cash held in account (negative coefficient) (Lamont et al., 2015). Variable definitions, construction as well as the precise formula for calculating the index can be found in conjunction with Table 19 in Appendix B.

In Table 10 we present results for the cross-sectional analysis regarding *CASH-TO-ASSETS* as the dependent variable. Compared to the baseline analysis, we find results regarding the lawyer CEO variable stronger and statistically significant only in the low-risk subsample in both the financial constraints and past variability-related analysis. Specifically, we find companies with lawyer CEOs to associate with lower levels of liquidity in said subsamples. For the subsamples representing high-risk firms, namely columns (1) and (3), select financial control variables have noticeably stronger statistically significant associations with a firm's cash-to-assets ratio, contrary to the low-risk samples, where asset tangibility is the only significant control variable. This finding supports our later suggestion, regarding our cross-sectional analysis with *CREDIT_RATING* as a dependent variable, where we hypothesize that financial ratio-based measures of risk receive more attention in a credit assessment in risky environments due to them being so-called low hanging fruit as targets of analysis.

Notwithstanding, there are a multitude of other potential explanations and interpretations for our observed results which cannot be fully explored in this thesis. As outlined earlier, reverse causality and omitted variables are also a potential concern. It is for example possible that lower risk firms have lower liquidity buffers due to them being less likely to need one but are simultaneously also more likely to hire lawyer CEOs for another reason.

Table 10 Cross-sectional analysis, liquidity

The table below presents the results of OLS regressions of cash-to-assets ratio on a set of independent variables for subsamples formulated based on both the Kaplan and Zingales index as well as standard deviation of stock returns. These are referred to as level of financial constraint and level of past variability, respectively. Lawyer CEO is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : CASH-TO-ASSETS			
	Financial Constraints		Past Variability	
	High (1)	Low (2)	High (3)	Low (4)
LAWYER	-0.021 (-1.34)	-0.029* (-1.91)	-0.007 (-0.45)	-0.026* (-1.74)
PHD	0.002 (0.37)	-0.002 (-0.19)	-0.011 (-1.38)	-0.002 (-0.27)
MBA	-0.001 (-0.12)	0.009 (0.77)	0.013 (0.97)	-0.007 (-1.36)
FEMALE	0.003 (0.33)	-0.002 (-0.16)	0.007 (0.50)	-0.005 (-0.46)
FIN_EDUC	0.008 (1.42)	-0.010 (-1.26)	-0.009 (-1.09)	0.003 (0.54)
TENURE	0.000 (-0.44)	-0.001* (-1.67)	-0.001** (-2.00)	0.000 (-0.03)
INT_COV	0.000 (1.02)	0.000 (0.22)	0.000 (0.56)	0.000 (-0.39)
LNSIZE	-0.006 (-0.97)	-0.001 (-0.21)	-0.004 (-0.60)	-0.001 (-0.15)
TOBINSQ	-0.002*** (-3.80)	-0.001 (-1.07)	-0.001 (-1.45)	-0.001 (-0.66)
ROA	-0.011 (-0.57)	-0.008 (-0.46)	-0.016 (-0.99)	0.011 (0.32)
LNMTB	0.010*** (3.61)	0.006 (1.19)	0.014*** (3.17)	0.001 (0.17)
RETVOL	0.004** (2.16)	0.003 (1.19)	-0.002 (-0.63)	0.005 (1.50)
CAP_INTEN	0.011** (2.06)	0.005 (0.45)	0.016** (2.01)	0.001 (0.16)
LEVERAGE	0.087*** (3.87)	-0.007 (-0.43)	0.081*** (2.67)	0.002 (0.12)
CAPEX	0.166*** (3.20)	0.009 (0.25)	0.047 (1.62)	0.006 (0.39)
RND	-0.019 (-0.18)	-0.025 (-0.46)	-0.014 (-0.24)	0.078 (0.65)
DIVPAYING	0.000 (-0.07)	-0.004 (-0.95)	0.002 (0.50)	-0.002 (-1.01)
ASSET_TANGIBILITY	-0.276*** (-8.74)	-0.393*** (-11.07)	-0.422*** (-12.64)	-0.257*** (-8.05)
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
S.E. clustered by	Firm	Firm	Firm	Firm
Adjusted R-squared	0.660	0.718	0.692	0.695
Observations	5121	5105	5121	5105

In Table 11 we present regression results for dependant variable *CREDIT_RATING*, where our sample is divided into two based whether the firm operates under either high financial constraints or low financial constraints, in columns (1) and (2) respectively. Columns (3) and (4) signify high and low levels of uncertainty measured by past variability, respectively.

First, analysing the effect of financial constraints, we find the lawyer CEO variable to associate with higher credit ratings in firms operating under low financial constraints with an average of 0.888 rating increments higher credit ratings. Results are significant at the 10% level. A statistically significant association between lawyer CEOs and credit ratings is not found for firms operating under high financial constraints. When it comes to control variables, firms led by MBAs or PHDs are strongly associated with better credit ratings when operating under low financial constraints. Additionally, firms with lower capital intensity are associated with better credit ratings, and firms which pay dividends are associated with better credit ratings, but only under low financial constraints. Conversely, firms led by females are strongly associated with better credit ratings, but only in firms operating under high financial constraints.

Regarding past variability as a proxy for an uncertain environment, we find lawyer CEOs to associate with 1.24 rating increments higher credit ratings when past variability is low. Conversely, in firms defined as having high past variability, no such association is found. Regarding control variables, we document the similar associations, although of slightly different strengths, as documented in columns (1) and (2) relating to the level of financial constraints a firm operates under.

We find our previously documented results from our baseline analysis presented in Table 7, in addition to being time dependent, to also be dependent of the level of financial constraints the firm operates under as well as the level of past variability, both proxies for the riskiness of the environment a firm operates in.

Table 11 Cross-sectional analysis, credit rating

The table below presents the results of OLS regressions of credit rating on a set of independent variables for subsamples formulated based on both the Kaplan and Zingales index as well as standard deviation of stock returns. These are referred to as level of financial constraint and level of past variability, respectively. Lawyer CEO is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : CREDIT_RATING			
	Financial Constraints		Past Variability	
	High (1)	Low (2)	High (3)	Low (4)
LAWYER	0.794 (1.28)	0.888* (1.91)	0.560 (1.03)	1.240*** (3.25)
PHD	0.398 (0.73)	1.158** (2.30)	0.562 (0.69)	0.819** (2.07)
MBA	-0.377 (-0.64)	1.120*** (2.60)	-0.350 (-0.55)	1.250*** (4.25)
FEMALE	1.239*** (2.75)	0.853 (1.34)	1.264*** (2.79)	-0.043 (-0.16)
FIN_EDUC	0.107 (0.35)	-0.456 (-1.29)	-0.232 (-0.59)	0.013 (0.06)
TENURE	0.004 (0.10)	0.047* (1.67)	0.023 (0.75)	0.030 (1.37)
INT_COV	0.024*** (2.67)	0.007 (1.33)	0.007** (0.64)	0.003 (1.29)
LNSIZE	0.228 (1.63)	0.139 (1.22)	0.129 (0.88)	0.113 (1.64)
TOBINSQ	0.622 (0.84)	0.109 (0.54)	0.128 (0.80)	0.183 (0.77)
ROA	2.880 (1.30)	-0.409 (-0.29)	0.197 (0.26)	1.198 (0.63)
LNMTB	-0.352 (-0.71)	0.145 (0.43)	-0.119 (-0.45)	0.197 (0.57)
RETVOL	0.024 (0.12)	-0.141 (-0.65)	-0.157 (-0.65)	0.163 (0.81)
CAP_INTEN	0.376 (1.02)	-0.540** (-2.26)	-0.018 (-0.05)	-0.291 (-1.53)
LEVERAGE	0.631 (0.51)	-1.334* (-1.66)	-0.173 (-0.14)	-1.511** (-2.44)
CAPEX	-10.012 (-1.51)	-2.778 (-0.64)	-10.383 (-1.42)	-4.427 (-1.46)
CASH-TO-ASSETS	-0.400 (-0.10)	-1.969 (-1.36)	-0.438 (-0.17)	-2.505 (-1.23)
DIVPAYING	0.187 (0.81)	0.608** (2.31)	0.328 (1.12)	0.424** (2.13)
ASSET_TANGIBILITY	-0.618 (-0.54)	0.267 (0.44)	0.057 (0.05)	0.136 (0.23)
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No
S.E. clustered by	Firm	Firm	Firm	Firm
Adjusted R-squared	0.138	0.259	0.096	0.315
Observations	512	493	512	493

Although our results are in contrast with the findings in Pham et al. (2022), we see them as both intuitive and plausible. We conjecture, that for firms that are more likely to be financially constrained, the financial metrics examined in a credit analysis essentially take priority over the CEO's characteristics. Financial metrics are in our mind so-called low hanging fruit of a credit analysis, and therefore financial constraints inhibit the need to examine management's personal traits and behaviour. Then in contrast, in the absence of financial constraints, the CEO's personal characteristics gain more prominence in the credit assessment process, and in the collective minds of rating agencies.

We conjecture that the same logic applies to the results of our analysis, in columns (3) and (4), examining the effect of a firm's past variability on the association between lawyer CEOs and a firm's credit rating. In essence, that when a firm has a high level of past variability, other more significant matters take precedence over the effect the CEO might have on the firm's riskiness and thus credit assessment. We conjecture those aspects such as business risk, industry and competitive position, financial metrics, and capital structure take precedence over the management's characteristics in a credit analysis. The management's effect only becomes apparent or at least stronger when the aforementioned metrics, deemed more pressing, point to low firm riskiness, and thus require less attention.

Female CEOs' association with higher credit ratings in high-risk firms is somewhat surprising, given the contrast to other CEO traits being only significant in low-risk firms.

One hypothesis supported by existing literature, e.g. Francoeur et al. (2007), is that female CEOs fare better in leading firms that operate in complex environments, indicated by high betas, high market-to-book ratios, and analyst forecast volatility. This definition of a complex environment could be likened to our definition of a risky environment, and although proxied by different measures, both represent risk in a broad sense.

Another hypothesis is that females represent more risk-averse behaviour, documented by e.g. Palvia et al. (2015), who find financial sector firms led by

female CEOs hold higher levels of equity capital and had a lower chance of failure during the Global Financial Crisis. This would then plausibly translate to better credit ratings especially in an uncertain environment where the probability of financial distress is higher.

Apart from the lawyer variable, no other CEO characteristic-related control variable shows clear and unified significant associations between the cross-sectional analyses. In our liquidity-related analysis, our variables seem to be mostly significant for the high-risk firms, leading to questions of whether different models should be used to explain the liquidity choices of firms in different financial situations. This dichotomy is not clearly visible in the credit rating-related analysis which in turn shows a different dichotomy, certain firm-level control variables being significant only for low-risk firms.

Nevertheless, we conclude that for both of our cross-sectional tests, financial control variables matter more for constrained firms, whereas the CEO characteristics are more dominant variables for less constrained firms. This is especially true concerning credit ratings, and mildly supported by the analysis regarding firm liquidity.

Following us being able to replicate the main results of Pham et al. (2022), suggesting that the association between lawyer CEOs and credit ratings is not limited to US-listed firms, we believe further research into this association is warranted to better understand the underlying mechanisms. One area of interest is to further test under which circumstances this relationship holds, to ultimately narrow down the underlying causal factor. One of these circumstances is other top management and their potential effects on our observed results. The Board of Directors, the CFO, and other institutions at the upper echelons of a firm are also bound to affect corporate policies, as well as the behaviour of the CEO. It is possible that lawyer CEOs have a different type of relationship with their firm's board or members of the leadership team that could influence the CEOs behaviour under those circumstances.

Another area of intrigue and common research topic relating to CEOs is compensation, both the absolute level of compensation and the way it is structured. An interesting future topic of future research would be whether

lawyer CEOs are more likely to be able to negotiate certain kinds of incentive structures. For example, one could hypothesize lawyer CEOs to be better equipped at negotiating superior incentive structures based on their knowledge of related legal areas such as corporate governance law. This could also potentially then shed light on new ways to interpret our documented results as well as results from previous literature discussed at length in this thesis.

6 Conclusions

This study examines the relationship between firms led by lawyer CEOs and firm risk behaviour using a sample of European-listed companies. We regress a lawyer CEO variable against a panel of risk-behaviour-related dependant variables. We use firm R&D spending, capital expenditures, cash-to-assets ratio, leverage as well as credit ratings as our proxies for firm risk behaviour. Additionally, we test the robustness of the documented associations across subsamples, for both time-dependence and whether firm riskiness influences the documented associations.

Our most significant finding is that lawyer CEOs associate with nearly a whole rating increment higher credit ratings. We find our credit rating association to be time dependent, specifically exclusive to the time following the Global Financial Crisis. Additionally, we find lawyer CEOs to associate with lower liquidity, as measured by a firm's cash-to-assets ratio. Furthermore, we find our results to be exclusive to less risky firms.

Our documented results are mixed relative to our original hypotheses. We are unable to document significant results for some of our variables, but the ones we do uncover, point to lawyer CEOs exhibiting less risky behaviour. Nevertheless, as some of our results can be interpreted in multiple ways, mainly the results relating to firm liquidity, further research is warranted to able to draw any definitive conclusions. Moreover, as more recent years within our dataset provide more abundant CEO-specific data, and as better data accumulates, future research utilizing this data should yield more robust conclusions.

As our research is novel insofar as we use European data, this thesis contributes to existing knowledge by testing whether previously uncovered associations and hypotheses regarding lawyer CEOs leading US-listed firms can be found in European firms. Additionally, we uncover new conditions for the documented associations adding to the cumulative understanding regarding lawyer CEOs and risk behaviour. Our findings shed light on where future

research potential lies in the European context, as well as generally regarding lawyer CEOs and their associations with firm behaviour.

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Appendix A

Table 12 Time dependence analysis, intangible investments

The table below presents the results of OLS regressions of R&D spending on a set of independent variables for subsamples pre- and post-Global Financial Crisis. The Lawyer CEO variable is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : RND	
	1998-2007 (3)	2009-2022
LAWYER	-0.005 (-0.63)	0.001 (0.41)
PHD	0.000 (-0.08)	0.000 (-0.01)
MBA	0.005 (1.17)	0.000 (0.00)
FEMALE	-0.002 (-0.13)	-0.002 (-0.55)
FIN_EDUC	0.002 (0.46)	0.000 (-0.19)
TENURE	0.000 (0.90)	0.000 (-0.16)
INT_COV	0.000 (0.73)	0.000 (-1.05)
LNSIZE	-0.002 (-1.01)	0.008 (0.58)
TOBINSQ	-0.002*** (-2.83)	0.000 (0.22)
ROA	-0.019** (-2.47)	-0.086** (-2.22)
LNMTB	0.002 (0.85)	0.006 (0.90)
RETVOL	0.000 (-0.07)	0.002 (1.48)
CAP_INTEN	0.002 (0.84)	-0.001 (-0.47)
LEVERAGE	-0.015** (-2.43)	-0.002 (-0.08)
CAPEX	0.012 (1.05)	0.044 (1.43)
CASH-TO-ASSETS	-0.013 (-1.23)	0.116 (1.49)
DIVPAYING	-0.001 (-0.69)	0.003 (1.58)
ASSET_TANGIBILITY	0.023*** (3.11)	0.012 (0.52)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
Clustered S.E.	Firm	Firm
Adjusted R-squared	0.815	0.705
Observations	2826	6957

Table 13 Time dependence analysis, tangible investments

The table below presents the results of OLS regressions of capital expenditures on a set of independent variables for subsamples pre- and post-Global Financial Crisis. The Lawyer CEO variable is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable : CAPEX	
	1998-2007	2009-2022
	(1)	(2)
LAWYER	-0.001 (-0.05)	-0.002 (-0.25)
PHD	0.004 (0.43)	-0.001 (-0.19)
MBA	0.009 (1.02)	0.002 (0.57)
FEMALE	0.018 (0.63)	0.001 (0.24)
FIN_EDUC	0.010 (1.24)	0.000 (-0.18)
TENURE	0.001 (0.90)	0.000 (0.72)
INT_COV	0.000** (2.04)	0.000*** (3.44)
LNSIZE	0.000 (0.09)	0.003 (1.16)
TOBINSQ	-0.001 (-0.51)	-0.001* (-1.82)
ROA	-0.031** (-2.27)	0.011 (1.29)
LNMTB	0.014*** (3.93)	0.011*** (5.45)
RETVOL	0.000 (-0.90)	0.000 (-0.66)
CAP_INTEN	0.016*** (4.90)	0.004 (1.17)
LEVERAGE	0.023** (2.11)	0.006 (0.67)
CASH-TO-ASSETS	0.049*** (2.64)	-0.013 (-1.32)
RND	0.04 (1.05)	0.010 (1.00)
DIVPAYING	0.003 (0.90)	-0.001 (-0.43)
ASSET_TANGIBILITY	0.025* (1.92)	0.012 (1.29)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
Clustered S.E.	Firm	Firm
Adjusted R-squared	0.455	0.588
Observations	2826	6957

Table 14 Time dependence analysis, leverage

The table below presents the results of OLS regressions of leverage on a set of independent variables for subsamples pre- and post-Global Financial Crisis. The Lawyer CEO variable is a binary variable that equals one if the company has a CEO with a law degree. All control variables are defined in Appendix B. Firm control variables are lagged by one year. T-statistics are reported in parentheses. The significance levels of the coefficients are reported as follows: * significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level.

	Dependent variable: LEVERAGE	
	1998-2007 (3)	2009-2022
LAWYER	-0.024 (-0.59)	0.036 (0.93)
PHD	0.043 (1.48)	0.015 (0.87)
MBA	0.007 (0.27)	0.009 (0.54)
FEMALE	-0.080** (-2.02)	-0.012 (-0.81)
FIN_EDUC	-0.025 (-1.09)	0.004 (0.34)
TENURE	0.002 (0.97)	-0.001 (-0.67)
INT_COV	-0.001*** (-3.92)	-0.001*** (-8.56)
LNSIZE	0.029* (1.83)	0.024** (2.38)
TOBINSQ	0.006 (1.48)	0.006** (2.49)
ROA	-0.112** (-2.01)	-0.227*** (-4.42)
LNMTB	-0.032** (-2.41)	-0.037*** (-4.44)
RETVOL	0.001*** (8.93)	0.003 (1.14)
CAP_INTEN	0.026* (1.68)	0.046*** (3.25)
CAPEX	0.086 (1.13)	0.080 (0.67)
CASH-TO-ASSETS	0.068 (0.84)	0.067 (1.29)
RND	-0.178 (-0.84)	-0.006 (-0.08)
DIVPAYING	-0.012 (-1.46)	0.002 (0.35)
ASSET_TANGIBILITY	0.171*** (3.22)	0.045 (1.11)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
Clustered S.E.	Firm	Firm
Adjusted R-squared	0.680	0.765
Observations	2826	6957

Appendix B

Table 15 Financial education variable's included majors

Majors counted towards the financial education (<i>FIN_EDUC</i>) variable	
Accountancy	Economics and Mathematics
Accountancy and Financial Analysis	Economics and Philosophy
Accounting	Economics and Political Science
Accounting and Business Management	Economics and Trade
Accounting and Economics	Finance
Accounting and Finance	Finance and Accounting
Business Administration and Accounting	Finance and Economics
Business and Accounting	Finance and International Business
Business and Economic Statistics	Finance and Management
Business and Economics	Finance and Marketing
Business Economics	Finance and Strategic Planning
Corporate Finance	Industrial Economics
Economic History	International Economics
Economic Sciences	International Finance
Economics	Marketing and Economics
Economics and Business Administration	Monetary Economics
Economics and Finance	Politics, Philosophy & Economics
Economics and Law	Public Accounting
Economics and Management	Transport Economics

Table 16 Numbers assigned to credit ratings

S&P	Moody's	Fitch	Assigned number
AAA	Aaa	AAA	21
AA+	Aa1	AA+	20
AA	Aa2	AA	19
AA-	Aa3	AA-	18
A+	A1	A+	17
A	A2	A	16
A-	A3	A-	15
BBB+	Baa1	BBB+	14
BBB	Baa2	BBB	13
BBB-	Baa3	BBB-	12
BB+	Ba1	BB+	11
BB	Ba2	BB	10
BB-	Ba3	BB-	9
B+	B1	B+	8
B	B2	B	7
B-	B3	B-	6
CCC+	Caa1	CCC+	5
CCC	Caa2	CCC	4
CCC-	Caa	CCC-	3
CC	Ca	CC	2
C	C	C	1
D	-	D	1

Table 17 Variable correlations

	LAWYER	MBA	PHD	FEMALE	FIN_EDUC C	TENURE	INT_COV	LNSIZE	TOBINSQ	ROA	LNMTB	CAP_INT EN	RETVOL	LEVERA GE	CASH_TO _ASSETS	RND	CAPEX	DIVPAYI NG	ASSET_T ANGIBLI TY
LAWYER	1.00																		
MBA	-0.06	1.00																	
PHD	0.01	-0.11	1.00																
FEMALE	-0.02	0.01	0.02	1.00															
FIN_EDUC	-0.15	-0.11	-0.10	0.02	1.00														
TENURE	0.02	-0.03	0.00	-0.04	0.07	1.00													
INT_COV	-0.02	0.01	0.04	0.03	-0.03	0.11	1.00												
LNSIZE	0.03	-0.03	-0.06	0.00	0.11	0.06	-0.11	1.00											
TOBINSQ	-0.03	-0.01	0.00	0.00	-0.02	0.05	0.30	-0.29	1.00										
ROA	0.01	0.00	0.00	0.00	0.00	0.05	0.38	0.03	0.25	1.00									
LNMTB	-0.05	0.00	0.01	0.01	-0.02	0.08	0.38	-0.34	0.71	0.31	1.00								
CAP_INTEN	-0.01	-0.05	0.00	0.00	0.00	-0.04	-0.04	0.04	-0.10	-0.04	-0.11	1.00							
RETVOL	0.00	0.00	0.00	0.00	-0.01	-0.04	-0.02	-0.07	-0.01	-0.05	-0.04	0.02	1.00						
LEVERAGE	0.07	0.00	-0.04	-0.03	0.04	-0.01	-0.34	0.16	-0.16	-0.11	-0.28	0.13	0.02	1.00					
CASH_TO_ASSETS	-0.02	-0.02	0.04	0.03	-0.07	0.03	0.14	-0.29	0.23	-0.02	0.25	-0.08	0.02	-0.21	1.00				
RND	-0.04	-0.05	0.07	0.00	-0.07	0.05	0.02	-0.14	0.15	-0.16	0.21	-0.09	0.01	-0.17	0.27	1.00			
CAPEX	0.02	-0.01	0.01	-0.03	-0.01	-0.08	0.03	-0.06	0.05	0.03	0.06	0.28	0.02	0.08	0.00	-0.05	1.00		
DIVPAYING	0.00	0.05	-0.05	-0.03	0.03	0.01	0.01	-0.01	0.01	0.00	0.02	-0.03	-0.02	0.00	-0.02	0.05	0.00	1.00	
ASSET_TANGIBILITY	0.02	0.03	-0.10	0.02	0.08	0.02	-0.19	0.31	-0.21	-0.05	-0.25	0.18	-0.03	0.40	-0.47	-0.23	0.14	0.02	1.00

Table 18 Variable definitions

Variables	Descriptions	Sources
CEO characteristics		
<i>LAWYER</i>	A dummy variable that equals one if the CEO has a law degree (LLB, LL.M, LL.D, JD), a degree in jurisprudence, or otherwise Law as their stated major subject. Zero otherwise.	Refinitiv Eikon Datastream, manually collected
<i>MBA</i>	A dummy that equals one if the CEO has an MBA and zero otherwise.	Refinitiv Eikon Datastream, manually collected
<i>PHD</i>	A dummy variable that equals one if the CEO has a doctoral degree (PhD, D.Sc., or JD).	Refinitiv Eikon Datastream, manually collected
<i>FEMALE</i>	A dummy that equals one if the CEO is female and zero otherwise.	Refinitiv Eikon Datastream
<i>FIN_EDUC</i>	A dummy that equals one if the CEO has a major involving accounting, finance, or economics in a broad sense and zero otherwise (a full list of included majors reported separately).	Refinitiv Eikon Datastream, manually collected
<i>TENURE</i>	The number of full years a CEO has spent at the same company as its CEO.	Refinitiv Eikon Datastream
Firm characteristics		
<i>INT_COV</i>	Operating income before depreciation, divided by interest expenses.	Refinitiv Eikon Datastream
<i>LNSIZE</i>	The logarithm of firm size measured by total assets.	Refinitiv Eikon Datastream
<i>TOBINSQ</i>	Total capitalisation (book assets plus market value of equity less book value of equity) to book assets.	Refinitiv Eikon Datastream
<i>ROA</i>	Net income to total book assets.	Refinitiv Eikon Datastream
<i>LNMTB</i>	The natural logarithm of the ratio of market capitalization value over the book value of assets.	Refinitiv Eikon Datastream
<i>CAP_INTEN</i>	Gross property, plant, and equipment, divided by total assets.	Refinitiv Eikon Datastream
<i>RETVOL</i>	Return volatility measured by the annualized stock return volatility based on the standard deviation of the daily stock returns over a fiscal year.	Refinitiv Eikon Datastream
<i>CAPEX</i>	Annual capital expenditures divided by firm total assets.	Refinitiv Eikon Datastream
<i>RND</i>	Annual R&D spending divided by annual revenue.	Refinitiv Eikon Datastream
<i>DIVPAYING</i>	A dummy that equals one if the firm paid a dividend during that year.	Refinitiv Eikon Datastream
<i>ASSETTANGIBILITY</i>	Fixed book assets divided by total assets.	Refinitiv Eikon Datastream
<i>CREDIT_RATING</i>	S&P, Fitch, or Moody's long-term rating.	Refinitiv Eikon Datastream, S&P Capital IQ

Table 19 The Kaplan and Zingales index

Ordered logit regression results from Kaplan and Zingales (1997)

Cash Flow/K	-1.002 (0.234)
Q	0.283 (0.078)
Debt/Total capital	3.139 (0.449)
Dividends/K	-39.368 (6.097)
Cash/K	-1.315 (0.289)
Log likelihood	-699.2
Pseudo-R ²	0.134

This table reports the results of a restricted version of the central regression of Kaplan and Zingales (1997), run by Steven N. Kaplan, for Lamont et al. (2001). The restriction refers to this version including only the independent variables available in COMPUSTAT. Standard errors are in parentheses.

Emulating Lamont et al. (2001) we use the following data items, which were originally chosen by the researchers based on their availability in COMPUSTAT: 1 (cash and short-term investments), 6 (liabilities and stockholders' equity—total), 8 (property, plant, and equipment), 9 (long-term debt—total), 12 (sales), 14 (depreciation and amortization), 18 (income before extraordinary items), 19 (dividends—preferred), 21 (dividends—common), 34 (debt in current liabilities), 60 (common equity—total), 172 (net income), and 216 (stockholders' equity—total).

The Kaplan and Zingales index, based on the coefficients of Table 19, is then constructed as follows: $-1.001909 * [(Item\ 18 + Item\ 14) / 8] + .2826389 * [(Item\ 6 + CRSP\ December\ Market\ Equity - Item\ 60 - Item\ 74) / Item\ 6] + 3.139193 * [(Item\ 9 + Item\ 34) / (Item\ 9 + Item\ 34 + Item\ 216)] - 39.3678 * [(Item\ 21 + Item\ 19) / Item\ 8] - 1.314759 * [Item\ 1 / Item\ 8]$.