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Investors Trust and the Gender of Senior Executives

An empirical study of investors trust and whether it is dependent on the gender of the senior executives of a company

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Abstract

This study examines whether investors' trust in senior executives is dependent on the gender of these, by investigating the relationship between the gender of the CEO/CFO and investors perceived risk of investing in the company. To make the result more robust, we control for factors that are generally known to influence the size of the bid-ask spread, such as size, trading volume, sector and market-to-book ratio, as well as for personal characteristics. We do not find evidence to support our hypothesis, that investors perceive the risk of investing to be lower in a firm with either a female CEO or CFO. Hence, our finding indicates that investors do not exhibit greater trust in female senior executives.

Keywords: Investor trust, Investor perceived risk, Gender of senior executives, Bid-ask spread

1. Introduction

It has been concluded in numerous studies that trust is vital for the creation of a good functioning capital market as investors depend on the information provided by the company (Tomkins, 2001; Sörenson, 2015). The importance of trust was made evident in the latest financial crisis, which can be argued to be a consequence of the lack of trust, resulting in investors wanting to reduce their risk exposure (Baldvinsdottir, Hagberg, Johansson, Jonäll & Marton, 2011).

Whether men and women differ have been of great interest for numerous scholars, not least within the research field of psychology. When comparing risk-taking behaviour between men and women, differences have been found regarding specific risk-behaviour, even though no general difference between the genders have been evident (Eckel & Grossman, 2002; Sapienza, Zingales & Maestripieri, 2009; Eagly & Wood, 2013). The differences found have been argued to partly be a result of historically different gender roles, (Eckel & Grossman, 2002), which have made women more risk-averse (e.g. Eckel & Grossman, 2002; Croson & Gneezy, 2009; Francis, Hasan, Park & Wu, 2015) whereas men often are found to exhibit greater overconfidence (Huang & Kisgen, 2013; Levi, Li & Zhang, 2014; Francis et al., 2015).

As the number of women in top management positions increases, scholars have taken interest in investigating to what extent differences between organizations can be attributed to gender (Francis et al., 2015). Research made on gender in the top management have been focusing on how differences between men and women impact the firms' decisions and policies, and several studies have found that corporate decisions made by women differ from the ones made by men (ibid.). The differences have been argued to depend on men being overconfident (Huang & Kisgen, 2013; Levi et al., 2014; Francis et al 2015) or women being more risk-averse (Byrnes, Miller & Shafer, 1999; Eckel & Grossman, 2002; Sapienza et al., 2009). For example, female CFO's have proven to conduct more conservative accounting than men (Francis et al., 2015; Liu, Wei & Xie, 2016; Huang & Kisgen, 2013), as well as performing less earnings management, measured through accruals (Liu et al., 2016). Scholars argue that female executives could be considered to make better decisions from a shareholder perspective (Levi et al., 2014; Huang & Kisgen, 2013), although, they are underrepresented in top management positions (Barua, Davidson, Rama & Thiruvadi, 2010; Huang & Kisgen, 2013). Though, it has been shown that changes in corporate policy brought on by women do not increase firm performance and that firms with a female CFO grow at a slower rate in comparison with firms where men hold this position (Francis et al., 2015; Huang & Kisgen, 2013).

One of the main evaluation tools for investors when making investment decision is the financial statement (Olsen, 2012), hence it is crucial that investors trust the information presented by the company. As the CEO and CFO are the main creators of the financial statement, investors trust in top management is important (Huang & Kisgen, 2013) and enables investors to act as if the uncertainty they face is reduced (Tomkins, 2001). Further, trust has been shown to be an important factor in the determination of an investor's perceived risk (Ryan & Buchholtz, 2001). An investors' trust regarding a certain investment is determined by the general trust that the investor has in humans, the efficiency of the market and the individual perception of the investment situation (ibid.), as well as the characteristics of the individual investor (Guiso, Sapienza & Zingales 2008).

The understanding of an investors' behaviour can be found in the understanding of the trade-off between the risk that investors face and the required return (Ryan & Buchholtz, 2001). The principal-agent relationship that exists between the CEO/CFO of a company and its investors imply that an information asymmetry exists. As trust is argued to have an inverse relationship with

perceived risk, if an investor has high trust in a specific investment, the risk is perceived to be low (Ryan & Buchholtz, 2001).

As investors perceived risk cannot be observed directly (Leuz & Verrecchia 2000), proxies are used for its measurement. One commonly used proxy for information asymmetry is the bid-ask spread (e.g. Leuz & Verrecchia, 2000; Leuz, 2002; Chae, 2005), which also have been found to be a good measure for investors perceived risk of investing in a company (Sörenson, 2015).

Empirical evidence suggests that accounting disclosure can impact the absolute information asymmetry, affecting the perceived information asymmetry, which can be measured through the bid-ask spread (Callahan, Lee & Yhan, 1997). When firms' financial information is more informative and unbiased, the absolute information asymmetry should decrease and consequently the bid-ask spread as well (Lev, 1989). If uninformed investors perceive a greater information asymmetry the liquidity of firm-securities might decrease and subsequently cause an increase of the bid-ask spread. Therefore, it should be of managers' interest to offer investors qualitative and timely information to reduce the information asymmetry (Callahan et al., 1997). Differences between how men and women disclose accounting information can be distinguished, hence could be expected to be reflected in how investors perceive the information asymmetry (Byrnes et al., 1999; Eckel & Grossman, 2002; Huang & Kisgen, 2013; Francis et al., 2015; Liu et al., 2016).

As previously mentioned, the increase of information disclosures leads to an absolute decrease in information asymmetry (Leuz & Verrecchia, 2000), whereas greater trust reduces investors perceived risk and uncertainty of investing, even though the information asymmetry remains constant. An increase in the trust among investor should therefore increase their willingness to trade and to assume risk, increasing the liquidity of the stock, which should be reflected in a lower transaction cost, hence a lower bid-ask spread (Callahan et al., 1997). An increase in trust impact the perceived risk, while the perceived information asymmetry remains constant, hence the bid-ask spread is argued to capture investors perceived investment risk. If the gender of the top manager is considered by investors, it could be evident in the size of the bid-ask spread. When investigating this relationship in our study, gender is considered to be the independent variable which could impact the bid-ask spread, which is the dependent variable. To test the relationship between gender of the senior executives and the bid-ask spread regression analyses have been run.

The sample used in our study have been collected only from the American market. This since Guiso et al. (2008) found that trust is affected by culture and history, indicating that how trusting individuals are in general widely varies between countries, which could impact the stock market mechanisms. The US market is chosen in order to obtain a large enough sample of companies with either a female CEO or CFO. Our sample consists of a total of 654 companies, where 295 have either a female CEO or CFO, and 359 companies that have appointed men in both positions, as of December 2016.

Investigating a phenomenon within a corporate setting entails that there are numerous variables that might impact the tested correlation. To ensure the robustness of our study, control variables that might affect the outcome have been defined and tested as possible underlying explanations for fluctuations in the bid-ask spread.

As women cannot be randomly allocated to firms and therefore might not be uniformly represented over different kinds of organizations and industries (Huang & Kisgen, 2013), we will control for firm-specific characteristics that might impact the result. Further, age and tenure will be included as control variables, as women in top management positions tend to be younger (ibid.) and because the development of a relationship over time will reduce the information uncertainty faced, hence reduce the need for trust (Tomkins, 2001). As the bid-ask spread reflects the actual

investment risk, as well as the perceived information risk, we will control for conservative accounting as a measure of the actual investment risk faced by investors.

The notion of trust has been of great interest to scholars across various research fields, though it is only during the last decades that it has been given attention in the field of accounting, where it has been argued that it is important that further research is made within this field (e.g. Tomkins, 2001; Baldvinsdottir et al., 2011). As earlier mentioned, accounting information is a core evaluation tool for investors (Olsen, 2012), and it is of importance that investors trust that the information given in the financial statements are consistent with the reality. As people in general trust women more (Garbarino & Slonim, 2009) and because women have been shown to differ to men in top management positions (e.g. Francis et al., 2015; Liu et al., 2016; Huang & Kisgen, 2013), which have been argued to be better from a shareholder perspective (Francis et al., 2015; Huang & Kisgen, 2013), one could expect that investors would trust, and thereby perceive the risk to be lower, for firms with a female CEO/CFO. Though, our findings suggest that, in general, there is no significant difference between how investors perceive the risk of investing in a firm, depending on the gender of the CEO/CFO.

To our knowledge, an investigation of investor trust and the gender of the top management have not been conducted before. Although, it has been proven that trust is important for investors in their decision making, how to determine the level of trust, and its components in regard to investors, is still an ongoing debate. By investigating if the gender of the CEO/CFO affects investors trust, we contribute to the literature on whether it makes a difference for an organization to appoint a woman or man as CEO/CFO.

The remaining structure of the paper is as following; section 2 will contain prior literature and empirical findings within the chosen field, followed by the development of our hypothesis. Section 3 introduces the chosen measure of investor trust, followed by a presentation of our data and summary statistics in section 4. Section 5 contains the regression analyses, and finally in section 6 our conclusion will be presented.

2. Hypothesis development

General gender differences

Whether, and how, men and women are different have been the focus of numerous studies within different research fields for decades, especially in terms of risk-behaviour and risk-taking. An ongoing debate among scholars concerns the definition of risk, as some define risk in a broader sense than others (Byrnes et al., 1999). Some studies focusing on the difference in risk behaviour between men and women have found that women tend to be more risk averse than men (e.g. Eckel & Grossman, 2002; Croson & Gneezy, 2009; Francis et al., 2015). Though, a meta-analysis conducted by Eagly and Wood (2013) found that, on average, the difference between the genders concerning risk-taking behaviour is small. But when performing meta-analyses of specific risk-taking behaviours, for example, in behaviours towards games of risk, significant differences between the genders was found (Byrnes et al. 1999; Eagly & Wood, 2013).

In order to explain found differences between the genders, scholars have turned to both differences in nurture (sociocultural influences) and nature (biological structures and processes) (Croson & Gneezy, 2009). Historically, men and women have had different roles. Women have carried the main responsibility for parenting, where low risk-taking often yield the highest return, which can explain them being more risk-averse. Whereas men have put higher risk investments in the mating procedure, where the expected payoff is higher (Eckel & Grossman, 2002). Further, Croson and Gneezy (2009) suggest that since women perceive emotions more strongly than men, this could impact their reaction to risk, hence emotional differences could be an explanation for the different risk-behaviours.

Eagly and Wood (1991), among others, turned to the social role theory, which emphasizes that gender roles in society dictate appropriate behaviour, acting as a normative pressure. Klenke (2003) studied gender roles in top management teams, where she found that people who acted in accordance with the socially accepted gender roles easier gained acceptance from the others in the team. This theory is supported by Eckel and Grossman (2002) who found evidence suggesting that both genders expect women to be more risk averse, something that can impact how women are treated and the choices they are offered, which subsequently can reinforce their risk-averse behaviour. Another explanation could be differences in testosterone level, which have been found to increase competitiveness and control, diminish fear and influence the balance between the sensitiveness of punishment and reward (Sapienza et al., 2009). This was tested by Sapienza et al. (2009), who investigated whether the testosterone level could explain the risk-taking behaviour among MBA-students. Results showed that men on average had a higher level of testosterone, though testosterone was only found to significantly impact risk-taking behaviour across men and women, and within the group of women (ibid).

Gender differences in the corporate setting

Within the field of business, Post and Byron (2015) found that men and women on corporate boards differ in their contingent frames, meaning that they hold different values, knowledge, and experience. Their findings indicated that increasing female directors on a board was positively correlated with monitoring activities which, if qualitative, could improve efficiency and thereby reduce agency costs. The result of the study further showed that increasing female directors on the board tend to increase accounting returns, but not necessarily market performance.

A study conducted by Bertrand and Schoar (2003) confirmed that individual managers do impact corporate practices. Their findings show that both CEOs and CFOs fixed effect have significant impact on corporate decisions, both regarding investment and financial policies. Though, there are mixed evidence regarding if, and how, men and women in top management positions differ (e.g. Post & Byron, 2015; Barua et al., 2010; Liu et al., 2016; Francis et al., 2015).

Studies that have found that men and women differ suggest that female CFOs use less abnormal accruals (e.g. Barua et al., 2009; Liu et al., 2016) and apply more conservative accounting techniques (Francis et al., 2015) than men in the same position. The use of conservative accounting can be argued to reflect the CFOs attitude towards risk (Francis et al., 2015), since conservative accounting is considered to reduce the risk in a firm's accounting information (Liu et al., 2016). Further findings by Huang and Kisgen (2013) suggests that gender differences exist when it comes to financial and investment decisions. Their study showed evidence that earnings forecasts made by men were narrower, they were more likely to exercise options later and more likely to engage in acquisitions that turn out to be value destroying for the company. These differences have been argued to be attributed to men being more overconfident than women (Huang & Kisgen, 2013; Levi et al., 2014; Francis et al. 2015). Furthermore, Levi et al. (2014) argue that overconfidence is the reason why male directors were found to place more acquisition bids and pay a higher bid premium than females in the same positions.

Both Francis et al. (2015) and Huang and Kisgen (2013) came to the conclusion that female executives on average make better decisions from a shareholder perspective. Despite this, women are still scarce in these positions (Barua et al., 2010). Huang and Kisgen (2013) argue that an explanation could be that men are better at other dimensions of the executive role, which are not covered in their study. Another explanation suggested by Francis et al. (2015), is that the changes in corporate policy that were brought on by women did not increase the firm performance, suggesting that the policy changes commonly affected by female CFOs might not be in the best interest of shareholders. Firms with female top executives have also been found to generally grow at a slower rate, which could explain why women are underrepresented in these positions (Huang & Kisgen, 2013).

Even though studies have found differences, Powell (1990), who conducted a meta-analysis of studies subjected to compare men and women in leadership positions, found no significant gender difference in general. Though, the general perception among both men and women is that females are more risk averse than men (Byrnes et al., 1999; Eckel & Grossman, 2002; Sapienza et al., 2009), which can be expected to influence both decisions and actions towards women (Eckel & Grossman, 2002).

Trust

Trust is a necessity because of the risk that humans constantly face and evolves as a consequence of adapting to uncertain events (Slovic, 1999), without risk there would be no need for trust (Chiles & McMacklin, 1996). The notion of trust can in a broader sense be defined as the acceptance of vulnerability, based on the expected intentions and performance of the trusted party (Sztompka, 1999). Hence, trust is the willingness to assume risk, not the taking of a risk per se (Mayer, Davis & Schoorman, 1995).

Trust is a multifaceted concept and, depending on context, different aspects of the notion of trust are relevant (Baldvinsdottir et al., 2011). Within accounting research, no consensus exists regarding the definition of trust, where at many scholars have developed their own definitions to

suit their studies. Though Tomkins (2001) definition of trust is the one that has been referred to the most times by other scholars within accounting research (Baldvinsdottir et al, 2011). Tomkins (2001) defines trust as:

“[T]he adoption of a belief by one party in a relationship that the other party will not act against his or her interests, where this belief is held without undue doubt or suspicion and in the absence of detailed information about the actions of that other party”.

As it is impossible to remove the uncertainty of the future behaviour of another party, all relationships are to some extent dependent upon trust, enabling us to adopt a belief without full information (Tomkins, 2001).

In stock markets, a principal-agent relationship exists between the top management of a company and its investors. Due to the existing information asymmetry, the need for trust become inevitable, and is a central mechanism for the creation of a functioning market economy (Fernando, 2009). The significance of trust in the stock markets is suggested by some scholars to be visible in the latest financial crisis, which can be argued to be a consequence of a decline in trust, resulting in investors wanting to decrease their exposure to risk (Baldvinsdottir et al., 2011). Guiso et al. (2008) found that trust is positively related to the acquisition of stocks with higher risk, and argue that the general participation in a stock market, partly can be explained by the level of trust in the culture. Olsen (2012) further found that when asking investors, they regarded trust as a vital aspect of their investment management.

Investors trust in a certain investment situation is dependent on both the characteristics of the trustee as well as the trustor (Mayer et al., 1995). Moreover, trading behaviour in financial markets can be explained as a consequence of the characteristics of the investor and the features of the investment situation (Ryan & Buchholtz, 2001; Guiso et al., 2008). Trust is in the context of investors viewed as the willingness to accept the risk, hence trust enables investors to act as if the uncertainty they face is reduced and act on incomplete information (Tomkins, 2001).

One of the main evaluation tools for investors is the financial statements (Olsen, 2012), and therefore it is in the interest of the organization that investors have trust in the information presented to them by the firms. Though, Tomkins (2001) argues that an organization can never be trustworthy, as trust is a human characteristic, hence investors trust in an organization implicitly refers to investors trust in the people representing the company. As the CEO and the CFO are the main creators of the financial statement (Huang & Kisgen, 2013), trust in them enables investors to act as if the uncertainty they face is reduced (Tomkins, 2001). As trust will decrease investors' concerns about opportunistic behaviour from the top management, trust can be argued to represent an intangible asset for the firm (Baldvinsdottir et al., 2011).

The understanding of an investor's behaviour can be found in the comprehension of the trade-off between the risk that investors perceive and their required return (Ryan & Buchholtz, 2001). Ryan and Buchholtz (2001) found that trust is a component in the determination of investors perceived risk of investing in a company, as opposed to earlier literature, that refers to perceived risk as a consequence of only the situational factors of an investment. Trust reduces the perceived level of risk in a relationship, but the risk perception also determines the need for trust (Das & Teng, 2001).

Investors behaviour is explained as determined by the individual risk-taking propensity and the level of situational trust attributed to the investment by the individual. The situational trust is further a combination of the individual's perception of the investment situation as well as the basic

trust that he/she has in the human nature and the efficiency of the market. Hence, the perceived risk is argued to be the opposite of the situational trust, if the situational trust is high, then the perceived risk is low (Ryan & Buchholtz. 2001). Similarly, Guiso et al. (2008) explained an investor's perceived risk of investing in a company as a function of the features of the stock and the characteristics of the investor, where trust is a part of the investor's specific characteristics.

Sörenson (2015) argued that trust both has a direct and an indirect effect on investors perceived risk and uncertainty. The indirect effect is defined as the positive impact that trust in management can have on how trustworthy and reliable the financial statements are perceived, and how well the statements are trusted to reflect the financial performance of the company, which consequently could lower the perceived risk of investing. The direct effect, on the other hand, is explained as the trust in the persons appointed as CEO and CFO, which could decrease the perceived risk.

In recent years, scholars have exhibited an increasing interest in whether gender impact the trust that other people have in a person. Among others, Garbarino and Slonim (2009) found that both men and women put greater trust in women, whereas other studies have found no difference in the trust exhibit by the trustor based on the gender of the trustee (e.g. Dreber & Johannesson, 2008; Bonein & Serra, 2009). The different results could be due to differences in samples, as Garbarino and Slonim (2009) look at a more diverse population, while Dreber and Johannesson (2008) as well as Bonein and Serra (2009) have based their study on more homogeneous samples. Hence, the study conducted by Garbarino and Slonim (2009) could be argued to be more generalizable to the entire population. Garbarino & Slonim (2009) argue that the difference found in their study partly could be explained by different expectations of men and women.

When looking at the market reactions towards men and women, Huang and Kisgen (2013) found that the market in general reacted more favourably to major decisions made by firms with female executives. They further found that male CEOs and CFOs were more often removed from their positions, which could indicate a lower trust in general for men, since tenure can be argued to reflect the markets trust for the CEO (Gibbs, Merchant, Van der Stede & Vargus, 2004).

Regarding trustworthiness, women is generally found to be more trustworthy than men (e.g. Buchan, Croson & Solnick 2008; Garbarino & Slonim, 2009; Snijders & Keren, 1999), which could be explained by the norms set by the society (Buchan et al., 2008). Further, it has been found that women have a lower tendency to lie in order to gain economic profits (Dreber & Johannesson, 2006), which could be explained by women being more risk-averse.

Studies have also examined whether the trust put in a specific gender is dependent on the gender of the trustor. Bonein and Serra (2009) found that both men and women exhibited a greater trust for people of the same sex, though in other studies, no evidence have been found for the existence of a gender pairing bias in trustworthiness (e.g. Eckel & Wilson, 2003; Snijders & Keren, 1999).

Eckel and Wilson (2003) argued that our perception of other people is shaped based on signals that easily can be read and clearly interpreted, such as sex and ethnicity. As found by earlier studies, CEO and CFO fixed effects have significant impact on corporate decisions and policies, and that we generally place greater trust in women. Current study will investigate if having a female CEO or CFO (hereafter referred to as senior executives) impact investors perceived risk of investing in a company (measured through the bid-ask spread), hence investors trust. To test this the following hypothesis have been developed:

H1: Investors perceive the risk of investing in a company with a female CEO or CFO to be lower, than in a company with only men in the senior executive positions.

3. Measure of Investor trust

Trust is argued to be inversely related with investors perceived risk (Ryan & Buchholtz, 2001), hence it should be possible to assess investors trust for the senior executives of a company by measuring investors perceived risk of investing in that company.

A commonly used proxy to measure information asymmetry is the bid-ask spread (e.g. Leuz & Verrecchia 2000; Leuz, 2002; He et al., 2013; Sörenson, 2015; LaFond & Watts, 2008), which is the difference between the bid and the ask price, hence the transaction cost that market makers charge investors for their services (Callahan et al., 1997). The bid-ask spread can be divided into three components, the *order process cost*, the *inventory holding cost*, and the *adverse selection cost*. The order process cost represents the cost of completing the transaction. The inventory holding cost is the cost of holding the stocks to be able to trade on demand. Finally, the adverse selection cost component represents the cost of trading with better-informed investors, hence the market maker's perceived information asymmetry (ibid).

An increase of information disclosures leads to an absolute decrease in information asymmetry (Leuz & Verrecchia, 2000), whereas greater trust reduces investors perceived risk and uncertainty of investing, even though the information asymmetry remains constant. An increase in the trust among investor should therefore increase their willingness to trade and to assume risk, increasing the liquidity of the stock, which should be reflected in a lower transaction cost, hence a lower bid-ask spread (Callahan et al., 1997). Trust is presumed to impact investors perceived risk and uncertainty of investing, which imply that a change in trust will not impact the market makers perceived information asymmetry, hence the relationship between informed and uninformed investors. Since no relationship is assumed between trust and perceived information asymmetry, a decomposition of the bid-ask spread is not needed in order to capture investors' trust, measured through investors perceived risk.

In order to calculate the bid-ask spread for current study, the bid and the ask price have been obtained from COMPUSTAT for each selected sample firm. Daily quotes have been collected to obtain a high level of accuracy, and each gathered price is quoted closing price. The bid-ask spread will be specified as the *quoted relative spread*, as done by Lin, Sanger & Booth (1995). To obtain the *quoted relative spread*, first the *absolute spread* is calculated using the following equation:

$$A_t - B_t = \text{Absolute spread}, t$$

Where A_t represents the daily quoted ask-price at time t , and B_t equals the daily quoted bid-price at time t . The difference between A_t and B_t equals the *absolute spread* at time t . In order to simplify, the assumption that investors only trade at quoted prices is made (Lin et al., 1995). To make the sample firms comparable the *quoted relative spread* is calculated using the following equation:

$$\frac{(A_t - B_t)}{\left(\frac{A_t + B_t}{2}\right)} = \text{Quoted relative spread}, t$$

Where A_t and B_t represents the asking-price respectively the bidding-price at time t . The *quoted relative spread* is obtained by dividing the absolute spread with the average of the ask-price and the bid-price. Using the *quoted relative spread* makes the cross-sectional comparison of the sample

firms more accessible (Lin et al., 1995). Further, a yearly average bid-ask spread is calculated for each sample firm, as the mean of the daily relative averages.

4. Data and summary statistics

Sample selection

In examining whether the gender of senior executives' impact investors perceived risk and uncertainty of investing, our primary research design is to compare the bid-ask spread of companies with a female CEO or CFO with companies that have a man in both positions. Both female CEOs and CFOs are included in the study, as the sample of female CEOs is too small to support a meaningful analysis. Even though the CEO is the most visible figure of a company, studies have shown that CFOs have significant impact on firm practice and financial policy (Bertrand & Schoar, 2003), hence both characteristics of the CEO and CFO should be factors taken into account by investors.

As the bid-ask spread, used to measure investors perceived risk, is considered to be a noisy measurement, a number of control variables need to be included in order to test the robustness of the result.

One of the challenges encountered in current research was to make the distinction between the individual manager and the firm, as women are not randomly allocated to firms, hence might not necessarily be uniformly represented over different kinds of organizations and industries (Huang & Kisgen, 2013). Huang and Kisgen (2013) found that firms that appoint a female as CEO or CFO on average are 50 percent greater in size than firms' that have a man in the both positions. In order to test for the impact that firm fixed effects might have on the bid-ask spread, controls will be made for firm size and sector. Firm size is measured through *Total assets*, which have commonly been used by scholars as a measure of size (e.g. Affleck-Graves, Callahan & Chiplankattis, 2002; Lee & James, 2007). Initially revenue was included as control variables, but when conducting a Pearson correlation test a significant correlation of 0,85 between revenue and total assets was found. Due to the high correlation, the decision was made to exclude revenue in favor of total assets. To control for industrial affiliation, Global Industry Classification Standard (GICS) has been used, and categorization has been made at sector level. For each of the 11 sectors (Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, materials, Real Estate, Telecommunication Services, Utilities) a dummy variable have been constructed to absorb the effects particular to each sector. To avoid multicollinearity, the Energy sector has been used as reference category.

The liquidity of shares has been found to impact the bid-ask spread (Callahan et al., 1997). To control for this effect *Trade volume* is included as a measure of liquidity, as it reflects the willingness among investors to sell and buy shares. *Trade volume* is measured as stock turnover, which is calculated as the average number of shares traded on a daily basis during 2016, divided by the number of shares outstanding. By using a relative measure of stock turnover, we remove the bias for larger companies (Chae, 2005).

We further want to eliminate the effect that personal characteristics have on investors' risk perception. For example, prior studies have found that female senior executives on average tend to be younger (Huang & Kisgen, 2013) and that people in general exhibit greater trust in older people than younger people (Garbarino & Slonim, 2009), hence *Age* has been included as a control

variable. Furthermore, Tomkins (2001) argues that the development of a relationship will reduce the uncertainty faced over time, which will decrease the need for either trust or information as uncertainty absorbing mechanisms. This was confirmed by Sörensen (2015) who found that tenure can be used as a proxy for trust, hence we will control for *Tenure* as a confounding variable in our regression analysis.

Huang and Kisgen (2013) as well as Francis et al. (2015) found that female CFOs conducted more conservative accounting compared to their male counterparts. As conservative accounting is perceived to reduce the risk of errors in a firm's accounting information (Liu et al., 2016), the actual investment risk is expected to decrease with the use of conservative accounting, as this reduces the information asymmetry between the senior executive and outside equity investors (LaFond & Watts, 2008). As information asymmetry has an indirect effect on the size of the bid-ask spread, we will control for this effect using *Market-to-book ratio* (MB ratio), which is considered to be a good measure of the degree of conservative accounting (Huang & Kisgen, 2013; Francis et al., 2015) as it captures the understatement of net assets and unverifiable growth options (LaFond & Watts, 2008).

TABLE 1
Summary of variables

<i>Variable</i>	<i>Type</i>	<i>Source</i>	<i>Proxy for</i>
<i>Bid-ask spread</i>	Dependent variable	CRSP	Investors perceived risk
<i>Gender</i>	Independent variable	Thomson Reuters	Gender
<i>Tenure</i>	Control variable	Bloomberg / Yahoo finance	Trust in management
<i>Age</i>	Control variable	Bloomberg / Yahoo finance	Age
<i>Trading volume</i>	Control variable	CRSP	Share liquidity
<i>Total assets</i>	Control variable	Compustat	Size
<i>Market-to-Book ratio</i>	Control variable	Compustat	Conservative Accounting
<i>Sector</i>	Control variable	Compustat	Industry

The initial sample has been collected from Thomson Reuters and contains listed firms on the US stock market. The companies have thereafter been separated based on the gender of the senior executives, where the female sample contains all the companies with either a female CEO or CFO. Following, a sample of companies with men as both CEO and CFO was constructed by randomly selecting companies, which all was within 2 standard deviations from the female sample mean of total assets, in order to obtain samples with companies of similar size.

Age and tenure for the full sample have then been manually collected through Bloomberg and Yahoo Finance, where *Tenure* is defined as how long the person has been in the position as CEO or CFO within the company. For companies with men in both positions, tenure and age have been collected for the CEO. The total sample has then been merged with accounting information for the fiscal year of 2016. The financial data is obtained from COMPUSTAT, hence we require the companies in our sample to be listed on either NYSE, Amex or Nasdaq. Our final samples

consist of a total sample of 654 companies of which 295 companies have a female CFO or CEO and 359 companies have only male senior executives.

Summary statistics and univariate comparisons

In Table 2 summary statistics for the variables used in our later regressions are presented, except gender, as it is constructed as a dummy variable.

TABLE 2
Descriptive statistics

Panel A: Summary statistics for full sample

Variables	Mean	Standard Deviation	Min	p25	p50	p75	Max	Skewness	Kurtosis
Bid-ask	0.63	1.29	0.01	0.04	0.11	0.54	23.31	4.772	46.920
Tenure	6.644	6.964	0.08	2.08	4.42	9	67	2.841	16.204
Age	54.775	7.432	30	51	55	59	84	0.040	3.960
Trading volume	11.638	39.793	0.001	4.020	7.064	11.525	1548.671	25.750	850.201
Total assets (size)	7339.706	23 481.76	0.423	315.601	1350.9	4723.2	403 821	8.738	106.208
MB ratio	9.698	339.262	-4164.706	1.523	2.515	4.423	14 913.33	38.317	1723.78
Log Bid-Ask	-6.438	1.625	-9.703	-7.733	-6.801	-5.213	-1.454	0.544	2.272
Log Tenure	1.419	1.053	-2.525	0.732	1.486	2.120	2.204	-0.529	3.643
Age (winsorized)	54.72	6.452	42	51	55	59	67	-0.112	2.435
Log Trading volume	1.871	1.030	-7.372	1.391	1.955	2.444	7.345	-0.858	9.483
Log Total assets (size)	7.092	2.040	-0.860	5.754	7.209	8.460	12.909	-0.191	2.972
Log MB ratio	1.090	0.940	2.001	0.512	0.978	1.530	9.610	1.473	10.461

Panel B: Summary statistics for female sample

Variables	Mean	Standard Deviation	Min	p25	p50	p75	Max	Skewness	Kurtosis
Bid-ask	0.706	1.736	0.01	0.04	0.10	0.52	23.31	6.669	71.418
Tenure	5.411	5.555	0.08	1.75	3.92	7.58	67	3.837	35.238
Age	52.275	7.122	30	47	53	57	84	-0.194	3.618
Trading volume	9.535	11.021	0.001	4.136	7.005	11.250	126.944	5.338	44.244
Total assets (size)	9679.918	28 656.69	3.563	284.508	1336.238	4695.706	260 078	5.289	35.837
MB ratio	4.199	14.148	-135.526	1.621	2.543	4.547	149.260	1.252	70.263

Log Bid-Ask	-6.482	1.678	-9.703	-7.767	-6.928	-5.258	-1.456	0.633	2.456
Log Tenure	1.221	1.068	-2.526	0.560	1.366	2.026	4.205	-0.665	3.776
Age (winsorized)	52.551	6.321	52	47	53	57	67	0.040	2.221
Log Trading volume	1.840	1.063	-7.372	1.420	1.947	2.420	4.844	-2.404	19.605
Log Total assets (size)	7.115	2.137	1.271	5.651	7.197	8.454	12.469	-0.029	2.905
Log MB ratio	1.115	0.868	-1.648	0.552	0.995	1.538	5.006	0.965	5.488

Panel C: Summary statistics for male sample

Variables	Mean	Standard Deviation	Min	p25	p50	p75	Max	Skewness	Kurtosis
Bid-ask	0.62	1.20	0.01	0.04	0.11	0.55	15.03	3.586	21.744
Tenure	8.090	8.088	0.25	2.83	5.17	11	53	2.204	9.245
Age	57.702	6.688	37	54	57	61	81	0.549	3.990
Trading volume	11.973	42.614	0.005	3.978	7.067	11.557	1547.671	24.276	748.846
Total assets (size)	6955.704	22503.54	0.423	319.88	1550.9	4723.2	403 821	9.740	131.109
MB ratio	10.627	366.783	-4164.706	1.514	2.450	4.392	14 193.33	35.446	1474.984
Log Bid-Ask	-6.431	1.616	-9.166	-7.729	-6.785	-5.209	-1.895	0.530	2.240
Log Tenure	1.650	0.989	-1.387	1.040	1.643	2.398	3.970	-0.296	3.032
Age (winsorized)	57.261	5.630	42	54	57	61	67	-0.105	2.685
Log Trading volume	1.876	1.024	-5,280	1.381	1.955	2.447	7.345	0.581	7.570
Log Total assets (size)	7.088	2.023	-0.860	5.768	7.209	8.460	12.909	-0.223	2.979
Log MB ratio	1.085	0.952	2.001	0.506	0.973	1.520	9.610	1.539	11.015

Notes:

The table presents the mean, standard deviation, minimum and maximum values as well as the 25th, 50th and 75th percentile of the variables that will be used in later tests. The table also shows the skewness and kurtosis. The table list both the absolute values of the variables in the upper part of the tables, and the adjusted values in the lower part of the tables. All values are in million USD, except the bid-ask spread, which is presented in percent.

Panel A of Table 2 contains the initial collected values of each variable for the full sample, including companies with both male and female senior executives. The upper part of Panel A reveals that all variables, except *Age*, are not normally distributed and heavily skewed. In order to obtain data that is normally distributed the natural logarithm is derived for *Tenure*, *Trading volume*, *Total assets* and the *MB ratio*, the new variables are found in the bottom half of Panel A. For *Bid-ask spread* a new variable has been constructed as well, by taking the natural logarithm, though, as this is our dependent variable of the regression we will test for both the *Bid-ask spread* and the *Log Bid-ask spread* in later regression analyses. In order to remove extreme values for *Age*, the variable has been winsorized to the 5 and 95 percentiles.

In general, our sample consists of relatively large firms, with a mean of \$7 339 million in total assets. Furthermore, Panel B and C show a great difference in the average size between the firms that have a woman as either CEO or CFO, where the mean is \$9 680 million, which is about 40

percent larger than the average firm which have men in both positions, where the mean is \$6 956 million. Huang and Kisgen (2013) argue that a reason for this difference could be that larger firms are more cautious not to discriminate between the genders, as they are more visible. Regarding *Trading volume* this is on average higher for firms with male senior executives. As we use a relative measure of *Trading volume*, an adjustment has been made for size, hence the difference indicates that the shares of the firms in the male sample are more liquid on the capital market. A further comparison of the female and male samples reveals that female CFO/CEOs on average are younger than the average male CEO, and that men have a longer average tenure in the position. A part of the explanation for this difference could be that the ratio of females hired in senior executive positions has been increasing during the last years. Regarding these personal characteristics, it might be influenced by the fact that the female sample consists of both CEO and CFO, while *Age* and *Tenure* only have been collected for CEOs for the male sample. Finally, the *MB ratio* is on average significantly higher for firms with only male senior executives. As the market-to-book ratio is used as a measure for conservative accounting, this difference is consistent with Francis et al. (2015) finding that men conduct less conservative accounting in relation to women. A comparison of the control variables between our male and female sample finds noticeable differences, indicating that these variables are relevant to control for when investigating the effect of gender on the bid-ask spread.

TABLE 3
Pearson correlations

	Log Bid-ask	Gender	Log Tenure	Age	Log Trading volume	Log Total asset (size)	Log MB
Log Bid-ask	1.000						
Gender	-0.012	1.000					
Log Tenure	-0.009	-0.203***	1.000				
Age	-0.061*	-0.364***	0.369***	1.000			
Log Trading volume	-0.391***	-0.012	-0.0841**	-0.087**	1.000		
Log Total asset (size)	-0.780***	0.005	-0.027	0.073**	0.207***	1.000	
Log MB	-0.223***	0.011	0.020	0.043	0.011	-0.082***	1.000

Notes:

*The table presents a pairwise correlation between the variables used in this study, based on the Pearson correlation test. Significance is indicated by * at the 10 percent, ** at the 5 percent *** at the 1 percent.*

Table 3 provides an overview of Pearson correlation, where pairwise tests have been performed among all variables. A strong negative correlation (-0.78), which is significant, is found between *Log Bid-ask spread* and *Log Total assets*, showing that the greater the firm is, the smaller is the bid-ask spread. Our finding is consistent with LaFond & Watts (2008) finding, that the information risk is lower for larger companies, compared to smaller companies. As Table 3 shows, several of the variables are significantly correlated with *Log Bid-ask spread*, implying the need to conduct a multivariate analysis.

5. Regression analysis

To test if to reject our null hypothesis or not, hence if investors perceive the risk of investing in a company to be indifferent regardless to the gender of the senior executives, we begin by conducting a t-test. This is performed for our initial sample of 3440 companies, of which 465 have either a female CEO or CFO. The t-test was shown not to be significant ($t(3440) = 0.639$, $p = 0.529$), hence we find no evidence for rejecting the null hypothesis. This means that we find no evidence that support that the gender of the CEO/CFO impact investors perceived risk of investing in a company. Though, as earlier discussed, our proxy of investors perceived investment risk, the bid-ask spread, is a noisy measure. Therefore, we will conduct a regression analysis with our control variables for personal characteristics and firm characteristics, to test our hypothesis further.

The main empirical model for our regression analysis is:

$$\begin{aligned} Bid - ask\ spread &= \alpha + \beta_1 Gender + \beta_2 Tenure + \beta_3 Age + \beta_4 Trade\ volume + \beta_5 Total\ Assets \\ &+ \beta_6 MtB\ ratio + \sum_{n=1}^8 Sector_n + \varepsilon \end{aligned}$$

The *Bid-ask spread* is measured using the daily average spread for 2016, and then the quoted relative spread is calculated by dividing the absolute average spread over the average of the bid and ask price. *Gender* is the independent variable of main interest and is constructed as a dummy variable that equals 1 if the firm have appointed a woman in the role of either CEO or CFO and 0 if the firm have men in both positions. *Tenure* is the number of years that the person has been appointed as CEO or CFO, within the firm. *Age* is the age of the studied CEO or CFO. *Trading volume* is measured by stock turnover, calculated as the daily average trading volume during 2016 and then divided by the number of shares outstanding. *Total assets* is the measure used to define firm size. *MB ratio* is calculated as the market value divided by the book value, where the book value is obtained by multiplying common shares outstanding with book value per share. Our hypotheses predict that the coefficient of gender (β_1) will be positively and significantly correlated with the size of the bid-ask spread for a stock in a given firm of our sample.

Sörenson (2015) found that tenure could be used as a proxy for trust in management and that it is negatively correlated with bid-ask spread when used as a measure of investors perceived risk. Thus, a negative relationship is expected between *Tenure* and *Bid-ask spread*. Similarly, *Age* has been found to positively impact trust in a relationship (Garbarino & Slonim, 2009), hence age is expected to be positively correlated with the *Bid-ask spread*.

The information risk has been argued to be larger for smaller firms than for large firms (LaFond & Watts, 2008), hence size is controlled for, measured through *Total assets*. Because we expect the information risk to be greater for larger firms, size is expected to be negatively correlated with *Bid-ask spread*. We further expect sector to be correlated with the bid-ask spread, as He, Lepone & Lung. (2013) found a significant correlation between the adverse selection component and sector.

The *Trading volume* reflects investors willingness to buy and sell shares and can be used as an indication of the liquidity of shares. A higher trading volume increases the liquidity of the shares and should decrease the transaction cost (Callahan et al., 1997), hence a negative relationship between *Trading volume* and the *Bid-ask spread* is predicted.

MB ratio is used as a proxy for conservative accounting to control for actual information asymmetry. In a company where conservative accounting is used in a greater extent, the *MB ratio* is expected to be greater. As conservative accounting is argued to decrease information risk in a company (Liu et al., 2016), a higher degree of conservative accounting is expected to be negatively correlated with the *Bid-ask spread*. Francis et al. (2015) found that female CFOs conducted a more conservative accounting compared to their male counterparts, hence if this is something taken into consideration by investors, there could be an interactive effect between gender and conservative accounting on the *Bid-ask spread*.

TABLE 4
Regression analysis

VARIABLES	(1) Predicted sign	(2) Bid-ask	(3) Log Bid-Ask All
<i>Gender</i>	-	-0.0004 (-0.93)	-0.068 (-1.17)
<i>Log Tenure</i>	-	-0.0001 (-0.51)	-0.045 (-1.65)
<i>Log Age</i>	-	0.0000 (0.28)	-0.006 (-1.27)
<i>Log Trade volume</i>	-	-0.0024*** (-4.98)	-0.419*** (-15.63)
<i>Log Total Assets</i>	-	-0.0014*** (-7.99)	-0.451*** (-33.49)
<i>Log MB ratio</i>	-	-0.0015*** (-4.14)	-0.324*** (-9.88)
Constant		0.0213*** (6.77)	-1.671*** (-5.67)
Observations		654	654
R-squared		0.415	0.759

Notes:

*In table 4 our main regression analysis is presented. Sector fixed effects are included in all models. The table presents the coefficients of the variables as well as the values of heteroscedasticity robust t-statistics inside the parentheses. Significance is indicated by * at the 10 percent, ** at the 5 percent *** at the 1 percent.*

In Table 4 our main regression test is reported. Containing our chosen main variables and control variables, which have been shown by earlier literature to impact investors trust or perceived risk. Table 4 shows both a regression with the original *Bid-ask spread* (2) and the *Log Bid-ask spread* (3). As both the *Bid-ask spread* and the *Log Bid-ask spread* are significantly correlated with the same control variables, we will hereafter concentrate on *Log Bid-ask spread*.

Furthermore, the table show that our main variable of interest, *Gender*, is negatively correlated with the size of the *Log Bid-ask spread*, as expected, but the correlation is not significant. Consequently, the result of the regression analysis is in line with the result in our initial t-test. This result indicates that investors do not perceive the risk of investing in a company with a female CEO or CFO to be significantly lower.

Moreover, no significant correlation between neither *Log Tenure* nor *Age* and *Log Bid-ask spread* is found, which indicate that these personal characteristics do not impact investors perceived risk of investing in a company. Contradicting to our result, Sörenson (2015) found a significant correlation between the tenure and bid-ask spread. An explanation for these differences could be that Sörenson (2015) conducted based her study on European firms.

We further find that for *Log Trading volume* the beta coefficient is negative and that the relationship is significant at a 99 percent level. This is similar to what Callahan et al. (1997) found and confirm our expectation that a more liquid share has a lower bid-ask spread than a less liquid share. Also for *Log Total assets* a negative and significant relationship is found. This finding suggests that the bid-ask spread decrease with the size of the company, which is argued by LaFond and Watts (2008) to be because the information risk is larger for smaller firms.

The variable *Log MB ratio* shows a negative correlation, significant at the 99 percent level, which confirms the expectation that conducting more conservative accounting decreases the spread of the bid-ask. Conservative accounting is in this study used as a measure of the actual information risk, hence performing conservative accounting reduces the information asymmetry as perceived by the market makers, similar to the finding of (LaFond & Watts, 2008).

Untabulated controls have been made in order to test for sector. When controlling for sector we find a significant correlation for the majority of the sectors, when Energy is selected as reference. We can therefore conclude that the sector, in which the company operates, affect the size the *Log Bid-ask spread* and consequently is a component in investors evaluation of the perceived risk of investing a company.

As it is only the control variables *Log Trading volume*, *Log Total assets* and *Log MB* that show significant correlation with *Log Bid-ask spread*, and the model show a high *R-squared* value of almost 76 percent we can conclude that these variables are the drivers behind the fluctuations in the bid-ask spread.

Additional tests

As we found earlier in Table 2, panel B and C, there are noticeable differences in the means regarding most of the control variables between the companies that have a woman in the position of CEO or CFO and the companies that have men in both positions. To further investigate these differences, in regard to the control variables, a regression analysis was run for each of the samples.

TABLE 5
Regression analysis

VARIABLES	(1) Bid-ask spread Women	(2) Bid-ask spread Men
Gender	-	-
Log Tenure	-0.089** (-2.40)	-0.009 (-0.20)
Age	-0.006 (-0.94)	-0.004 (-0.54)
Log Trade volume	-0.388*** (-5.66)	-0.438*** (-9.53)
Log Total assets	-0.445*** (-16.80)	-0.438*** (-19.17)
Log MtB ratio	-0.317*** (-5.38)	-0.343*** (-6.16)
Constant	-1.760*** (-4.15)	-1.935*** (-4.36)
Observations	295	359
R-squared	0.755	0.769

Notes:

*Table 5 presents a regression analysis performed for the samples of men and women individually. Sector fixed effects are included in all models. The table presents the coefficients of the variables, as well as the values of heteroscedasticity robust t-statistics inside the parentheses. Significance is indicated by * at the 10 percent, ** at the 5 percent *** at the 1 percent.*

When looking individually at the female and the male samples, some differences are found in comparison with the regression run on the full sample (*Table 4*). While *Log Trading volume*, *Log Total assets* and *Log MB ratio* still is significantly correlated with the *Log Bid-ask spread* at a 99 percent significance, differences are found for the variables that reflects personal characteristics. As for women, *Log Tenure* is significant at a 95 percent, though for the male sample, no significant correlation for *Log Tenure* is found, which is consistent with the regression analysis of the full

sample. This indicates that investors perceived risk of investing in a company is influenced by the tenure of a female CEO or CFO, but not of that of a male CEO. For neither the male nor the female sample *Age* was found to have a significant correlation with the *Log Bid-ask spread*, which is consistent with the finding for the full sample.

As Table 5 showed a significant correlation between the variable *Log Tenure* and the *Log Bid-ask spread* for the female sample, but not for the male sample, it is of interest to test the interaction between the variables *Gender* and *Log Tenure* across the full sample. By adding an interaction variable, we can investigate whether there is an interactive effect between *Gender* and *Log Tenure* which can explain the size of the *Log Bid-ask spread*.

TABLE 6
Regression analysis, with an interaction variable

VARIABLES	Bid-ask spread All
Gender	0.104 (1.12)
Log Tenure	0.016 (0.39)
Age	-0.007 (-1.50)
Log Trade volume	-0.397*** (-10.90)
Log Total assets	-0.446*** (-28.57)
Log MtB ratio	-0.343*** (-8.36)
Interaction Tenure - Gender	-0.090* (-1.76)
Constant	-2.330*** (-7.95)
Observations	654
R-squared	0.733

Notes:

*Table 6 presents a regression analysis performed with an interaction variable, including the variables Gender and Tenure. Sector fixed effects are included in the model. The table presents the coefficients of the variables as well as the values of heteroscedasticity robust t-statistics inside the parentheses. Significance is indicated by * at the 10 percent, ** at the 5 percent *** at the 1 percent.*

The regression in Table 6 shows a correlation between the *Log Bid-ask spread* and the variable that interact *Gender* and *Log Tenure*, significant at 90 percent. This interaction variable implies that tenure impacts the bid-ask spread in different extent, depending on the gender of the CEO/CFO. Since gender is constructed as a dummy variable, this interaction term will not impact the bid-ask spread for companies with a man as both CEO and CFO. This suggests that the tenure of a female CEO or CFO is a factor that impact investors perceived risk negatively, hence investor perceive the risk to decrease with the tenancy of a female CEO/CFO, while the tenure of the CEO in a company with only men in senior executive positions is not a determinant factor of investors perceived risk. Hence, this implies that investors perceive female and male senior executives differently.

Within Sector

As noted earlier women are not randomly allocated over organizations, hence might not be uniformly represented over different industries. In Appendix A we can see that in our sample, women have the highest representation within the sector of *Consumer Discretionary* and *Information Technology*. Since we have found that the sector in which a company operates most often impacts the bid-ask spread, we consider it to be of interest to perform a regression analysis within these two industries.

TABLE 7
Regression analysis, within industries

VARIABLES	(1) Log Bid-ask Consumers Discretionary	(2) Log Bid-ask Information Technology
Gender	-0.411** (-2.59)	0.163 (0.87)
Log Tenure	-0.020 (-0.33)	0.013 (0.16)
Age	-0.011 (-0.88)	0.009 (0.64)
Log Trade volume	-0.029*** (-3.14)	0.003 (0.72)
Log Total assets	-0.403*** (-9.04)	-0.467*** (-12.21)
Log MtB ratio	-0.439*** (-5.67)	-0.408*** (-3.53)
Constant	-2.612*** (-3.46)	-3.770*** (-4.09)
Observations	105	97
R-squared	0.681	0.739

Notes:

*In Table 7 we present regression analysis run within the specific industries Consumer Discretionary and Information Technology. Sector fixed effects are included in all models. The table presents the coefficients of the variables as well as the values of heteroscedasticity robust t-statistics inside the parentheses. Significance is indicated by * at the 10 percent, ** at the 5 percent *** at the 1 percent.*

Table 7 show that within the sector *Consumer Discretionary*, the gender of the CEO/CFO is negatively correlated with the *Log Bid-ask spread*, with a significance at 90 percent. Applying this to our hypothesis this finding indicates that, within this specific sector, companies that appoint a woman in the position of CEO or CFO will have a smaller bid-ask spread than companies that appoints men in both positions. This indicates that investors perceive the risk of investing in a company with men as both CEO and CFO to be larger. Concerning the control variables *Log Trade volume*, *Log Total assets* and *Log MB ratio*, they all remain significantly correlated with the *Log Bid-ask spread*, consistent with our result from the regression performed across all industries. Also, for the personal characteristics, *Log Tenure* and *Age*, no significant correlation could be found, which is consistent with our findings in the regression analysis of our full sample. It is notable that within current selected sample, women are overrepresented within sector *Consumer Discretionary*. Though this is not the case for the full population, where 21 percent of the companies within the sector have either a female CEO or CFO. For the regression test conducted for *Information Technology*, as for the main regression analysis, no significant correlation between *Gender* and the *Log Bid-ask spread* is found.

6. Conclusion

In this paper, we studied whether the gender of the top management in a company impacts investors perceived risk of investing in a company. We find that, in general, no significant correlation can be found between gender and the size of the bid-ask spread, indicating that investors do not perceive the risk of the investment to be different depending on the gender of the CEO/CFO, hence do not trust women more than men, in contradiction to our expectations. When adding an interactive variable, we further find that investors take the tenure of a female CEO/CFO into account when evaluating the risk of investing in a company, but not the tenure of a male CEO/CFO. Thus, investors trust for a female CEO/CFO seems to grow with the tenancy of her role, but is not affected by the tenure of a male in the same position. This finding do indicate that investors might put higher trust in female senior executives, compared to their male counterparts.

Additionally, when running regression analyses for specific industries we found that within the sector *Consumer Discretionary* there was a significant negative correlation between gender and the bid-ask spread. This finding indicates that investors, evaluating the risk of investing in companies within this sector, take the gender of the CEO/CFO into account, and exhibit greater trust in female CEOs and CFOs, compared to male CEO/CFO. Even though this finding cannot be generalized, this is the sector which has the highest percentage of female CEO/CFOs, which could indicate that as women become more represented in these positions, investors might take a greater interest in the gender of the CEO/CFO.

Through the control variables used in each regression analysis we find, in line with earlier studies, that trading volume, total assets, market-to-book ratio and sector significantly impact the bid-ask spread.

In current study the chosen proxy for information asymmetry, hence trust and investors perceived risk of investing in a firm, is the bid-ask spread. As prior mentioned this is a noisy measure and therefore it could be recommended for further research that the same test is run with additional proxies. Post-earnings announcement drift (PEAD) can be used to measure investors reaction after an announcement, e.g. earnings announcement. Hence, PEAD could be used as a measure of information asymmetry and to test if investors react differently to announcements from a firm with a female CEO/CFO compared to a company with men in both positions.

Furthermore, in current study we were unable to collect information regarding personal characteristics such as education, previous work experience, etc., which could influence investors perception of a CEO/CFO, hence their perceived risk of investing in a company. Adding these control variables to the regression could capture more of the fluctuations in the bid-ask.

This study extends previous research on the subject by investigating whether investors take into account the gender of the senior executives, when assessing the risk, they perceive of investing in the company. Though evidence is not found that supports the hypothesis that a female CEO/CFO would decrease investors perceived risk, a significant correlation is found within the sector of *Consumer Discretionary*. Females are still a rarity in senior executive positions, though, as women become more common in these positions, there could be reason to conduct a similar study again.

7. References

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8. Appendix A

Sector	Male		Female		Total (accumulated)
	Number	Percentage	Number	Percentage	
Consumer Discretionary	40	38%	65	62%	16%
Consumer staples	21	64%	12	36%	32%
Energy	30	63%	18	38%	37%
Financials	5	50%	5	50%	38%
Health care	39	66%	20	34%	39%
Industrials	93	69%	42	31%	47%
Information Technology	45	46%	52	54%	52%
Materials	39	66%	20	34%	61%
Real Estate	16	48%	17	52%	70%
Telecommunication	3	60%	2	40%	91%
Services					
Utilities	42	76%	13	24%	100%
Total	328		251		