

Are women really more risk averse?

A study on gender differences in corporate financial policy decisions

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Abstract:

Despite the recent progression of gender diversity in managerial positions, men still outnumber women at the top. The stereotype of women as being less prone to risk is sometimes referred to as an explanation of why women do not break the glass ceiling. Our study contributes to the existing literature on gender differences in risk propensity. It does so by exploring if women's alleged risk aversion is present among female CEOs in one of the world's most gender-equal countries, Sweden. We conduct an OLS regression examining the potential effect of gender differences on financial ratios of 752 unique companies between 2015 and 2019. We find no support for women being more risk averse in corporate financial policy decisions than men. Hence, we suggest that the general preconception of the female stereotype could be questioned.

Keywords: Gender differences, CEO gender, Risk-taking, Leverage, Cash ratio

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1. Introduction

Over the last decades, the percentage of women in senior executive positions in large publicly listed companies in the European Union has increased and almost doubled between the years 2012 to 2019 (Eurostat, 2022). However, women are still outnumbered by men at the top, as females only made up 18% of all executive positions in 2019. Sweden is often referred to as one of the most gender-equal countries globally and is frequently listed at the top of gender equality rankings (World Economic Forum, 2021; UN Development Programme, 2020). However, even in such a forward-leaning country, the gap between men and women remains pervasive, especially at the very top. In 2019, the percentage of female managers in Sweden was 43.1% (Eurostat, 2022), while the share of female board members and senior executives amounted to 37.5 and 23.7%, respectively (Eurostat, 2022). Both of the latter have increased compared to when the data started to be observed. As the percentage of women in senior management positions grows, a stream of literature regarding gender differences in corporate decision-making emerges. This study will continue upon the existing findings but with the relationship between CEO gender and corporate financial policy decisions, specifically their riskiness, as its focal point.

Risk aversion is researched in a large set of literature. For example, by examining the choice of asset allocation in saving plans, Sundén and Surette (1998) find that women, on average, invest more heavily in low-risk options than high-risk ones. Jianakoplos and Bernasek (1998) strengthen the results of Sundén and Surette when they find a larger share of women to prefer no risk at all compared to the share of men, when allocating household assets. Additionally, they find that women's risk aversion does not drop to the same extent as for men when wealth increases. Thus, when looking at household financial decisions, women are more risk averse. Both Schubert et al. (1999) and Johnson and Powell (1994) question whether any conclusion regarding gender differences can be drawn if one does not account for the setting. Schubert et al. only find differences to be present when the situation is abstract, not contextual. Johnson and Powell discover a significant gender difference in risk aversion in a non-managerial population. However, the authors find no such distinction to be present in a managerial population, and thus, conclude that stereotypes based on faulty premises may limit women from reaching managerial positions.

Faccio et al. (2016) study the relationship between CEO gender and corporate risk-taking in European companies. The paper finds female CEOs to be associated with less risk as their companies exhibit lower leverage, less volatile earnings, and a higher chance of survival. Even when controlling for potential endogeneity concerns, including self-selection and familiarity bias, their initial findings of women being more risk averse are still robust. However, Adams and Funk (2012) discover opposite results when examining risk attitudes among directors on boards of Swedish companies. Women in senior management positions are, according to their findings, even more prone to risk than their male counterparts. On the contrary, they find this relationship to be reversed when comparing gender differences in the general population.

1.1 Purpose

The purpose of this study is to examine whether the CEO gender impacts the riskiness in corporate financial policy decision-making in Swedish companies. This is of interest as women are increasingly taking place at the top of the business industry in Sweden as well as in Europe as a whole. Thereto, Sweden is at the forefront of gender equality, and as described in the previous section, there are conflicting views on gender risk aversion between European and Swedish senior managers, making this a highly interesting topic to develop. We aim to extend the existing literature regarding gender differences in risk propensity and how it affects corporate risk-taking. Consequently, we wish to deepen the modern debate on gender inequality by addressing the following question: *“Are Swedish female CEOs really more risk averse in corporate financial policy decisions?”*

1.2 Our study

By conducting an OLS regression on firm-year observation of publicly listed Swedish companies, we study the relationship between CEO gender and company risk. Our study only includes publicly listed companies partly as they must apply the same standard to their reporting. Additionally, the CEOs of publicly listed companies face similar pressure as their decisions are openly reviewed by a large share of outside stakeholders. For smaller privately owned companies, the magnitude of CEOs' decisions is smaller as they generally have fewer stakeholders. Hence, the conditions in which CEOs of publicly listed companies operate in differ from the ones that CEOs of privately owned companies face. As we have seen an increase in female representation in senior management positions during recent years, we limit our study to only include observations of the year 2015 to 2019. This mitigates the risk of incorporating obsolete premises in our results.

In previous research by Faccio et al. (2016), they measure company risk with three different proxies; leverage, volatility on return on assets, and the likelihood of survival. As we limit our study to review whether there is a gender difference in corporate financial policy decisions, we exclude proxies that are to a larger extent influenced by market conditions and not directly related to the financial decisions of the executive team. Therefore, we determine the risk level by examining financial balance sheet ratios, specifically leverage and cash ratio, as suggested by Robinson et al. (2020). By including leverage, we are able to compare our results with the findings by Faccio et al. We expect a negative relationship between female CEOs and leverage, while our prediction for their relationship with cash ratio is the opposite.

1.3 Contribution

We contribute to the current literature in two ways. Firstly, we expand the findings by Faccio et al. (2016) regarding gender differences in corporate settings as we apply a more time-relevant period. Additionally, as we focus solely on a more gender-equal geographical area, we gain knowledge of whether the contextual society impacts executives' decision-making process or not. To the best of our knowledge, this is the first paper to conduct a study on CEO and corporate risk-taking in Swedish public companies. Hence, the study will broaden and deepen the existing understanding on gender differences in corporate risk-taking.

Secondly, we also develop the findings by Adams and Funk (2012) on the differences in risk attitudes between women and men amongst the general population as well as in senior management positions in Sweden. While their study finds an opposing result to what is otherwise concluded in a large set of literature, their conclusion stems from self-assessment studies and is not based on actual behavior. As our study instead applies a research method including risk proxies unaffected by the perceptions of individuals, we hope to extend Adams and Funk's contribution to the knowledge of gender differences in Swedish companies.

2. Literature and Hypothesis development

Several previous research fields are of interest when we explore whether female CEOs are more or less risk averse than their male counterparts. In the following section, we review previous literature covering observations of discrepancies in male versus female risk behavior in general contexts as well as in corporate settings. In addition to these, we review literature examining the importance and influence of the CEO role and gender. Finally, we develop the hypothesis to be tested in this paper.

2.1 Risk behavior

2.1.1 Female versus male risk behavior

The topic of behavioral gender differences concerning risk propensity has been studied extensively in prior literature. A large part of the literature focuses on differences in private investments; see Sundén and Surette (1998) and Jianakoplos and Bernasek (1998) below. Others, such as Schubert et al. (1999) and Johnson and Powell (1994), argue the importance of studying risk propensity in contextual situations and not drawing conclusions about gender differences amongst managers based on findings from the general population.

Sundén and Surette (1998) examine the presence of gender differences in the allocation of assets in retirement savings plans. They collect investment decisions from about 4000 households in 1992 and 1995 and categorize them as i) mainly invested in stocks, ii) mostly in bonds, and iii) investments split between the two. Sundén and Surette find that a combination of gender and marital status are drivers of investment decisions. They show that single women and married men are less likely than single men to invest primarily in stocks, a result with statistical significance. The paper also finds married women more likely to invest primarily in bonds than single women. They find factors such as age and education to have no effect on asset allocation decisions. The paper demonstrates the complexity of risk aversion, the importance of gender in matters where risk is present, and indicates that women are more risk averse than men. In addition to the findings by Sundén and Surette, Jianakoplos and Bernasek (1998) examine potential gender differences in asset allocation by studying household holdings of risky assets. Survey results show that 60% of all women preferred no risk compared to only 40% of all men preferring the same level of risk, the lowest risk preference of four potential answers in the survey. Additionally, they find relative risk aversion to decrease less for single women than for single men when wealth increases, indicating that women are more risk averse relative to men.

They also find that single women hold smaller amounts of risky assets than married women and single men. Further, they find evidence of reductions in risky assets due to an increase in the number of children in the household for single women, which they could not observe for single men or married women. Both articles document differences in risk propensity between men and women. However, neither Sundén and Surette (1998) nor Jianakoplos and Bernasek (1998) comment on why they find these differences or what implications their findings may have, leaving the mechanism observed but relatively unexplored. Nevertheless, Sundén and Surette argue that these differences may lead to large differences in financial wealth when they reach retirement age.

Schubert et al. (1999) consider it necessary to investigate if the gender stereotypes of risk preferences often referred to are actually present in economic behavior and therefore examine gender-specific risk propensity in decisions relevant to labor and financial markets. They study this by testing for gender differences in both contextual and abstract frames, with both gain- and loss domains. For contextual frames, the authors choose an investment (gain) and insurance (loss) domain, and in the abstract treatment, they perform gain- and loss-gambling. In the gain-gambling frame, women were more risk averse compared to men and in contradiction to many other studies, women displayed significantly more risk-seeking behavior when facing the loss-gambling frame. These results add to the previously mentioned research by Sundén and Surette (1998) and Jianakoplos and Bernasek (1998). Schubert et al. find the financial decisions settings to be the dependent factor for the comparative risk propensity of men and women. Hence, they add tension to the literature when they show that risk propensity varies in different settings, thereby highlighting a possible risk propensity among women previously neglected.

Johnson and Powell (1994) also question the previously found gender stereotypes often considered to cause the underrepresentation of women in managerial positions. By comparing the non-managerial population (without formal management education) and a managerial group (with formal management education), they find differences in risk propensity between men and women in the non-managerial group while not in the managerial group. The participants of the non-managerial study were completely unaware of the observation and their participation as the data was collected from real betting offices. The managerial study was conducted by allowing commerce undergraduates to recommend undertaking or not undertaking a project with a low positive NPV, i.e., a perilous project. These results suggest that the stereotypes considered to hinder women from managerial positions are based on faulty premises if they

stem from the behaviors of the whole population and not just from those interested in managerial positions.

2.1.2 Risk behavior in corporate settings

Prior literature on gender differences in risk preferences in general settings has been extended and researched extensively in corporate settings. Faccio et al. (2016) acknowledge the potential problem of companies acting on the existing stereotype of women as more risk averse when they appoint a female CEO as it might be a mean to decrease risk in their company. Hence, these companies potentially pressure the female CEO into certain types of decisions which could affect the implications of many studies of gender differences in corporate settings. Nevertheless, the authors document that European companies led by female CEOs have lower leverage, less volatile earnings, and a higher chance of survival compared to companies led by men. To strengthen the study's implications, they study transitions from male to female CEO, and the authors find these to reduce company risk. Even though Faccio et al. face the endogeneity problems mentioned above, they correct their studies for self-selection and familiarity. They find companies led by female CEOs to be associated with lower levels of risk and that less risky decisions follow the appointment of a female CEO. These results indicate that females CEOs are more risk averse than male CEOs

Overconfidence is highly related to risk propensity and there is a general understanding that women are less overconfident than men. Huang and Kisgen's (2013) article builds on this general understanding of women being less overconfident than men and examines its the implications in corporate settings. Huang and Kisgen find that female executives undertake fewer acquisitions and issue debt less often compared to male executives. They also show female executives to have approximately 2% higher announcement rates than their male counterparts. The same association is shown regarding debt issue announcement returns. Huang and Kisgen's results imply that male executives are relatively more overconfident than women in similar executive positions. Additionally, Tosun et al. (2022) find female directors to lower the tendency of overconfident CEOs to hold sub-optimal levels of cash. They also show that female directors improve decision-making in companies as a result of effective monitoring. However, they find that female directors themselves are not prone to be especially optimistic or cautious, nor does having more female directors affect excess cash holdings unless an overconfident CEO is present. Another article by Levi et al. (2014) explores confidence-related actions when examining the effects of gender on acquisitions. They present evidence of an

association between the number of female directors and fewer bids as well as reduced bid premiums. They find each additional female director to be associated with 7.6% fewer bids and every female bidder director to reduce the bid premium by 15.4%. This result supports Huang and Kisgen's (2013) findings, indicating that men are more overconfident than women and, hence, show that women are more risk averse than men.

Schopohl et al. (2021) further develop on the impact of board diversity on company risk. According to their findings, female CFOs in UK firms significantly reduce their firm leverage and do so more effectively if their boards are diverse and externally appointed. They also find that overly powerful CEOs reduce female CFOs' impact on leverage. Li and Zeng (2019) add to the studies of CFOs by emphasizing the importance of CFO gender when assessing stock price crash risk in a large sample of US public firms. They find female CFOs to have lower future stock price crash risk, counteract hoarding of bad news and affect stock return distribution. When separating CEOs from the sample and examining their impact on future stock price crash risk separately, they find no significant results.

The gender differences in boardrooms are examined further by Adams and Funk (2012). They acknowledge the often documented general differences between men and women but investigate the presence of these differences in Swedish boardrooms. Their findings show gender differences in the boardroom, but these differences are reversed compared to those observed in the population. Adams and Funk find that female directors emphasize benevolence, universalism, and stimulation while caring less for power, security, conformity, and tradition. They even find female directors to be slightly more risk prone than their male counterparts. Adams and Funk develop their paper by discussing potential explanations for why Swedish female directors show these reversed values. They argue that if breaking the glass ceiling is an aspiration, being competitive might be a necessity. Another potential explanation argued for is that women acting too feminine will not be promoted and therefore behave as men typically do. The article also clarifies that the reversed findings could also be a consequence of women adjusting their behavior in male-dominated environments. Adams and Funk also note that generally, the only position in Swedish boards that is not externally appointed is the CEO. Lyness and Judeisch (1999) argue that women have to overcome gender stereotypes by an extreme job performance to be externally appointed. Adams and Funk's results imply that the otherwise often documented corporate gender differences might not apply to Swedish boardrooms. However, they do not provide a dependable prediction of the characteristics of the

CEO as they argue that this position probably faces different expectations than the other directors. In addition, the article only studies the directors' perceptions of their own attitudes but does not examine if these alleged risk preferences are affecting corporate decision-making.

2.2 The role of the CEO

The impact of behavioral gender differences is likely to vary depending on the influence of the person whose behavior is studied. Previous literature provides differentiated opinions regarding the most influential position of companies and whether individuals have the ability to influence corporate decisions, specifically regarding the influence on risk propensities.

Bertrand and Schoar (2003) study how an individual can influence corporate decision-making by examining 600 publicly traded US firms and over 500 individual managers that could be observed in a minimum of two separate companies. They find that all financing, investment, and other organizational strategy variables systematically depend on the individual in charge. Graham et al. (2013) compare the personality traits of CEOs and CFOs with corporate finance decisions such as debt maturity, acquisition activity, and leverage policy. The study shows that managerial attributes and attitudes can be related to the firm's corporate actions. The areas focused on were based on findings in 2012 by Graham et al. (2015), showing that CEOs felt that they have the most considerable influence on mergers and acquisitions and the firm's capital structure. One of the findings by Graham et al. (2013) is that optimistic CEOs use more short-term debt compared to CEOs who are less optimistic. They also find male CEOs more likely to have higher debt ratios than female CEOs, notably higher short-term ratios. In addition, they find that firms with previous or future growth rates are more likely to be run by risk-tolerant CEOs. The authors acknowledge that they cannot show the direction of the causality as the results could be seen as a reflection of managers' self-selection into companies reflecting their personality traits. They find a significant relationship between company actions and CEO characteristics.

Schopohl et al. (2021) examine if female CFOs and CEOs in the UK affect corporate leverage. They find that female CFO reduces companies' leverage significantly while finding no such reduction when studying female CEOs exclusively. When looking at both CEOs and CFOs, the significant decrease in leverage remains. They also show that the power of the CEO matters for the influence of the CFO, as the reduction of leverage was more efficient when the CEO was less powerful. Even though their findings favor the importance of the CFO gender on corporate

leverage, the authors acknowledge that CFOs have an especially large impact in the UK and are usually in charge of leverage. Hence, the study's indication of executive role might be of less value to the rest of the world. Chava and Purnanandam (2010) add to the studies of individuals' influence on corporate risk-taking and contradict the findings by Schopohl et al. (2021). They compare risk-decreasing incentives for both CEOs and CFOs and find only those of the CEOs to be associated with lower leverage and higher cash balances. Instead, they find risk-decreasing incentives for the CFOs to be associated with higher earnings-smoothing through accounting accruals and safer debt-maturity choices. The authors argue that these results show that the risk preferences of the CEOs are significant determinants of broader decisions in the companies, such as capital structure. Meanwhile, the preferences of CFOs impact more specific and detailed financial decisions.

Individuals are shown to have the ability to impact corporate decisions (Graham et al., 2013; Bertrand and Schoar, 2003). Still, the previous literature about whose influence is the largest on corporate risk measures is ambiguous as results acknowledge both the CEO and the CFO as the most influential role (Schopohl et al., 2021; Chava and Purnanandam, 2010). However, the reasoning about the importance of the CEO is developed by Graham and Harvey (2001). They state that the relation between the CEO and CFO is assumed to be an agency relation, where the CFO answers to the CEO. The same association is implied by Mian (2001), who argues that the CFO can be replaced if the firm's financial performance is weak and that the risk of this increases if it is a public company as they are under more pressure. These studies imply that the CFOs might be acting more according to their CEOs' incentives than their own.

2.3 Hypothesis

Schubert et al. (1999) clearly question the implications of the differences in risk preferences found by both Sundén and Surette (1998) and Jianakoplos and Bernasek (1998) when they find that the tendency of women to be relatively more risk averse than men disappears in contextual situations. Johnson and Powell (1994) also question these findings when they argue that such studies create false stereotypes, hindering women from higher executive positions when they consider the whole population and not only the managerial population. These early discrepancies in both findings and implications of whether women are more risk averse than men or not and in which situations these differences are present, make this an interesting topic to examine further.

Since then, numerous studies on gender differences in corporate settings have been conducted. Research finds female CEOs to be less overconfident and hence, more risk averse than their male counterparts by making fewer acquisitions, placing fewer bids with lower bid premiums and issuing less debt (Levi et al., 2014; Huang and Kisgen, 2013). The presence of female directors in boards lowers the tendency of overconfident male CEOs to reduce cash holdings below optimal levels (Tosun et al., 2022). The female risk aversion is shown in the UK, where female CFOs lower the company leverage and do so even more efficiently if they are externally appointed (Schopohl et al., 2021). Other research finds female CEOs to reduce leverage and volatile earnings while also increasing the companies' chance of survival (Faccio et al., 2016). The mentioned literature indicates that female executives are more risk averse than their male counterparts.

These behavioral differences have lately been studied in Sweden as well, focusing on behavioral differences among female and male directors (Adams and Funk, 2012). It is of particular interest as Sweden is ranked as one of the world's most equal countries (UN Development Programme, 2020). In addition, the paper is directly related to our research topic as well as the geographical area of interest for our study. Their findings are notable as they show that the behavior of females at the top of the business industry deviates from the observed behaviors in the general population. However, if women are to be externally appointed, they have to perform extraordinarily well (Lyness and Judiesch, 1999), which according to the authors, is a potential reason for their deviating findings. As the CEOs in Sweden are usually internally appointed (Adams and Funk, 2012), and thus, do not face the same pressure as externally appointed directors, we believe that the CEOs may deviate from the findings regarding board members by Adams and Funk. Thus, there is interest in studying CEOs separately.

It is shown that specific individuals in charge affect financial decisions (Bertrand and Schoar, 2003) and the personality traits of the CEOs and CFOs are shown to influence corporate actions, such as leverage (Graham et al., 2013). Whether the relevant actor to observe is the CEO or the CFO of the company differs across the literature. In the UK, female CFOs are shown to be associated with lower leverage (Schopohl et al., 2021). Meanwhile, no such significant relationship can be found for female CEOs, which would argue in favor of the influence of the CFO. However, the authors emphasize that the role of the CFO in the UK is bigger and in charge of leverage which reduces the importance of their implications.

Implementing risk-decreasing incentives for both CEOs and CFOs results in differentiated effects for the companies (Chava and Purnanandam, 2010). The incentives of the CEO lead to a decrease in leverage and an increase in cash holdings, while the CFO incentives only affect more detailed financial aspects. Additionally, the CEO and CFO relationship has been studied before and is assumed to be of an agency nature (Graham and Harvey, 2001). Additionally, the CFO is considered to be easily replaced by the CEO (Mian, 2001). Overall, this indicates that even if the CFO would be in charge of, or would have the most significant influence on company leverage and cash holdings, the CFO must still follow the preferences of the CEO to avoid the risk of being replaced. Consequently, we will examine the following hypothesis:

H: Female CEOs in Swedish publicly listed companies are more risk averse in corporate financial policy decisions than their male counterparts.

3. Methodology

This section explains how we examine the research question and test the hypothesis. We start by presenting how the data is collected and how the sample is selected. We then present our study's design and our choice of risk proxies. Lastly, we present our robustness check to mitigate endogeneity concerns.

3.1 Data collection

We collect the majority of the data from *Retriever Business*, a database that Retriever maintains. The database contains up to 20 years of information about all Swedish companies, both private and public ones. We gather information about the current CEO, including gender, name and appointment date, and the gender of the previous CEO. Later in this section, we extend the discussion regarding CEO information. From *Retriever Business*, we further obtain accounting data regarding capital structure, financial performance, and company characteristics. We collect data for five consecutive years, starting in 2015. We classify our sample into industries by gathering the Global Industry Classification System (GICS) code from *Compustat Global*. S&P Global Market Intelligence maintains *Compustat Global*, which contains financial and industry data that is used worldwide.

To identify the gender of the CEO, we primarily use the gender indicator provided by *Retriever Business*. As a shortcoming, *Retriever Business* only stores information about the current CEO and its predecessor and, hence, the gender of some observations are unidentifiable through the data source. By filtering on the appointment date, we identify for which companies we can not assign the gender of the CEO through the pulled dataset. To retain as large a sample as possible, we manually identify the remaining companies by collecting names from annual reports and press releases. We then identify the gender by using Internet-based sources for names, for instance NordicNames.de, similar to the used approach in Faccio et al. (2016). In the event of a change of the CEO, we apply the following approach; if the change took place in the first half of the year, we assign the gender of the new CEO. However, if the change happened in the second half of the year, we use the gender of the resigning CEO. By applying this approach, the chosen risk proxies reflect the gender of the individual who has possessed the role as CEO for the majority of the observed year.

3.2 Sample selection

Our sample consists of all Swedish publicly listed companies registered before 2015-01-01 which enables us to obtain a panel data set through the selected years of 2015-2019. The chosen period is considered relevant in reflecting our contemporary society but avoids the potential effects of the pandemic starting in 2020. The initial sample consists of 773 companies that we reduce as we apply the two following mandatory criteria.

Firstly, data on gender has to be available as the hypothesis focuses on gender effects. Therefore, we apply the previously described process in which we primarily gather the data from *Retriever Business*. We complement the data by analyzing annual reports and press releases when the initial approach was insufficient. If the gender is unidentifiable for one or several years, we drop all observations for that company. This eliminates 16 companies from our sample, resulting in a remaining total of 757 companies. Thereafter, we review data for all the residuary dependent and independent variables. If the data reporting for an observed company is consistently inadequate throughout 2015-2019, we drop the observation of the company for all years. This decreases the sample by five companies.

Our final sample consists of 752 unique firms with a total of 3,760 firm-year observations. As not all companies report data for all years, the number of observations with complete information for all variables amounts to 3,729 firm-year observations.

3.3 Regression model

We apply a pooled Ordinary Least Square (OLS) regression model to test how the gender of the CEO is associated with the risk level of the individual firm. The OLS model is extensively used in papers published in reputable journals, including papers that examine the relationship between individuals' characteristics and corporate outcomes (Li and Zeng 2019; Faccio et al., 2016; Levi et al., 2014). We use a panel data set to incorporate the benefits of cross-sectional and time-series observations. The final main regression to be used is as follows:

$$Risk_{i,t} = \beta_0 + \beta_1 * Female\ CEO_{i,t} + \beta_2 * \ln(Employees)_{i,t} + \beta_3 * \ln(Assets)_{i,t} + \beta_4 * \ln(Company\ age)_{i,t} + \beta_5 * ROA_{i,t} + \varepsilon_{i,t}$$

The dependent variable *Risk* to be tested is one of the two chosen financial ratios, *Leverage* and *Cash ratio*, for the individual firm i at time t . These measurements are subject to managerial choices, influenced by the particular CEO (Graham et al., 2013; Chava and Purnanandam, 2010; Bertrand and Schoar, 2003). Our independent variable of interest is the dummy variable *Female CEO* $_{i,t}$ that equals one if the CEO is a female and zero otherwise. When we deploy the test using *Leverage* as the proxy, we expect to find a negative relationship between *Leverage* and *Female CEO*, similar to Faccio et al. (2016). The intuition is as follows; if a woman is more risk averse, as suggested by our hypothesis, we expect a lower level of leverage as it mitigates the risk of financial distress. On the contrary, we expect to find a positive relationship between *Cash ratio* and *Female CEO*, implying that female CEOs have higher cash ratios to decrease the riskiness, as suggested by Chava and Purnanandam (2010). Our main regression further includes firm-level control variables to adjust for the potential effect of different firm characteristics such as age, asset size, and total asset return. A detailed description of these is located in section 3.3.3. To prevent potential skewness of our results driven by outliers, we winsorize all continuous variables at the 1st and 99th percentile.

3.3.1 Risk proxies

As described, we deploy our test with two different financial ratios as measurements of risk. Prior research differs in its use of risk measures; some explore financial ratios (Tosun et al., 2022; Schopohl et al., 2021; Faccio et al., 2016; Chava and Purnanandam, 2010), while others focus on market-based measures (Peltomäki et al., 2021; Li and Zeng, 2019). As we want to examine the impact of individuals in charge, we consider it more relevant to measure financial ratios as they reflect the direct consequences of corporate financial decisions, while market-based measures are to a larger extent affected by market expectations and valuation.

According to financial literature (Robinson et al., 2020), the importance of financial ratios and their relations to risk is emphasized extensively by prior research. These find financial ratios to be of high importance when assessing a firm's risk of financial distress. There are five categories of financial ratios; activity, liquidity, solvency, profitability, and valuation. Liquidity ratios indicate companies' ability to meet their short-term obligations, while solvency ratios measure their ability to meet long-term obligations (Robinson et al., 2020). We find it relevant to examine liquidity ratios and solvency ratios, both derived from the balance sheet, as we wish to measure company risk.

3.3.1.2 Leverage

In the first regression, the dependent variable of risk is leverage which is a solvency measure and hence, measures the firms' ability to meet long-term obligations. There are several ways of measuring leverage and we use the debt-to-equity ratio. Consequently, we define leverage accordingly:

$$Leverage = \frac{Total\ Debt}{Total\ Assets - Total\ Debt}$$

The reasons why it is relevant to examine and measure the level of debt in a company are several, one is to capture the company risk which is dependent on the company's leverage (Robinson et al., 2020). The risk of equity return is also affected by financial leverage, and its influence is likely to be more significant for struggling firms (Chan and Chen, 1991).

Leverage is considered to measure the riskiness of corporate financing choices (Faccio et al. (2016). The authors argue that if a company has high leverage, they are more exposed to negative shocks to their underlying business and hence, endanger larger effects on their net profitability and a higher risk of default. Ferreira and Vilela (2004) also mention the generally accepted relation between leverage and the risk of bankruptcy due to the rigid amortization plans debt usually has. According to Berk and DeMarzo (2017), the risk of equity increases with higher leverage, regardless if there is an underlying risk of default for the firm. Traczynski (2017) finds only two robust measures predicting default risk, one of which he finds to be leverage. In addition, Cathcart et al. (2020) show a positive relation between leverage and default probabilities. Ohlson (1980) also finds that leverage significantly impacts the likelihood of bankruptcy. Additionally, leverage is commonly used in prior research to measure company risk and as an indicator of individuals' risk propensity (Schopohl et al., 2021; Faccio et al., 2016; Chava and Purnanandam, 2010).

3.3.1.1 Cash ratio

In the second regression, we define our dependable variable risk as cash ratio, which measures liquidity. We define cash ratio accordingly:

$$Cash\ ratio = \frac{Cash + Cash\ Equivalents}{Current\ Liabilities}$$

Cash ratios and cash holdings are recurrently used as an indicator of company risk in research (Tosun et al., 2022; Liu and Mauer, 2011; Chava and Purnanandam, 2010). According to Opler et al. (1999), one of several managerial motives to have higher cash holding is for its risk averse nature. Ferreira and Vilela (2004) acknowledge the benefits of greater cash holdings, including the reduction of the likelihood of financial distress, the allowance of pursuance of investment policy when financial constraints are met, and minimizing the cost of raising external funds, alternatively liquidating assets. The trade-off theory states that the optimal level of cash is decided by weighing these benefits to the cost of holding cash, mainly opportunity costs (Ferreira and Vilela, 2004). Cash holdings are considered to reduce the bankruptcy risk of companies, according to Tosun et al. (2022). They also describe it as the result of a firm's past activities in terms of investment and financing as well as its operation. According to Bates et al. (2009) and Opler et al. (1999), cash holdings increase as a precautionary move when firms' cash flows become riskier. Riddick and Whited (2009) find evidence of this tendency to increase cash holdings when income uncertainty rises.

Both the determinants and implications of greater cash holdings have been widely examined in prior literature. Opler et al. (1999) look into determinants of cash holdings and find that firms with riskier activities, smaller firms, and firms with better growth opportunities hold higher cash levels. If companies, however, have better access to capital markets, they hold lower levels of cash. Ferreira and Vilela (2004) draw similar conclusions, also examining the determinants of cash holdings but in EMU¹ corporation. They find cash holdings to be negatively related to leverage, size, and assets' liquidity and positively associated with investment opportunities and cash flows. Ozkan and Ozkan (2004) find that determinants with negative associations of cash holdings in UK firms are liquid assets, bank debt, and leverage. They find cash flows and growth opportunities to be positively related to cash holdings.

Additionally, the relation between cash holdings and risk has been examined by implementing risk-increasing or decreasing incentives. Findings by Liu and Mauer (2011) show that risk-increasing compensation incentives for CEOs positively affect firms' cash holdings. The increased risk caused by the risk-increasing incentives could lead to higher external funding costs. In order to hedge for future funding needs, companies with higher risk may hold excess cash, which, according to the authors, could explain the positive relationship between risk and

¹ Economic and Monetary Union of the European Union

cash. Chava and Purnanandam (2010) show the opposite reaction when looking at risk-decreasing incentives for CEOs which they find to be associated with higher cash holdings. The two articles describe the multiple use of cash with the same purpose of reducing risk in companies. If the risk incentives are enforced to reduce risk directly, Chava and Purnanandam (2010) show that an increase in cash holdings is a method of reducing risk. Meanwhile, if higher risk is incentivized, higher cash holdings are used to lower the risk by compensating for the firm's higher financial risk, according to Liu and Mauer (2011). This finding follows Ferreira and Vilelas's (2004) reasoning about the relationship between leverage and cash. If a company has high levels of leverage, they are supposed to hold larger amounts of cash to compensate for the higher risk of financial distress caused by the high leverage. Meanwhile, they also reason that high levels of leverage can be seen as an indicator of a firm's ability to issue debt, diminishing the need for companies to hold cash.

3.3.2 Independent variable

We use the dummy variable *Female CEO* as the key explanatory variable of interest when conducting the test. The variable equals one if the corresponding firm's CEO is a woman and zero if the CEO is a man. The usage of dummy variables in this manner is extensively used in research on gender differences (Schopohl et al., 2021; Peltomäki et al., 2021; Faccio et al., 2016; Adams and Funk, 2012).

3.3.3 Control variables

We include several control variables in our main regression to mitigate the influence of confounding variables and, thus, enhance the validity of the effect of our key independent variable. By including the below variables, we limit the effect of observable firm characteristics on our result.

Our first variables try to capture the potential effect of size. According to Chan and Chen (1991), differences in size cause companies to react differently to equal economic news. Additionally, companies of different sizes exhibit different return characteristics, potentially affecting cash holdings and leverage. Several previous papers in the financial literature also control for size (Schopohl et al., 2021; Levi et al., 2014; Adams et al., 2005). Thus, we incorporate $\ln(Assets)$ and $\ln(Employees)$ in our regression model as proxies for size. $\ln(Assets)$ is the natural logarithm of a company's total assets. *Total assets* is the sum of non-current and

current assets, expressed in Swedish Krona (SEK). $\ln(\text{Employees})$ is the natural logarithm of the number of employees for each firm-year observation.

We include similar variables as Faccio et al. (2016) to control for firm characteristics. $\ln(\text{Company age})$ is the natural logarithm of a company's age, measured as the difference between the observed year and year of registration. *Age* controls for potential differences caused by firms being in different life cycle stages. Lastly, *ROA* is the return on total assets, defined as the ratio of the sum of operating profit and interest income divided by total assets. *ROA* indicates the quality of the management and how efficiently a company generates profit from its assets.

3.4 Endogeneity

A potential limitation of our study is related to endogeneity concerns, a well-known issue within research (Li and Zeng, 2019; Faccio et al., 2016). For example, the appointment of a CEO could be affected by individual board members' biases of gender stereotypes. Thus, the appointment of a female CEO happens when the board wants to lower the risk level. Similarly, another bias could be that men are more likely to be appointed CEO in industries with a higher general risk level. Hence, the result found might not be a cause of the risk aversion between the genders but rather omitted variables, social structures, and selection bias. We address the issue in two steps approach, similar to Levi et al. (2014). Firstly, we include sector and time fixed effects in our main regression to adjust for cross-sectional differences. This approach helps us remove potential biases in unobservable and/or time-invariant omitted variables. Secondly, we perform a propensity score matching in which companies are matched on observable firm characteristics, and thereafter, we compare the risk level of these matching companies.

According to Robinson et al. (2020), one should only interpret financial ratios in relation to other information about the company. Therefore, it is essential to compare the ratios within the industry as there are applicable norms for specific industries. Due to our sample's limited number of firm-year observations, we perform our main regression with fixed effect on a sector level rather than an industry level. We follow the approach used by Freel et al. (2012) when we categorize our sample firms into industry sectors. We use three broad sectors; *Production*, *Wholesale and Retail*, and *Knowledge Service*. We recognize all companies' Global Industry Classification Standard (GICS) code and associate the code with one of the three mentioned sectors. An overview of the sector selection, including GICS, number of companies, the share of female CEOs, and example companies, is available in Appendix 3.

To further mitigate endogeneity concerns, we introduce a propensity score matching procedure (Rosenbaum and Rubin, 1983). With this procedure, we match companies that are virtually identical except for the gender of the CEO. The score is based on our control variables $\ln(Assets)$, $\ln(Employees)$, $\ln(Company\ age)$, and ROA . We follow Faccio et al. (2016) and set the maximum difference of the propensity score to be no more than 0.1% in absolute value between the control group, i.e., companies with a male CEO, and the treatment group, i.e., female led companies. This strategy increases the similarity between the matches and, thus, improves the result of potential differences in risk-taking. A shortcoming with the procedure is that we only match on observable characteristics, and hence, there might still be unobservable differences we can not control for.

We also run a matched-sample regression including the indicator of treatment and the matching covariates as proposed by Leung and Veenman (2018). This procedure is described as a “doubly-robust” estimation and eliminates any possible random difference in the covariates between the control and treated observation. Thus, the bias-reducing properties of matching and regressing are combined with this method.

3.5 Potential other problems

A potential problem using an OLS regression is heteroscedasticity. Applying this model assumes the error terms to have an unknown but constant variance, so-called homoscedasticity. If this assumption is violated, the model deployed faces problems with heteroscedasticity. We detect the presence of heteroscedasticity when performing the Breusch-Pagan and Cook-Weisberg test. To solve the issue, we include Robust Standard Errors which adjust the standard errors to consider the heteroscedasticity.

An additional potential problem is multicollinearity. This occurs if two or more of the independent variables correlate highly with each other and thus, cannot contribute with unique information to the regression model. We find no issue with multicollinearity as we study the Variance Inflation Factor.

4. Results

4.1 Main regression

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. Dev	Min	Max	Female		Male	
						Mean	Median	Mean	Median
<i>Female CEO</i>	3 760	0.072	0.259	0	1				
<i>Leverage</i>	3 745	1.334	2.340	-4.94	15.83	1.073	0.71	1.354	0.82
<i>Cash ratio</i>	3 745	2.910	5.409	0	39.174	2.878	1.267	2.913	1.220
<i>ln(Employees)</i>	3 589	4.070	2.538	0	10.699	3.530	2.833	4.112	3.611
<i>ln(Assets)</i>	3 729	12.380	2.637	7.441	18.650	12.068	11.783	12.405	12.040
<i>ln(Company age)</i>	3 760	2.647	0.904	0.693	4.710	2.589	2.639	2.652	2.639
<i>ROA</i>	3 745	-0.146	0.434	-2.257	0.534	-0.225	-0.023	-0.140	0.011

Note: This table reports descriptive statistics for the sample. The table includes the number of observations (Obs.), mean (Mean), standard deviation (Std. dev.), minimum value (Min), and maximum value (Max). It also reports the mean and median sorted by the gender of the CEO. A complete definition of variables is available in Appendix.

The descriptive statistics show a total of 3,760 firm-year observations of CEO gender, whereof 7.2% are female CEOs. The share of female CEOs varies depending on the sector and industry belonging and increases during our time period for every sector (see Appendix 4). In 2015, 6.1% of all CEOs were women, and in 2019, the share of female CEOs increased to 8.6%. We find the highest number of female CEO observations in the *Healthcare industry* (92 observations of 860, 10.7%), which belongs to the *Knowledge service sector*. This sector has the highest total share of female CEO observations (7.8%) and is the largest sector in terms of the number of total companies. The *Wholesale and retail* sector reports a summarized share of 7.5% female CEO observations, while the *Production* sector only has a share of 6.3% female CEOs during the observed period. Other industries with higher shares of female CEOs are *Utilities*, *Real Estate* and *Consumer Staples*. However, these industries have a lower number of publicly listed companies than the *Healthcare industry*.

Out of these 3,760 observations, 3,745 had reported both leverage and cash ratio. The mean value of *Leverage* among all of the observations is 1.334, and the mean value for *Cash ratio* is 2.910. In Table 1, the initial number shows gender differences when comparing both of the

dependent variables. The mean value of *Leverage* for female CEOs is 1.073, while male CEOs report a higher *Leverage*, a mean of 1.354, 26.2% higher than the female mean value. Comparing *Cash ratio*, the mean ratio for male and female CEOs differs much less, with a mean value of 2.913 and 2.878, respectively. Table 1 also shows that male CEOs tend to have higher numbers of employees on average, with a natural logarithm value of 4.112 versus 3.530. On average, male CEOs also control older companies compared to their female counterparts, a difference of 0.063, counted in the natural logarithm of age. The descriptive statistics also report that the mean and median of assets in male-led firms are larger than those led by a female CEO. Table 1 further shows that the mean value of ROA in companies led by women is lower than in companies led by male CEOs. The same relationship is shown for the median value as the median ROA is positive for male CEOs while negative for female CEOs.

Table 2: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) <i>Female CEO</i>	1						
(2) <i>Leverage</i>	-0.031* (0.057)	1					
(3) <i>Cash ratio</i>	-0.002 (0.918)	-0.182*** (0.000)	1				
(4) <i>ln(Employees)</i>	-0.059*** (0.000)	0.117*** (0.000)	-0.300*** (0.000)	1			
(5) <i>ln(Assets)</i>	-0.033** (0.043)	0.088*** (0.000)	-0.117*** (0.000)	0.809*** (0.000)	1		
(6) <i>ln(Company age)</i>	-0.018 (0.271)	0.011 (0.511)	-0.113*** (0.000)	0.504*** (0.000)	0.515*** (0.000)	1	
(7) <i>ROA</i>	-0.051*** (0.002)	0.073*** (0.000)	-0.014 (0.393)	0.420*** (0.000)	0.480*** (0.000)	0.274*** (0.000)	1

*Note: This table reports the Pearson correlation coefficient between our variables. A complete definition of variables available in Appendix. P-value in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table 2 shows the correlation between our variables. Notable is the negative correlation of -0.182 with a significance level of 1% between *Leverage* and *Cash ratio*, which is in accordance with our predicted relationship between the two risk measures. In addition to this, the table shows a negative correlation of -0.031 with a significance level of 10% and a p-value of 0.057 between *Female CEO* and *Leverage*, and an insignificant small correlation between *Female CEO* and *Cash ratio* of -0.002 with a p-value of 0.918.

Table 3: Main regression

	(1)			(2)		
	Leverage			Cash ratio		
	No FE	Sector FE	Sector & Time FE	No FE	Sector FE	Sector & Time FE
<i>Female CEO</i>	-0.214* [0.125]	-0.218 [0.156]	-0.214 [0.155]	-0.486* [0.275]	-0.516 [0.387]	-0.499 [0.388]
<i>ln(Employees)</i>	0.124*** [0.025]	0.117*** [0.041]	0.116*** [0.041]	-1.168*** [0.105]	-1.123*** [0.199]	-1.125*** [0.199]
<i>ln(Assets)</i>	0.000 [0.031]	0.004 [0.060]	0.006 [0.060]	0.639*** [0.086]	0.712*** [0.167]	0.717*** [0.168]
<i>ln(Company age)</i>	-0.177*** [0.054]	-0.168** [0.082]	-0.162** [0.082]	-0.124 [0.122]	-0.221 [0.215]	-0.203 [0.217]
<i>ROA</i>	0.183 [0.129]	0.176 [0.150]	0.168 [0.151]	0.775*** [0.163]	0.915*** [0.213]	0.886*** [0.213]
<i>Constant</i>	1.355*** [0.325]	1.293** [0.639]	1.379** [0.641]	0.076 [0.706]	-1.684 [1.527]	-1.669 [1.528]
<i>R-squared</i>	0.018	0.019	0.021	0.138	0.167	0.168
Sector Fixed Effect	No	Yes	Yes	No	Yes	Yes
Time Fixed Effect	No	No	Yes	No	No	Yes
No. of observations	3 588	3 588	3 588	3 588	3 588	3 588

*Note: This table reports the result from the regression.. In Regression (1), Leverage is the dependent variable. In Regression (2), Cash ratio is the dependent variable. A complete definition of variables available in Appendix. Within-firm clustered robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

When testing our hypothesis with our main regression, we conduct two separate tests. In the first test, the dependent variable is *Leverage*, and in the second test, the dependent variable is *Cash ratio*. We use *ROA* and the natural logarithm of *Employees*, *Assets*, and *Company age* as control variables for both regressions. We run both of our tests in three steps: first without any fixed effect, then including sector fixed effect, and lastly, sector and time fixed effect. We will refer to these steps as different versions of the tests.

We present the result of our main regression in Table 3. When we do not adjust for any fixed effect in our first test, we find a negative coefficient between *Leverage* and the *Female CEO* of -0.214. This negative relationship indicates that female-led companies, on average, have lower leverage and hence, a lower risk level, similar to the predictions in our hypothesis. The result is significant at a 10% level, with a p-value of 0.087. When we re-run our test by including sector

fixed effect, we see a negative coefficient of -0.218 between *Leverage* and *Female CEO*. However, the significance disappears as the p-value rises to 0.162. In the version of test 1, including both sector and time fixed effects, the coefficient is the same as without any control for fixed effects, but with a higher p-value of 0.169, indicating no significant difference between the genders. As described in section 3.4, the theory emphasizes the importance of adjusting for industry fixed effects. Since the significance disappears when doing so, we find no support for our hypothesis when using leverage as our proxy for risk.

Both $\ln(\text{Employees})$ and $\ln(\text{Company age})$ show highly significant results for all three versions but with different relationships to *Leverage*. $\ln(\text{Employees})$ has a positive coefficient between 0.124 (without fixed effects) to 0.116 (including sector and time fixed effect). This suggests that leverage increases as a company grows in terms of the number of employees. On the other hand, leverage decreases as $\ln(\text{Company age})$ increases. Both $\ln(\text{Assets})$ and *ROA* positively correlate with *Leverage*, but these results are insignificant. We further see that the value of *R-squared* increases as we include fixed effects, going from 0.018 to 0.019 and, lastly, 0.021. This implies that fixed effects have an impact on our analysis.

Table 3 further shows the result of our second test, in which we use *Cash ratio* as the dependent variable. Opposite to our predictions, we find a negative relationship of -0.486 between *Female CEO* and *Cash ratio*, meaning that female CEOs have a lower cash ratio than their male counterparts. In the version not controlled for fixed effect, we find a p-value of 0.077, hence a significance level of 10%. However, similar to what we experienced in the test with leverage as the dependent variable, the results are no longer significant as we control for fixed effects. With sector fixed effect, the coefficient changes to -0.516 with a p-value of 0.183, and as we incorporate time fixed effect, the coefficient reduces to -0.499 with a p-value of 0.199. To conclude, *Cash ratio* does not support the hypothesis as we found a negative, rather than positive, relationship between the cash ratio and gender. Additionally, we do not find significant results for the negative relationship when adjusting for fixed effects.

$\ln(\text{Employees})$, $\ln(\text{Assets})$, and *ROA* do all provide our model with significant results at a 1% level for all versions of our second test. There is a negative relationship between $\ln(\text{Employees})$ and *Cash ratio* with a coefficient of -1.125 (including sector and time fixed effect). For $\ln(\text{Assets})$ and *ROA*, there is a positive relationship of 0.717 and 0.886, respectively. The second test's *R-squared* is higher than the first test's and spans from 0.138 to 0.168 in the different

versions. The influence of including fixed effects is also stronger in the second test compared to the first one.

4.2 Robustness checks

Table 4: Propensity score matching

PANEL A: Test of difference in risk proxies				
Variable	Matched obs.	Mean (Female CEOs - Male CEOs)	Diff.	P-value of diff.
<i>Leverage (female CEOs)</i>	258	1.078	-0.150	0.210
<i>Leverage (male CEOs)</i>		1.228		
<i>Cash ratio (female CEOs)</i>	258	2.719	0.140	0.419
<i>Cash ratio (male CEOs)</i>		2.579		
PANEL B: Matched-sample regression with sector and time fixed effect				
Variable	(1) Leverage	(2) Cash ratio		
<i>Female-led vs. Male-led companies</i>	-0.167 [0.201]	-0.104 [0.372]		
<i>ln(Employees)</i>	0.089 [0.060]	-0.812*** [0.199]		
<i>ln(Assets)</i>	-0.025 [0.070]	0.371** [0.161]		
<i>ln(Company age)</i>	-0.058 [0.110]	-0.522** [0.243]		
<i>ROA</i>	0.170 [0.360]	1.038*** [0.308]		
<i>Constant</i>	1.245 [0.808]	1.317 [1.535]		
<i>R-squared</i>	0.022	0.200		
Sector Fixed Effect	Yes	Yes		
Time Fixed Effect	Yes	Yes		
No. of observations	497	497		

*Note: This table presents the result of a Propensity score matching. The propensity score is estimated on firm characteristics included in our main regression analysis within a year-sector group. Panel A includes the mean (Mean) of the two groups (female CEOs and male CEOs), the difference (Diff) between the mean of the two groups and observations, and p-value of difference (P-value of difference). Panel B presents the outcome of the main regression based on the propensity score matched sample. A complete definition of variables is available in the Appendix. Robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

As previously discussed, we face concerns with endogeneity, and we thus carry out a propensity score matching to check for robustness in our results. The propensity scores are based on firm characteristics in year-sector observations and are limited to have a maximum difference of 0.1% in absolute value and to find a 1:1 match. In Panel A of Table 4, we present the gender difference in our risk proxies of the matched observations. The difference in *Leverage* between female and male CEOs is -0.150 with a p-value of 0.210. This relationship is similar to what we found in the main regression. For *Cash ratio*, we see the opposite relationship compared to the main regression, meaning that the *Cash ratio* for our matched sample is higher when the CEO is female. This relationship is, however, insignificant as the p-value equals 0.419.

In Panel B, we present the result of repeating the main regression with the matched sample. We run the regression of our two risk proxies with the matched-sample treatment indicator variable created by the propensity score matching procedure. There is a negative relationship between female-led companies and *Leverage* and *Cash ratio*. This is the same relationship as found in our main regression but with coefficients of smaller magnitude. The coefficient of *Leverage* is -0.167 (-0.214 in Main regression, Table 3), and the coefficient of *Cash ratio* is -0.104 (-0.499 in Main regression, Table 3). Both of the findings are, however, not significant. To conclude, the results of the robustness checks do not support our hypothesis.

4.3 Additional tests

4.3.1 Board diversity

A great share of previously mentioned literature examines the effects of having diverse boards. Both Tosun et al. (2022) and Schopohl et al. (2021) find gender distribution in boards to be related to company risk, while Adams and Funk (2012) argue that the behavioral characteristics of female board members in Swedish publicly listed firms differ from the rest of the population. As we find no significant differences in risk propensity when comparing Swedish female and male CEOs, we find it interesting and of explanatory value to test if a higher share of female board members impacts the riskiness of a company. Hence, explore if it could better explain gender differences in corporate settings than the gender of the CEO. Therefore, we extend our research further by testing the impact of gender diversity on boards by adding the share of female directors on boards as a control variable in our main regression.

We replace *Female CEO* with the share of women on boards, *Board diversity*, as the primary independent variable in our regression and control for sector fixed effects. Due to data limitation on board diversity, we run an OLS regression solely on a cross-sectional data set of 2020. To avoid collinearity results, we exclude CEO gender from this regression as these are often included in the boards, and their gender would otherwise be accounted for twice. As shown in Appendix 5, companies with a male CEO have a slightly lower average share of female directors, 23.8%, compared to 27.0%. However, we anticipate that the gender of the CEO could, to some extent, explain this difference as it is often included on the boards. In Appendix 6, we show that the *Board diversity* has a negative relationship of -0.716 with *Leverage*. However, this is an insignificant result with a p-value of 0.201. When examining female directors' relation to *Cash ratio*, its coefficient is smaller than for female CEOs, -0.266 but still insignificant with a p-value of 0.791.

4.3.2 Performance-based compensation

We also test if the share of performance-based compensation is related to company risk. Prior research has found different incentives to affect company risk measures (Schopohl et al., 2021; Chava and Purnanandam, 2010). As a higher performance-based share implies a larger dependency on performance for the individual, there is a relationship between risk propensity and performance-based salary. We, therefore, extend our study by examining if there is a relationship between leverage or cash ratio and share of performance-based salary for board and CEO and if women or men are more likely to have a higher share of performance-based salary. The interpretive value of this test is somewhat limited as we have no access to information about which targets determine performance. However, since the selection of workplace and its associated salary composition is an individual's choice, individuals can determine the riskiness of their own income to some extent. Thus, we find it interesting to examine the share of bonuses in companies run by female CEOs compared to companies run by male CEOs. We also find it relevant to explore the relationship between the bonus component itself and our risk proxies because of its connection to risk propensity.

Appendix 7 shows the average share of performance-based salary for board members and CEOs in Swedish public companies run by female or male CEOs. It shows that female CEOs have a lower average share of performance-based salary for board and CEO, a share of 4.2% compared to the average of 5.7% in companies run by male CEOs. This indicates that female CEOs have a lower share of performance-based salary, i.e., a less risky salary. This could imply that female

CEOs either apply to companies with less risk-filled salary policies, are recruited to them, or impose such salary policies after their entry. However, this result includes endogeneity concerns and requires further examination.

We add the share of performance-based salary, *Bonus*, as a control variable in our main regression while keeping *Female CEO* as the independent variable. We also include time and sector fixed effects. Appendix 8 shows no significant relationship between *Bonus* and *Leverage* as we find its coefficient to be -0.480 with a p-value of 0.254. However, we find a positive effect on *Cash ratio* at a 5% significance level with a coefficient of 1.367. When adding *Bonus* as a control variable, we also find a significant relationship between *Female CEO* and *Cash ratio*. The result indicates a 1% significance level with a coefficient of -0.922 and a p-value of 0.001.

5. Discussion

We find that female CEOs are associated with lower leverage in all versions of our tests, supporting our hypothesis. However, in contradiction to our predictions, we find that female CEOs are related to lower cash ratios. Before including sector and time fixed effects in our main regression, we find the gender of the CEO to impact both leverage and cash ratio at a 10% significance level. As we run our test, controlling for sector and time fixed effect, we cannot find statistically significant support for women being more risk averse than men. Thus, we cannot find any strong support for our hypothesis.

When we follow the standards of prior literature and include sector and time fixed effects, we observe an increase in the explanatory value for both our regressions models. However, as we do this, our initial significant findings disappear. When we control for fixed effect, the coefficients remain similar to our initial findings but with higher p-values. Since the significant CEO gender differences in risk preferences disappear, we interpret the sector to have an important influence on companies' risk levels and, to some extent, limit the impact of the CEO. When comparing the risk propensities of CEOs without controlling for the different conditions, we could argue for the presence of gender differences. However, the result could be a cause of endogenous matching, which will be discussed further below. Our lack of significant results indicates no gender differences in risk propensity among male and female CEOs. This is coherent with findings in prior literature (Schubert et al., 1999; Johnson and Powell, 1994). These argue that when women are given contextual decisions or if women are in the managerial population, they do not differ from men in the risk propensity. The CEO is undoubtedly a highly managerial position in companies, and it is reasonable to consider their decisions as almost exclusively contextual.

Faccio et al. (2016) also examine the relation between CEO gender and company risk and use leverage as one of their risk indicators. Our studies differ sample-wise, as Faccio et al. examine a larger sample and a broader geographical area. They include a sample of 132 590 private and public European companies and observe these from 1999 to 2009. In contradiction to our insignificant results, Faccio et al. find significant results of risk aversion among female CEOs. They find a negative relationship between female CEOs and leverage at a 1% significance level. Our findings on Swedish publicly listed firms differ from those by Faccio et al. In other words, we find the risk propensity among CEOs in Swedish publicly listed firms to deviate from those

of the CEOs in the rest of Europe. There are numerous potential explanations for why we find different results compared to Faccio et al. (2016). Even though we do not examine these, we consider it relevant to discuss some potential explanations for why our Swedish sample differs in risk propensity. One potential explanation for why we find men and women to differ less than what Faccio et al. find, is that we focus exclusively on one of the most gender-equal countries in the world (UN Development Programme, 2020). In countries where genders are more equal, stereotypes and social norms that create expectations on women to be less risk prone, are likely not to be as present. Hence, it is believable that higher equality indexes are reflected in the behaviors of the CEOs in the examined country. Therefore, we consider it reasonable that Swedish male and female CEOs differ less in risk propensity than in Europe, i.e., an area with a lower equality ranking (UN Development Programme, 2020). In addition to geographical differences, Faccio et al. examine their sample for 10 years, starting 16 years before our first observations. As the share of female CEOs has increased during the last years, the discrepancy between our observed periods might also contribute to our differentiated findings. Following the previous discussion, a more prominent presence and likely a larger acceptance of female CEOs could lower the pressure to act according to existing risk averse stereotypes.

Unlike Faccio et al. (2016), the paper by Adams and Funk (2012) is geographically closely related to our research as they focus on Swedish companies when examining the characteristics of female board members. They find Swedish female directors to hold opposite characteristics compared to the rest of the female population. The shown characteristics of female directors are typically associated with those of the male stereotype, including risk preference. However, the findings by Adams and Funk are based solely on self-perception. It is, hence, difficult to conclude if their results actually indicate a higher risk propensity in the female director population or if female directors simply compare themselves to a lower general risk propensity amongst women. Similarly, as they potentially face different social expectations than male directors, they could assess their risk propensity differently.

Nevertheless, Adams and Funk discuss whether Swedish CEOs face the same barriers as directors. They argue that this might not be the case as CEOs are usually not externally appointed, unlike the directors. Therefore, according to Lyness and Judeisch (1999), they do not need to show as extreme performance, and thus, we anticipate that the CEO might differ from Adams and Funk's board-level findings. As we find no significant differences in risk

propensity between male and female CEOs, we show that the CEOs deviate from the gender differences that Adams and Funk argue to be present. At the same time, we can not find female CEOs to be more risk averse, as argued by Faccio et al. (2016).

In the literature, there is a conflicting view of whether it is the CEO or the CFO who has the most influence on broader corporate financial policy decisions (Schopohl, 2021; Graham et al., 2013; Chava and Purnanandam, 2010). In addition, prior literature also examine the influence of diverse boards on risk-taking (Schopohl et al., 2021; Levi et al., 2014; Adams and Funk, 2012). Thus, the combination of which executives or directors and risk proxies are examined could impact the result and lead to different conclusions than in previous corporate financial literature. As prior literature on relevant decision makers is contradictory, we add board diversity to our initial, inconclusive research on the impact of CEO gender. Our results show that board diversity cannot explain corporate risk-taking as we find no significant relationship between the share of female directors and risk proxies during 2020. However, a possible explanation for our insignificant results could still be that the CFOs influence our chosen risk proxies the most, as found in the UK (Schopohl et al., 2021). In such a situation, examining gender differences amongst CEOs or board members based on these risk proxies would not provide results that reflect gender differences in corporate settings. Due to the limitation of this study and our sample size, as well as the lack of available data for CFOs, we do not perform additional tests on CFOs.

We confirm the anticipated relationship between the size of the performance-based salary component and corporate risk-taking when we find a significant positive relationship between the bonus component and cash ratios. When we control for differences in the share of performance-based pay, we find the gender of the CEO to be significantly related to cash ratio on a 1% significance level. We imagine that this is either due to a difference in the sample (2,780 observations instead of 3,588 because of unavailable compensation data), or that those female CEOs whose behavior turned the prior results insignificant are those who also have higher shares of performance-based salary. Hence, their deviating risk preferences are now explained by the bonus component instead.

5.2 Endogeneity

As discussed in several papers (Li and Zeng, 2019; Faccio et al., 2016), endogeneity concern is an issue when examining corporate risk-taking and individual characteristics. Unobservable

firm characteristics might cause a potential difference between the two groups. Self-selection bias could cause individuals to apply for companies with a certain risk profile, and hence, the actual gender does not cause the risk level we use as proxies of a CEO's risk-taking. Social norms and structures might also be incorporated into an individual's beliefs, causing her or him to lean toward certain types of companies. The appointment of the CEO may not be a random decision and is therefore subject to the biases of board members. If the board wants to be less exposed to risk, they potentially appoint a female CEO as they believe she will act more risk averse. Hence, there is a predetermined journey in which the independent decision-making of the CEO may be limited.

By solely studying the difference in corporate risk-taking and not attitudes, we might capture the effect of unobservable differences rather than the gender of the CEO. We include sector fixed effects to control for unobservable sector characteristics as an initial step. When doing so, the significance of the results found in our first regression disappears, which indicates that gender has no significant effect on the risk level. As we develop our study with a propensity score matching to compare virtually identical companies, we still experience the same pattern as in our main regression. However, the magnitude of the coefficients decreases and the p-values increase, meaning that the insignificant results continue to be present. This result contradicts Faccio et al. (2016), that find a significant difference in corporate risk-taking when performing a propensity score matched analysis. As previously described, our study differs from theirs in terms of the study's design. This includes differences in geographical location (Sweden vs. Europe), companies of interest (publicly listed vs. all), observed period (2015-2019 vs. 1999-2009) and risk proxies (leverage and cash ratio vs. leverage, volatility of ROA and likelihood of survival).

Despite attempts to mitigate the risk of endogenous matching between CEOs and companies, we emphasize that any documented relationship could be caused by unobservable characteristics and/or omitted variables. Since a random assignment of CEO is not possible, we do not exclude endogeneity as a potential explanation for differences in corporate risk-taking.

5.3 Research method

To determine the studied companies' risk levels, we chose two accounting-based financial ratios as risk proxies, as suggested by literature (Robinson et al., 2020). The reason for using accounting-based measures is that they can be influenced by the CEO (Graham et al., 2015;

Chava and Purnanandam, 2010), compared to market-based measures, such as volatility on stock return that are more sensitive to external influence and market conditions. Notwithstanding, we are humble about the fact that the ratios could be a consequence of previous management decisions and/or the company's performance. In addition, financial ratios that stem from the balance sheet are snapshots of the situation at the very end of the reporting period.

Our first proxy, *Leverage*, is a generally known determinant of risk level in corporate policy decisions (Robinson et al., 2020; Berk and DeMarzo, 2017). We found the relationship between leverage and female CEOs to be negative, similar to the correlation in Faccio et al. (2016), which strengthens the validity of our results. As we study the regression on *Cash ratio*, we find the opposite relationship compared to our predictions. One possible explanation is that women CEOs are not more risk averse, maybe even less so than male CEOs, and hence, chose to decrease the ratio. However, another potential reason for the outcome is that the cash ratio might not be a sophisticated proxy for risk due to the ambiguous reasons to hold cash. According to financial literature, cash is a risk-free asset that reduces the average risk of a company's all assets (Berk and DeMarzo, 2017). Risk aversion motivates an increase in cash holdings (Opler et al., 1999), and cash holdings are negatively related to leverage (Ozkan and Ozkan, 2004). An increase in cash holdings could also be a precautionary move to limit potential underlying risk (Bates et al., 2009), either driven by operational or financial properties. E.g., if the financial risk is high, i.e., leverage is high, cash holdings might simultaneously need to be increased to mitigate the risk of an unforeseen shock. Hence, one might expect a different relationship between risk and cash ratio than proposed in section 3.3.

Another essential consideration when evaluating the research method is the reliability of the data. Reliability refers to how the data used in the regression has been selected and gathered and if the observed values are reliable and accurate. We used *Retriever Business* as our main source for all variables except for *Industry*, for which we used *Compustat Global*. By not using several different sources avoids a potential risk of mismatch or misinterpretation. Due to the shortcoming regarding the reporting of the gender of the CEO as described in section 3.1, we had to manually collect the information through data scraping of annual reports and press releases for some observed companies. This manual process enabled incorrect reporting of the gender, which could affect the result. However, most of the observations were not required to undergo the manual process. We did several random tests on the finalized sample, and we could

not find any errors. We further see that the percentage of female CEOs in our sample increases over time, similar to what is reported by Eurostat (2022).

Although we are using control variables as in similar studies, we acknowledge that there still might be additional observable characteristics that could provide explanatory value to the outcome. Another limitation of the study is the fact that we only control for observable firm characteristics in our tests. Thus, a possible explanation for our result is that there are underlying individual differences in the characteristics of the CEOs that influence the outcome. In addition, we only study corporate risk-taking and not psychological or attitudinal differences in risk propensity. Hence, other unobservable effects might determine the chosen risk level.

6. Conclusion

Women have always been underrepresented in the corporate world, but lately, we have observed an increasing representation of women in senior management positions. One explanation often referred to for why women fail to break the glass ceiling is their alleged risk aversion. This is a topic frequently studied in prior literature where women are found to invest in less risky options compared to men (Sundén and Surette, 1998; Jianakoplos and Bernasek, 1998) and European companies with female CEOs are also shown to have less risk in their companies (Faccio et al., 2016). There are, however, contradictory findings where women are shown to not be more risk averse than men if the managerial population is studied or if we study women and men in contextual situations (Schubert et al., 1999; Johnsson and Powell, 1994). Adding to this tension are the findings of Swedish female directors who consider themselves to be more risk prone than the general female population (Adams and Funk, 2012).

We, thus, add to the prior research on gender differences in corporate settings by examining if female CEOs in Swedish publicly listed companies are more risk averse in corporate financial policy decisions than their male counterparts. We reject our hypothesis as we find no significant results when comparing the relationship between risk proxies and female CEOs. However, we find female CEOs to be insignificantly negatively related to both leverage and cash ratio. Whilst we predicted the relationship with leverage to be negative, the result for the cash ratio goes against our predicted outcome. To confirm the robustness of our results, we did a propensity score matched regression which confirmed the findings of insignificant results. We add contradicting results to previous findings on corporate financial policy decisions since we can not find support for women being more risk averse. Furthermore, as women in senior management positions in Sweden are previously found to not consider themselves as more risk averse, our results on corporate risk-taking extend this knowledge. To conclude, we contribute to the existing literature by examining female CEOs' behavior in one of the world's most gender-equal countries. When doing so, we find no significant differences. Hence, we suggest that the general preconception of the female stereotype could be questioned.

We acknowledge that our research has some shortcomings. Firstly, cash ratio is a slightly ambiguous risk measure. Secondly, we only account for observable firm characteristics and hence, risk interpreting our results without considering other unobservable differences among male and female CEOs and their companies. Thirdly, our results would be of higher explanatory

value with a large sample, and if it could include the gender of both CFOs and CEOs as we currently leave the influence of the CFO unexplored. We acknowledge several shortcomings of our study, and conclusions should be drawn cautiously as we provide no significant indication of the effect of gender on corporate risk-taking. However, our study does provide inspiration for future research since we contradict prior findings on the effect of female CEOs in other less equal geographical areas and partly question the conclusions previously drawn from self-assessment studies in Sweden.

6.1 Future research

This study has examined whether female CEOs are more risk averse than men in financial corporate policy decisions. The topic of gender differences and risk aversion has been extensively studied in many different settings. However, to the best of our knowledge, this is the first paper to conduct a study on CEO and corporate risk-taking in Swedish publicly listed companies. Because of the study's limitations, we see several areas of interest for future research.

Firstly, Adams and Funk (2012) find that Swedish female directors exhibit an even more risk prone attitude than male directors. Thus, women at the top of business differ from the general population. This finding only examines directors' own perceptions of their behavior and beliefs, not their actual behavior, we firmly believe that it would be interesting to conduct a combined study. Such a study would include conducting a survey on risk attitude, like Adams and Funk, and collecting risk proxies, as we do in this study. By doing so, it would examine if executives' perceived attitudes affect their actions and decision-making and if there are gender differences in the explored relationship.

Secondly, a limiting factor in our study is the number of available observations. Consequently, we were limited to look at sectors rather than industries to maintain a sufficient amount of observations in each group which decreases the explanatory value of the study to some extent. The limited amount of observations also rules out the possibility of conducting a difference-in-difference test, describing the effect on the risk level after transitioning from a female CEO to a male CEO, or vice versa. By broadening the scope, e.g., including all Nordic countries, more detailed tests can be conducted as the number of observations increases.

Thirdly, the role of the CEO versus the CFO is discussed in prior literature. Future research could include both the CFO and CEO and compare the difference in risk level, dependent on

the gender composition of the two positions. As there are four potential combinations (female CEO, female CFO; male CEO, male CFO; female CEO-male CFO; male CEO-female CEO), one would require a larger sample than what is available within the context of our study. Corporate financial policy decisions in public companies are not one-sided decisions and the power of the respective executive might differ between companies. Thus, it would be of interest to investigate the gender effect of different executive compositions.

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Appendix

Appendix 1: Variable definition and source

Variable	Definition	Source
<i>Female CEO</i>	Dummy variable that equals 1 if the CEO is female and 0 otherwise	Retriever Business (<i>Annuals reports, press releases</i>)
<i>Leverage</i>	Ratio of total debt divided by total assets minus total debt	Retriever Business
<i>Cash ratio</i>	Ratio of total cash and cash equivalents divided by total current liabilities	Retriever Business
<i>ln(Employees)</i>	Natural logarithm of the number of employees	Retriever Business
<i>ln(Assets)</i>	Natural logarithm of total assets (SEK)	Retriever Business
<i>ln(Company age)</i>	Natural logarithm of the difference between observed year and registration date	Retriever Business
<i>ROA</i>	Ratio of the sum of operating profit and interest income, divided by total assets	Retriever Business
<i>Industry</i>	The Global Industry Classification Standard code	Compustat Global
<i>Sector</i>	Segmentation based on <i>Industry</i>	
<i>Board diversity</i>	Ratio of female board members divided by the total number of board members	Retriever Business
<i>Bonus</i>	Ratio of performance-based compensation for CEO and board members divided by the total compensation for CEO and board members	Retriever Business
<i>Note: This table reports the definition and source of all variables.</i>		

Appendix 2: Process of selecting sample

	Effect	Accumulated size
Swedish limited public company, registered before 2015-01-01		773
Gender unidentifiable	-16	757
No values reported for all years 2015-2019	-5	752
Total	-21	752
<i>Note: This table reports the sample selection process, including the effect and accumulated size.</i>		

Appendix 3: Sector selection and share of female CEO

Sector	Industry	GICS No. of companies		Example
<i>Production</i>	<i>Energy</i>	10	14	Lundin Energy, Tethys Oil
	<i>Materials</i>	15	35	Boliden, Gränges, SSAB
	<i>Industrials</i>	20	159	NCC, Haldex, NIBE, SAAB
	<i>Utilities</i>	55	4	Slitevind, Arise, Implementa Sol
	<i>Real Estate</i>	60	57	Bonava, Castellum, Balder
Total			269	
<i>Wholesale and retail</i>	<i>Consumer Discretionary</i>	25	72	Duni, MIPS, Nelly Group
	<i>Consumer Staples</i>	30	23	Scandi Standard, Swedish Match
	<i>Communication services</i>	50	47	Eniro, Storytel, Telia, Embracer
Total			142	
<i>Knowledge service</i>	<i>Health Care</i>	35	172	Elekta, Getinge, SOBI
	<i>Financials</i>	40	36	Ratos, Resurs, Investor, Avanza
	<i>Information Technology</i>	45	133	Fingerprint, Mycronic, Tobii
Total			341	
<i>Note: This table represents the selection of sectors based on industry. Industry is based on the Global Industry Classification Standard (GICS)</i>				

Appendix 4: Share of female CEO (%)

Sector	Industry	No. of companies	2015	2016	2017	2018	2019	Total
<i>Production</i>	<i>Energy</i>	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<i>Materials</i>	35	2.9%	2.9%	5.7%	11.4%	11.4%	6.9%
	<i>Industrials</i>	159	3.1%	3.1%	2.5%	3.1%	4.4%	3.3%
	<i>Utilities</i>	4	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
	<i>Real Estate</i>	57	12.3%	15.8%	14.0%	15.8%	15.8%	14.7%
Total		269	5.2%	5.9%	5.6%	7.1%	7.8%	6.3%
<i>Wholesale and retail</i>	<i>Consumer Discretionary</i>	72	5.6%	6.9%	6.9%	11.1%	8.3%	7.8%
	<i>Consumer Staples</i>	23	13.0%	13.0%	13.0%	17.4%	21.7%	15.7%
	<i>Communication services</i>	47	2.1%	2.1%	2.1%	4.3%	4.3%	3.0%
Total		142	5.6%	6.3%	6.3%	9.9%	9.2%	7.5%
<i>Knowledge service</i>	<i>Health Care</i>	172	9.3%	9.3%	11.0%	10.5%	13.4%	10.7%
	<i>Financials</i>	36	8.3%	8.3%	5.6%	5.6%	2.8%	6.1%
	<i>Information Technology</i>	133	3.8%	3.8%	4.5%	5.3%	5.3%	4.5%
Total		341	7.0%	7.0%	7.9%	7.9%	9.1%	7.8%
GRAND TOTAL		752	6.1%	6.5%	6.8%	8.0%	8.6%	7.2%

Note: This table reports the share of female CEOs within each sector and industry.

Appendix 5: Descriptive statistics for additional test including Board diversity

Variable	Obs.	Mean	Std. dev.	Min	Max	Female CEO		Male CEO	
						Mean	Median	Mean	Median
<i>Board diversity</i>	742	0.242	0.183	0	0.778	0.270	0.268	0.238	0.240
<i>Leverage</i>	739	1.299	2.877	-5.9	22.02	1.545	0.84	1.266	0.74
<i>Cash ratio</i>	739	2.861	4.570	0.023	29.962	2.578	1.172	2.900	1.299
<i>ln(Employees)</i>	726	4.359	2.414	0	10.563	3.975	3.257	4.412	4.060
<i>ln(Assets)</i>	737	12.918	2.537	8.207	19.009	12.590	11.973	12.964	12.655
<i>ln(Company age)</i>	752	2.903	0.719	1.792	4.745	2.877	2.708	2.907	2.773
<i>ROA</i>	739	-0.127	0.357	-1.738	0.438	-0.182	-0.05	-0.119	0.010

Note: This table reports descriptive statistics for the sample of additional test. The table includes the number of observations (Obs.), mean (Mean), standard deviation (Std. dev.), minimum value (Min), and maximum value (Max). It also reports the mean and median sorted by the gender of the CEO. A complete definition of variables is available in the Appendix.

Appendix 6: Additional test with Board diversity as main independent variable

	(1)	(2)
	Leverage	Cash ratio
<i>Board diversity</i>	-0.716 [0.559]	-0.266 [1.004]
<i>ln(Employees)</i>	0.224*** [0.074]	-0.940*** [0.178]
<i>ln(Assets)</i>	-0.035 [0.097]	0.609*** [0.154]
<i>ln(Company age)</i>	-0.283* [0.167]	-0.070 [0.246]
<i>ROA</i>	0.099 [0.441]	0.108 [0.335]
<i>Constant</i>	1.856* [1.104]	-1.386 [1.490]
<i>R-squared</i>	0.021	0.189
Sector Fixed Effect	Yes	Yes
No. of observations	716	716

*Note: This table reports the result from the regression including sector fixed effect. Board diversity is defined as the share of women in the board. In Regression (1), Leverage is the dependent variable. In Regression (2), Cash ratio is the dependent variable. A complete definition of variables is available in the Appendix. Robust standard errors in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Appendix 7: Descriptive statistics for additional test including Bonus

Variable	Obs.	Mean	Std. dev.	Min	Max	Female		Male	
						Mean	Median	Mean	Median
<i>Female CEO</i>	3 760	0.072	0.259	0	1				
<i>Leverage</i>	3 745	1.334	2.340	-4.94	15.83	1.073	0.71	1.354	0.82
<i>Cash ratio</i>	3 745	2.910	5.409	0	39.174	2.878	1.267	2.913	1.220
<i>Bonus</i>	2 819	0.056	0.107	0	0.510	0.042	0	0.057	0
<i>ln(Employees)</i>	3 589	4.070	2.538	0	10.699	3.530	2.833	4.112	3.611
<i>ln(Assets)</i>	3 729	12.380	2.637	7.441	18.650	12.068	11.783	12.405	12.040
<i>ln(Company age)</i>	3 760	2.647	0.904	0.693	4.710	2.589	2.639	2.652	2.639
<i>ROA</i>	3 745	-0.146	0.434	-2.257	0.534	-0.225	-0.023	-0.140	0.011

Note: This table reports descriptive statistics for the sample. The table includes the number of observations (Obs.), mean (Mean), standard deviation (Std. dev.), minimum value (Min), and maximum value (Max). It also reports the mean and median sorted by the gender of the CEO. A complete definition of variables is available in the Appendix.

Appendix 8: Additional test with Bonus included in main regression

	(1)	(2)
	Leverage	Cash ratio
<i>Female CEO</i>	-0.168 [0.135]	-0.922*** [0.265]
<i>Bonus</i>	-0.480 [0.421]	1.367** [0.636]
<i>ln(Employees)</i>	0.094*** [0.026]	-1.041*** [0.109]
<i>ln(Assets)</i>	0.062 [0.039]	0.548*** [0.094]
<i>ln(Company age)</i>	-0.073 [0.056]	-0.161 [0.134]
<i>ROA</i>	0.001 [0.138]	1.207*** [0.217]
<i>Constant</i>	0.441 [0.407]	2.074*** [0.799]
<i>R-squared</i>	0.028	0.173
Sector Fixed Effect	Yes	Yes
Time Fixed Effect	Yes	Yes
No. of observations	2 780	2 780

*Note: This table reports the result from the additional regression including sector fixed effect. In Regression (1), Leverage is the dependent variable. In Regression (2), Cash ratio is the dependent variable. Within-firm clustered robust standard errors in brackets. A complete definition of variables is available in the Appendix. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*