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Abstract

This thesis focuses on the relationship between females in the top corporate positions and the governance and reporting practices of the firm. The topic is timely, since the issue of gender equality in business life has attracted increasing attention recently.

The primary interest of the research lies in the question of whether the experts' gender is related to decision-making regarding corporate governance policies, financial reporting, or external control. In particular, the Chief Executive Officers, Chief Financial Officers, Chairpersons of the Board, and responsible auditors are examined. Five separate essays examine the topic from different viewpoints. The data are drawn from the largest publicly traded U.S. and Nordic firms.

The results indicate that male- and female led firms differ in several aspects. For example, the firms with female executives are associated with better corporate governance quality, more conservative financial reporting practices, and better financial performance. In general, the findings provide support for the existence of gender-based behavioral differences at the executive and expert level.

Overall, these results offer new empirical evidence on the differences between men and women holding top positions within a firm. The reported results may provide important information for policy authorities in relation to gender quotas at the executive level.

Keywords

Corporate Governance, Female Executives, Executive Gender, Chairperson of the Board, Auditor Gender

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Vaasa, February 2012

Emilia Peni

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1 INTRODUCTION

This doctoral dissertation examines the differences between the behavior of male and female executives and experts and the possible impact on corporate governance and financial reporting practices. The research focuses particularly on executives and experts involved in their firms' corporate governance systems and aims to investigate whether the gender of a firm's executives and experts influences its corporate governance policies, financial reporting, or auditing practices. In particular, the research aims to extend the existing literature by addressing whether and how female chief executive officers (CEOs), chief financial officers (CFOs), board chairs, and external auditors influence the governance practices, financial reporting, and external control within a firm.

Psychology and management literature acknowledge the existence of significant gender-based differences in various areas, such as communicative abilities, conservatism, leadership styles, risk aversion, and cognitive functioning. Given these well-documented differences and their possible impact, for example, on financial reporting and governance practices, gender diversity at executive level has received increased attention in recent corporate finance literature, perhaps due to legislative requirements enacted in many countries for a minimum number or proportion of female board members. Nevertheless, important questions related to the impact of gender diversity and, especially, to the possible role of the gender of individual executive or expert have largely been overlooked in the existing corporate governance and financial accounting literature.

Overall, the estimation results reported in this dissertation imply that gender-based differences have an impact on executive behavior, and the dissertation's constituent essays shed light on important questions concerning women's proficiency and performance at work. The potential of women is still commonly under-utilized at the executive level and this research may also promote the business case for involving women to a greater extent than happens currently.

The remainder of this introductory chapter is organized as follows. The next section briefly describes the evolution of gender roles and their possible impact on working life. Part 3 discusses society's effect on gender roles and the gender policies and regimes employed in various countries. Next, the position of women at work is described. Part 5 summarizes the gender-based differences in behavior and characteristics that may have an impact on an executive's decision-making and, consequently, the financial performance and governance practices of the firm. The next section briefly describes the earlier literature on the relationship between the gender of an executive, director, or expert, and firm performance and

governance mechanisms. Finally, Part 7 summarizes the five essays that comprise this dissertation.

2 GENDER EVOLUTION AND WORKING LIFE

Evolutionary biology literature indicates that women and men have specialized in different tasks as a result of the requirements of nature. Women gave birth and nurtured the children, while the man's task was to provide food for the whole family or earn a living to do so. As Geary (1998) argues, women in all known societies have been found to exhibit more nurturing behavior than men. In fact, research suggests that women of all ages tend to be "person-oriented", whereas men are more "object-oriented", a gender-based difference observable from early infancy (Goodenough 1957).

Due to this ancient division of tasks men were, and often still are, considered the heads of the household. On the other hand, women are expected to take care of tasks such as cleaning and cooking. This division would encourage women to learn domestic skills from childhood, whereas men tend to focus on learning skills that are marketable in the paid economy (Carli & Eagly 1999). Although modern Western societies are slowly breaking down these age-old task divisions, and traditional roles both at home and at work are being reformed, even today some people see women as subordinate to their husbands and not as individuals capable of independent decision-making. Prejudices found at work may mean women are not taken as seriously as their male counterparts and are instead thought of as secretaries assisting men in doing their important work. Women are not expected to understand anything finance-related, let alone actually have something valuable to add to a discussion or to decision-making.

The belief that women and men should occupy different roles in society arises from the fact that women's lives were dominated by the capacity to bear children. The technological development of the 20th century, however, freed women from the reproductive constraints of the past (Hunter College 1983). Simultaneously, the work environment was restructured so it became less dependent on the physical strength that men often excel at (Cook 1985). Today, almost all labor market positions in Western societies are formally open to both men and women. However, a significant segregation prevails so that, in practice, there is still "men's work" and "women's work". Moreover, even in the occupations that are largely integrated, the highest occupational positions are more likely to be held by men than by women, suggesting that hidden gender discrimination is still present in the workplace (Browne 2002: 5).

Writing about gender equality, Sümer (2009: 1) states: *"I conceptualize gender equality as a situation in which women have a fair deal concerning their life changes; a social condition in which women and men are not constrained by ex-*

pectations and structures assuming a certain biological trait." The statement indicates that, regardless of recent development, gender equality is today still a rather distant concept in many respects. For example, even though women work outside their homes more often than they did in the past, and men tend to be more involved in the family, women still carry most of the domestic burden (Major, 1993; Lewis, Smithson, Brannen, Das Dores Guerreiro, Kugelberg, Nilsen & Connor 1998).

3 SOCIETY'S EFFECT ON GENDER ROLES

> "The world we have created is a product of our way of thinking. It cannot be changed without changing the way we think." (Einstein)

As Einstein suggested, society cannot renew itself unless there is a change in the way people think. Despite the attempts to establish gender equality, the world is still very different for men and women. As Bryson (2007: 37) writes: *"Although women in many nations now have more or less the same legal rights as men, women and men in general continue to play different roles and to receive different rewards – and in general this works to the disadvantage of women."* However, promoting and examining gender equality is a very controversial topic, since highlighting women's rights can be considered inequitable and even sexist (Griffin 2009: 16).

Many countries and companies have realized the importance of gender equality in working life, and have introduced policies and laws promoting equal rights and responsibilities for men and women (De Anca 2008; Hoel 2008). People, in general, believe that female-friendly countries (e.g. where women have equal rights) and companies tend to select more female leaders; however, rather surprisingly, this does not seem to be the case (Adler 1999).

3.1 Gender policies and regimes

Earlier literature suggests that gender roles do not necessarily generalize across different cultures, and, for example, the tasks and responsibilities of women may vary significantly between cultures. Despite these significant cultural differences, however, women are underrepresented in the business world's top positions throughout the world (Adler & Izraeli 1994; EU 2011b), which means that the gender inequality problem has gained global attention.

The Western economies have for long valued gender equality highly, whereas, for example, in Africa and the Middle East men strictly remain the breadwinners and heads of households, and a woman's job is to serve the husband. Europe is often seen as a pioneer in matters related to gender equality, and traditional European gender roles have experienced significant changes during the past few decades. Housewives are a diminishing group in Europe, while the dual-earner family model is becoming increasingly common. This trend is also supported, for example, by the European Union (EU) and various country-level policies promoting women's advancement in business; for instance, supporting parents in reconciling their work and family commitments is a major goal on the European social agen-

da (Sümer 2009: 1). Scandinavian women have achieved a high level of equality with men compared to the majority of other European countries, and this is mainly due to the Nordic welfare model (Sümer 2009: 39).

In general, gender equality is highly valued and promoted in the Nordic countries, and their national policies are planned with gender equality in mind. This is demonstrated by the fact that all the Nordic countries are highly ranked in the gender-related development indices of the United Nations (UN) Human Development Report. For example, the UN's Gender Inequality Index ranks all the Nordic countries among the top-20 in the world in their latest index report in 2008 (1. Norway, 9. Sweden, 16. Finland, 17. Iceland, 19. Denmark) (HDR 2008). The United States of America (U.S.A.) is ranked number four in the list. This suggests that, since this dissertation uses data from the Nordic countries and the U.S.A, the results are based on countries with extremely high gender equality.

International comparisons such as the Legatum Prosperity Index (Legatum 2010) commonly list the Nordic countries as among the best places to live. This is partly because of the high level of gender equality and, for example, good social benefits that support motherhood. For instance, the national legislations of all the Nordic countries accept the provision and funding of children's daycare as a task of the state (Leira 2006). This principle increases equality and provides all mothers with equal opportunities to work outside the homes.

In line with the literature suggesting that females may have a positive impact, for example, on firm performance and market value (see e.g. Farrell & Hersch 2005; Campbell & Mingues-Vera 2008; Adams & Ferreira 2009), legislators have noticed the importance of encouraging firms to promote gender equality, and get more women working at the executive level. For example, in Norway, the board of directors of a firm must now be at least 40 % female (Hoel 2008). In a similar vein, in Finland, publically listed firms are required to have at least one female board member or they must account for why they have not met this requirement in their annual reports. It seems reasonable to assume that the Nordic states' pioneering legislative activity on gender equality will become more common globally.

The trend towards gender equality has also been promoted recently by the EU through its Women's Charter enacted in March 2010, which aims to achieve equality in decision-making. Following the charter, the European Commission adopted a Gender Equality Strategy in September 2010 (EU 2010; 2011b). This strategy includes a goal of getting more women into senior positions in business life. Moreover, in March 2011, the EU Justice Commissioner Viviane Reding asked publically listed European firms to sign the "Women on the Board Pledge

for Europe", and her initiative was supported by the European Parliament in July 2011 (EU 2011a; 2011c). The pledge urges firms to increase the proportion of females on their corporate boards to 30 % by 2015 and to 40 % by 2020. Commissioner Reding has also stated that, unless the aim of the pledge has made credible progress by March 2012, legislative action will be prepared at the EU level (EU 2011c). These recent initiatives indicate that the gender inequality problem is widely acknowledged and significant attempts towards solving the issue are being made.

3.2 Gender and cultural differences

In Western societies, women are now more highly educated than men. For instance, in the United States, 57.4 % of Bachelor's degrees were awarded to women in 2008, whereas when statistics were first compiled in 1960 the women's share was only 35.2 % (U.S. Bureau of the Census 2011). In a similar vein, in 2008 women received 60.4 % of the Master's degrees (32.0 % in 1960) and 50.8 % of the Doctoral degrees (10.0 % in 1960). However, despite women's high level of education, they continue to experience workplace discrimination. For example, women are severely underrepresented in senior management. Women account for about a third of Master of Business Administration (MBA) course members (Rhode & Kellerman 2007: 2), but hold only two to three percent of CEO positions of the S&P 500 firms (see essay II, Peni & Vähämaa 2010). The situation is similar in Europe, since only five percent of the top executives of the 200 largest European firms are female (International Labor Organization 2004). The situation is significantly worse in parts of Asia, Africa, and the Middle East, where in many nations women are restricted, for instance, from walking alone and working outside their homes (Hayward 2005: 151). If women attain executive positions despite the odds, they still tend to face lower levels of compensation, mobility, and authority (Lyness & Thompson 1997).

According to status characteristics theory, gender is a diffuse status characteristic, since more honor, respect, and importance are attached to men than women (Berger, Fisek, Norman & Zelditch 1977; Ridgeway & Diekema 1992; Wagner & Berger 1997). Thus, men are thought to be more competent than women in many aspects, and because people are generally more influential when they are perceived to be competent, the assumption of men's superior competence makes it difficult for women to demonstrate their competence (Carli & Eagly 1999).

It has been documented that a double standard exists when estimating competence, in that what constitutes a high level of competence is higher for women

than men (Carli & Eagly 1999). This double standard also creates a disadvantage for women in hiring and promotion. For example, Foschi, Lai, and Sigerson (1994) document that a majority of men would prefer to hire a man or not to hire anyone than hire a woman whose performance was superior to that of the best male candidate.

4 WOMEN AND WORKING LIFE

> "To take from any community its male workers would paralyze it economically to a far greater degree than to remove its female workers. The labor now performed by the women could be performed by the men, requiring only the setting back of many advanced workers into earlier forms of industry; but the labor now performed by the men could not be performed by the women without generations of effort and adaptation. Men can cook, clean, and sew as well as women; but the making and managing of the great engines of modern industry, the threading of earth and sea in our vast systems of transportation, the handling of our elaborate machinery of trade, commerce, government – these things could not be done so well by women in their present degree of economic development." (Perkins Gilman 1898: 8–9).

Despite being well over a hundred years old, the above quote still seems to describe the attitudes of many. Both domestic and work-related tasks are often divided into feminine and masculine, and, commonly, the masculine tasks are the ones that are considered important from the point of view of a well-functioning society. Perkins Gilman's (1898: 9) argument from the 1800s summarizes the public opinion that had prevailed for centuries: *"The male human being is thousands of years in advance of the female in economic status."* Attempts to attain gender equality have been successful to the extent that it is now commonly recognized that females may also have a lot to offer at the executive level. As Sharpe (2000) claims, *"After years of analyzing what makes leaders most effective and figuring out who's got the Right Stuff, management gurus now know how to boost the odds of getting a great executive: Hire a female.*

Despite promoting gender equality, the power relations resulting from gender hierarchy still tend to be unequal. Labor markets are segregated on the basis of gender, that is, there are women's and men's jobs. Women are over-represented in the public sector, health care, and education fields (Barth, Røed, and Torp 2002: 9). Women also tend to have lower employment rates than males (see e.g. Eurostat 2010), which may expose women to higher levels of poverty and social exclusion. Men have traditionally been preferred as executives, since an ideal employee is considered to be one who works continuously from the end of education until retirement, without letting family or other obligations interfere (Cook 1992; Pleck 1977). It has been suggested that this male model of work needs to be challenged in order to promote gender equality (Cook 1992; Lewis & Cooper 1996). The current competitive and quickly changing economic conditions seem to be slowly changing these traditions (Cooper & Lewis 1999), which may work to the advantage of the more adaptable females. Moreover, as Evers (2003: 4)

notes, gender inequality is not only bad for women, but also harms development and economic growth generally.

Previous literature indicates that reputation concerns are efficient in shaping the governance practices of firms (Wu 2004). Since gender equality is commonly seen as a desirable feature, women may be appointed to managerial positions in order to please the public and, therefore, their opportunities to influence decision-making may be limited. Interestingly, since gender equality has become a public issue, many companies have been making it extremely difficult to identify the people occupying the executive seats. For example, there seems to be a tendency to remove photographs of executives from web sites and annual reports and to indicate the first name only with an initial. An alternative method involves listing dozens of people as the "leadership team" or all the affiliate companies' executives may be listed as well (Womenomics 2010).

4.1 Being a role model

Female leaders are considered to symbolize change. If, for example, a female CEO, president, or chairperson is nominated, it raises the possibility of other societal and organizational changes (Adler 1999). Chesterman, Ross-Smith, and Peters (2004) conducted a study of women's advancement opportunities finding that having female executives as role models tends to attract other women to managerial positions. Moreover, they report that the most important issue in increasing women's share of managerial positions is getting explicit support from the senior executive, which highlights the responsibility that corporate executives have for promoting gender equality, and just how important that responsibility is.

The majority of current female leaders are the first females to hold their particular position, so they have no female predecessors or role models. These females rely heavily on public support, instead of a traditional corporate support system (Adler 1999). Kramer, Konrad, and Erkut (2006) suggest that one woman cannot necessarily precipitate a change in the corporate board operations and, therefore, having role models and peers is extremely important. They further argue that the presence of three or more women causes a shift in the board dynamics and, after reaching that critical limit, the female presence on the board becomes the norm and gender ceases to be an issue. It follows that in order to promote women's advancement in business, a safety net and support system needs to be created for female candidates targeting executive positions.

4.2 Gender wage gap

Empirical evidence demonstrates that for as long as there have been paid jobs, women have consistently earned less than men. For example, in 1313 the taxable wealth of Parisian women was about two thirds that of men (Reskin & Padavic 1994: 101), and in 1850, women working in manufacturing earned less than half of what men earned (Goldin 1990). Therefore, the gender wage gap phenomenon is by no means new, and despite the movement toward equal pay for similar work, the gender wage gap still exists around the world. For example, in Europe men generally earn 15–20 % more than women (Plantega and Remery 2006: 4–5). Women also more commonly work part-time (Eurostat, 2006: 4), which decreases their social security benefits and pension payments. The gender difference in pay does not seem to be explained by the different fields of work, since men are reported to earn more than women in jobs where men are the majority or the minority, as well as in gender-neutral jobs (Lorber 2005: 79–80). Mothers are reported to earn substantially less than other women during their lifetime (Davies, Joshi, & Peronaci 2000; Budig & England 2001).

Various explanations have been offered for the persistence of the gender wage gap. It has been documented that women who do not have children still earn less than men in comparable positions (Stroh, Brett & Reilly, 1992; Schneer & Reitman, 1995), which indicates that the pay gap is not explained by career breaks due to maternity leave. Moreover, it has been argued that women tend to earn less than men because their attitudes, preferences, or qualifications make them less competitive (Roos & Gatta 1999); therefore, the gender wage gap simply reflects the gender differences in the human capital offered to the employer. This explanation seems rather implausible considering the evidence presented in Chapter 1.4 indicating that many of the typical female characteristics, as well as their higher level of education, may give females a competitive advantage in the labor market. An alternative explanation is that the people whose top priority is to achieve high status positions tend to be among the highest paid (Browne 2002: 33). Therefore, the continued existence of the gender wage gap could be seen more as a reflection of interests and priorities rather than as proof of gender discrimination in the work place.

4.3 Gender and careers

Given that the labor market is extremely competitive, one might expect that individual talent and experience determine who climbs in the corporate ladders. However, apparently there is still prejudice against aspiring female executives, and

"old boys' networks" can efficiently block the progress of talented female applicants. Cronin and Fine (2010: 13) suggest that the traditional ways of working in the world of business tend to work against female executive candidates: "*The corporate system – the way the business world operates – generates rules of behavior that create common guidelines for what is acceptable and what is not. These basic, respected rules of business work well for men but can inadvertently create paradoxes that put women in no-win situations and limit their opportunity to succeed in a manner comparable to men.*"

Traditionally, the position of women in business has been challenging. In the 1930s, many American firms and schools introduced marriage bars denying work and education to married women (Nickless 1999: 270). For women, the biggest change in the labor market was the entry of married women into the work force, which has transformed society (Goldin 1990). Women have come a long way since those times, but even today they often face different challenges during working life than men do. For instance, many women working in male-dominated organizations may be described as "outsiders within" (Lorber 2005: 84), and, in consequence, they may have limited opportunities for career development. It has also been suggested that women face additional barriers in accessing executive positions as a result of social exclusion or discrimination (Singh & Vinnicombe 2004; Mateos de Cabo, Gimeno & Escot 2011). For example, it has been argued that different hiring practices are used when assessing female and male candidates (Woodhams & Lupton 2006). The literature has also documented that executives tend to hire subordinates like themselves (Anderson-Gough, Grey & Robson 2005), which is likely to hinder women's advancement in business.

The career paths of women are affected by gender stereotypes, gender differences in family obligations, gender bias in evaluation and mentoring, and deficient public policies (Rhode & Kellerman 2007: 6). It is not surprising that the career paths of men and women tend to differ. Women's careers have been shown to typically follow a pattern where a period of employment is followed by a multiyear career interruption, and then a return to employment (Stroh & Reilly 1999). This pattern is mainly result of childbearing and social reasons.

It is clear that attaining a senior level position not only requires the right personality, knowledge, and experience, but also a devotion to one's career spanning decades. Therefore, one's attitudes towards work and career development have an impact on the outcome. Schwartz (1989) suggests that women are, in general, less involved in developing their careers due to family constraints. It has been proposed that women opt out of full-time professional work in order to accommodate domestic obligations (Belkin 2003: 42). These types of explanations are worth

considering, since women tend to make different choices than men. For example, more women opt out of business life for at least some period, and more women who stay in the game tend to remain childless (Rhode & Kellerman 2007: 4). Interestingly, close to 20 % of women holding graduate or professional degrees do not work outside their homes, while the same is true for only five percent of men (Wallis 2004: 51).

The statistics indicate that combining professional and family lives is more difficult for women than for men. For example, only 46 % of female executives in the U.S.A. are married, compared to over 94 % of male executives (Catalyst). In a similar vein, 27 % of female senior executives have no children, while the same is true for only 3 % of the men (Rhode & Kellerman 2007: 5–6). These figures suggest that, in general, the women who make it to the executive level are required to opt out of domestic distractions. As Lorber (2005: 71) claims, *"The heart of the difference is that women workers have families and men workers have wives."* International surveys indicate that the highest percentage of dual-earner couples is in Sweden (85.1 %), followed by Finland (80.6 %). In the U.S.A., both parents in 72.3 % of families work outside their homes (Jacobs & Gerson 2004: 119–147, 216).

The widely used term glass ceiling refers to the invisible barriers that women face when aiming for the top rungs of the corporate ladder. The first female CEO was appointed to a Fortune 500 company as late as 1999 (Cotter, Hermsen, Ovadia & Vanneman 2001), which clearly indicates that women face a disadvantage when applying for the most senior positions. Evidently, despite the vast amount of attention that the glass ceiling phenomenon has attracted, the solution is yet to be found.

What leads those rare female executives to the senior leadership positions? According to Adler (1999), the majority of female leaders are driven by a vision, mission, or cause. They have personal goals, and holding a top position simply offers the means to achieve these goals. Women have also been reported to measure successful career advancement less on remuneration and more on how the work allows them to balance their personal and professional lives (Stroh & Reilly 1999).

5 GENDER-BASED DIFFERENCES IN BEHAVIOR AND CHARACTERISTICS

> "It seemed clear to me that any between-sex differences in thinking abilities were due to socialization practices, artifacts and mistakes in the research, and bias and prejudice. After receiving a pile of journal articles that stood several feet high and numerous books and book chapters that dwarfed the stack of journal articles, I changed my mind." (Halpern 2000.)

A significant stream of management and psychology literature argues that gender-based differences exist in various aspects. It has been suggested that the differences between men and women may vanish at the executive level and that women in senior positions in fact resemble men in their behavior. However, Adams and Funk (2010) report findings indicating that, even at the director level, fundamental differences exist between men and women. They further suggest that those differences persist even within firms so that there is a difference in the behavior of a man and a woman working in a similar position in the same firm. The gender differences in characteristics that may have an impact on executive and expert behavior are discussed below.

5.1 Cognitive abilities

Browne (2002: 33) suggests that gender differences in temperament, cognitive abilities, and occupational preferences are at least to some extent responsible for the commonly acknowledged problems in business, namely the glass ceiling phenomenon, the gender wage gap, and occupational segregation. He also proposes that people who regard status as a high priority also tend to achieve high status, as they are more willing to invest in earning it. Similarly, people who value a high salary make sacrifices and, therefore, also end up earning well.

Prior literature suggests that women and men execute work tasks differently. An explanation provided by evolutionary theory is that females and males have very different perspectives on time. Women carry babies and raise them to adulthood; definitely a long-term commitment measured in terms of slow but steady progress. In contrast, male hunters had to move fast in order to be able to hunt game. Researchers have proposed that this difference in perspectives also influences the way women and men operate at work. Women are perhaps able to see the whole picture better and are able to make long-term plans for improving things, while men want to see the change as soon as possible, without considering that women's style could actually be more efficient in the long run. Moreover, it is also

suggested that women are more flexible and able to adapt relatively effortlessly (Katz 1997), which should be valued by employers.

5.2 Risk aversion and conservatism

The risk aversion levels of women and men differ. It is widely reported that women are more conservative and risk averse than men (see e.g. Levin, Snyder & Chapman 1988; Johnson & Powell 1994; Powell & Ansic 1997; Jianakoplos & Bernasek 1998; Byrnes, Miller & Schafer 1999). The difference between genders in risk-taking behavior is said to be evident even in childhood. Boys are thought to be exposed to greater risks both because of being more likely to engage in risky behavior, but also because when engaging in the same activity as girls, boys are more likely to perform it in a risky manner (Browne 2002: 19). The gender-based differences identified are reported to widen further in adolescence (Schrader & Wann 1999).

Reporting on performance at work, Schubert (2006) argues that women try harder to avoid losses and so their risk-taking is more moderate than that of males. According to the empirical findings of Martin, Nishikawa, and Williams (2009), the market is aware of the gender-based differences in risk tolerance, since their estimation results indicate that changes in risk following CEO appointments are significantly lower when the incoming CEO is female.

Sturdivant, Ginter, and Sawyer (1985) suggest that executive conservatism has a significant impact on firm performance. Interestingly, they claim that conservatism is negatively associated with the firm's social responsiveness and some aspects of financial performance. However, it is not clear whether these results would hold true in today's financial market. Due to the reported gender-based differences in risk aversion and conservatism, Stendardi, Graham and O'Reilly (2006) even suggest that the financial advisors should tailor their financial planning process based on the client gender. Overall, the widely reported gender-based differences in risk tolerance and conservatism may have a significant impact on the firm's financial performance and reporting practices

5.3 Overconfidence

Psychology literature indicates that, in general, people are prone to overestimate their skills and knowledge and are overconfident of their own relative abilities (Fischhoff, Slovic & Lichtenstein 1977; Weinstein 1980; Lichtenstein, Fischhoff

& Phillips 1982; Taylor & Brown 1988; Camerer & Lovallo 1999). Bonner (2008) suggests that men tend to be more overconfident than women, especially in domains traditionally considered masculine, such as business life. Moreover, the level of overconfidence apparently increases with more difficult tasks (Klayman, Soll, González-Vallejo & Barlas 1999).

Barber and Odean (2001) argue that the excessive overconfidence of men can be seen in their trading behavior on stock exchanges. Their results indicate that men trade an average of 45 % more than women, which reduces their net returns by 2.65 percentage points annually, compared to the 1.72 percentage point reduction of females' returns caused by trading. Interestingly, single men are reported to trade 67 % more than single women, which causes their returns to decrease by 1.44 percentage points more annually than the returns of single women. Thus, it can be concluded that men's overconfidence may reduce their potential financial wealth.

It has been suggested that managerial overconfidence may account for corporate investment distortions (Malmendier & Tate 2005). In particular, overconfident CEO's investment decisions are more responsive to cash flow; that is, they tend to overinvest when they have abundant funds. Malmendier and Tate (2008) also argue that overconfident CEOs are prone to overestimate their income-generating ability and, as a consequence, they overpay for target companies in mergers. In general, the differences in overconfidence levels may be seen in the executive's behavior and actions at work, which may lead to differences in the performance of firms led by females from those led by males.

5.4 Ethical behavior and diligence

Research suggests that female executives and directors have higher moral standards than males (Bernardi & Arnold 1997; Borkowski & Urgas 1998; Roxas & Stoneback 2004; Peterson, Albaum, Merunka, Munuera & Smith 2010). Moreover, according to MacLeod Heminway (2006), women are more trustworthy than men, and may therefore be less likely to manipulate corporate financial reporting. Dollar, Fisman, and Gatti (2001) find that the greater the female representation in the United States House of Representatives, the lower the level of corruption, which also suggests that women at the top level positions may be more trustworthy and honest than men. In a similar vein, Betz, O'Connell, and Shepard (1989) state that men are more than twice as likely to engage in unethical actions – for example to purchase stocks using insider information – than women.

Earlier literature has documented differences in the level of diligence of male and female executives. Huse and Solberg (2006) argue that women at the executive and director level tend to be better prepared for meetings than men. Women are also reported to have higher expectations regarding their responsibilities (see e.g. Fondas & Sassalos 2000), which is likely to have an impact on their performance at work.

5.5 Communicative skills and leadership style

Scholars have argued that women have better communication skills (see e.g. Wood, Polek & Aiken 1985; Fondas 1997; Schubert 2006). Robinson and Dechant (1997) and Dallas (2002) suggest that women perform better in group problem-solving and decision-making tasks. Females are also reported to be more comfortable in addressing tough issues facing the firm (Kramer et al. 2006; McInerney-Lacombe, Bilimoria & Salipante 2008)

Prior research also supports the related finding that the leadership styles of males and females differ. It is suggested that women in the executive positions are less directive and autocratic than men, and more democratic, cooperative, and participative than male executives (Eagly & Johnson 1990, Eagly, Johannesen-Schmidt & van Engen 2003). Eagly and Carli (2003) report that the leadership style of women may be more efficient in the contemporary business environment. Women also take their executive roles very seriously, which may improve their leadership skills (Fondas & Sassalos 2000). Interestingly, female subordinates have been reported to give higher performance ratings to female leaders than males do (Luthar 1996).

6 THE IMPLICATIONS OF GENDER-BASED DIFFERENCES ON FIRM PERFORMANCE AND GOVERNANCE MECHANISMS

As described above, men and women are reported to differ in many respects that may have an impact on decision-making and work performance. In general, it is suggested that gender-diversity has a positive impact on firm performance and market valuation (see e.g. Carter, Simkins & Simpson 2003; Erhardt, Werber & Shrader 2003; Farrell & Hersch 2005; Krishnan and Park 2005). Importantly, by considering women when appointing senior level directors will make it possible for the firms to draw from a broader pool of talent.

Adams and Ferreira (2009) examine the impact that women on corporate boards may have on firm governance and performance, and find that gender-diverse boards generally put more effort into monitoring. Their results also suggest that female board members are more diligent in attending board meetings than men. Adams and Funk (2010) report that gender-based differences even persist at director level within firms, suggesting that the behavioral differences between men and women may play a role in the executive level too. Their results further indicate that firms with female directors may act in a more stakeholder friendly way.

Market is reported to value the presence of females in corporate boards and senior management. For example, Keys, Turner, and Friday (2002) document that firms that promote director diversity add more shareholder value than the nondiversity promoters do. Campbell and Minguez-Vera (2010) study the appointments of female board members and find evidence indicating that a firm's stock price tends to increase when a female appointment is announced. Moreover, they argue that the appointments of female board members are positively related to the longer-term valuation of the firm. Related to corporate acquisitions, Levi, Li, and Zhang (2008) report that the bid premia in acquisitions is affected by the number of female board members in both the acquiring and the target firm.

Corporate diversity provides the firms with a better understanding of the market. Moreover, diversity also increases creativity and innovation (Robinson & Dechant 1997). Therefore, women may simply have a positive impact on corporate governance and firm performance since people with different backgrounds may have different viewpoints, which may be especially precious during times of economic crisis (Kirk & Gwin 2009). Considering the current financial turmoil, the possible effects of gender diversity and the presence of female in senior management on corporate governance and firm performance are intriguing.

7 SUMMARY OF THE ESSAYS

The purpose of this dissertation is to examine the impact of female experts on corporate governance, financial reporting, and external control. The financial data used in the thesis comprises published figures from publically listed firms in U.S.A. and Nordic countries – more specifically, the firms listed on the NASDAQ OMX exchanges and the firms included in the Standard & Poor's 1500 Composite Index (S&P 1500).

This dissertation consists of the five essays that are described briefly below. The overarching purpose of the dissertation is to examine whether and how the corporate governance and financial reporting practices of firms led by females differ from those in firms led by men. As described above, earlier management and psychology literature documents significant gender-based differences. Therefore, it is of interest to examine how these differences between male and female executives and experts can affect the financial performance and reporting practices of a firm.

7.1 Female executives, chairwomen, and corporate governance

The first essay of this dissertation examines whether the gender of the firm's top executives (CEO and CFO) and board chairpersons is associated with the corporate governance practices within the firm. The purpose of this essay is to give an overview of the impact made on the governance practices of the firm by female executives and chairwomen, whereas the second, third, and fifth essays in this dissertation examine the effect of executive and chairperson gender on firm performance and financial reporting.

The definition of corporate governance tends to vary based on discipline but, in general, corporate governance can be viewed as the set of practices and norms that influence corporate decision-making and power relations (Blair 1995; Aguilera & Jackson 2010). Corporate governance practices have been a focus of interest as a result of the high-profile collapses of large U.S. firms such as Enron and WorldCom. Since the earlier literature plausibly documents that women are more conservative, risk averse, and ethical, it is of interest to examine whether the gender of the firms' executives and board chairpersons has an impact on the corporate governance practices.

Previous literature has examined various matters influencing corporate governance practices, but the possible impact of characteristics specific to executives has

not been previously covered. Earlier studies suggest that the gender of a firm's executives and directors may affect corporate decision-making and, therefore, affect the firm's financial performance, market valuation, and financial reporting procedures (see e.g. Erhardt et al. 2003; Campbell & Minguez-Vera 2008; Barua, Davidson, Rama & Thiruvadi 2010).

The motivation for conducting this study is based on the indication from earlier literature that significant gender-based differences exist between men and women and that those differences may also have a role in working life. This essay contributes to the existing literature by assessing whether and how the quality of corporate governance is related to the gender of the firm's executives and board chairs.

This essay uses the Corporate Governance Quotient (CGQ) of RiskMetrics to measure the overall strength of the firm's governance practices. The sample used in the analysis covers the S&P 500 firms over the period 2003–2008. The reported findings indicate that female CEOs and board chairs have a positive impact on the overall quality of corporate governance, whereas CFO gender does not influence the general governance practices of the firm. Several areas of governance are then assessed to investigate whether the impact of the gender of the executives and chair varies between governance areas. These results suggest that female CEOs and chairwomen have the largest influence on the governance attributes that are related to the board of directors. Overall, the findings reported in this essay suggest that the gender of the executive and chairperson may have important implications for the quality of corporate governance. Moreover, the findings may provide important information for legislators and policy makers in relation to gender equality programs and regulations.

7.2 Female executives and earnings management

The second essay in this dissertation examines the relationship between the gender of executives and earnings management. Earlier literature indicates that earnings management practices may depend on managerial motives and characteristics and, consequently, it is of interest to examine whether firms' earnings reporting practices vary based on the executive gender.

Accounting earnings are a widely used measure of firm performance. However, the regulation and guidelines concerning accounting practices leave firms' management with some discretion over earnings management. It is widely reported that firms' executives may have personal incentives to manipulate earnings re-

porting and, consequently, the quality of financial reporting may suffer based on management's agendas.

This essay studies the association between earnings management and the gender of the firm's executives. In particular, the CEO and CFO of the firms are focused on. The underlying assumption in this essay is that the widely documented gender-based differences may affect the work performance and decision-making of male and female executives and, consequently, influence the firm's financial reporting practices. Consequently, this study contributes to the existing literature by examining the potential impact of female executives on the financial reporting practices of a firm.

The work of Cheng and Warfield (2005), Geiger and North (2006), and Matsunaga and Yeung (2008) investigating the effects of executive characteristics and incentives on financial reporting practices is important to this study. In general, prior literature indicates that the quality of financial reporting depends on managerial motives and the opportunism of the firm's executives. Accordingly, this research hypothesizes that firms with female executives are associated with more conservative financial reporting practices.

The sample examined in this essay covers the S&P 500 firms in the fiscal years 2003–2007. The findings reported in this essay suggest that firms with female CFOs are associated with income-decreasing earnings management practices, implying that they tend to follow more conservative financial reporting strategies. However, there is no relationship between the CEO gender and earnings management of the firm.

Given the gender-based differences in, for example, conservatism and risk-aversion, it can be argued that female executives may inherently be more prone to avoiding opportunistic income-increasing financial reporting practices. Therefore, the reported findings are in line with the documented gender-based differences and, in general, the results demonstrate that the gender of the executives may have important implications for the quality of financial reporting.

7.3 Executive turnover, gender, and earnings management

The third essay continues the earnings management theme and examines whether personnel changes at the executive level influence the reported relationship between executive gender and earnings management. Recent accounting scandals have highlighted the need for reliable, accurate, and timely financial information,

the provision of which is commonly a responsibility of the CFO. The legislation also highlights this task; for example, the Sarbanes-Oxley Act of 2002 (SOX 2002) states that both the CEO and CFO be held personally responsible for the accuracy and completeness of the company's financial reporting.

Earlier literature focused mainly on examining the impact the CEO has on firm performance and financial reporting, often at the cost of ignoring the influence of other key executives. However, as the study described above in section 7.2 suggests, the role of the CFO in a firm's financial management is also very important. Therefore, this essay focuses on examining the effects of CFO turnover on earnings management. In particular, given the literature on gender-based differences, it is of interest to examine whether the genders of incoming and outgoing CFOs influence the financial reporting practices of the firm.

The importance of the CFO's role is supported by the few studies that have examined this aspect. For example, Jiang, Petroni, and Wang (2008) suggest that CFOs are in fact the executives with the most influence on the company's financial reporting practices. Therefore, the impact of CFOs on the reported financial information should be thoroughly examined. The global financial turmoil of recent years has led to a dramatic increase in executive turnover. It is therefore of interest to examine the financial consequences of a CFO turnover within a firm. This essay contributes to the existing literature by assessing whether and how a change of CFO and the genders of incoming and outgoing executives affect the firm's financial reporting practices. Overall, this study provides new and important information about the effects of executive-specific characteristics on earnings management.

This essay uses a three-year sample of CFO changes in S&P 1500 firms, excluding financial firms and firms with multiple CFO turnovers during the fiscal year, as this would make it impossible to estimate the impact of a specific executive change on earnings management. The reported results suggest that, in general, CFO turnover decreases earnings management, which is in line with Geiger and North (2006), for example, who report that firms tend to have lower levels of discretionary accruals after a CFO change. However, if a CFO does change, the incoming and outgoing CFO genders seem to have an influence on the firm's earnings management practices. In particular, if a male CFO is replaced by a female, the discretionary accruals are negatively influenced. In contrast, earnings management increases if a male CFO replaces either a female or a male. Overall, the results indicate that the firms which change from a male CFO to a female one tend to move towards higher quality financial reporting practices.

The reported results are in line with earlier literature documenting a decrease in discretionary accruals following a CFO change (see e.g. Geiger & North 2006) and with the second essay reporting that firms with female CFOs follow less aggressive earnings management strategies. The results are also in line with the psychology literature on gender-based differences such as risk-taking preferences, conservatism, and ethical behavior.

7.4 Auditor's gender and audit fees

The fourth essay in the dissertation focuses on examining the impact an external expert's gender may have on the firm. In particular, this essay examines the association between auditor gender and audit fees paid by the client firm. The audit fee literature assumes that audit pricing may be affected, for example, by the characteristics of the audit firm or office. Given that psychology literature documents significant gender-based differences at the executive and expert level, it is of interest to examine whether the gender of an individual audit partner has an impact on audit pricing.

Prior literature indicates that audit fees are a function of audit team labor hours, labor costs per hour, and a risk component. Therefore, the characteristics of a responsible audit partner may affect both the audit investment and the risk component, thereby influencing the audit fees paid by the client. As the International Standards of Auditing (IAASB, 2009) state, the audit partner is responsible for ensuring the overall quality of the audit. Therefore, it is conceivable that as a result of well-documented gender-based differences, female auditors may require a more thorough and costly audit. Consequently, the examined hypothesis states that there is a relationship between the gender of the audit engagement partner and the audit fees.

The data used in this study consist of the publicly listed firms in Denmark, Finland, and Sweden. These particular countries are selected because their legislation requires the responsible audit partners to be named in the audit reports. This is a requirement not found in the legislation of many other countries, including the U.S.A. and the United Kingdom, where only the responsible audit firm's name is included in the audit reports. Interestingly, publishing the responsible audit partner's name is on the agenda of the Public Company Accounting Oversight Board (PCAOB) and, consequently, the U.S.A. may soon follow the example of the Nordic countries and require the signatures of the responsible audit partners on the audit reports (PCAOB 2009).

The examined data period covers the fiscal years 2005–2006. The data on audit partner gender are manually gathered from the firms' audit reports. The reported results indicate that, after controlling for client attributes, female auditors are associated with higher audit fees. This finding is particularly interesting considering the well-documented gender wage gap and the glass ceiling phenomenon, encapsulating the difficulty females have in reaching top executive and expert level positions, such as a partnership in an audit firm.

Various possible explanations for the findings are discussed in the essay. In general, the reported results are in line with the earlier literature reporting that females are more risk averse, ethical, and diligent and less overconfident than men, which may lead to higher audit fees. For example, female audit partners may invest more time in planning audit engagements, which would increase the audit effort and, consequently, the audit fees. Due to their higher risk-aversion, women may also estimate some client risk components higher than males, thereby influencing the audit fees.

7.5 CEO and chairperson characteristics and firm performance

The fifth essay examines the relationship between executive and board chairperson characteristics and firm performance. Behavioral differences between humans can often easily be noted in everyday life. In the business world, decision-making power is often concentrated in a few, therefore it is of interest to study whether and how individual characteristics of an executive may affect firm performance.

The essay focuses on CEOs and the board chairs. CEOs are included since they are usually the most visible and powerful executives in a firm. However, earlier literature often ignores chairpersons or, alternatively, they are considered in the same terms as other board members. In fact, board chairs are often very experienced, highly educated long-term members of the company's administration, and they may have vast authority within their firm. For example, Brickley, Linck, and Coles (1999) report that 16 % of the CEOs that retire continue their careers by serving as the board chairs in their own companies, which supports the view of chairs having a high level of knowledge and authority within a firm.

Earlier literature indicates that various executive-specific characteristics may influence their behavior at work. However, the great majority of studies concentrate on one specific characteristic of an executive at the cost of ignoring other characteristics that may play a significant role in determining the firm performance.

Consequently, this essay contributes to the existing literature by assessing whether and how executive characteristics may affect firm performance. The executive attributes covered in this essay are age, experience, busyness, quality, and gender.

The sample consists of the S&P 500 firms from 2006–2010. In general, the reported results indicate that demographic and experience-related characteristics may be associated with the market valuation and financial performance of the firm. Interestingly, a positive relationship is documented between female executives, and Tobin's Q and return on assets. Moreover, executive busyness seems to have a negative impact on firm performance, whereas results for executive age are mixed. The executive quality, experience, and duality are reported to be positively related to the financial performance of the firm.

The reported results are in line with earlier literature documenting that female-controlled firms tend to outperform male-controlled firms (see e.g. Krishnan & Park 2005; Smith, Smith & Verner 2006). In general the reported findings suggest that it is important to consider the characteristics of executives among the determinants of firm performance.

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FEMALE EXECUTIVES, CHAIRWOMEN, AND CORPORATE GOVERNANCE[☆]

ABSTRACT

This paper examines whether the gender of top executives and board chairs is associated with the strength of corporate governance mechanisms within a firm. In particular, this paper focuses on the gender of the Chief Executive Officer (CEO), Chief Financial Officer (CFO), and chairperson of the board, and uses the Corporate Governance Quotient to measure the strength of governance. Based on a six-year sample of the S&P 500 firms, the following main results are reported: i) Female CEOs and chairwomen have a positive impact on firm's overall corporate governance. ii) When the different governance attributes are examined individually, the results indicate that female CEOs and chairwomen have the most significant influence on the governance attributes related to the board of directors. iii) Female CFOs have a negative impact on the overall compensation index and the industry-specific takeover defenses index. Overall, the findings of this paper indicate that the gender of the firm's executives and chairs may have important implications for the strength of corporate governance. This study provides new empirical evidence on the relationship between female executives, chairwomen, and corporate governance. The results reported in this study may provide useful information for policy authorities in relation to gender quota discussions, proposals, and regulations.

Keywords: Corporate Governance, Executive Gender, Female Executives, Chairwomen

1 Introduction

This paper examines the association between the gender of the firm's top executives and board chairs and the corporate governance practices within the firm. The definition of corporate governance tends to vary based on discipline, but it can be broadly defined as "the study of power and influence over decision making within

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the corporation" (Aguilera & Jackson, 2010). Economists, for instance, tend to see corporate governance as a combination of contracts among owners, while legal scholars define corporate governance as the set of legal, cultural, and institutional aspects that determine what companies can do and who controls them (Blair, 1995; Aguilera & Jackson, 2010). In addition, national practices, customs, laws, and policies influence the way a corporation is operated and governed.

Over the past decade, corporate governance practices have been of increasing interest due to the collapse of large U.S. firms such as Enron, Tycon International, and WorldCom. Many of these recent problems were caused by accounting irregularities that, for instance, enabled excessive earnings management by the firm's top executives. The Sarbanes-Oxley Act (SOX, 2002) was created in response to the high-profile corporate failures in the hope of restoring market confidence in corporate governance.

Earlier literature has examined various attributes influencing corporate governance, but the impact of executive-specific characteristics has so far attracted surprisingly little attention from researchers. An executive may, for example, have a personal interest in reporting overly optimistic earnings, but the role of effective corporate governance practices is to ensure that reliable information is provided to the company's stakeholders. Previous studies indicate that the gender of the firm's executives and directors may affect corporate decision-making and, consequently, have implications for the firm's financial performance, market valuation, and financial reporting practices (see e.g., Barua, Davidson, Rama & Thiruvadi, 2010; Campbell & Minguez-Vera, 2008; Erhardt, Werbel & Shrader, 2003; Peni & Vähämaa, 2010). In relation to corporate boards, Kramer, Konrad, and Erkut (2006) suggest that increasing the representation of women on corporate boards may improve corporate governance practices. In general, prior literature indicates that the gender of the firm's executives and/or directors may impact the effectiveness of the firm's governance structures.

The purpose of this paper is to examine whether the executive and board chair gender[1] is associated with the strength of corporate governance mechanisms within the firm. In particular, this paper focuses on the chairperson of the board and the two top executives of the firms, the Chief Executive Officer (CEO), and Chief Financial Officer (CFO), and examines whether their gender affects the quality of corporate governance structures. In order to study the issue more thoroughly, dif-

[1] Following the common practice of earlier studies (see e.g., Adams & Ferreira, 2009; Campbell & Minguez-Vera, 2008), the terms female vs. male and women vs. men are used interchangeably in this study.

ferent areas of corporate governance are investigated, namely audit, board of directors, compensation, and takeover defenses.

The motivation for this study is based on the prior literature that indicates significant differences between males and females in working life and, additionally, suggests that executive's personal values and roles may significantly influence their decision-making (Adams, Licht & Sagiv, 2010). This paper contributes to the existing literature by assessing whether (and if so, how) the gender of the executive and chairperson and the quality of corporate governance are related. In addition, the results provide new evidence for understanding the potential effects of the recent national policies and regulations of various countries, for example Norway and Spain (De Anca, 2008; Hoel, 2008), on gender quotas in the executive level. These countries' efforts are supported by earlier research, since for example Grosvold and Brammer (2011) document that country-level institutions have a significant role in increasing women's share of board seats. Attempts to instigate gender equality in the business world have also been made for instance by the European Commission, politicians, shareholders, Fortune and FTSE rankings, and "best places for women to work" lists (see e.g., Terjesen, Sealy & Singh, 2009). The efforts of these groups and organizations further highlight the importance of promoting gender equality in business.

The remainder of the paper is organized as follows: The next section briefly describes the related literature and presents the research hypothesis. Section 3 presents the data employed in the empirical analyses, while Section 4 introduces the methodology used to examine the association between females and corporate governance. The results of the analyses are described and discussed in Section 5. Finally, the last section provides concluding remarks.

2 Related literature

The existing literature indicates that corporate governance affects firm profitability and market value (see e.g., Bauer, Guenster & Otten, 2004; Bebchuk, Cohen & Ferrell, 2009; Brown & Caylor, 2006, 2009; Gompers, Ishii & Metrick, 2003; Renders, Gaeremynck & Sercu, 2010). The seminal study of the area by Gompers et al. (2003) reports findings indicating that firms with better governance mechanisms tend to have higher firm value, profits, and sales growth, and lower capital expenditures. Moreover, Bauer, Frijns, Otten, and Tourani-Rad (2008) document that well-governed Japanese firms significantly outperform poorly governed firms by up to 15% a year. In a similar vein, Bhagat and Bolton (2008) report findings indicating that strong corporate governance mechanisms are significantly posi-

tively correlated with better contemporaneous and subsequent operating performance.

Related literature suggests that executive-specific characteristics may impact their performance in business life. Gender diversity theory indicates that women and men differ in numerous respects. Diversity among a firm's employees and corporate boards is commonly considered a positive feature, since it enhances knowledge, creativity, innovative capabilities, experience, effectiveness, and skills within the firm (Cohen & Levinthal, 1990; Huse, Nielsen & Hagen, 2009; Østergaard, Timmermans & Kristinsson, 2011; Shumpeter, 1934; Torchia, Calabrò & Huse, 2011; van der Vegt & Janssen, 2003; Wenger, 2000; Zahra & George, 2002). It is widely acknowledged in the psychology and management literature that significant gender-based differences exist for example in risk aversion, ethical behavior, diligence, conservatism, leadership style, and information processing (see e.g., Byrnes, Miller & Schafer, 1999; Eagly & Carli, 2003; Eagly & Johnson, 1990, Eagly, Johannesen-Schmidt & van Engen, 2003; Johnson & Powell, 1994; Nettle, 2007; Peterson, Albaum, Merunka, Munuera & Smith, 2010; Pierce & Sweeney, 2010; Roxas & Stoneback, 2004; Schmitt, Realo, Voracek & Allik, 2008; Schubert, 2006).

Earlier literature quite plausibly suggests that gender-based differences influence an individual's performance at work. For example, Erhardt et al. (2003) examine a set of large U.S. firms and find that gender diversity on the board of directors is positively associated with firm profitability. In addition, Campbell and Minguez-Vera (2008) and Carter, Simkins, and Simpson (2003) document that the gender diversity is related to an increase in firm performance and higher firm value. Kramer et al. (2006) suggest that the presence of three or more women seems to result in a shift in the board dynamics. After reaching that critical limit, having women on the board becomes normal and gender ceases to be a concern. Gul, Srinidhi, and Ng (2011) link gender diversity and corporate governance by suggesting that gender diverse boards may act as a substitute mechanism for otherwise weak corporate governance, whereas Nielsen and Huse (2010b) suggest that female directors' contribution to board decision-making enhances board strategic involvement. Nielsen and Huse (2010b) further document that female directors reduce the level of conflict in corporate boards, and they use board development activities, such as work instructions, evaluations, and development programs to improve board effectiveness. In addition to gender diversity, an individual executive's gender has been documented as having significant effects on the operations of the firm. For example, Barua et al. (2010) and Peni and Vähämaa (2010) study the relationship between executive gender and earnings management and find that

firms with female CFOs are associated with more conservative financial reporting practices.

It is conceivable that the gender-based differences vanish at the top executive level and that the women who pursue leadership positions are rather similar to men. Adams and Funk (2010) survey the directors and CEOs of the Swedish publicly-listed firms to examine whether the executives exhibit gender-based differences, or if the women who have made it to senior positions in fact resemble men. Their findings indicate that, even at the director level, there are fundamental differences between women and men, which may lead to differences in priorities. They also report that gender-based differences persist even within firms, in that there is a difference between a male and a female working in a similar position within the same firm. Adams and Funk (2010) and Schwartz and Rubel (2005) further report that, consistent with findings for the general population, female directors are more universally orientated and benevolent, but less power-oriented than men. Interestingly, in the Scandinavian countries the women in executive positions have been suggested to have more masculine values than men in similar top positions (Antal & Izraeli, 1993).

Women may have to work harder and demonstrate superior competence in order to be nominated to a top position (see e.g., Eagly & Carli, 2003) and, thus, the female executives and chairs are likely to be highly competent and diligent. Women may also face extra barriers in achieving top positions due to social exclusion or discrimination (Mateos de Cabo, Gimeno & Escot, 2011; Singh & Vinnicombe, 2004). For instance, Woodhams and Lupton (2006) examine the hiring practices of firms in the United Kingdom and report that 44% of the interviewers admitted asking different questions of male and female candidates, and almost a third revealed using different decision criteria based on the candidate gender. Moreover, Sheridan and Milgate (2005) suggest that, in general, women's competence has to be established either in public or through family connections before a firm is willing to risk nominating a female onto its board of directors.

Various reasons for the gender-based differences in work life have been suggested. Among the most popular explanations are females' better understanding of consumer behavior (Brennan & McCafferty, 1997), differences in risk aversion, overconfidence, cautiousness, ethical behavior, and conservatism (Beu, Buckley & Harvey, 2003; Jianakoplos & Bernasek, 1998; Johnson & Powell, 1994; Nettle, 2007; Pierce & Sweeney, 2010; Schmitt et al., 2008; Schubert, 2006; Sunden & Surette, 1998), women's more thorough preparation for work meetings (Huse & Solberg, 2006), and differences in leadership styles (Eagly & Carli, 2003). Female directors have been indicated to provide greater oversight and monitoring of

managers' actions and reporting (Hillman, Shropshire, & Cannella, 2007; Adams & Ferreira, 2009). With respect to corporate governance, risk aversion and conservatism may be particularly important characteristics for an executive, since corporate governance is essentially a mechanism for controlling risk in a firm.

2.1 Research Hypothesis

Overall, earlier studies indicate that corporate governance is an important factor influencing the corporate performance (see e.g., Bauer et al., 2004; 2008; Bebchuk et al., 2009; Bhagat & Bolton, 2008; Brown & Caylor, 2006, 2009; Gompers et al., 2003; Renders et al., 2010). Earlier literature suggests that executives' personal values and roles have a significant impact on their decision-making (Adams et al., 2010; Pierce & Sweeney, 2010). Moreover, attitudes, cognitive functioning, and beliefs have been documented varying systematically with demographic variables, such as gender (Robinson & Dechant, 1997). In general, women are reported to be more conservative, risk-averse, honest, and stricter in monitoring and to have a clearer overview, which may influence the executive's or chairperson's performance at work. Since corporate governance is closely related, for instance, to lower risk-taking and better ethical behavior, it is plausible to expect that female leaders may have a positive influence on the quality of corporate governance.

The executives examined in this paper are the CEOs, CFOs, and board chairs. The CEOs and CFOs are included since they are the senior executives who are the most likely to impact the firm's reporting and governance practices, and they are also the executives that the Sarbanes-Oxley Act (SOX, 2002) requires to ascertain the accuracy and completeness of the firm's financial reporting. Chairpersons typically have vast experience, knowledge, and power within the firm management and, thus, could be expected to have a significant impact on governance-related decisions within the firms. Female executives and chairwomen are expected to exert a positive influence on corporate governance, since women are in general reported to be more ethical, risk averse, and conservative. All these characteristics are likely to increase the transparency and integrity of the firm's governance practices, such as compensation and ownership guidelines, the board's operating principles, and progressive practices, which may lead to an increase in the overall quality of corporate governance.

Many of the individual corporate governance components may be influenced by the gender of the executive or chairperson. For example, women may have fewer external board memberships (Zelechowski & Bilimoria, 2004), they may be more diligent in attending the board meetings (see e.g., Adams & Ferreira, 2009), or

they may be more open and responsible, which may impact for example on publishing governance guidelines and taking action on shareholder proposals. Women's higher moral standards (see e.g., Bernardi & Arnold, 1997; Beu et al., 2003) may, for instance, decrease related-party transactions and restating financials due to options. In general, it is conceivable that gender-based differences in executive and chairperson characteristics influence the firm's governance practices. Understanding the possible relation between executive and chair gender and corporate governance is important since, as Adams and Funk (2010) put it, "*if women and men are intrinsically different, then the presence of women may have long-term effects on corporate decision-making*". Thus, based on the gender diversity theory and gender-based differences in managerial behavior, the following hypothesis is posited:

> *Hypothesis 1. Female executives and chairwomen have a positive influence on the quality of corporate governance.*

3 Data

The sample covers the S&P 500 firms over the period 2003–2008. Firms with executive or chairperson changes during the fiscal year and firms with insufficient data have been excluded from the sample. In addition, financial firms are left out of the sample since, as noted for example by Adams and Mehran (2003), regulation typically has more influence on the governance of financial institutions than on other firms. The final sample consists of 367 firms and 2202 firm-year observations. The strength of corporate governance is measured by the Corporate Governance Quotient (CGQ), for which the data are obtained from RiskMetrics Group. The data on executive and chair gender are manually gathered from AuditAnalytics database, and have been completed by using the firms' annual reports and press releases. Finally, Thomson Reuters Financial Worldscope provides the financial data.

CGQ[2] is a registered trademark of Institutional Shareholder Services (ISS), and is calculated based on 67 different variables in the following four categories: 1) board of directors, 2) audit, 3) antitakeover, and 4) compensation/ownership

[2] As of March 2010, the RiskMetrics Group replaced the CGQ by a new governance measure, Governance Risk Indicator (GRId). Essentially, the new governance measure is based on the same components than the CGQ used in this study, but GRId is presented as an absolute figure, instead of on percentile basis compared to the other firms. In June 2010, RiskMetrics was acquired by MSCI.

(CGQ, 2008). The components of the CGQ index are listed in Appendix 1. The governance data used to construct the index are from public filings, such as the U.S. Securities and Exchange Commission (SEC) filings, company websites, and company surveys. Each company evaluated by RiskMetrics may verify the data concerning their firm before publication. Companies can change their governance ratings only by making and publicly disclosing changes in their governance practices.

RiskMetrics changes the ratings model and the weights of each included component over time in order to better reflect the market trends in corporate governance. CGQ scores are relative and expressed on a percentile basis. For example, a CGQ index rank of 95 means that the examined company outperformed 95 % of the companies within the same index, in this case the S&P 500, while the CGQ industry ranking states the percentage of companies that the examined firm has outperformed within the same industry group. Thus, the higher the CGQ score assigned to a firm, the better the quality of its corporate governance mechanisms.

Numerous previous studies have used the CGQ or its components as a measure of corporate governance (see e.g., Aggarwal, Erel, Stulz & Williamson, 2009; Beltratti & Stulz, 2009; Brown & Caylor, 2009; Doidge, Karolyi & Stulz, 2007). In addition, the widely used governance measure Gov-Score of Brown and Caylor (2006) is based on CGQ, but it is presented in absolute numbers instead of on a percentile basis. Moreover, market analysts and shareholders are interested in these quotients and for example the Yahoo! Finance website lists the current CGQs for each firm as a measure of corporate governance. CGQ is selected as a governance measure in this study since it includes a covering set of corporate governance dimensions. The monitoring and controlling tasks of the corporate boards (Adams & Ferreira, 2009; Huse et al., 2009) and the top executives cause the examined executives and chairs to potentially have an impact on the firm's governance practices. In particular, it has been reported that the presence of female board members is positively related to strategic types of control and corporate social responsibility (Huse et al., 2009). Moreover, Tacheva and Huse (2006) suggest that women are more likely to contribute to qualitative than to quantitative board tasks.

Earlier literature indicates that the way governance is measured is important (see e.g., Black, Jang & Kim, 2006; Ertugrul & Hegde, 2009; Larcker, Richardson & Tuna, 2007). Moreover, Bohren and Odegaard (2004) suggest that governance mechanisms may be independent and, therefore, should be analyzed individually rather than as a bundle. Thus, in addition to the overall indices, specific areas of corporate governance are also examined, namely audit, board, executive and di-

rector compensation and ownership, and takeover defenses. The examined sub-scores rank companies into quintiles relative to a relevant index and industry group. Thus, the sub-scores get values from one to five, so that a company with a sub-score value of one is among the bottom quintile of the firms in the measured governance area, whereas a company with a sub-score value of five is in the top quintile in that specific governance area. Similar to the overall governance rankings, the sub-scores are calculated based on both the index rank (S&P 500) and the industry rank. For example, the board of directors governance sub-score considers the strength of governance in board related areas, such as board size, structure, and different committees, meeting frequency, and voting rules, whereas the audit sub-score considers the existence of an audit committee, presence of financial experts, and the amount of audit fees paid by the company. Thus, for instance a high board sub-score can be interpreted as a company having a good level of governance in matters within the remit of the board of directors. The components of each governance sub-score are presented in Appendix 1. The board sub-score contains items 1–20 of Appendix 1, audit sub-score items 21–26, takeover defenses sub-score items 27–46, and executive and director compensation and ownership sub-score items 47–60.

The sample is introduced by the executive and chairperson gender and industry in Table 1. As can be seen from the table, female leaders are a small minority in all the examined industries. Interestingly, the number of females has increased during the sample period (CEOs from 1.63 % to 3.30 %, CFOs from 6.81 % to 9.54 %, and chairs from 1.63 % to 2.45 %). However, it should be noted that while the numbers of female executives and chairs are low, the women included in the examined sample constitute the total population and, thus, their number cannot be increased.

Table 1. Female executive and chair representation by year and industry.

The table introduces the female executive representation in the S&P 500 firms during the sample period 2003–2008. Female executives are classified by industry and year.

SIC code	Industry description	Firms in industry	Firms with female CEO						Firms with female CFO					
			2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
1000-1700	Mining and construction	29	0	0	0	0	0	0	2	2	2	3	4	4
2000-3900	Manufacturing	189	4	6	6	8	7	9	7	8	10	10	12	13
4000-4900	Transportation, communications, electric, gas, and sanitary services	53	0	0	0	0	0	0	4	4	8	6	6	6
5000-5900	Wholesale and retail trade	46	1	1	1	1	1	1	5	5	7	5	5	4
7000-8900	Services	50	1	1	1	2	2	2	7	8	8	10	7	8
	total	367	6	8	8	11	10	12	25	27	35	34	34	35
	% of females		1.63%	2.18%	2.18%	3.00%	2.72%	3.30%	6.81%	7.36%	9.54%	9.26%	9.26%	9.54%

SIC code	Industry description	Firms in industry	Firms with female chair					
			2003	2004	2005	2006	2007	2008
1000-1700	Mining and construction	29	0	0	0	0	0	0
2000-3900	Manufacturing	189	5	6	6	8	8	9
4000-4900	Transportation, communications, electric, gas, and sanitary services	53	0	0	0	0	0	0
5000-5900	Wholesale and retail trade	46	0	0	0	0	0	0
7000-8900	Services	50	1	1	1	0	0	0
	total	367	6	7	7	8	8	9
	% of females		1.63%	1.91%	1.91%	2.18%	2.18%	2.45%

4 Methodology

The association between female executives and chairwomen and the quality of corporate governance is examined with the following cross-sectional, two-way fixed-effects panel regression:

$$CGQ_{j,t} = \beta_1 Female_{j,t} + \beta_2 Growth_{j,t} + \beta_3 Leverage_{j,t} + \beta_4 MB_{j,t} + \beta_5 ROA_{j,t} + \beta_6 Size_{j,t} + \sum_{k=1}^{n-1} \alpha_k Industry_j^k + \sum_{y=2004}^{2008} \omega_y Year_j^y + \varepsilon_{j,t} \quad (1)$$

where $CGQ_{j,t}$ denotes the level of corporate governance quotient for firm *j* in year *t*. In Model specifications 1, 3, and 5 the dependent variable $CGQ_{j,t}$ is the CGQ index, while in Models 2, 4, and 6 the dependent variable is the CGQ industry index ($CGQ\_industry_{j,t}$). $Female_{j,t}$ is a binary variable indicating the gender of the examined director, that is the CEO (Models 1 and 2), CFO (Models 3 and 4), or chairperson of the board (Models 5 and 6). $Female_{j,t}$ is assigned to one if the examined executive or chair is female. $Growth_{j,t}$ is the one-year sales growth rate, $Leverage_{j,t}$ is the leverage of the firm, measured as total liabilities divided by total assets, $Market\text{-}to\text{-}book_{j,t}$ is the market-to-book ratio, measured as the ratio of market value to the book value of equity, $Return\ on\ assets_{j,t}$ is the return on assets, calculated as net income divided by total assets, $Size_{j,t}$ is the logarithm of total assets, *Industry* dummy variables control for the industry-specific effects[3], and *Year* are binary variables for the fiscal years. In order to account for contemporaneous correlation, the White cross-section robust covariances are employed throughout the different model specifications.

The control variables employed in Equation (1) are selected based on the earlier corporate governance literature on the underlying factors of corporate governance quality. The sales growth rate is suggested to be negatively related to corporate governance (Gompers et al., 2003), good governance is reported to decrease leverage (Bunkanwanicha et al., 2008; Arping & Sautner, 2010), stock market valuation (*Market-to-book)* is indicated to have a positive impact on the strength of corporate governance (Bruno & Claessens, 2010), good corporate governance is associated with higher operating performance (*Return on assets*) (Bhagat & Bol-

[3] *Industry 1* is a dummy variable for the mining and construction industry, *Industry 2* is the manufacturing industry dummy, *Industry 3* is a dummy variable for transportation, communications, electric, gas, and sanitary services, *Industry 4* is a dummy variable for wholesale and retail trade, and *Industry 5* is a dummy for services industry.

ton 2008), and firm size has been generally suggested to have a positive and significant relation to corporate governance (Gompers et al., 2003: Brown & Caylor, 2006). Moreover, Becker, DeFond, Jiambalvo, and Subramanyam (1998) argue that firm size may be a surrogate for numerous omitted variables. The industry dummies are employed in the regressions since the earlier literature has reported differences in corporate governance practices based on the industry the firm operates in (Giroud & Mueller, 2010), and the year dummies are included following the common practice of earlier studies (see e.g., Bebchuk et al., 2009).

In addition to the overall governance indices, specific areas of corporate governance are examined. These sub-scores vary in different model specifications so that each of the following dependent variables is used in the regressions: audit sub-score – index (*Audit*), audit sub-score – industry (*Audit_industry*), board subscore – index (*Board*), board sub-score – industry (*Board_industry*), compensation sub-score – index (*Compensation*), compensation sub-score – industry (*Compensation_industry*), takeover defenses sub-score – index (*Takeover*), and takeover defenses sub-score – industry (*Takeover_industry*).

5 Results

5.1 Descriptive Statistics

The descriptive statistics of the data are presented in Table 2. Overall, the average values of the alternative governance measures are relatively high, the mean values for *CGQ* and *CGQ_industry* being 53.50 and 83.43, respectively. The high *CGQ_industry* mean value indicates that the sample firms have in the main realized the importance of good corporate governance. Interestingly, the descriptive statistics indicate that the quality of corporate governance differs based on the executive and chair gender. In particular, firms with female CEOs and chairs have higher mean values of the corporate governance variables than firms with male leaders, which provides preliminary support for the research hypothesis. The minimum governance scores for firms with female CEOs and chairs are significantly higher than the minimum scores for male-led firms (e.g. the minimum CGQ for firms with female CEOs is 16.60 and for firms with male CEOs it is 0.20, while the minimum CGQ index scores for are 73.00 and 0.80 for firms with female and male CEOs, respectively). In contrast, the corporate governance measures do not seem to be affected by the CFO gender.

Table 2. Descriptive statistics.

Table reports the summary statistics for the sample firms in 2003–2008. Financial institutions (SIC codes 6000–6900) and firms with inadequate data are excluded from the sample. In addition, the results for *t*-tests for differences in means of the governance scores in male- and female-led firms are reported. *CGQ* is the CGQ index and *CGQ_industry* is the CGQ industry index, whereas *Female* and *Male* prefixes denote firms with female and male executives, respectively. n=2202.

Variable	Mean	Median	Std.dev.	Max	Min
CGQ	53.50	55.10	28.57	99.80	0.20
Firms with female CEO	66.91	76.05	27.89	99.60	16.60
Firms with male CEO	52.47	53.40	28.59	99.80	0.20
Firms with female CFO	53.01	53.35	26.92	99.20	1.60
Firms with male CFO	53.01	54.60	28.81	99.80	0.20
Firms with female chair	62.47	69.60	28.92	99.60	15.50
Firms with male chair	52.28	53.25	28.61	99.80	0.20
CGQ - industry	83.43	89.90	18.10	100.00	0.80
Firms with female CEO	92.33	95.15	7.46	100.00	73.00
Firms with male CEO	82.73	89.10	18.47	100.00	0.80
Firms with female CFO	83.32	89.30	17.52	100.00	27.70
Firms with male CFO	82.99	89.70	18.49	100.00	0.80
Firms with female chair	90.15	93.60	9.85	100.00	59.90
Firms with male chair	82.49	89.10	18.76	100.00	0.80
Audit subscore	3.79	4.00	1.24	5.00	0.00
Audit subscore - industry	4.28	5.00	1.81	5.00	1.00
Board subscore	3.17	3.00	1.40	5.00	0.00
Board subscore - industry	4.48	5.00	0.84	5.00	1.00
Compensation subscore	3.16	3.00	1.45	5.00	0.00
Compensation subscore - industry	4.17	5.00	1.14	5.00	1.00
Takeover defense subscore	3.04	3.00	1.42	5.00	0.00
Takeover defense subscore - industry	2.72	3.00	1.35	5.00	1.00
CEO	0.03	0.00	0.16	1.00	0.00
CFO	0.10	0.00	0.30	1.00	0.00
Chair	0.02	0.00	0.15	1.00	0.00
Sales growth	11.41	8.91	17.61	192.53	-60.20
Leverage	0.24	0.23	0.16	1.42	0.00
Market-to-book (MB)	4.18	2.85	14.30	359.61	-110.87
Return on assets (ROA)	7.88	7.94	8.26	51.70	-68.06
Size	9.22	9.16	1.13	13.59	5.89

Table 2 cont. Descriptive statistics.

t-test for differences in means	t-stat.	p-value
H_0: $CGQ_{MaleCEO} = CGQ_{FemaleCEO}$	3.46	0.00
H_0: $CGQ\_industry_{MaleCEO} = CGQ\_industry_{FemaleCEO}$	3.59	0.00
H_0: $CGQ_{MaleCFO} = CGQ_{FemaleCFO}$	0.00	1.00
H_0: $CGQ\_industry_{MaleCFO} = CGQ\_industry_{FemaleCFO}$	0.23	0.82
H_0: $CGQ_{MaleChair} = CGQ_{FemaleChair}$	2.33	0.02
H_0: $CGQ\_industry_{MaleChair} = CGQ\_industry_{FemaleChair}$	2.70	0.01

Table 2 indicates that firms with female CEOs and chairs have stronger corporate governance mechanisms. For example, the mean value of CGQ index for firms with female CEOs is 66.91 and for firms with male CEOs it is 52.47. In a similar vein, the mean CGQs for firms with female and male chairs are 62.47 and 52.28, respectively. The *t*-tests reported in Table 2 demonstrate that the difference in corporate governance quotients between the female-led and male-led firms is statistically highly significant when the CEOs and chairs are considered. Thus, consistent with the research hypothesis, the univariate tests suggest that firms with female executives and chairwomen are associated with stronger corporate governance mechanisms.

Table 3 presents the correlation matrix of variables used in the regressions. Not surprisingly, the alternative CGQ indices are strongly positively correlated (0.74). In addition, the alternative sub-indices have high positive correlations (audit 0.88, board 0.65, compensation 0.77, and takeover defenses 0.92, respectively), which are to be expected due to the definition of these indices. The sub-indices also correlate positively with the main CGQ indices, board indices having the highest correlation with the main indices.

As Table 3 indicates, the *CEO* and *Chair* variables are strongly positively correlated with each other (0.72). This is naturally partly caused by CEO duality, since in 65.34 % of the firms the CEO and chair positions are held by the same person. 69.09% of firms with female CEOs have executive duality, while male CEOs also hold chair positions in 65.23% of the firms. This is a noteworthy characteristic of the data, since CEO duality is often considered to be harmful for the firm (see e.g., Cochran, Wood & Jones, 1985), though also controversial evidence in favor of executive duality has been presented (see e.g., Chanine & Tohmé, 2009; Elsayed, 2007). Kang and Zardkoohi (2005) provide a covering summary of the studies examining the relationship between CEO duality and firm performance.

Table 3. Correlation matrix.

The table reports the pairwise correlations for the regression variables. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	CGQ_ind	Audit	Audit_ind	Board	Board_ind	Comp	Comp_ind	Takeover	Takeover_ind	CEO
CGQ	0.74 ***	0.33 ***	0.33 ***	0.61 ***	0.46 ***	0.50 ***	0.38 ***	0.34 ***	0.35 ***	0.09 ***
CGQ_ind		0.34 ***	0.35 ***	0.49 ***	0.71 ***	0.38 ***	0.47 ***	0.24 ***	0.24 ***	0.09 ***
Audit			0.88 ***	0.21 ***	0.19 ***	0.09 ***	0.07 ***	0.09 ***	0.08 ***	0.04
Audit_ind				0.20 ***	0.21 ***	0.07 ***	0.08 ***	0.09 ***	0.10 ***	0.03
Board					0.65 ***	0.10 ***	0.06 **	0.18 ***	0.16 ***	0.08 ***
Board_ind						0.09 ***	0.19 ***	0.07 ***	0.07 ***	0.07 ***
Comp							0.77 ***	-0.04	-0.03	0.03
Comp_ind								-0.08 ***	-0.05 *	0.06 **
Takeover									0.92 ***	0.03
Takeover_ind										0.02

Table 3 cont. Correlation matrix.

Variable	CFO	Chair	Growth	Leverage	MB	ROA	Size
CGQ	-0.02	0.08 ***	-0.09 ***	0.11 ***	-0.02	-0.01	0.19 ***
CGQ_ind	-0.02	0.07 ***	-0.08 ***	-0.02	0.02	0.07 ***	0.14 ***
Audit	0.01	0.03	-0.03	0.05 **	0.03	0.02	0.09 ***
Audit_ind	0.02	0.02	-0.04	0.08 ***	0.01	-0.01	0.14 ***
Board	-0.02	0.07 ***	-0.07 ***	0.06 **	0.01	-0.03	0.16 ***
Board_ind	-0.02	0.07 ***	-0.04	-0.03	0.04 *	0.02	0.06 **
Compensation	-0.04 *	0.06 **	-0.05 *	0.07 ***	-0.04	0.04	0.01
Compensation_ind	-0.03	0.06 **	-0.08 ***	0.06 **	-0.03	0.05 *	0.01
Takeover	0.00	-0.03	-0.06 **	-0.04 *	0.01	-0.03	0.20 ***
Takeover_ind	-0.03	-0.01	-0.11 ***	-0.01	0.00	-0.06 **	0.21 ***
CEO	-0.01	0.72 ***	-0.03	0.06 **	0.17 ***	0.04 *	0.04
CFO		-0.02	0.05 **	-0.01	-0.01	-0.04	-0.02
Chair			-0.03	0.04	0.00	-0.03	0.00
Growth				-0.15 ***	0.02	0.17 ***	-0.02
Leverage					0.06 **	-0.21 ***	0.18 ***
Market-to-book						0.16 ***	-0.07 ***
Return on assets							-0.09 ***

Additionally, if a firm has a positive attitude towards females they may be more likely to nominate females for more than one top position at a time. Interestingly, the *CEO* and *Chair* variables have a significant positive correlation with the overall governance indices *CGQ* and *CGQ_industry*, as well as with part of the governance sub-indices. These significant positive correlations between the executive gender and governance variables may be incorporated to support the research hypothesis.

5.2 Regression Results

The results of the alternative regression specifications are presented in Table 4. In general, the results indicate that executive and chair gender may influence the governance practices of the firm. As the table depicts, the explanatory power of the model specifications 1–6 varies from 4.70 % to 11.51 %. Overall, the models with CGQ industry index as the dependent variable have significantly higher R^2s than the models with the CGQ index as the dependent variable. The relatively low R^2s are in line with the previous literature examining the relationship between firm-specific characteristics and corporate governance indices (see e.g., Chhaochharia & Laeven, 2009).

As can be seen from Table 4, the control variables *Growth* and *Size* seem to have an important role in explaining the firm's corporate governance, while *Leverage*, *Market-to-book*, and *Return on assets* are less important. Interestingly, the mining and construction industry (*Industry 1*) has a negative and significant impact on corporate governance practices. In particular, firms operating in the fields of mining and construction have on average 12.33 % lower governance scores than the other sample firms. The other examined industries are negatively associated with the industry-specific corporate governance indices (Models 2, 4, and 6). All the year dummies are positively related to the corporate governance indices, indicating that the average corporate governance scores in the sample increase every year.

Table 4. Regression results.

The table reports the results of alternative versions of the panel regression model. t-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Dependent variable	CGQ		CGQ_ind		CGQ		CGQ_ind		CGQ		CGQ_ind	
Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Constant	10.93	***	58.08	***	12.20	***	59.97	***	11.12	***	58.05	***
	(4.64)		(13.98)		(4.70)		(15.99)		(4.82)		(15.52)	
Female variables:												
CEO	13.69	***	6.08	***								
	(6.45)		(8.80)									
CFO					0.07		0.44					
					(0.07)		(0.77)					
Chair									11.08	**	6.04	***
									(2.03)		(7.94)	
Control variables:												
Growth	-0.09	***	-0.07	***	-0.11	***	-0.09	***	-0.08	**	-0.07	***
	(-2.69)		(-3.09)		(-3.36)		(-3.62)		(-2.10)		(-3.75)	
Leverage	12.63	***	-1.17		13.69	***	0.55		11.88	**	-0.58	
	(2.61)		(-0.64)		(3.36)		(0.25)		(2.51)		(-0.26)	
MB	-0.03		0.02		0.01		0.03	***	0.02		0.03	***
	(-0.58)		(1.32)		(0.52)		(5.38)		(0.77)		(5.89)	
ROA	0.03		0.09	*	0.08		0.10	**	0.04		0.08	**
	(0.43)		(1.82)		(1.32)		(2.25)		(0.60)		(1.99)	
Size	4.40	***	3.33	***	4.15	***	3.03	***	4.34	***	3.31	***
	(13.63)		(6.37)		(10.02)		(6.56)		(11.30)		(6.96)	
Industry 1	-9.49	***	-13.37	***	-7.37	**	-12.07	***	-8.75	***	-12.78	***
	(-3.20)		(-7.36)		(-2.03)		(-6.49)		(-2.80)		(-8.26)	
Industry 2	-0.34		-3.23	***	0.27		-2.68	***	-1.13		-4.02	***
	(-0.38)		(-4.56)		(0.25)		(-4.50)		(-1.09)		(-5.80)	
Industry 3	0.79		-14.34	***	1.71		-13.83	***	1.76		-15.11	***
	(0.20)		(-5.63)		(0.46)		(-6.01)		(0.43)		(-5.64)	
Industry 4	-0.55		-5.78	***	0.58		-4.80	***	0.14		-5.35	***
	(-0.15)		(-3.86)		(0.17)		(-3.29)		(0.04)		(-4.48)	
2004	1.90	***	1.80	***	1.25	***	1.01	***	1.89	***	1.50	***
	(72.74)		(24.78)		(11.77)		(12.67)		(30.50)		(19.26)	
2005	2.62	***	6.81	***	1.92	***	5.99	***	2.78	***	6.69	***
	(15.22)		(52.17)		(10.26)		(47.63)		(12.14)		(55.11)	
2006	1.78	***	6.03	***	2.59	***	6.01	***	3.30	***	6.61	***
	(7.71)		(30.78)		(11.65)		(37.41)		(10.19)		(39.32)	
2007	1.64	***	7.00	***	1.99	***	6.28	***	2.76	***	7.38	***
	(7.21)		(27.87)		(8.91)		(31.72)		(10.59)		(38.38)	
2008	1.84	***	7.71	***	2.23	***	7.25	***	3.27	***	8.19	***
	(8.08)		(27.53)		(8.34)		(26.74)		(12.96)		(41.18)	
N	2161		2161		2164		2164		2202		2202	
Adjusted R^2	0.05		0.12		0.05		0.10		0.05		0.11	
F-stat.	7.86	***	16.52	***	6.90	***	14.49	***	7.64	***	15.98	***

The variable of interest in the regressions is the executive and chair gender dummy (*Female*). Consistent with the research hypothesis, the estimation results indi-

cate that the gender of the firm's executives and chairperson affects the quality of corporate governance. The estimated coefficients for the CEO and chairperson genders are positive and statistically highly significant. Thus, the results reported in Table 4 suggest that female CEOs and chairpersons may improve the quality of corporate governance measures, while the CFO gender does not have a significant role. In particular, the estimated coefficients indicate that, all control variables being equal, the firms with female CEOs have on average 20.29 % higher corporate governance scores than firms with male CEOs. Compared to the other firms operating in the same industry, the firms led by female CEOs have on average 6.96 % higher CGQs. In a similar vein, for an average company in the sample, changing from a chairman to a chairwoman, ceteris paribus, would increase the corporate governance quality by 15.97% (or by 6.89 % if compared to the other firms in the industry).

Omitted variables test is conducted to examine whether the female dummies make a significant contribution beyond the control variables in explaining the variance in corporate governance. The incremental F-statistics (not tabulated) testing the restricted model without female dummies against the models reported in Table 4 suggest that the CEO and chair genders are important in explaining the variation of corporate governance. These results are significant at the 1 % level for models with CGQ index as a dependent variable and at the 5 % level for models with CGQ industry index as a dependent variable. In contrast, according to the incremental F-statistics the CFO gender does not have a statistically significant impact on corporate governance, as also suggested by the main results reported in Table 4.

In addition to the overall indices, sub-indices of corporate governance are also examined. The results of these estimations generally indicate that the influence of executive and chair gender on corporate governance varies in different corporate governance areas. Table 5 presents the regression results for models with the index-specific governance sub-scores as a dependent variable. The results for models with the industry-specific sub-scores as a dependent variable are not tabulated, but they are very similar to the results reported in Table 5. The explanatory power of the models presented in Table 5 varies from 2.74 % to 6.40 %, except for the models with the compensation sub-index (*Compensation*) as a dependent variable. For those models (Models 13–15) the explanatory power varies from 1.01 % to 1.50 %, thereby indicating that the dependent variable is not explained well by the control variables employed in this study. As the table suggests, the industry and year fixed effects tend to differ based on the governance area examined. Again, the mining and construction industry (*Industry 1*) tends generally to have a negative impact on corporate governance, except for the audit sub-index in Model 8

and the compensation sub-index in Model 14. Transportation, communications, electric, gas, and sanitary services (*Industry 3*) are negatively related to the audit sub-score and positively related to the takeover defenses sub-score. Wholesale and retail trade (*Industry 4*) has a negative relation to the board sub-score and a positive relation to the takeover defenses sub-score. The impact of year dummies seems to vary from one model to another.

As Table 5 indicates, the overall audit sub-index (*Audit*) is positively affected by chairwomen (4.08 % increase in the index if the firm has a chairwoman instead of a chairman), while in the case of the board sub-indices, female CEOs and chairpersons both have a positive and statistically highly significant influence on the quality of corporate governance (13.81 % index increase for female CEOs and 13.81 % for chairwomen), which is in line with the main CGQ index results reported in Table 4, as well as with the earlier literature on positive effects of gender diversity (Adams & Ferreira, 2009; Nielsen & Huse, 2010a).

The female CEOs seem to have a positive relation with the compensation indices (*Compensation* and *Compensation_industry*). Interestingly, the overall compensation index (*Compensation*) and the industry-specific takeover defenses index (*Takeover_industry*) (not tabulated) are negatively influenced by female CFOs. For example, when a firm has a female CFO, its overall compensation index is 3.37 % lower than in the firms with male CFOs. Since this index is a combination of incentive pay, transparency, and good compensation practices, the gender-based differences in risk taking may explain the finding. Since women are documented to be more risk averse than men (see e.g., Jianakoplos & Bernasek; Byrnes et al., 1999), the incentive pay may be lower in the firms with female CFOs, which may have a negative impact on the compensation index.

It is possible that despite controlling for many firm-specific factors, the executive and chair gender and the quality of governance may be endogenous. Due to the problems with finding an adequate instrument for the instrumental variable techniques, the endogeneity issue is approached by using the matched pairs technique. In particular, the sample firms with female executives or chairs are matched with male-led firms based on industry, firm size, and performance. These regressions can only be conducted for the models with *CGQ* as a dependent variable (Models 1, 3, and 5) since, as the sample is also matched by industry, the industry-specific governance scores (*CGQ_industry*) cannot be examined here. The results of these additional analyses (not tabulated) suggest that, even after employing the matched pairs technique, the female CEOs have a positive and significant effect on corporate governance.

Table 5. Regression results.

The table reports the results of alternative versions of the panel regression model. t-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Dependent variable	Audit		Audit		Audit		Board		Board		Board	
Variable	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
Constant	3.05	***	2.88	***	2.91	***	1.64	***	1.68	***	1.79	***
	(11.72)		(9.23)		(10.48)		(6.64)		(7.19)		(8.73)	
Female variables:												
CEO	0.22						0.46	***				
	(1.44)						(5.36)					
CFO			0.02						0.02			
			(0.24)						(0.63)			
Chair					0.25	*					0.50	***
					1.68						(3.07)	
Control variables:												
Growth	0.00		0.00		0.00		0.00		0.00	*	0.00	
	(-0.25)		(-0.05)		(-0.02)		(-1.31)		(-1.72)		(-1.39)	
Leverage	0.39		0.48	*	0.42		0.11		0.03		0.08	*
	(1.38)		(1.69)		(1.57)		(0.99)		(0.38)		(1.68)	
MB	0.00		0.00		0.00		0.00	*	0.00	***	0.00	**
	(1.55)		(0.00)		(0.50)		(1.77)		(2.70)		(2.52)	
ROA	0.00		0.00		0.00		0.00		0.00		0.00	
	(0.12)		(1.24)		(0.15)		(-0.51)		(-0.33)		(-0.59)	
Size	0.08	***	0.10	***	0.10	***	0.17	***	0.17	***	0.16	***
	(3.09)		(2.81)		(3.20)		(6.76)		(6.56)		(6.87)	
Industry 1	-0.68	***	0.74	***	-0.62	***	-0.42	***	-0.45	***	-0.42	***
	(-5.72)		(-7.79)		(-4.59)		(-4.01)		(-4.02)		(-4.07)	
Industry 2	-0.13	*	-0.1		-0.15	*	-0.04		-0.06		-0.09	
	(-1.87)		(-1.26)		(-1.88)		(-0.67)		(-0.93)		(-1.53)	
Industry 3	-0.27	***	-0.31	**	-0.29	**	0.07		-0.01		0.05	
	(-3.00)		(-1.97)		(-2.40)		(0.52)		(-0.09)		(0.33)	
Industry 4	-0.05		-0.04		-0.06		-0.24	**	-0.27	**	-0.23	**
	(-0.40)		(-0.33)		(-0.58)		(-2.00)		(-2.15)		(-2.04)	
2004	0.50	***	0.53	***	0.49	***	0.09	***	0.09	***	0.09	***
	(80.86)		(87.77)		(55.78)		(14.64)		(11.74)		(15.25)	
2005	0.68	***	0.71	***	0.65	***	0.03	***	0.00		0.05	***
	(59.24)		(93.24)		(52.96)		(4.55)		(0.22)		(5.00)	
2006	0.75	***	0.80	***	0.74	***	0.04	***	0.05	***	0.10	***
	(57.04)		(91.92)		(63.30)		(4.62)		(5.79)		(9.16)	
2007	0.72	***	0.78	***	0.70	***	-0.01		-0.02	*	0.04	***
	(48.47)		(69.47)		(61.46)		(-1.37)		(-1.85)		(3.20)	
2008	0.55	***	0.61	***	0.53	***	0.16	***	0.15	***	0.21	***
	(21.79)		(32.13)		(26.18)		(9.74)		(8.53)		(14.06)	
N	2161		2163		2202		2161		2163		2202	
Adjusted R^2	0.05		0.06		0.05		0.03		0.03		0.03	
F-stat.	7.93	***	9.17	***	7.58	***	4.94	***	4.37	***	4.54	***

Table 5 cont. Regression results.

Dependent variable	Compensation		Compensation		Compensation		Takeover		Takeover		Takeover	
Variable	Model 13		Model 14		Model 15		Model 16		Model 17		Model 18	
Constant	2.76	***	2.77	***	2.75	***	1.04	***	1.17	***	0.99	***
	(8.75)		(9.01)		(9.35)		(5.55)		(6.46)		(6.15)	
Female variables:												
CEO	0.33	*					0.19					
	(1.89)						(1.01)					
CFO			-0.14	**					-0.04			
			(-2.10)						(-0.66)			
Chair					0.45						-0.24	
					(1.52)						(-1.37)	
Control variables:												
Growth	0.00	*	0.00	***	0.00		0.00	*	0.00	**	0.00	
	(-1.90)		(-3.10)		(-1.43)		(-1.74)		(-1.99)		(-1.10)	
Leverage	0.80	***	0.83	***	0.74	**	-0.97	***	-1.03	***	-0.89	***
	(2.70)		(3.08)		(2.39)		(-6.10)		(-7.07)		(-5.98)	
MB	0.00		0.00		0.00		0.00	*	0.00	***	0.00	***
	(-0.68)		(-0.35)		(0.03)		(1.78)		(3.26)		(4.39)	
ROA	0.00	**	0.01	***	0.01	***	0.00	*	0.00		0.00	**
	(2.31)		(3.52)		(3.57)		(-1.90)		(-0.44)		(-2.28)	
Size	0.01		0.01		0.01		0.25	***	0.24	***	0.25	***
	(0.36)		(0.19)		(0.43)		(15.39)		(17.35)		(23.39)	
Industry 1	-0.06		0.13	**	-0.09		-0.34	***	-0.27	***	-0.33	***
	(-0.91)		(1.99)		(-0.95)		(-4.69)		(-3.91)		(-5.02)	
Industry 2	0.03		0.07		0.01		-0.08	**	-0.09		-0.12	***
	(0.51)		(1.05)		(0.13)		(-1.96)		(-1.52)		(-2.70)	
Industry 3	0.02		0.10		0.07		0.20	*	0.26	**	0.18	**
	(0.12)		(0.82)		(0.44)		(1.81)		(2.48)		(2.06)	
Industry 4	0.19		0.25		0.20		0.27	**	0.27	**	0.34	***
	(1.11)		(1.60)		(1.07)		(2.43)		(2.14)		(3.87)	
2004	0.13	***	0.12	***	0.15	***	-0.10	***	-0.14	***	-0.15	***
	(20.12)		(20.97)		(23.62)		(-26.52)		(-18.93)		(-31.45)	
2005	0.21	***	0.23	***	0.22	***	-0.25	***	-0.29	***	-0.29	***
	(18.94)		(22.05)		(14.77)		(-51.74)		(-34.48)		(-111.33)	
2006	0.23	***	0.22	***	0.25	***	-0.25	***	-0.27	***	-0.26	***
	(17.71)		(20.66)		(12.25)		(-26.65)		(-60.35)		(-39.32)	
2007	0.14	***	0.11	***	0.16	***	-0.17	***	-0.19	***	-0.19	***
	(17.27)		(17.58)		(10.88)		(-14.38)		(-45.63)		(-19.55)	
2008	0.30	***	0.29	***	0.33	***	-0.10	***	-0.13	***	-0.11	***
	(26.76)		(40.77)		(20.54)		(-6.73)		(-13.72)		(-6.54)	
N	2161		2163		2202		2161		2163		2202	
Adjusted R^2	0.01		0.01		0.01		0.06		0.06		0.06	
F-stat.	2.22	***	2.82	***	2.54	***	8.48	***	8.40	***	9.00	***

The control variables appear as in the models reported in Table 4, except for the firm size, which is now insignificant. This indicates a good fit of the matching, as the size effect does not distort the findings. Similar to the results reported in Table 4, the CFO gender seems to have no impact on the strength of corporate governance. In contrast to the main results, the chairperson's gender also appears insignificant here, which may be caused by the small sample size.

5.3 Discussion of the Findings

The empirical findings reported above indicate that executive and chair genders are related to the quality of corporate governance mechanisms. The gender diversity theory indicates significant gender-based differences in various aspects that may have an impact in the working life. For example, female leaders have been suggested to be more democratic, participative, and cooperative than men and also less autocratic and directive (Eagly, Johannesen-Schmidt & van Engen, 2003; Eagly & Johnson, 1990). Women are more likely than male directors to serve on committees related to board monitoring, such as audit, nominating, and corporate governance committees (Adams & Ferreira, 2009). This indicates that women may be more interested in corporate governance related matters and, thus, also to invest in improving the company's governance practices. Moreover, women are suggested to take their roles as directors very seriously, which may lead to open discussions and questioning and, consequently, to improved corporate governance (Fondas & Sassalos, 2000).

Earlier literature indicates that an executive's personal values and roles significantly influence the decisions that they make (Adams et al., 2010; Pierce & Sweeney, 2010). In addition, it has been documented that attitudes, cognitive functioning, and beliefs tend to vary systematically with demographic variables, such as gender (Robinson & Dechant, 1997). Interestingly, it has been widely suggested that females have significantly higher ethical standards than males (see e.g., Bernardi & Arnold, 1997; Borkowski & Ugras, 1998; Peterson et al., 2010; Roxas & Stoneback, 2004) and, in addition, females have been reported to be more risk averse than men (see e.g., Byrnes et al., 1999; Jianakoplos & Bernasek, 1998; Schubert, 2006). Female directors are suggested to be more prone to address tough issues facing the management of the firm (Kramer et al., 2006; McInerney-Lacombe, Bilmoria & Salipante, 2008) which is likely to impact the firm's governance practices. According to MacLeod Heminway (2007), women tend to be more trustworthy than men, and therefore less likely to manipulate corporate financial reporting.

Since the quality of corporate governance is affected by the personal views and ethics of the executive and chairperson of the board, the decisions that males and females make at work are likely to differ. For example, a more conservative, risk averse and upright executive or chairperson may be more prone to follow guidelines and recommendations on corporate governance, which would cause the firm to have higher quality corporate governance.

It is of interest why the female CFOs do not impact corporate governance in the same manner as the female CEOs and chairs. This finding may primarily be

caused by the different tasks of these executives. CEOs and chairs are often responsible for important decisions made within the firm and can influence the direction the firm is heading in, whereas the CFOs main responsibility is operational rather than strategic, as they are responsible for the financial reporting of the firm. This difference in responsibility may leave them with fewer opportunities to influence the firm's internal corporate governance practices.

In general, the reported findings support the current efforts of several countries (e.g. Norway and Spain), the European Commission, companies, and stock exchanges to introduce regulations and policies promoting the advancement of women to top executive positions and corporate boards. The findings suggest that the attempts toward gender equality are extremely important and should be adopted at the firm-level. The results are also likely to interest the decision-makers in companies and perhaps promote the advancement of women in business. Overall, this paper further increases the awareness of gender-based differences and their impact on working life.

5.4 Robustness Checks

Several additional tests have been performed to ensure the robustness of the empirical findings. In order to ascertain that the reported findings are not caused by a few outlying observations, the data have been winsorized at the 0.5 % and 99.5 % levels. The results of these regressions (not tabulated) are in line with the results reported in Table 4, and have even higher statistical significance levels in suggesting that female CEOs and chairs have a positive impact on corporate governance, while the CFO gender does not influence the governance practices.

The previous literature has indicated that it is important to account for research and development expenses when considering the firm's success by different measures. Thus, the original models were re-estimated by including the ratio of research and development expenses to sales (*Research*) in the equation. *Research* is not included into the original model because the data on the variable are not available for about a third of the sample companies and, thus, by including the variable, the sample size would diminish disproportionately. The results with regressions including the *Research* variable (not tabulated) support the main findings reported in Table 4, thus indicating that the executive and chair gender influence a firm's corporate governance practices.

In order to ascertain that the results using the industry-specific CGQs are not distorted by the industry dummies included in the models, the Models 2, 4, and 6 of

Table 4 are re-estimated without the industry dummies. The results of these tests (not tabulated) are in line with the findings reported in Table 4.

5.5 Limitations

In interpreting the findings of this study, some limitations need to be considered. First, as can be noted from Table 1, the number of female observations is very low, which obviously may reduce the statistical power of the tests conducted. Moreover, due to the small number of female executives and chairwomen, the changes in values or behavior of one woman may impact the findings. It should also be noted that many of the female executives and chairs are newly appointed and, thus, their possibilities to influence the rather slowly changing corporate governance practices may be limited.

It would be interesting to examine the non-CEO chairs separately to show that the CEO duality does not drive the results. Unfortunately, the small number of female observations constrains from examining the non-CEO chairs separately in this study, since it would cause the sample size to drop disproportionately. Thus, this interesting topic must be left for the future research to cover. However, it should be acknowledged that the female executives and chairs included in the sample constitute the total population and, thus, their number could not have been increased.

Second, since the examined sample consists of the S&P 500 firms, the reported findings may not be applicable to smaller firms or to firms operating outside the United States. Moreover, the American mainly unitary board structure differs from the two-tier board structures found in many western economies and so the results may not be generalized to countries which do not commonly have unitary board structures. Additionally, the results may be distorted by the selection bias, that is, females may self-select into firms with better governance. On the other hand, it is possible that companies with good governance may opt to appoint more women onto their boards and executives.

Naturally, public opinion is an important issue for the companies to consider when determining their governance practices. For example, Wu (2004) suggests that reputation concerns are effective in compelling companies to improve their corporate governance practices. Gender equality is usually seen as a desirable feature and many countries have even introduced laws, regulations, and guidelines promoting the advancement of women in business. Thus, women may be appointed to senior positions in an attempt to influence regulators and the public. As a consequence, their opportunities to shape governance practices may be lim-

ited, which may decrease the explanatory power of the female dummies. For example, it has been reported that female board members may not be listened to, or may be excluded from social events and even from some part of the decision-making discussions, and they may be subject to inappropriate behavior (Kramer et al., 2006), all of which are likely to decrease their individual contribution.

Finally, it should be noted that it is a challenging task to quantify the strength of corporate governance mechanisms within firms and, as indicated by for example Ertugrul and Hegde (2009) and Larcker et al. (2007), the way one measures governance influences the outcome. Therefore, despite using several alternative governance measures in the statistical analyses, it is conceivable that the measures employed do not adequately capture all dimensions of corporate governance. Moreover, the effects of executive and chair gender on individual corporate governance components are not analyzed here beyond the sub-index level due to length of paper constraints. Thus, this interesting topic is left for future research to cover.

6 Conclusions

The importance of good corporate governance has been highlighted in the previous literature. Thus, it is essential to examine the underlying factors that influence corporate governance decisions. The purpose of this paper is to examine whether and how the gender of the firm's CEO, CFO, and chairperson influence the corporate governance practices within the firm. The sample consists of the S&P 500 firms during the period 2003–2008.

The findings reported in this paper suggest that female CEOs and chairs tend to have a positive impact on the quality of corporate governance mechanisms. In contrast, the CFO gender seems to have no impact on the general corporate governance indices. In order to gain more specific knowledge of the relation between the executive and chairperson gender and corporate governance, different sub-indices of corporate governance are also examined. These are indices focusing on audit, board of the directors, compensation, and takeover defenses. The results of these additional analyses indicate that the impact of the executive and chair gender varies in different areas of corporate governance. In examining the audit sub-indices, chairwomen seem to have a positive impact on overall audit-related corporate governance. For the board indices, the results are similar to those of the overall indices, that is, the female CEOs and chairpersons seem to improve corporate governance. In the case of the compensation index, the female CEO is suggested to have a positive impact on the compensation indices. Interestingly, the

overall compensation index (*Compensation*) and the industry-specific takeover defenses index (*Takeover_industry*) are negatively influenced by female CFOs, while the CFOs were found to have no significant influence on the overall corporate governance indices.

In general, the empirical findings reported in this paper suggest that gender-based differences, for instance, in leadership styles, conservatism, risk aversion, and trustworthiness may influence the strength of corporate governance mechanisms. Finally, the findings provide further support for the existence of gender-based differences in the behavior and performance of the executive and chairperson, indicating the importance of the recent national policies in numerous countries on gender quotas at the executive level.

This paper provides an overview of the relation between females in top corporate positions and corporate governance. The reported exploratory findings do raise many questions, which must be left to be answered by future research. For example, since it has been suggested by previous studies that corporate governance practices vary between industries (see e.g., Giroud & Mueller, 2010), and that there is significant variation in the board gender diversity between industries (Brammer, Millington & Pavelin, 2007), it would be interesting to examine whether the female executives' impact on corporate governance differs based on industry. The small sample size of this study unfortunately does not permit such an analysis. Other possible underlying factors affecting the corporate governance quality, such as executive and chairperson characteristics other than gender, are also an important topic for future research to cover. For example, it would be of interest to examine whether female influence on corporate governance differs for executive and non-executive chairwomen.

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Appendices

Appendix 1. CGQ ratings criteria.

Board

1. Board composition
   - At least a majority of the directors on board should be independent.
2. Nominating committee composition
   - Should be composed solely of independent directors.
3. Compensation committee composition
   - Should be composed solely of independent directors.
4. Governance committee
   - The functions of a governance committee should be handled by a committee of a board.
5. Board structure
   - Directors should be accountable to shareholders on an annual basis.
6. Board size
   - Boards should have 6–15 members, a size of 9–12 members is considered optimal.
7. Changes in board size
   - Shareholders should have the right to vote on changes on the board size.
8. Cumulative voting
   - Shareholders should have the right to cumulate their votes for directors.
9. Boards served on – CEO
   - The CEO should not serve on more than two boards of other public companies.
10. Boards served on – other than CEO
    - Outside directorships should be limited to service on the boards of four or fewer public companies.
11. Former CEOs on the board
    - Former CEO should not serve on the board.
12. Chairman/CEO separation
    - The CEO and chair positions should be separated and the chairman should be an independent outsider.
13. Governance (board) guidelines
    - Board guidelines should be published on the company website.
14. Response to shareholder proposals
    - An action should be taken within 12 months on all shareholder proposals supported by a majority vote.
15. Board attendance
    - Directors should attend at least 75 % of the board meetings.
16. Board vacancies
    - Shareholders should have an opportunity to vote on all directors selected to fill vacancies.
17. Related-party transactions – CEO

- CEO's should not be the subject of transactions that create conflicts of interest.

18. Related-party transactions – other than CEO
    - Officers and directors should not be the subject of transactions that create conflicts of interest.
19. Majority voting
    - Ideally directors should be elected with an affirmative majority votes cast.
20. ISS recommendation of withhold votes
    - ISS has not recommended a withhold vote from any directors.

Audit

21. Audit committee
    - Should be composed solely of independent directors.
22. Audit fees
    - Consulting fees (audit related and other) should be less than audit fees.
23. Auditor ratification
    - Shareholders should be permitted to ratify management's selection of auditors each year.
24. Financial experts
    - The entire audit committee should be comprised of financial experts.
25. Financial restatements
    - The company should not have restated financials during any period during the past two years.
26. Options backdating
    - The company has not restated financials due to options.

Charter/Bylaws

27. Poison pill adoption
    - The company should not have a poison pill in place.
28. Poison pill – shareholder approval
    - Shareholders should be permitted to approve shareholder right plans (i.e. poison pills).
29. Poison pill – TIDE provision
    - If a poison pill is adopted, it should include a three year independent director evaluation (TIDE) provision.
30. Poison pill – sunset provision
    - If a poison pill is adopted, it should include a sunset provision.
31. Poison pill – qualified offer clause
    - If a poison pill is adopted, it should include a qualified offer clause.
32. Poison pill – trigger
    - If a poison pill is adopted, the trigger threshold should be 20 percent or higher.
33. Vote requirements – charter/bylaw amendments
    - A simple majority vote should be required to amend the charter/bylaws and to approve mergers or business combinations.
34. Vote requirements – mergers

- A simple majority vote should be required to approve mergers or business combinations.

35. Written consent
    - Shareholders should be permitted to act by written consent.
36. Special meetings
    - Shareholders should be permitted to call special meetings.
37. Bylaw amendments
    - Management should not be permitted to amend the bylaws without shareholder approval.
38. Capital structure – dual class
    - Common stock entitled to one vote per share is viewed favorably.
39. Capital structure – blank check preferred
    - Declawed preferred stock is viewed favorably.

State of incorporation

40. State of incorporation antitakeover provisions
    - Incorporation in a state without anti-takeover provisions, or opting out of such protections is viewed favorably.
41. Control share acquisition
    - Shares can be denied their voting rights when they contribute to ownership in excess of certain thresholds.
42. Control share cashout
    - Dissident shareholders are given the right to "cash out" of their position in a company at the expense of the shareholder who has taken a control position.
43. Freezeout
    - Investors who surpass a certain ownership threshold in a company are forced to wait for a specified period of time before gaining control of the company.
44. Fair price
    - A requirement that board and shareholder approval are obtained for all takeover bids that do not meet predetermined fair price standards.
45. Stakeholder law
    - Directors are permitted, when taking action, to weigh the interests of constituents other than shareholders in the decision making process.
46. State endorsement of poison pills
    - A seal of approval is lent to the use of poison pills should they be challenged in court.

Ownership

47. Director stock ownership
    - All directors with more than one year of service should own stock.
48. Executive stock ownership guideline
    - Executives should be subject to stock ownership guidelines.
49. Director stock ownership guidelines
    - Directors should be subject to stock ownership guidelines.
50. Officer and director stock ownership levels

- Officers and directors should have a significant ownership position in their company's stock.

51. Mandatory holding period for stock options
    - Officers and directors should hold a meaningful portion of the shares acquired after exercise.
52. Mandatory holding period for restricted stock
    - Officers and directors should hold a meaningful portion of the shares acquired after exercise.

Executive and director compensation

53. Cost of option plans
    - An option-pricing model is used to measure the cost of all new stock-based incentive plans. The cost is compared to an allowable cap that is based upon company-specific factors including industry, market capitalization, performance, and levels of cash compensation. The estimated plan cost is compared to the allowable cap.
54. Option repricing permitted
    - Plan documents should be written to expressively prohibit repricing without prior shareholder approval.
55. Shareholder approval of option plans
    - All stock-based incentive plans should be submitted to shareholders for approval.
56. Compensation committee interlocks
    - No interlocking directors should serve on the compensation committee.
57. Director compensation
    - Directors should receive a portion of their compensation in the form of stock.
58. Option burn rate
    - Burn rates are considered excessive where average annual option grants exceed 2% of outstanding shares over the past three years or exceed one standard deviation from the industry mean.
59. Performance-based compensation
    - Awards should be based upon transparent performance criteria.
60. Option expensing
    - A review of whether companies have pro-actively adopted FAS 123, which is recommendable.

Progressive practices

61. Board performance reviews
    - A policy of conducting annual board performance reviews should be disclosed.
62. Individual director performance reviews
    - A policy of conducting annual board performance reviews should be disclosed.
63. Meetings of outside directors

- A policy specifying that directors should meet without the CEO should be disclosed.

64. CEO succession plan
    - A board-approved CEO succession plan should be in place and evaluated by the directors periodically.
65. Board can hire outside advisors
    - A policy authorizing the board to hire its own advisors should be disclosed.
66. Directors resign upon job changes
    - A policy requiring directors to resign upon a change in job status should be disclosed.

Director education

67. Directors participating in director education programs
    - All board members should participate in director education programs that fulfill criteria accepted by the RiskMetrics.

FEMALE EXECUTIVES AND EARNINGS MANAGEMENT[☆]

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ABSTRACT

Purpose – The purpose of this paper is to examine the association between earnings management and the gender of the firm's executives.
Design/methodology/approach – Panel regressions of discretionary accruals on a set of female executive dummies and firm-specific controls.
Findings – The results provide considerable evidence to suggest that firms with female CFOs are associated with income-decreasing discretionary accruals, thereby implying that female CFOs are following more conservative earnings management strategies.
Research limitations/implications – In general, the findings indicate that gender-based differences in conservatism, risk-aversion, and managerial opportunism may have important implications for financial reporting and corporate governance.
Originality/value – This paper extends prior research by addressing the potential effects of female executives on earnings management. The findings reported in this paper provide novel insights to the empirical financial accounting literature.
Keywords Earnings management, Discretionary accruals, Female executives, Female CEOs, Female CFOs
Paper type Research paper

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1 Introduction

Accounting earnings are perhaps the most widely used measure of firm performance. Given that accounting rules and financial reporting standards provide the executives of a firm with considerable opportunities for earnings management, it is not surprising that increasing attention in financial accounting literature has been devoted to the analysis of earnings management. It has been long acknowledged that firm's executives may have incentives to manipulate earnings in order to maximize firm value and/or their own wealth at the expense of shareholders (see e.g., Holthausen, 1990; Christie and Zimmerman, 1994; Beneish, 2001). Thus, it is widely recognized that the quality of financial reporting may depend on managerial motives and characteristics, and moreover, that the opportunism of the firm's executives tends to reduce earnings quality.

In this paper, we examine the association between earnings management and the gender of the firm's executives. In particular, we focus on the gender of the firm's Chief Executive Officer (CEO) and Chief Financial Officer (CFO), and attempt to assess whether and how these female executives affect the quality of reported financial information. The underlying assumption in our empirical analysis is that women and men may act and behave somewhat differently, and that the gender-based differences, for instance, in cognitive functioning, decision-making, and conservatism may have important implications for the quality of financial reporting.

This paper builds upon three distinct lines of research. First, a vast body of accounting literature indicates that earnings management is affected by the characteristics and incentives of the firm's executives (see e.g., Cheng and Warfield, 2005; Davidson et al., 2007; Meek et al., 2007; Jiang et al., 2008; Matsunaga and Yeung, 2008). Nevertheless, to the best of our knowledge, the role of executive gender has so far been ignored in this context. Our analysis is further motivated by the recent corporate finance literature that examines how the gender of the firm's executives and directors affects corporate governance and the firm's financial performance (see e.g., Carter et al., 2003; Erhardt et al., 2003; Farrell and Hersch, 2005; Rose, 2007; Campbell and Minguez-Vera, 2008; Adams and Ferreira, 2009). In brief, these studies suggest that female representation may enhance the functioning and efficiency of corporate boards and committees and, more generally, that executive gender may affect managerial behavior. We aim to extend this strand of literature by addressing the potential effects of female executives on financial reporting. Finally, it has been long acknowledged in cognitive psychology and management literature that significant gender differences exist e.g. in conservatism, risk averseness, and ethical behavior (see e.g., Powell and

Ansic, 1997; Jianakoplos and Bernasek, 1998; Byrnes et al. 1999; Schubert, 2006). In this paper, we presume that the documented behavioral differences between women and men may influence the firm's financial reporting practices.

The results of our empirical analysis indicate that the gender of the firm's executives may affect the quality of financial reporting. In particular, using a sample of S&P 500 firms with 1955 firm-year observations, we run several alternative panel regressions of earnings quality on a set of female executive dummies and firm-specific control variables. These regressions provide considerable evidence to suggest that firms with female CFOs are associated with income-decreasing discretionary accruals. These more negative accruals imply that female CFOs are following more conservative financial reporting strategies. This finding is broadly consistent with the literature on gender differences in conservatism and risk-aversion. We find, however, no relationship between earnings management and the gender of the firm's CEO. Thus, consistent with prior research (Geiger and North, 2006; Jiang et al., 2008; Matsunaga and Yeung, 2008), our results provide evidence about the significant influence of CFOs on the quality of accounting information.

The remainder of the paper is organized as follows. Section 2 briefly reviews the literature on female executives and earnings management, and introduces our research hypothesis. Section 3 represents the methodology used in the analysis, while Section 4 describes the data used in the empirical tests. Our empirical findings regarding the effects of executive gender on earnings management are reported in Section 5. Finally, the last section provides concluding remarks.

2 Related literature and hypothesis development

2.1 Female executives, corporate governance, and firm performance

Psychology and management literature have long acknowledged that significant gender-based differences exist, for instance, in leadership styles, communicative skills, conservatism, risk averseness, and decision-making. Given these differences and their potential implications for corporate governance, the issue of gender diversity has begun to receive increasing attention in corporate finance and corporate governance literature over the past few years. Several studies have recently focused on the effects that female executives and directors may potentially have on the firm's financial performance and market value. In this paper, we attempt to extend this literature by addressing the effects of female executives on the quality of accounting information.

Carter et al. (2003), Erhardt et al. (2003), Farrell and Hersch (2005), Rose (2007), Campbell and Minguez-Vera (2008), and Adams and Ferreira (2009) examine the effects of female executives and directors on the firm's financial performance and market value. Erhardt et al. (2003) use a sample of large U.S. firms to examine the relationship between board diversity and financial performance, and document that the diversity of the board is positively associated with profitability. They argue that gender diversity may lead to a wider knowledge base, which may create a competitive advantage compared to companies with non-diversified boards. In a similar vein, Carter et al. (2003), Farrell and Hersch (2005), and Campbell and Minguez-Vera (2008) document that gender diversity is associated with improved financial performance and higher firm value.

Some studies, however, suggest that gender diversity does not necessarily improve firm performance. Watson (2002) shows that after controlling for the industry and age of the firm, there are no significant differences between male- and female-controlled firms. Nevertheless, he also finds some evidence to suggest that female-controlled firms may outperform male-controlled firms. Using Danish data, Rose (2007) reports that there is no significant link between firm performance and female board representation. Adams and Ferreira (2009) document that the average effect of female directors on firm performance is negative. Their findings, however, also indicate that gender diversity may improve financial performance in companies with weak corporate governance.

Wolfers (2006) examines the stock market performance of large female-headed U.S. firms. Using data on S&P 1500 firms, he finds no systematic differences in stock returns for firms with female or male CEOs. Francoeur et al. (2008), in contrast, document that firms with female executives may generate positive abnormal stock returns when they are operating in complex environments. Adams et al. (2009) focus on the stock market performance of firms with newly appointed CEOs, and document that the gender of the CEO does not affect the post-appointment performance. Interestingly, their findings also suggest that the pre-appointment stock returns are higher for the firms that appoint female CEOs, and thereby indicate that female executives do not appear to self-select into precarious positions.

Brennan and McCafferty (1997), Fondas and Sassalos (2000), Eagly and Carli (2003), and Huse and Solberg (2006) attempt to explicate why female executives and directors may improve firm performance and corporate governance. Brennan and McCafferty (1997) suggest that females have a better understanding of consumer behavior, the needs of the customers, and the opportunities for companies in meeting those needs. Fondas and Sassalos (2000) presume that diverse boards

are more effective than homogenous boards. They argue that women may improve decision-making by bringing different perspectives and opinions into a discussion. Eagly and Carli (2003) suggest that the leadership style of women is more effective under contemporary business environment. Furthermore, they note that due to the glass ceiling phenomenon, women have to demonstrate extra competence in order to reach managerial positions and corporate boards. Finally, according to Huse and Solberg (2006), female representation may improve board behavior and effectiveness simply because the women on corporate boards tend to be better prepared for the board meetings than men.

A considerable body of economic psychology literature suggests that females are more conservative and risk averse than men (see e.g., Johnson and Powell, 1994; Powell and Ansic, 1997; Jianakoplos and Bernasek, 1998; Sunden and Surette, 1998; Byrnes et al. 1999; Schubert, 2006). According to Bernardi and Arnold (1997), female executives and directors may have higher moral standards than their male counterparts. Moreover, MacLeod Heminway (2007) argues that women are more trustworthy than men, and are thereby less likely to manipulate corporate financial and other disclosures. In this paper, we postulate that the documented gender differences especially in conservatism, risk averseness, and ethical behavior may influence the quality of financial reporting.

2.2 Earnings management

Given that accounting earnings are perhaps the most widely used measure of firm performance, it is not surprising that a vast body of empirical financial accounting literature has focused on factors that may potentially affect earnings management. In general, the existing literature has documented that financial reporting is of higher quality when firms have stronger corporate governance mechanisms or when there is a greater demand for high-quality financial reporting (see e.g., Ball et al., 2000; Klein, 2002; Xie et al., 2003; Ebrahim, 2007; Ball and Shivakumar, 2008).

The relationship between different corporate governance factors and earnings management has been recently examined e.g in Becker et al. (1998), Klein (2002), Balsam et al. (2003), Xie et al. (2003), Velury and Jenkins (2006), Ebrahim (2007), and Jenkins and Velury (2008). Becker et al. (1998) investigate whether auditor quality has an effect on earnings management, and find that the clients of the Big Six auditors have significantly lower discretionary accruals than the clients of non-Big Six auditors. Similar findings on the constraining effects of auditors on earnings management are documented e.g. in Balsam et al. (2003), and Jenkins and Velury (2008). Klein (2002), Xie et al. (2003) and Ebrahim

(2007) examine the relationship between earnings management and the characteristics of the board of directors and audit committees. Their results consistently indicate that earnings management is negatively related to board and audit committee independence and meeting activity. Velury and Jenkins (2006) document that institutional ownership improves the quality of financial reporting.

Perhaps most related to the current study, Cheng and Warfield (2005), Geiger and North (2006), Davidson et al. (2007), Meek et al. (2007), Matsunaga and Yeung (2008), and Jiang et al. (2008) focus on the effects of executive characteristics and incentives on earnings management. Cheng and Warfield (2005), Meek et al. (2007) and Jiang et al. (2008) examine the relation between managers' stock-based compensation and earnings management, and document that executives with high equity incentives are more likely to engage in earnings management. In addition, Jiang et al. (2008) also show that earnings management is more affected by the CFOs' than the CEOs' equity incentives, thus implying that the CFOs have more influence on earnings management. Davidson et al. (2007) examine whether the age and career horizon of the firm's executives affect earnings management. Their findings suggest that firms with older CEOs, who are nearing the retirement age, are associated with aggressive income-increasing earnings management.

Geiger and North (2006) examine the control of CFOs on the discretionary accruals in reported earnings by focusing on the appointments of new CFOs. Interestingly, they find that discretionary accruals decrease significantly after the appointment of a new CFO, thereby providing empirical evidence on the influence of CFOs on earnings management. Finally, Matsunaga and Yeung (2008) investigate whether the firm's disclosure policies and financial reporting are different in firms that have a former CFO acting as the CEO, and document that the firms controlled by ex-CFOs are associated with income-decreasing discretionary accruals, or more conservative accounting practices.

2.3 Hypothesis

The existing accounting literature shows that the quality of financial reporting depends on managerial motives and incentives, and moreover, that the opportunism of the firm's executives affects earnings management. Therefore, managerial characteristics are acknowledged as important determinants of earnings quality. Further, recent corporate finance literature indicates that the gender of the firm's executives and directors may affect corporate governance and the firm's financial performance. These findings suggest that executive gender may affect managerial behavior. In this paper, we presume that the documented gender-based differences

in conservatism, risk averseness, and ethical behavior may have important implications for earnings management. Thus, we examine the following hypothesis:

> *H1: Firms with female executives are associated with more conservative financial reporting.*

3 Methodology

The association between earnings management and the gender of the firm's executives is examined with cross-sectional panel regressions. As the first step of the analysis, we need to estimate the quality of reported earnings. Following previous studies, we assess the extent of earnings management by estimating the discretionary accruals in reported earnings (see e.g., Becker et al., 1998; Xie et al., 2003; Francis et al., 2005; Geiger and North, 2006; Davidson et al., 2007; Meek et al., 2007). Since the estimation of discretionary accruals is model-dependent, we employ two alternative models of expected accruals to quantify earnings management. The first model used in this study is the accruals measure proposed by Dechow and Dichev (2002) (DD model), and the second model is the modified version of the Dechow-Dichev model developed by McNichols (2002) (modified DD model). The difference between these two models is that the modified DD model includes two additional variables into the original DD equation in order to increase the explanatory power of the cross-sectional regression.

Accruals are usually considered as temporary adjustments that resolve timing problems in the underlying cash flows at the cost of making assumptions and estimates. Dechow and Dichev (2002) argue that the quality of accruals and earnings is decreasing in the magnitude of estimation error in accruals. They derive an empirical measure of accruals quality as the residuals from regressions of changes in working capital on past, present, and future operating cash flows. Thus, the Dechow-Dichev model to estimate the extent of earnings management is given by:

$$(1) \qquad ACC_{j,t} = \alpha + \beta_1 CF_{j,t-1} + \beta_2 CF_{j,t} + \beta_3 CF_{j,t+1} + \varepsilon_{j,t}$$

where $ACC_{j,t}$ denotes total current accruals for firm j at time t, and is calculated as [ACC = Δcurrent assets – Δcurrent liabilities – Δcash + Δdebt in current liabilities], Δ is the change in a given accounting figure from year t–1 to year t, CF denotes operating cash flow for firm j at time t, which is calculated as [CF = net income before extraordinary items – total accruals], and total accruals is equal to total current accruals minus depreciation and amortization expense. The residual

term of the regression is, by definition, the difference between the amount accrued and the amount realized. Dechow and Dichev (2002) define discretionary accruals as the magnitude of these estimation errors.

McNichols' (2002) modified version of the Dechow-Dichev model simply augments the original model with the change in sales revenue and property, plant, and equipment as additional independent variables. McNichols (2002) shows that by adding these two variables into the DD model, the explanatory power of the cross-sectional regression increases significantly, thereby reducing the measurement error in discretionary accruals. The modified Dechow-Dichev equation to estimate discretionary accruals is given by:

$$ACC_{j,t} = \alpha + \beta_1 CF_{j,t-1} + \beta_2 CF_{j,t} + \beta_3 CF_{j,t+1} + \beta_4 \Delta SALES_{j,t} + \beta_5 PPE_{j,t} + \varepsilon_{j,t} \quad (2)$$

where $\Delta SALES$ denotes change in sales from year t–1 to year t, and PPE is the gross value of property, plant, and equipment at the end of year t. Again, the residual term of Equation (2) is used to quantify the extent of earnings management. All the variables used in both accruals models are scaled by the average of total assets between year t–1 and t.

After the estimation of discretionary accruals, we examine the association between earnings management and the gender of the firm's executives with the following cross-sectional panel regression:

$$DA_{j,t} = \alpha_0 + \beta_1 FEMALE_{j,t} + \beta_2 LEV_{j,t} + \beta_3 LOSS_{j,t} + \beta_4 MB_{j,t} + \beta_5 SGROWTH_{j,t} + \beta_6 SIZE_{j,t} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2003}^{2006} \omega_y YEAR_j^y + \varepsilon_{j,t} \quad (3)$$

where $DA_{j,t}$ denotes discretionary accruals for firm j in year t. The test variable in our regression specification is *FEMALE*, which is defined as one of the following alternative female executive dummies: *FCEO* equals one if the CEO of the firm is female, *FCFO* equals one if the firm has a female CFO, and *FEXEC* is set to one if either the CEO or the CFO is female. In addition to using the female dummy variables one by one, we also estimate a model in which the *FCEO* and *FCFO* dummies are used simultaneously. Thus, we estimate four different regression specifications, where the included female variables are: (i) *FCEO*, (ii) *FCFO*, (iii) *FEXEC*, and (iv) *FCEO* and *FCFO*.

Following prior literature, we include several control variables in our model. $LEV_{j,t}$ in Equation (3) is financial leverage for firm j in year t, measured as total liabilities divided by total assets, $LOSS_{j,t}$ is a dummy variable that equals one if the net income in year t is negative, $MB_{j,t}$ is the market-to-book ratio, measured as the ratio of market value to book value of equity, $SGROWTH_{j,t}$ is the sales growth rate, and $SIZE_{j,t}$ is the natural logarithm of total assets.

Previous studies indicate that the above firm characteristics are useful predictors of earnings management (see e.g., Cheng and Warfield, 2005; Francis et al., 2005; Geiger and North, 2006; Meek et al., 2007). *LEV* and *LOSS* are proxies for the financial condition of the firm. According to DeAngelo et al. (1994), troubled companies may have strong incentives to use income-decreasing, that is, more negative accruals. Moreover, accruals models may overestimate the accruals for poorly performing firms (see e.g., Dechow et al., 1995). Thus, we expect a negative association between these variables and discretionary accruals. *MB* and *SGROWTH* are proxies for growth. High-growth firms are typically less transparent and may have greater opportunities for opportunistic earnings management (see e.g., Geiger and North, 2006; Meek et al., 2007). Based on prior research, we expect a positive association between these variables and accruals. Finally, previous studies show that *SIZE* is negatively associated with earnings management. Larger firms may have stronger governance structures, lower information asymmetries, and are generally subject to greater monitoring by auditors and financial analysts (see e.g., Meek et al., 2007). Moreover, Becker et al. (1998) argue that firm size may also surrogate for numerous omitted variables.

Given that the extent of earnings management may differ over time and across industries, we control for the potential industry and time effects with dummy variables. SIC_j^k in Equation (3) is a dummy variable according to industry classification (SIC) codes and $YEAR_j^k$ is a dummy variable that indicates fiscal years. Hence, throughout the panel regressions, we use a two-way fixed-effects specification, which allows for a different intercept for each industry in the sample and also controls for the possible change in earnings management over time. Moreover, in order to account for contemporaneous correlation and different variances in the disturbances of each cross-section, we employ the White cross-section robust covariances in the regressions.

4 Data

The sample used in the empirical analysis consists of the S&P 500 firms as of July 2007. Following prior research, we exclude financial institutions (SIC codes 6000–6999) from the sample due to their special regulatory environment. Firms with insufficient financial data are also excluded. This leaves us with a sample of 391 firms, which are classified by industry in Table 1. The data used in our analysis cover the fiscal years 2003-2007, and contain 1955 firm-year observations.

Table 1. Number of female executives by industries.

		Firms in	Firms with female CEO					Firms with female CFO				
SIC code	Industry description	industry	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
1000-1700	Mining and construction	28	0	0	0	1	0	1	1	1	3	5
2000-3900	Manufacturing	208	4	7	6	7	7	10	12	13	12	12
4000-4900	Transportation, communications, electric, gas, and sanitary services	55	0	1	1	0	0	4	4	8	6	3
5000-8900	Trade and services	100	3	3	3	5	4	12	13	15	16	12
	Total	391	7	11	10	13	11	27	30	37	37	32
	% of females		1.79%	2.81%	2.56%	3.32%	2.81%	6.91%	7.67%	9.46%	9.46%	8.18%

The gender data used in the analysis are obtained from Audit Analytics database. Since the data available from the database were partly insufficient to identify the genders of executives for all firms, we have completed our gender data by gathering information from the annual reports of the companies. For each firm, we determine the gender of the firm's CEO and CFO. As can be noted from Table 1, the number of female executives has slightly increased during the sample period. Despite the recent development, women are still relatively underrepresented in the top management. Only approximately 3 % of the sample firms have a female CEO, while about 8 % of the CFOs are female. This severe underrepresentation of women among top executives has been widely documented and analyzed in recent literature (see e.g., Adams et al., 2007; Wanzenried, 2008).

As discussed in the previous section, we need several financial statement items to measure the discretionary accruals. In addition, following previous studies on earnings management, we employ financial leverage, the level of net income, market-to-book ratio, sales growth rate, and firm size as control variables in our empirical analysis. All these financial statement data are obtained from Thomson Financial Worldscope.

Table 2 reports descriptive statistics for the sample of S&P 500 firms. Panel A presents the summary statistics for all firms and Panel B for the firms with female

executives. As can be noted from Table 2, the firms with a female CEO seem to be smaller than the sample firms on average as measured by the log of total assets, whereas the firms with female CFOs seem not to differ in size from the whole sample mean. Interestingly, the accruals based on the modified DD model suggest that firms with female executives are, on average, associated with negative, earnings-decreasing discretionary accruals. This would suggest that female executives are utilizing more conservative accounting practices.

Table 3 reports the pairwise correlations for the variables used in the regression. As expected, the measures for discretionary accruals based on the DD model (*DA1*) and the modified DD model (*DA2*) are strongly positively correlated with each other. Among the control variables, the strongest correlations are observed between leverage and size (0.319), and between leverage and sales growth (-0.206). Regarding the female executive variables, Table 3 shows that the *FCEO* and *FCFO* dummies exhibit a modest positive correlation (0.014), and naturally, both of these dummies appear strongly positively correlated with the composite dummy *FEXEC*.

Table 2. Descriptive statistics.

Panel A reports the summary statistics for the sample of 1955 yearly observations for 391 S&P 500 firms. Financial institutions (SIC codes 6000–6900) and firms with inadequate data are excluded. Panel B reports the statistics for the firms with female executives.

Panel A. Summary statistics for all firms (n=1955 observations)					
Variable	Mean	Median	Std.dev.	Max	Min
DD model	0.004	0.002	0.034	0.294	-0.190
Modified DD model	0.000	0.000	0.032	0.246	-0.186
Leverage	0.550	0.562	0.194	1.591	0.012
Loss	0.075	0.000	0.264	1.000	0.000
Market-to-book	3.863	3.100	3.798	52.920	0.540
Sales growth	12.818	9.674	17.396	132.793	-56.583
Size	9.148	9.126	1.227	13.587	3.286
Panel B. Summary statistics for firms with female executives					
Variable					
Firms with female CEO (n=52 observations)					
DD model	0.000	-0.003	0.035	0.082	-0.136
Modified DD model	-0.002	-0.005	0.034	0.072	-0.145
Leverage	0.540	0.599	0.237	0.862	0.039
Loss	0.116	0.000	0.324	1.000	0.000
Market-to-book	6.160	4.460	5.257	23.830	1.460
Sales growth	11.914	7.403	16.351	78.329	-15.199
Size	8.781	9.396	1.701	10.452	3.400
Firms with female CFO (n=163 observations)					
DD model	0.001	0.000	0.036	0.125	-0.157
Modified DD model	-0.003	-0.002	0.033	0.089	-0.145
Leverage	0.524	0.531	0.158	0.909	0.163
Loss	0.058	0.000	0.235	1.000	0.000
Market-to-book	3.693	2.760	3.529	31.400	0.600
Sales growth	13.208	8.384	21.809	119.957	-56.583
Size	9.127	9.171	1.193	12.148	6.773

Table 3. Correlations.

The table reports pairwise correlations for the variables used in the regressions. (i) The dependent variables *DA1* and *DA2* are the residual terms from the regressions for accruals quality. (ii) Firm-specific control variables are defined as follows: *LEV* is total liabilities divided by total assets, *LOSS* is a dummy variable which is set to one if the net income is negative, *MB* is a comparison of the share price to the book value per share, *SGROWTH* is the sales growth rate, and *SIZE* is the natural log of total assets. (iii) The binary variables for executive gender are defined as follows: *FCEO* equals one if the CEO of the company is female, *FCFO* is set to one if the firm has female CFO, and *FEXEC* is set to one if either the CEO or the CFO is female.

Variable	DA2	LEV	LOSS	MB	SGROWTH	SIZE	FCEO	FCFO	FEXEC
DA1	0.956	-0.104	-0.251	-0.009	0.144	-0.087	-0.013	-0.042	-0.038
DA2		-0.159	-0.319	0.047	0.044	-0.102	-0.007	-0.043	-0.035
LEV			0.080	0.054	-0.206	0.319	0.025	-0.005	0.008
LOSS				-0.106	-0.096	-0.155	0.050	0.011	0.032
MB					0.067	-0.110	0.091	-0.022	0.024
SGROWTH						-0.063	0.051	-0.001	0.025
SIZE							-0.060	0.003	-0.029
FCEO								0.014	0.510
FCFO									0.901

5 Results

5.1 Regressions results

The estimation results of our fixed-effects panel regressions are reported in Table 4. The estimates are presented in two panels: Panel A reports the results for the regressions where the discretionary accruals are determined with the Dechow-Dichev model, while the estimates in Panel B are based on the modified Dechow-Dichev model. As can be noted from Table 4, the *F*-statistic is significant at the 1 % level in each of our eight regression specifications, and the control variables are mostly statistically highly significant. The adjusted R^2s of the estimated models are relatively low, varying between 8.8 % and 9.7 % for the DD model regressions and between 13.0 % and 14.0 % for the modified DD model regressions. Nevertheless, it should be noted that low R^2s are typical in this type of accruals regressions (see e.g., Xie et al., 2003; Geiger and North, 2006; Davidson et al., 2007; Meek et al., 2007; Jenkins and Velury, 2008).

Table 4. Regression results.

The table reports the estimates of five alternative versions of the following two-way fixed-effects regression model:

$$DA_{j,t} = \alpha_0 + \beta_1 FEMALE_{j,t} + \beta_2 LEV_{j,t} + \beta_3 LOSS_{j,t} + \beta_4 MB_{j,t} + \beta_5 SGROWTH_{j,t} + \beta_6 SIZE_{j,t} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2003}^{2006} \omega_y YEAR_j^y + \varepsilon_{j,t}$$

where $DA_{j,t}$ denotes the residual term from the employed accruals model for firm j in year t, $LEV_{j,t}$ is financial leverage, $LOSS_{j,t}$ is a dummy variable that equals one if the net income of firm j during the fiscal year t is negative, $MB_{j,t}$ is market-to-book ratio, $SGROWTH_{j,t}$ is the sales growth rate, $SIZE_{j,t}$ is the natural logarithm of total assets, SIC_j^k is a dummy variable according to industry classification (SIC) codes, and $YEAR_j^k$ is a dummy variable that indicates fiscal years. The dummy variables for executive gender are defined as follows: *FCEO* is one if the CEO of the company is female, *FCFO* equals one if the firm has a female CFO, and *FEXEC* is set to one if either the CEO or the CFO is female. *t*-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A. Accruals based on the DD model

Variable	Exp. sign	Model 1	Model 2	Model 3	Model 4
Constant		0.035 ***	0.038 ***	0.037 ***	0.037 ***
		(5.65)	(9.01)	(7.45)	(6.19)
Female executive variables:					
FCEO	-	-0.002			-0.002
		(-0.47)			(-0.50)
FCFO	-		-0.004 **		-0.007 ***
			(-2.24)		(-3.28)
FEXEC	-			-0.003 **	
				(-2.14)	
Control variables:					
LEV	-	-0.002	-0.001	-0.003	-0.004
		(-0.71)	(-0.53)	(-0.81)	(-0.98)
LOSS	-	-0.033 ***	-0.032 ***	-0.032 ***	-0.033 ***
		(-7.25)	(-8.06)	(-7.46)	(-7.06)
MB	+	0.000 **	-0.001 ***	0.000 ***	0.000 ***
		(-2.35)	(-8.52)	(-4.93)	(-3.69)
SGROWTH	+	0.000 ***	0.000 ***	0.000 ***	0.000 ***
		(2.74)	(4.80)	(3.10)	(3.16)
SIZE	-	-0.003 ***	-0.003 ***	-0.003 ***	-0.003 ***
		(-3.93)	(-6.23)	(-4.72)	(-3.96)
Industry and year effects:					
SIC1	?	0.011	0.013 *	0.011	0.011
		(1.61)	(1.75)	(1.61)	(1.54)
SIC2	?	0.000	0.000	0.000	0.000
		(-0.06)	(-0.06)	(-0.41)	(-0.20)
SIC3	?	-0.007 ***	-0.007 ***	-0.008 ***	-0.007 ***
		(-5.05)	(-4.76)	(-7.03)	(-5.17)
YEAR03	?	0.001 ***	0.002 ***	0.002 ***	0.002 ***
		(2.84)	(5.48)	(4.08)	(3.86)
YEAR04	?	0.001 **	0.002 ***	0.002 ***	0.002 ***
		(2.18)	(6.15)	(5.34)	(4.01)
YEAR05	?	-0.001 *	0.000 **	0.000	-0.001 **
		(-1.91)	(-2.15)	(-0.75)	(-2.10)
YEAR06	?	-0.002 ***	-0.002 ***	-0.002 ***	-0.002 ***
		(-7.57)	(-16.39)	(-10.13)	(-7.34)
Adjusted R^2		0.094	0.097	0.088	0.095
F-stat.		13.424 ***	13.720 ***	11.820 ***	11.578 ***

Table 4 cont. Regression results.

Panel B. Accruals based on the modified DD model

Variable	Exp. sign	Model 1	Model 2	Model 3	Model 4
Constant		0.035 ***	0.040 ***	0.037 ***	0.038 ***
		(6.33)	(9.84)	(7.45)	(6.93)
Female executive variables:					
FCEO	-	-0.001			-0.002
		(-0.30)			(-0.51)
FCFO	-		-0.004 **		-0.007 ***
			(-2.37)		(-3.78)
FEXEC	-			-0.003 **	
				(-2.09)	
Control variables:					
LEV	-	-0.015 ***	-0.016 ***	-0.017 ***	-0.017 ***
		(-5.15)	(-5.07)	(-4.72)	(-4.21)
LOSS	-	-0.040 ***	-0.039 ***	-0.038 ***	-0.040 ***
		(-8.85)	(-10.57)	(-9.56)	(-8.84)
MB	+	0.000	0.000	0.000	0.000
		(0.67)	(0.13)	(0.54)	(0.11)
SGROWTH	+	0.000 *	0.000 **	0.000 ***	0.000 *
		(-1.72)	(-2.02)	(-2.59)	(-1.76)
SIZE	-	-0.003 ***	-0.003 ***	-0.002 ***	0.003 ***
		(-4.18)	(-5.90)	(-4.48)	(-3.71)
Industry and year effects:					
SIC1	?	0.013 **	0.014 **	0.013 **	0.014 **
		(2.12)	(2.13)	(2.02)	(2.00)
SIC2	?	0.000	-0.001	-0.001	-0.001
		(-0.09)	(-0.43)	(-0.53)	(-0.35)
SIC3	?	-0.010 ***	-0.010 ***	-0.012 ***	-0.100 ***
		(-5.63)	(-6.45)	(-7.46)	(-6.72)
YEAR03	?	0.002 ***	0.002 ***	0.003 ***	0.002 ***
		(4.66)	(5.84)	(7.12)	(4.38)
YEAR04	?	0.000	0.001 *	0.001 **	0.001
		(-0.12)	(1.81)	(2.41)	(1.51)
YEAR05	?	-0.001 **	0.000	0.000	0.000
		(-2.05)	(-0.33)	(0.60)	(-1.08)
YEAR06	?	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***
		(-5.51)	(-7.79)	(-7.48)	(-4.05)
Adjusted R^2		0.139	0.136	0.130	0.140
F-stat.		20.009 ***	19.525 ***	17.652 ***	17.195 ***

The variables of interest in our regressions are the female executive dummies. As can be seen from Table 4, the coefficient estimates for the female dummies are consistently negative in all eight regression specifications, thereby suggesting that firms with female executives may be associated with income-decreasing discretionary accruals. However, we do not observe any significant association between the gender of the firm's CEO and earnings management, as the estimated negative

coefficients for the *FCEO* dummy appear statistically insignificant in the regressions. Nonetheless, the lack of significance may simply be related to the extremely low number of female CEOs in our sample.

The estimated coefficients for the *FCFO* and *FEXEC* dummy variables are statistically highly significant in all regression specifications. In both panels, the coefficients for the *FCFO* dummy are negative and statistically significant at the 5 % level in Model 2 and at the 1 % level in Model 4, while the estimated coefficients for the *FEXEC* dummy are negative and significant at the 5 % level. Thus, our estimations provide considerable evidence to suggest that firms with female CFOs are following more conservative financial reporting strategies. In general, the regression results in Panel A are largely consistent with the ones reported in Panel B, and thereby indicate that our findings are not dependent on the model used to measure discretionary accruals.

Overall, the results presented in Table 4 provide support for our research hypothesis by suggesting that the gender of the firm's executives may affect the quality of financial reporting. In particular, our regression estimates indicate that the firms with female CFOs are following more conservative financial reporting policies than the firms with male CFOs. This finding is broadly consistent with the prior literature on gender differences in conservatism and risk aversion (e.g., Johnson and Powell, 1994; Powell and Ansic, 1997; Jianakoplos and Bernasek, 1998; Byrnes et al., 1999; Schubert, 2006; Watson and McNaughton, 2007). Given these gender differences, it is reasonable to argue that female CFOs may inherently be more prone to avoid opportunistic income-increasing earnings management. Although the estimated coefficients for female CEOs are also consistently negative, the CEOs seem not to have any statistically significant effect on earnings management. Thus, consistent with Geiger and North (2006) and Jiang et al. (2008), our findings provide further empirical evidence on the significant influence of CFOs on the quality of financial reporting.

5.2 Robustness checks

The regressions in the previous section indicate that firms with female CFOs are associated with conservative, income-decreasing financial reporting. In the following, we attempt to examine the robustness of our findings by conducting several additional tests. First, in order to test that our results are not caused by a few outliers, we winsorize the discretionary accruals measures and the control variables at the 0.5% and 99.5% levels and then re-estimate all the models represented in Table 4. The estimation results (not tabulated) are mainly consistent with the regression results based on the original data. Some of variables lose a part of their

explanatory power in comparison with the main results, but the signs of the estimated coefficients remain the same. More importantly, consistent with Table 4, our estimations based on the winsorized data suggest that the gender of the CFO affects earnings quality. The estimated coefficients for the *FCFO* dummy are negative and statistically highly significant in three regression specifications (M4 with the DD model and M2 and M4 with the modified DD model). In general, the regressions with the winsorized data indicate that our findings are not driven by extreme observations or few outliers.

Prior literature indicates that the characteristics of the board of directors and audit committees may affect earnings management. Therefore, in order to alleviate the correlated omitted variable problem, we introduce board size and independence and audit committee size and independence as additional control variables in the regressions. Again, the estimation results (not tabulated) are mainly consistent with Table 4. The coefficient estimates for the female executive dummies are consistently negative, and statistically highly significant for the *FCFO* dummy variable in all four regression specifications. Thus, these additional estimations provide further evidence to suggest that firms with female CFOs are associated with more conservative financial reporting strategies.

Furthermore, we attempt to examine whether our empirical findings are induced by firm-size effects. We split the sample into small firms and large firms, and re-estimate all the regressions (not tabulated). The results for large firms are in line with the estimates for the whole sample presented in Table 4. The estimates for the *FCFO* dummy are negative and statistically highly significant in all regression specifications. However, in the subsample of small firms, the coefficient for the female CFO dummy is statistically significant only in Model 4 with the discretionary accruals based on the modified DD model. The amount of female CFOs in both groups is almost equivalent, so the difference in the number of female CFOs does not explain the mostly insignificant estimates in the small firm sample. However, given the rather small number of female observations in both subgroups, our regression results may lack significance simply because the sample size is insufficient for reliable estimations. Nevertheless, our main findings seem not to be particularly dependent on firm size.

As discussed above, we have used two-way fixed-effects regression specifications with the White cross-section robust covariances. To examine whether our results depend on the panel estimation specifications, we also run the same regressions with the ordinary coefficient covariance method and with no fixed-effects specifications. With these settings, we get generally similar results (not tabulated) as presented in Table 4. The coefficients for the female CFO variable are negative

throughout the regressions, although statistically significant only in two out of four regressions (M4 with the DD model and M4 with the modified DD model).

Finally, although we have used industry dummies in the regressions to control for potential industry effects, we attempt to further ensure that our empirical findings are not driven by industry-related factors. Therefore, we compare the average discretionary accruals for firms with female CFOs to average discretionary accruals for other firms within each industry. This comparison (not tabulated) indicates that the accruals for firms with female CFOs are consistently smaller in each industry group, thereby suggesting that our main findings are not induced by industry effects. However, the differences in average accruals are statistically insignificant.

5.3 Limitations

We acknowledge several limitations in our empirical analysis. First, our sample consists of the S&P 500 firms, and is thereby limited to very large publicly traded U.S. firms. Our empirical findings are not necessarily applicable to smaller firms, or to non-U.S. firms. Moreover, it should be noted that the low number of female executives in the S&P 500 firms may reduce the statistical power of our tests. Second, due to the fact that our executive gender data are hand-collected, we were forced to limit the sample to five fiscal years. Thus, we are unable to analyze the relation between executive gender and earnings management through time in different business cycles. Given that the sample period is characterized by the strong growth of the U.S. economy, it is possible that the income-decreasing accruals of firms with female executives are actually a reflection of "cookie-jar" reserve accounting. Third, due to the short sample period and the low number of female executives, we are unable to examine whether the appointment of female executives would improve earnings quality. Fourth, we recognize that the applied accruals models may not provide perfect estimates of the extent of earnings management. Finally, it should be noted that our findings may suffer from a self-selection bias. Although we have attempted to control for industry and size effects, it is possible that we have omitted some correlated variables, or that certain firm characteristics simultaneously affect the choice of female executives and earnings management.

6 Conclusions

In this paper, we examine the association between earnings management and the gender of the firm's executives. We focus on the gender of the firm's Chief Exec-

utive Officer (CEO) and Chief Financial Officer (CFO), and attempt to assess whether and how these female executives affect the quality of financial reporting. Our empirical analysis is motivated by the documented gender differences in conservatism, risk averseness, and ethical behavior. Moreover, the existing corporate finance literature suggests that executive gender may affect managerial behavior, while a vast body of accounting literature shows that the quality of financial reporting depends on managerial motives and incentives. Thus, we hypothesize that the gender of the firm's executives may potentially have implications for earnings management.

The results of our empirical analysis indicate that the gender of the firm's executives may affect the quality of reported earnings. In particular, using a sample of S&P 500 firms with 1955 firm-year observations, we run several alternative panel regressions of earnings quality on a set of female executive dummies and firm-specific control variables. These regressions provide considerable evidence to suggest that firms with female CFOs are associated with income-decreasing discretionary accruals, thereby implying that female CFOs are following more conservative financial reporting strategies. This finding is broadly consistent with the existing literature on gender differences in conservatism and risk aversion. We find, however, no relationship between earnings management and the gender of the firm's CEO. Thus, consistent with prior research, our findings provide evidence about the significant influence of CFOs on earnings management activities. In general, the empirical findings reported in this paper demonstrate that gender-based differences, for instance, in conservatism, risk-aversion, and managerial opportunism may have important implications for the quality of reported financial information.

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EXECUTIVE TURNOVER, GENDER, AND EARNINGS MANAGEMENT[☆]

ABSTRACT

This paper examines the relationship between the Chief Financial Officer (CFO) turnover and earnings management. Based on cross-sectional panel regressions on a three-year sample of CFO changes in the S&P 1500 firms, the following findings are reported: i) CFO turnover decreases earnings management. ii) Discretionary accruals are negatively influenced when a male CFO is replaced by a female. iii) Earnings management becomes more income-increasing if the outgoing CFO is a female and the incoming male, and in the case of male-male CFO changes. Overall, these results indicate that the firms who hire a female CFO after a male tend to convert towards higher quality financial reporting practices.

Keywords: earnings management, executive turnover, CFO turnover, gender-based differences

1 Introduction

The importance of Chief Financial Officers (CFOs) in firm management has gained considerable attention in the recent corporate finance literature. The numerous accounting scandals have increased the significance and demand of reliable and accurate financial information, which often is mainly for the CFOs to provide. This is noted also in the legislation, as the Sarbanes-Oxley Act of 2002 sets both the Chief Executive Officers (CEOs) and CFOs in a personal responsibility on the accuracy and completeness of the financial information provided by the company (Sarbanes-Oxley Act, 2002).

Majority of the earlier studies considering the executive's influence on financial reporting focus on examining the CEOs. However, for example Jiang, Petroni, and Wang (2010) suggest that, in fact, the CFOs are the executives with the most control power on the company's financial reporting and, therefore, their impact on the reported financial information should be more thoroughly examined. Thus, the purpose of this paper is to examine the effects of CFO replacements on earn-

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ings management. In particular, it is of interest to study whether the genders of the incoming and outgoing CFOs have an influence on financial reporting practices.

This study contributes to the earlier literature in fields of corporate governance, earnings management, and executive gender by assessing whether and how the CFO change and incoming and outgoing executive genders influence the firm's earnings reporting practices. Moreover, studying the impact of the CFO genders in executive turnovers provides new and important information about the executive-specific impact on earnings management.

Based on a three-year sample of CFO changes in S&P 1500 firms, it is suggested that firms with CFO turnovers tend to convert towards more conservative financial reporting practices. However, in case a CFO change takes place, the incoming and outgoing CFO genders seem to have an impact on the firm's earnings management. In particular, if a female replaces a male as a CFO, the level of earnings management seems to be negatively influenced. Conversely, if the outgoing CFO is female and the incoming male, the earnings management of the firm tends to become more income-increasing. Finally, in the case of a male-male CFO change, the firm's discretionary accruals are also reported to increase following the appointment.

The exploratory results reported in this paper are broadly consistent with Geiger and North (2006) documenting a decrease in firm's discretionary accruals following a CFO change, and also with Barua, Davidson, Rama, and Thiruvadi (2010) and Peni and Vähämaa (2010) who report that firms with female CFOs follow less aggressive financial reporting strategies. The findings are suggested to be caused by the well-documented gender-based differences, for example, in risk-taking, decision-making, overconfidence, conservatism, information processing, and ethics (see e.g., Johnson and Powell, 1994; Bernardi and Arnold, 1997; Byrnes, Miller, and Schafer, 1999; Dallas, 2002; Schubert, 2006; MacLeod Heminway, 2007; Bonner, 2008, Peterson, Albaum, Merunka, Munuera, and Smith, 2010, Pierce and Sweeney, 2010).

The remainder of the paper is organized as follows. Section two introduces the earlier streams of literature related to the executive gender, executive turnover, and earnings management. In addition, the research hypothesis is formed based on the prior literature. In the third part of the paper, the methodology is explained, while section four describes the data used in the empirical analyses. Section five summarizes the results of the empirical tests, and discusses possible explanations for the reported findings. Finally, the last section provides concluding remarks.

2 Related literature

The executive changes have increased rapidly during the past couple of years due to the ongoing financial crisis, and the end for this trend is nowhere to be seen. For example, in 2006 nearly one in seven of the largest U.S. firms lost a CFO, while in 2005 the firms changed their CFOs already three times more often than they did in 2002 (Prince, 2007). Thus, it is of interest to examine what are the financial consequences of the CFO turnover from the firm's point of view.

Mian (2001) studies the CFO turnovers and finds that they are preceded by negative excess returns and a decline in operating return on assets, thus suggesting that the CFO turnover is caused by a bad firm performance. Interestingly, the escalating CFO turnover has implications also, for example, for corporate investment decisions. In a survey 87.6 % of the CFOs stated that their companies have shortened the payoff horizons of their investment decisions due to the shorter tenure of executives (Williams, 2007).

In general, it is widely accepted that the application of accounting standards always requires judgment (see e.g., Beechy, 2005; Cormier and Magnan, 2005). Thus, earlier studies have examined the impact of key executives on earnings management. Jiang et al. (2010) study the CEO and CFOs' impact on manipulating the reported earnings, and their findings indicate that the firms' likelihood of beating benchmarks and the magnitude of its discretionary accruals are more sensitive to the CFO's equity incentives than those of the CEO. This is a reasonable result, as the CFO's main responsibility within the firm is financial reporting.

The existing literature has documented that the CFOs may involve in earnings management in order to increase their own wealth. For example, the incumbent CFO may have incentives for more income-increasing earnings management in order to improve the firm's reputation and to maximize her/his compensation, which may be tied to the firm's financial performance (Kinney & Martin, 2004; Nelson, Elliot & Tarpley, 2002). In a similar vein, the retiring or leaving CFOs may be prone to maximize the firm performance and their compensation prior the turnover (Burgstahler & Dichev, 1997; Cheng, 2004).

Interestingly, Geiger and North (2006) suggest that firms tend to have lower discretionary accruals following a CFO change. Moreover, they find that the new CFOs hired from outside the company cause the finding, thus indicating that the external CFOs tend to follow more conservative reporting strategies.

Barua et al. (2010) and Peni and Vähämaa (2010) study the effects of executive gender on earnings management and suggest that firms with female CFOs tend to

use more income-decreasing earnings reporting. Interestingly, Peni and Vähämaa (2010) find that the CEO gender has no significant impact on the earnings management. The results of Barua et al. (2010) and Peni and Vähämaa (2010) are in line for example with Jiang et al. (2010) suggesting that the CFOs are the executives with most influence on earnings reporting within a firm.

The literature on gender-based psychological differences suggests that men and women are different in many aspects, and that these characteristics may also influence their behavior in work life. For example, it has been reported that women tend to be more conservative and risk averse than men (see e.g., Powell and Ansic, 1997; Jianakoplos and Bernasek, 1998; Byrnes et al., 1999). Moreover, the presented evidence indicates that women are less overconfident than men particularly in masculine domains, which the business life has traditionally been (Bonner, 2008). It has also been suggested that females may have higher ethical standards than males (Peterson et al., 2010; Pierce and Sweeney, 2010). Finally, as it has been difficult for the females to get a foothold in the door of the male-dominated executive suites, the women who have actually made it to the powerful position of a CFO are expected to be highly talented and hard-working (Eagly and Carli, 2003).

The findings of Geiger and North (2006) suggest that CFO turnover reduces earnings management. On the other hand, Barua et al. (2010) and Peni and Vähämaa (2010) find that female CFOs follow more conservative reporting strategies. Thus, given the gender-based differences for example in conservatism, risk aversion, and moral standards, it is of interest to examine whether the relationship between the CFO changes and earnings management is influenced by the genders of the incoming and outgoing executives. Thus, it is hypothesized:

> *H_1: CFO turnover decreases earnings management.*
>
> *H_2: The earnings management decrease following a CFO turnover is greater when a female CFO replaces a male.*

In particular, it is examined whether the genders of the incoming and outgoing CFOs have an impact on the firm's reported earnings. H_1 is tested in order to confirm that the findings of earlier studies indicating that the CFO change leads to a decrease in discretionary accruals (Geiger & North, 2006) hold also in this sample. The results reported by indicate that, while Barua et al. (2010) and Peni and Vähämaa (2010) propose that female CFOs are associated with income-decreasing earnings management. Consequently, H_2 tests the prediction that, if the CFO changes from male to a female, the discretionary accruals in the firm's

financial reporting would become more negative. Thus, H_2 tests the main contribution of this study.

3 Methodology

Following earlier studies, the level of earnings management employed in each firm is examined by using discretionary accruals in reported earnings (see e.g., Becker, DeFond, Jiambalvo, and Subramanyam, 1998; Francis, LaFond, Olsson, and Schipper, 2005; Geiger and North, 2006; Meek, Rao, and Skousen, 2007; Barua et al., 2010). This practice is supported for example by Geiger and North (2006: 785), who argue that "*examining signed discretionary accruals is the most appropriate measure of the intentional influence of management on financial reporting*". Further researchers (see e.g., Ashbaugh et al., 2003) suggest that the current accruals are where management has the most significant discretion to influence the firms earnings. Therefore, the level of earnings management is here estimated by signed discretionary accruals.

In order to ensure that the results are not dependant on the chosen method of the accrual estimation, two alternative models are employed. The accrual models used are the ones proposed by Dechow and Dichev (2002) (DD model) and its modified version introduced by McNichols (2002) (modified DD model). The difference between the models is that in the modified version of the DD model, two additional variables are included in the model in order to increase its explanatory power.

Dechow and Dichev (2002) propose that the quality of reported earnings is related to the estimation error in accruals and, thus, they derive a measure of earnings management by employing discretionary accruals as follows:

$$(1) \qquad ACC_{j,t} = \alpha + \beta_1 CF_{j,t-1} + \beta_2 CF_{j,t} + \beta_3 CF_{j,t+1} + \varepsilon_{j,t}$$

where $ACC_{j,t}$ equals total current accruals for firm j at time t, and is calculated as [ACC = Δcurrent assets – Δcurrent liabilities – Δcash + Δdebt in current liabilities], Δ is the change in a given accounting figure from year t–1 to year t, CF denotes operating cash flow for firm j at time t and is calculated as [CF = net income before extraordinary items – total accruals], and total accruals is equal to total current accruals minus depreciation and amortization expenses. In this regression, the residual term measures the difference between the estimated and realized amounts, and Dechow and Dichev (2002) define discretionary accruals as the magnitude of these estimation errors.

The modified DD model by McNichols (2002) adds the change in sales and the value of property, plant, and equipment into the model as additional variables. This modification of the model is justified by suggesting that the additional variables increase the explanatory power of the model significantly, which leads to a decrease in the measurement error of the discretionary accruals. The modified DD model is estimated as:

$$ACC_{j,t} = \alpha + \beta_1 CF_{j,t-1} + \beta_2 CF_{j,t} + \beta_3 CF_{j,t+1} + \beta_4 \Delta SALES_{j,t} + \beta_5 PPE_{j,t} + \varepsilon_{j,t} \quad (2)$$

where the additional variables are $\Delta SALES$, which denotes the change in sales from year t–1 to year t, and PPE is the gross value of property, plant, and equipment at the end of year t. Similar to the DD model, the residual terms of (2) are used to measure the extent of earnings management. Following Dechow and Dichev (2002), all the variables used in both accruals models are scaled by the average of total assets between year t–1 and t. Following earlier literature (DeFond & Jiambalvo, 1994; Chung & Kallapur, 2003; Geiger & North, 2006), the signed discretionary accruals are examined in this study. Signed accruals give more specific information than the absolute accruals, which only reveal the extent of used earnings management, but do not specify whether the firm managed their earnings up- or downwards.

After quantifying the level of earnings management, its relation to the executive turnover is examined with the following cross-sectional panel regressions:

$$DA_{j,t} = \alpha_0 + \beta_1 CHANGE_{j,t} + \beta_2 LEV_{j,t} + \beta_3 LOSS_{j,t} + \beta_4 MB_{J,T} + \beta_5 SGROWTH_{j,t} + \beta_6 SIZE_{j,t} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2005}^{2006} \omega_y YEAR_j^y + \varepsilon_{j,t} \quad (3)$$

where $DA_{j,t}$ denotes discretionary accruals for firm j in year t. The test variable in the regression specification is the binary variable $CHANGE_{j,t}$, which varies in different model specifications: (i) *CHANGE* gets a value of one if the firm's CFO was replaced during the fiscal year. In all the following model specifications an executive change takes place and, instead, the genders of outgoing and incoming executives are focused on: (ii) *INCFOUTGM* is assigned to one if the incoming CFO is female and the outgoing male, (iii) *INCMOUTGF* equals one if female CFO is replaced by male, (iv) *INCMOUTGM* is one if both the old and new CFOs

are male, and (v) *INCFOUTGF* gets a value of one if the incoming and outgoing CFOs are both female.

Following prior studies, several control variables are included in the model. $LEV_{j,t}$ is the financial leverage for firm *j* in year *t*, measured as total liabilities divided by total assets. $LOSS_{j,t}$ is a binary variable which is assigned to one if the firm's net income during the fiscal year is negative. *LEV* and *LOSS* are both proxies for the financial state of the firm, as the previous literature has indicated differences in the earnings management based on the firm's financial success. For example, Reynolds and Francis (2000), and Menon and Williams (2004) find that the firm's financial health is negatively associated with discretionary accruals. Moreover, for example Dechow, Sloan, and Sweeney (1995) suggest that the accrual models may overestimate the amount of discretionary accruals for firms with financial troubles. Based on these studies, a negative relation between the proxies for the financial condition of the firm and discretionary accruals is expected.

Two controls for the firm growth are included in the model: $MB_{j,t}$ is the market-to-book ratio, measured as the ratio of market value to book value of equity, and $SGROWTH_{j,t}$ is the one-year sales growth rate. Earlier studies (see e.g., Geiger and North, 2006; Meek et al., 2007) have reported a positive impact of firm growth on the discretionary accruals. This finding is supported by the view suggesting that the high-growth firms have typically less transparent governance practices and, thus, they may have greater possibilities for using opportunistic earnings management.

Previous studies have indicated that the firm size ($SIZE_{j,t}$), measured as the natural logarithm of total assets, is negatively related to earnings management. The larger firms are typically under a more thorough surveillance by the auditors and financial analysts, which may decrease their possibilities of intensive earnings management (Meek et al., 2007). Moreover, the often stronger governance mechanisms of larger firms may prevent them from reporting overly opportunistic earnings. Finally, *SIC* variables included in the model are the binary variables controlling for the industry effects, while *YEAR* variables are dummies for fiscal years.

The panel regressions are estimated with White cross-section robust covariances in order to account for contemporaneous correlation and different variances in the disturbances of the cross-sections. A two-way fixed effects specification is used throughout the panel regressions in order to control for the industry effects and possible changes in earnings management over time.

4 Data

The sample used in the empirical analysis consists of S&P 1500 firms in 2004–2006. Some of these firms experience a CFO change in one sample year, while a majority of the sample firms do not have a CFO turnover during the sample period. Following for example Geiger and North (2006), the financial institutions (SIC codes 6000–6900, 253 observations) are excluded from the sample due to their special features. Also firms with multiple CFO changes during the sample period (202 observations) are left out of the sample, as in those cases it is impossible to identify the impact of a specific change on earnings management. Furthermore, also observations with insufficient data (69 observations) are excluded from the sample. Thus, the final sample consists of 976 firms and 2928 firm-year observations. In total, 182 firms experienced a CFO turnover during the sample period.

The data on CFO changes are hand-collected from AuditAnalytics database for years from 2004 to 2006. The financial statement data used in the analyses are obtained from Thomson Reuters Financial Worldscope. The sample of CFO changes is introduced by year, industry and the incoming and outgoing CFO genders in Table 1.

Table 1. Number of CFO changes per type, year, and industry.

The table presents the CFO changes in the S&P 1500 firms during the sample period 2004–2006. The changes are classified by industry, year, and the incoming and outgoing CFO genders.

SIC code	Industry description	Changes per industry	Incoming F, outgoing M			Incoming M, outgoing F		
			2004	2005	2006	2004	2005	2006
1000-1900	Mining and construction	9	0	0	2	0	0	1
2000-3900	Manufacturing	85	0	2	3	2	2	3
4000-4900	Transportation, communications, electric, gas, and sanitary services	20	0	2	1	0	1	0
5000-5900	Wholesale and retail trade	29	0	4	0	0	0	0
7000-8900	Services	39	0	0	0	0	0	1
	total	182	0	8	6	2	3	5

SIC code	Industry description	Incoming M, outgoing M			Incoming F, outgoing F		
		2004	2005	2006	2004	2005	2006
1000-1900	Mining and construction	1	3	2	0	0	0
2000-3900	Manufacturing	10	27	36	0	0	0
4000-4900	Transportation, communications, electric, gas, and sanitary services	4	8	4	0	0	0
5000-5900	Wholesale and retail trade	5	8	11	0	0	1
7000-8900	Services	1	20	16	0	1	0
	total	21	66	69	0	1	1

As Table 1 demonstrates, in a great majority of the CFO changes both the incoming and outgoing executives were males (156 observations). In 14 cases, a male CFO was replaced by a female, and in 10 firms the incoming CFO was male and the outgoing female. In addition, in only two firms a female CFO was replaced by a female and, thus, changes of this type cannot be further examined based on the small sample size.

The summary statistics for the sample of S&P 1500 firms used in the empirical analysis are reported in Table 2. The non-binary variables are winsorized at the 0.5 % and 99.5 % levels to ensure that the findings are not caused by a few outlying observations. The first part of the table introduces the descriptive statistics for all the sample firms, while panels B–E present the statistics for the different types of CFO changes based on the incoming and outgoing executive genders.

As can be seen from the table, for the subsample with an incoming female and outgoing male CFO, the discretionary accruals are, on average, lower than for the other subsamples and for the total sample with the CFO changes. This finding is in line with Peni and Vähämaa (2010) suggesting that firms with female CFOs tend to use income-decreasing reporting practices.

Table 2. Descriptive statistics.

Table reports the summary statistics for the sample firms during the fiscal years 2004–2006. Financial institutions (SIC codes 6000–6900), firms with multiple CFO changes during the sample period, and firms with inadequate data are excluded from the sample. Only two of the sample firms reported a CFO change with both incoming and outgoing executives being females. Thus, the descriptive statistics for these types of changes are not tabulated. Panel F of the table reports the results for t-tests for differences in means for the total sample (descriptives in Panel A of the table) and the subsample of firms with CFO changes (Panel B of the table).

Panel A. Summary statistics for all firms (n=2928 observations)

Variable	Mean	Median	Std.dev.	Max	Min
DD model	0.000	-0.002	0.040	0.264	-0.294
Modified DD model	0.000	-0.001	0.039	0.262	-0.263
Leverage	0.485	0.500	0.208	1.573	-0.322
Loss	0.031	0.000	0.175	1.000	0.000
Market-to-book	4.068	2.630	18.586	831.080	-79.540
Sales growth	17.167	12.513	22.163	491.438	-59.893
Size	7.455	7.307	1.551	13.528	3.316

Panel B. Summary statistics for all firms with a CFO change (n=182 observations)

Variable	Mean	Median	Std.dev.	Max	Min
DD model	-0.009	-0.007	0.047	0.109	-0.294
Modified DD model	-0.009	-0.006	0.047	0.113	-0.263
Leverage	0.484	0.508	0.218	1.052	-0.022
Loss	0.013	0.000	0.113	1.000	0.000
Market-to-book	3.388	2.470	5.506	58.640	-19.760
Sales growth	15.026	11.939	16.904	97.618	-39.223
Size	7.368	7.443	1.523	11.943	3.755

Panel C. Incoming female CFO, outgoing male CFO (n=14 observations)

Variable	Mean	Median	Std.dev.	Max	Min
DD model	-0.018	-0.014	0.045	0.036	-0.160
Modified DD model	-0.015	-0.009	0.043	0.041	-0.153
Leverage	0.513	0.489	0.202	0.915	0.113
Loss	0.000	0.000	0.000	0.000	0.000
Market-to-book	2.359	2.025	1.104	5.010	1.210
Sales growth	12.078	8.332	14.133	33.466	-10.966
Size	7.646	7.572	1.607	11.296	5.341

Panel D. Incoming male CFO, outgoing female CFO (n=10 observations)

Variable	Mean	Median	Std.dev.	Max	Min
DD model	0.002	-0.008	0.025	0.039	-0.025
Modified DD model	0.001	-0.006	0.025	0.038	-0.029
Leverage	0.477	0.578	0.292	0.781	0.081
Loss	0.000	0.000	0.000	0.000	0.000
Market-to-book	3.218	3.285	1.604	5.270	1.320
Sales growth	21.570	21.723	14.037	39.817	-0.183
Size	7.385	6.913	1.804	10.222	5.585

Panel E. Incoming male CFO, outgoing male CFO (n=156 observations)

Variable	Mean	Median	Std.dev.	Max	Min
DD model	-0.009	-0.005	0.049	0.109	-0.294
Modified DD model	-0.009	-0.005	0.049	0.113	-0.263
Leverage	0.479	0.506	0.215	1.052	-0.022
Loss	0.015	0.000	0.123	1.000	0.000
Market-to-book	3.089	2.465	3.445	20.260	-19.760
Sales growth	14.901	11.884	17.372	97.618	-39.223
Size	7.338	7.449	1.512	11.943	3.755

Table 2. cont. Descriptive statistics.

Panel F. *t*-test for differences in means	t-stat.	p-value
H_0: $DA1_{AllFirms} = DA1_{CFOChangeFirms}$	3.20	0.00
H_0: $DA2_{AllFirms} = DA2_{CFOChangeFirms}$	3.59	0.00
H_0: $Leverage_{AllFirms} = Leverage_{CFOChangeFirms}$	-0.77	0.44
H_0: $Loss_{AllFirms} = Loss_{CFOChangeFirms}$	1.38	0.17
H_0: $MB_{AllFirms} = MB_{CFOChangeFirms}$	0.49	0.62
H_0: $SGrowth_{AllFirms} = SGrowth_{CFOChangeFirms}$	1.04	0.30
H_0: $Size_{AllFirms} = Size_{CFOChangeFirms}$	0.08	0.94

Panel F of Table 2 tabulates the t-tests for difference in means for the total sample and the firms with a CFO change. Interestingly, the table depicts that the firms with a CFO change have more income-decreasing discretionary accruals than the total sample firms.

Table 3 reports the pairwise Pearson correlations for the sample firms. As can be expected, the alternative accrual measures (*DA1* and *DA2*) are strongly positively correlated. The control variables leverage and size correlate positively (0.435), which indicates that, on average, the larger firms in the sample are more heavily leveraged. Naturally, the variable controlling for the CFO change (*CHANGE*) correlates positively with the dummies that determine the incoming and outgoing CFO genders.

Table 3. Correlation matrix.

The table reports the pairwise Pearson correlations for the whole sample (n=2928). (i) The dependent variables DA1 and DA2 are the residual terms from the regressions for accruals quality presented in (1) and (2). (ii) Firm-specific control variables are defined as follows: LEV is total liabilities divided by total assets, LOSS is a dummy variable which is set to one if the net income is negative, MB is a comparison of the share price to the book value per share, SGROWTH is the sales growth rate, and SIZE is the natural log of total assets. (iii) The binary variables for the CFO change are defined as follows: CHANGE is one if the CFO changes, INCFOUTGM equals one if the outgoing CFO is a female and the incoming a male, INCMOUTGF is set to one if a female CFO is replaced by a male, INCMOUTGM is one if both the incoming and outgoing CFOs are male, and INCFOUTGF is set to one if a female CFO is replaced by another female. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	DA2	LEV	LOSS	MB	SGROWTH	SIZE	INCFOUTGM	INCMOUTGF	INCMOUTGM	INCFOUTGF
DA1	0.967	-0.089	-0.169	0.110	0.298	0.043	-0.056	0.072	-0.012	0.034
DA2		-0.014	-0.208	0.097	0.161	0.139	-0.040	0.075	-0.030	0.044
LEV			-0.008	0.089	-0.138	0.446	0.040	-0.035	-0.016	0.027
LOSS				0.014	0.000	-0.209	-0.043	0.128	-0.046	-0.016
MB					0.104	0.013	-0.055	-0.013	-0.125	0.587
SGROWTH						-0.114	-0.049	0.078	-0.019	0.020
SIZE							0.040	0.009	-0.036	0.000
INCFOUTGM								-0.070	-0.707	-0.030
INCMOUTGF									-0.591	-0.025
INCMOUTGM										-0.258

5 Results

5.1 Regression results

The results of the panel regressions on the relation between the CFO change and earnings management are reported in Table 4. As the table shows, the adjusted R^2s vary from 6.4 % to 13.1 % for the regression specifications based on the DD model, and from 6.4 % to 9.8 % for the regressions based on the modified DD model.

In Models 2–4 of Table 4, the subsample of firms with a CFO change during the sample period is examined. Model 2 suggests that in case a male CFO is replaced by a female, the firm's discretionary accruals are negatively influenced. In case of an outgoing female and incoming male CFO, there is a positive and significant relation between the CFO change and earnings management (see Model 3 in Table 4). Finally, as Model 4 depicts, the male-male CFO changes also have a positive impact on the discretionary accruals. As mentioned earlier, the low number of observations with female-female CFO changes restrains from examining this type of changes in more detail.

Table 4. Regression results.

The table reports the alternative versions of the following regression model:

$$DA_{j,t} = \alpha_0 + \beta_1 CHANGE_{j,t} + \beta_2 LEV_{j,t} + \beta_3 LOSS_{j,t} + \beta_4 MB_{J,T} + \beta_5 SGROWTH_{j,t} + \beta_6 SIZE_{j,t} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2005}^{2006} \omega_y YEAR_j^y + \varepsilon_{j,t}$$

where $DA_{j,t}$ denotes the residual term from the employed accruals model for firm j in year t, $LEVj_{,t}$ is financial leverage, $LOSS_{j,t}$ is a dummy variable that equals one if the net income of firm j during the fiscal year t is negative, $MB_{j,t}$ is market-to-book ratio, $SGROWTH_{j,t}$ is the sales growth rate, $SIZE_{j,t}$ is the natural logarithm of total assets, SIC_j^k is a dummy variable according to industry classification (SIC) codes, and $YEAR_j^k$ is a dummy variable that indicates fiscal years. The dummy variables for CFO change are defined as follows: *CHANGE* is one if the firm's CFO changes during the fiscal year, *INCFOUTGM* equals one if a male CFO is replaced by a female, INCMOUTGF is set to one if the incoming CFO is a male and the outgoing a female, and INCMOUTGM equals one if both the new and old

CFOs are male. *t*-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A. Regression results, accruals based on the DD model.

		All firms		*Firms with a CFO change*			
Variable	Exp. sign	Model 1		Model 2		Model 3		Model 4	
Constant		0.006	***	-0.022	***	-0.024	***	-0.030	***
		(4.41)		-(4.41)		-(5.65)		-(6.09)	
Change variables:									
CHANGE	?	-0.009	***						
		-(8.35)							
INCFOUTGM	?			-0.008	***				
				-(32.41)					
INCMOUTGF	?					0.024	***		
						(48.02)			
INCMOUTGM	?							0.009	***
								(27.48)	
Control variables:									
LEV	-	-0.024	***	-0.045	***	-0.045	***	-0.045	***
		-(7.17)		-(5.71)		-(5.78)		-(5.61)	
LOSS	-	-0.035	***	-0.058	*	-0.056		-0.059	*
		-(18.05)		-(1.72)		-(1.56)		-(1.86)	
MB	+	0.000	***	0.003	***	0.003	***	0.003	***
		(11.34)		(8.23)		(8.93)		(8.41)	
SGROWTH	+	0.001	***	0.000	***	0.000	***	0.000	***
		(11.70)		(3.73)		(4.15)		(3.57)	
SIZE	-	-0.002	***	0.002	*	0.002	**	0.002	*
		-(5.01)		(1.92)		(2.04)		(1.95)	
Adjusted R^2		0.131		0.065		0.078		0.064	
F-stat.		33.680	***	2.173	**	2.437	***	2.160	**
n		2928		182		182		182	

Table 4. cont. Regression results.

Panel B. Regression results, accruals based on the modified DD model.

		All firms		*Firms with a CFO change*							
Variable	Exp. sign	Model 1		Model 2		Model 3		Model 4			
Constant		-0.003		-0.035	***	-0.037	***	-0.043	***		
		-(1.59)		-(8.69)		-(10.86)		-(10.83)			
Change variables:											
CHANGE	?	-0.008	***								
		-(9.67)									
INCFOUTGM	?			-0.006	***						
				-(11.54)							
INCMOUTGF	?					0.023	***				
						(30.00)					
INCMOUTGM	?							0.009	***		
								(34.24)			
Control variables:											
LEV	-	-0.021	***	-0.040	***	-0.040	***	-0.040	***		
		-(7.08)		-(4.50)		-(4.56)		-(4.44)			
LOSS	-	-0.036	***	-0.071	*	-0.069		-0.072	*		
		-(13.34)		-(1.74)		-(1.59)		-(1.83)			
MB	+	0.001	***	0.003	***	0.003	***	0.003	***		
		(13.11)		(7.57)		(8.13)		(7.69)			
SGROWTH	+	0.000	***	0.000		0.000		0.000			
		(6.20)		(0.70)		(0.69)		(0.68)			
SIZE	-	-0.000		0.003	***	0.003	***	0.003	***		
		-(0.64)		(3.68)		(3.96)		(3.72)			
Adjusted R^2		0.098		0.064		0.076		0.064			
F-stat.		24.399	***	2.159	**	2.382	***	2.155	**		
n		2928		182		182		182			

The impact of the CFO gender on earnings management is further examined by estimating regressions models that include both the change dummy and a variable controlling for the incoming and outgoing CFO genders. These results are reported in Table 5 and, in general, they indicate that, controlling for the CFO change, the outgoing and incoming CFO genders are important. In particular, these results are in line with Table 4 in suggesting that if a female CFO replaces a male, the discretionary accruals are negatively influenced. In contrast, if a male CFO replaces either a female or a male, the discretionary accruals tend to increase.

As a whole, the research hypotheses are supported by the findings reported in Tables 4 and 5. These results are well in line with Geiger and North (2006) and Jiang et al. (2010) introducing a significant influence of CFOs on earnings man-

agement, and Barua et al. (2010) and Peni and Vähämaa (2010) reporting that firms with female CFOs are associated with income-decreasing discretionary accruals. Thus, the findings suggest that the female executives follow less aggressive reporting strategies. The results are further supported by the literature on gender-based differences for example in risk-taking, ethics, and conservatism (see e.g., Johnson and Powell, 1994; Jianakoplos and Bernasek, 1998; Schubert, 2006; Watson and McNaughton, 2007).

Table 5. Regression results.

The table reports the alternative versions of the following regression model:

$$DA_{j,t} = \alpha_0 + \beta_1 CHANGE_{j,t} + \beta_2 LEV_{j,t} + \beta_3 LOSS_{j,t} + \beta_4 MB_{J,T} + \beta_5 SGROWTH_{j,t} + \beta_6 SIZE_{j,t} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2005}^{2006} \omega_y YEAR_j^y + \varepsilon_{j,t}$$

where $DA_{j,t}$ denotes the residual term from the employed accruals model for firm j in year t, $LEVj_{,t}$ is financial leverage, $LOSS_{j,t}$ is a dummy variable that equals one if the net income of firm j during the fiscal year t is negative, $MB_{j,t}$ is market-to-book ratio, $SGROWTH_{j,t}$ is the sales growth rate, $SIZE_{j,t}$ is the natural logarithm of total assets, SIC_j^k is a dummy variable according to industry classification (SIC) codes, and $YEAR_j^k$ is a dummy variable that indicates fiscal years. The dummy variables for CFO change are defined as follows: *CHANGE* is one if the firm's CFO changes during the fiscal year, *INCFOUTGM* equals one if a male CFO is replaced by a female, INCMOUTGF is set to one if the incoming CFO is a male and the outgoing a female, and INCMOUTGM equals one if both the new and old CFOs are male. *t*-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

		Accruals based on the DD model					
Variable	Exp. sign	Model 1		Model 2		Model 3	
Constant		0.006	***	0.006	***	0.006	***
		(4.67)		(4.02)		-(4.68)	
Change variables:							
CHANGE	?	-0.007	***	-0.009	***	-0.011	***
		-(70.13)		-(3.57)		-(17.30)	
INCFOUTGM	?	-0.009	***				
		-(17.07)					
INCMOUTGF	?			0.013	***		
				(4.99)			
INCMOUTGM	?					0.004	***
						(5.84)	
Control variables:							
LEV	-	-0.024	***	-0.238	***	-0.024	***
		-(7.14)		-(7.14)		-(7.14)	
LOSS	-	-0.035	***	-0.035	***	-0.035	***
		-(17.85)		-(17.85)		-(17.84)	
MB	+	0.001	***	0.001	***	0.001	***
		(11.49)		(11.20)		(11.43)	
SGROWTH	+	0.000	***	0.000	***	0.000	***
		(11.63)		(11.76)		(11.64)	
SIZE	-	-0.002	***	-0.002	***	-0.002	***
		-(4.99)		-(4.98)		-(4.98)	
Adjusted R^2		0.131		0.131		0.131	
F-stat.		31.148	***	31.241	***	31.107	***
n		2928		2928		2928	

5.2 Robustness checks

The findings tabulated in Tables 4 and 5 indicate that, in general, if a CFO change takes place, the incoming and outgoing CFO genders have an influence on the firm's future earnings management. These findings are supported by additional analyses. The regressions are re-examined with non-winsorized data, and these estimation results (not tabulated) are in line with the reported results, thus suggesting that firms with female CFOs follow less aggressive financial reporting strategies.

Table 5 cont. Regression results.

		Accruals based on the modified DD model		
Variable	Exp. sign	Model 4	Model 5	Model 6
Constant		-0.003 *	-0.003	-0.003 *
		-(1.67)	-(1.45)	-(1.66)
Change variables:				
CHANGE	?	-0.008 ***	-0.010 ***	-0.011 ***
		-(57.72)	-(3.94)	-(19.85)
INCFOUTGM	?	-0.007 ***		
		-(13.32)		
INCMOUTGF	?		0.013 ***	
			(5.01)	
INCMOUTGM	?			0.003 ***
				(5.49)
Control variables:				
LEV	-	-0.020 ***	-0.021 ***	-0.021 ***
		-(7.05)	-(7.05)	-(7.05)
LOSS	-	-0.036 ***	-0.036 ***	-0.036 ***
		-(13.25)	-(13.22)	-(13.23)
MB	+	0.001 ***	0.001 ***	0.001 ***
		(13.29)	(12.89)	(13.22)
SGROWTH	+	0.000 ***	0.000 ***	0.000 ***
		(6.17)	(6.23)	(6.16)
SIZE	-	0.000	0.000	0.000
		-(0.65)	-(0.64)	-(0.64)
Adjusted R^2		0.098	0.098	0.098
F-stat.		22.565 ***	22.660 ***	22.538 ***
n		2928	2928	2928

Similar tests are also conducted by using the absolute value of abnormal accruals as a dependent variable. These results based on absolute abnormal accruals (not tabulated) indicate that the CFO change in general tends to increase the absolute level of earnings management. In contrast, as Model 2 indicates, if a female CFO replaces a male, the level of earnings management decreases. Similarly, if the CFO changes from a female to a male, the level of earnings management is negatively influenced (not statistically significantly when the accruals are based on the modified DD model). Finally, in the case of male-male CFO changes, the level of earnings management tends to increase.

5.3 Limitations

Before corroborated by future research, several limitations need to be considered when interpreting the results of this exploratory study. Perhaps most importantly, the number of female executives in the CFO change observations is very small. As the previous studies have shown, the share of females in the executive level is low to begin with, and as here only the CFO changes are focused on, the female observations are scarce. In addition, because the firms with multiple CFO changes were eliminated from the sample due to the difficulties they would introduce in interpreting the results, the total sample on changes is limited. As the CFO change data are hand-collected, and additionally due to the unavailability of the data on smaller firms, extending the sample to smaller firms is not conceivable.

Moreover, adding the recent years of financial turmoil period to the sample would overly increase the amount of firms with multiple CFO changes and, thus, the sample period is ended to 2006 (data for year 2007 are used in the accrual estimations). This is supported by Crist and Kolder Associates' report (2011) which indicates that currently the average tenure of an S&P 500 firm's CFO is about five years. Moreover, they also document that the CFO volatility was particularly high during the recent financial crisis (19.8 % turnover rate in 2007 and 19.4 % in 2008). Since the firms with multiple CFO changes during the sample period are excluded from the analyses, these high volatility figures indicate that, if sample years were to be added, the number of sample firms would decrease significantly. Therefore, since extending the data is not reasonable, the low number of female CFO observations may reduce the statistical power of the conducted tests.

Since the sample consists of the S&P 1500 firms, the results may not be applicable to smaller firms or to firms operating outside the U.S. Moreover, during the sample period the U.S. economy was in a phase of strong growth and, thus, the results may not be applicable to recessionary periods.

Often in the studies that focus on examining the impact of the executive gender on various matters, the presence of endogeneity cannot be ruled out. Here, the endogeneity problem is detracted by focusing on examining the CFO changes instead of the CFO gender as a constant variable. It is, however, possible that a self-selection bias distorts these findings, as certain types of firms may be more prone to hire a female CFO. Thus, it is possible that some correlated variables are omitted from the analyses, or that certain firm-specific characteristics simultaneously influence the CFO nomination decision and firm's earnings management.

Finally, despite using two separate, rather recently developed models of accrual estimation, it is to be noted that the chosen models may not provide perfect esti-

mates on the use of earnings management since, for example, they do not separate the accruals based on whether their level was unexpected or not. However, as this paper aims to extend the work of Barua et al. (2010) and Peni and Vähämaa (2010), the focus is kept on the abnormal accruals instead of other possible measures of earnings management. This is in line for example with Geiger and North (2006), who state that discretionary accruals is the most appropriate measure of earnings management. Due to these limitations the results should be considered as exploratory, until corroborated by future research.

6 Conclusions

This paper examines the relation between a CFO change and earnings manipulation in the S&P 1500 firms. In particular, the genders of the incoming and outgoing executives are focused on in estimating the impact of a CFO change on firm's financial reporting practices. The earlier literature has provided evidence on both the CFO change and the female CFOs impact on earnings quality (see e.g., Geiger and North, 2006; Barua et al., 2010; Peni and Vähämaa, 2010). The purpose of this paper is to combine these reported findings and to examine whether the executive gender has an impact on earnings management in case of a CFO change. Moreover, the widely documented gender-based differences for example in risk tolerance, ethics, and conservatism support the view of executive gender having an impact on the executive's work. Thus, it is hypothesized that, in the case of a CFO turnover, there exists a relationship between earnings management and the incoming and outgoing CFO genders.

The findings documented in this paper in general indicate that the incoming and outgoing CFO genders influence the firm's earnings management. Based on the employed two-way fixed effects panel regressions, it is suggested that CFO change is negatively associated with the discretionary accruals of the firm. If only the firms with CFO changes during the sample period are focused on, it can be proposed that the firms with incoming female and outgoing male CFOs tend to follow less agressive reporting practices following the turnover. Contrarily, if a CFO of either gender is replaced by a male, the discretionary accruals of the firm are positively influenced.

Thus, based on the reported findings it can be concluded that the CFO gender has an impact on earnings management and, consistently with Barua et al. (2010) and Peni and Vähämaa (2010), that firms with female CFOs tend to follow more conservative financial reporting strategies. Overall, the results are in line with the psychology literature on the gender-based differences for example in risk toler-

ance, conservatism, and ethics. Finally, the findings provide further support on gender-based differences in the executive performance and, thus, suggest that these well-documented differences between males and females may also have important implications in the executive level.

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AUDITOR'S GENDER AND AUDIT FEES[☆]

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ABSTRACT

Documented behavioral differences between women and men suggest (see e.g. Davidson & Gist, 1996; Fondas & Sassalos, 2000; Schubert, 2006; Bonner, 2008) that the gender of the audit engagement partner may have implications for the price setting of the audit. Thus, this paper examines the effect of the auditor's gender on audit fees in an environment, where the responsible audit partners can be identified. Using a sample of public firms from the NASDAQ OMX exchanges in three Nordic countries, we find evidence indicating that firms with female audit engagement partners have significantly higher audit fees. Although this is an interesting finding, it should be interpreted with caution since there is no clear theoretical explanation to support it. Potential reasons are introduced, such as the gender differences in risk tolerance, which may affect the pricing decisions by increasing the audit investment and/or increasing the audit fee risk premium. Alternatively, female auditors' diligence, lower overconfidence, and higher level of preparation could also lead to an increase in audit investment, and thereby result in higher audit fees.

Keywords: audit fees, gender-based differences, psychological characteristics

Summary

This paper examines the effect of the audit engagement partner's gender on the audit fees in an environment, where the audit partner(s) responsible for the audit can be identified. Prior audit fee studies have focused on the effects of client characteristics, audit firm characteristics, and the engagement attributes on audit fees. Moreover, the audit fee literature concentrating on e.g. the Big-4 premiums and industry specialization has for long assumed that the pricing of an engage-

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ment is identical across the entire audit firm. However, in more recent literature the focus has increasingly been on examining how office level attributes affect audit fees. This study goes one step further by considering the individual audit engagement partner's potential effect on the audit fees.

The purpose of this paper is to examine whether the gender of the auditor has an effect on the fees paid by the client. More specifically, it is of interest to study whether the documented gender differences e.g. in cognitive functioning and risk preferences impact the audit engagement partner's decisions on the audit investment and/or audit fee risk premium, and thereby affect audit fees.

Using a sample of public firms from the NASDAQ OMX exchanges in three Nordic countries, namely Finland, Denmark, and Sweden, we find exploratory evidence indicating that firms with female audit engagement partners have significantly higher audit fees than firms with male auditors. Since the existing literature does not provide a clear theoretical explanation for this finding, the interpretations should be made with caution. Our results may, however, suggest that gender differences in risk tolerance influence the pricing decisions by causing either an increase in the audit investment and/or an increase in the risk premium of audit fees. Alternatively, female auditors' diligence and higher level of preparation could also lead to an increase in the audit investment, and thereby result in higher audit fees. However, it should be noted that because the theoretical background of the study is drawn from management, psychology, and finance literature, the reported findings are somewhat exploratory.

1 Introduction

The vast majority of previous studies on audit fees have focused on the effects of client characteristics, audit firm characteristics, and the engagement attributes on audit fees. The literature on audit fees assumes that the pricing of an engagement may be affected e.g. by the characteristics of the audit firm or office. Given that there may exist differences in individual auditors' attributes that could have an effect on the pricing of the audit engagement, e.g. distinctions in engagement planning, negotiation skills, team management capabilities, and risk preferences, more research in this area is called for (e.g. DeFond & Francis, 2005).

The purpose of this study is to examine whether the gender of the auditor has an effect on the fees paid by the client. More specifically, we focus on studying whether and how the gender of the audit engagement partner affects the fees paid to the external auditors. If the audit partners can be associated with gender differ-

ences e.g. in cognitive functioning, decision-making, leadership style, and risk preferences (Wood et al., 1985; Johnson & Powell, 1994; Eagly & Carli, 2003; Schubert, 2006) which may affect the decisions on the audit investment, the audit fees could be affected by the gender of the audit engagement partner.[4]

The potential consequences of gender differences have been subject to an increasing interest in the recent corporate finance literature. The findings indicate, for instance, that female directors have to demonstrate superior competence to reach top positions (Eagly & Carli, 2003), they have higher expectations regarding their responsibilities and, thus, prepare themselves for the tasks more thoroughly (Fondas & Sassalos, 2000; Huse & Solberg, 2006), women tend to be less overconfident than men (Bonner, 2008) and, finally, women are more risk averse than men (Levin, et al., 1988; Jianakoplos & Bernasek, 1998; Schubert, 2006). The possible gender-based differences in all of these areas could have an impact on the fees paid by the audit clients. As a consequence, it is important to empirically investigate the relationship between auditor gender and audit fees to find evidence on whether and how the audit engagement partner characteristics affect the audit fees.

We conduct this study by focusing on the listed firms in three Nordic countries: Denmark, Finland, and Sweden. In these countries, the responsible audit engagement partners' names, as well as the names of the audit firms they are representing are mandatory information on the audit reports. This is in contrast with many other countries, for instance the U.S. and the U.K., where only the name of the audit firm is printed on the audit report.

Using a sample of 715 firm-year observations from NASDAQ OMX listed firms, we find evidence suggesting that firms with female audit engagement partners have significantly higher audit fees. Thus, in general, our empirical findings indicate that the auditor's gender may have an impact on audit fees. The results are interesting, however, interpretations should be made keeping in mind that there is no clear theoretical background for this finding and, therefore, more research is needed. The findings are consistent with the existing studies suggesting that women are on average more risk averse than men. The previous audit fee studies indicate that the risk tolerance of the audit partner may affect the audit fees in two ways: it could affect the level of the audit investment (e.g. audit effort), or the risk premium of the engagement may be influenced (Houston et al. 1999, 2005; John-

[4] It should be noted that we assume that the individual audit partners are able to influence the audit fees. Nevertheless, the audit engagement partner effects may be mitigated due to the competition in the audit market. Consequently, the analysis is largely exploratory in nature.

stone & Bedard, 2001, 2003). Thus, in both cases, a higher level of risk aversion may lead to a higher level of audit fees. Due to the fact that our theoretical background is based on evidence from psychology, management, and finance literature, and this issue has not been addressed previously in audit research, the reported empirical findings should be considered largely exploratory in nature.

The remainder of this paper is organized as follows. Section 2 reviews the related literature and presents our research hypothesis. Section 3 describes the data on the OMX listed firms and presents the methodology used in the analysis. The empirical findings on the effect of auditor gender on audit fees are reported in Section 4. Finally, Section 5 provides concluding remarks.

2 Related literature and hypothesis

2.1 Audit partners, gender, and audit fees

The existing literature suggests that audit fees are to a large extent a function of audit team labor hours, audit team labor costs per hour, and a risk component. Following Francis' (2004) motivation concerning the shift from firm-level analysis to office-level analysis, it may be warranted to go one level further and consider how the characteristics of individual audit partners, such as the gender of the audit partner, can affect the audit investment component (i.e. the number of audit hours) and the risk component of the audit fees.

The requirements for an adequate audit and the responsibilities of the engagement partner are regulated comprehensively. The International Standards of Auditing (ISA) (IAASB, 2009; ISA 220 and ISA 300) state that the audit partner is responsible for the overall quality of each engagement s/he is assigned to. The responsible audit partner should plan the nature, timing, and extent of guidance and supervision of team members, and to review their work. The audit partner also needs to be assured that the engagement team has the required capabilities, competence, and time to perform the audit according to the professional standards and regulatory requirements. According to ISA requirements, the audit partner is required to use an appropriate consultation and include specialized experts to the team in the case of complicated or contentious matters.[5]

[5] We conducted an interview with two Finnish certified public accountants (CPA) from different Big-4 firms about the role of the engagement partners in audit team. These auditors are responsible for auditing multiple NASDAQ OMX listed firms. Our interviews indicate that, at least in the

Additionally, the Code of Ethics for Professional Accountants (IESBA, 2009) states that the audit engagement partner is responsible for setting the audit fee at a level which allows a sufficient amount of resources to be invested in the engagement. The Code emphasizes that there are no circumstances under which the amount of the audit fee can justify the lack of resources or time to properly perform the audit. As a consequence, individual behavioral attributes could have an effect on the engagement partner's estimation of the required work amount. Thus, gender differences in risk aversion may lead female auditors to demand higher audit fees simply because they require a higher level of assurance, i.e. more work.

The audit process consists of four major phases: 1) planning, 2) risk assessment, 3) conducting the audit, and 4) evaluating the results and issuing the report. In defining the size of the audit fee, particularly the decisions and assessments made during the first two phases are important. According to the professional regulation, the audit partner is responsible for the decisions related to the whole auditing process.

The documented behavioral differences between women and men e.g. in planning, group decision-making, risk tolerance, or overconfidence may affect the formation of the audit fee. Davidson and Gist (1996) examine how audit planning can affect the labor hour component of audit fees. They find that audit planning reduces the total audit effort up to a certain level, and thereafter increases the audit hours spent on an engagement. Additionally, they report that clients with higher assessed riskiness require more planning. According to the literature on gender differences, there may be features related to gender, which affect the planning of the audit engagement. First, Huse and Solberg (2006) argue that women in high positions, such as corporate boards, are better prepared for meetings than men. Second, women tend to have higher expectations regarding their responsibilities (Fondas & Sassalos, 2000), and they have to demonstrate extra competence to reach top positions (Eagly & Carli, 2003). Third, women have better communicative skills and may, as a consequence, have a comparative advantage over men in tasks where communication within and among different groups is required (see e.g., Wood et al., 1985; Maznevski, 1994; Fondas, 1997; Schubert, 2006). Thus,

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Finnish setting, the engagement partners are responsible for all the decisions that affect the price of the engagement. According to our interviewees, the responsible auditor determines, for example, the amount of experienced members in the audit team, the total audit team effort, the need for using external experts, and the client risk margin. As the price of the audit consists of these elements, it seems reasonable to assume that the responsible audit partner has an impact on the audit fees.

women tend to perform better in group problem-solving and decision-making tasks (Wood et al., 1985, Robinson & Dechant, 1997; Dallas, 2002). Communication skills may also give female auditors a comparative advantage over men in client negotiations concerning the engagement and, thus, female auditors may be able to sell a higher level of assurance to the client. Consequently, gender differences among audit partners may have an effect on both the audit planning as well as the audit process and, therefore, the gender of the audit partner may affect the amount of hours the audit team spends on an engagement. If the female auditors use significantly more time in planning the task, it may increase the audit fees, whereas a reasonable investment in planning may reduce the audit effort and, thus, also the audit fees.

Many studies propose that women are more conservative and risk averse than men (see e.g., Levin et al., 1988; Johnson & Powell, 1994; Powell & Ansic, 1997; Jianakoplos & Bernasek, 1998; Byrnes et al., 1999). Schubert (2006) suggests that women try to avoid losses and therefore tend to take less extreme risks. Planning an audit engagement includes the assessment of the inherent risk, control risk, and setting the detection risk, which are done by the engagement partner. The risk assessments are used for audit planning decisions concerning the nature, timing, and extent of audit evidence testing. Houston et al. (1999, 2005) and Johnstone and Bedard (2001, 2003) show that auditors address changes in different aspects of risk by adapting the audit investment and/or the risk premium. Consequently, if there are gender differences in the risk assessment process, risk tolerance, or assessment of the persuasiveness of evidence, female audit engagement partners could have higher audit fees because of the increased audit investment and/or the risk premium.

Evidence from psychology research indicates that, in general, people tend to overestimate their knowledge and abilities (Fischhoff et al., 1977; Lichtenstein et al., 1982). Kennedy and Peecher (1997), Messier et al. (2008), and Owhoso and Weickgenannt (2009) find evidence of overconfidence at all levels of the audit team, namely partners, managers, seniors, and staff. Moreover, auditors seem to be overconfident in their own knowledge and abilities, as well as the abilities of other team members. Given that overconfidence exists also among the audit partners, as reported by Kennedy and Peecher (1997), Bonner, (2008), Messier et al. (2008), and Owhoso and Weickgenannt (2009), it may affect the audit engagement partner's decisions on the audit investment during the audit procedures, or the audit fee risk premium. The earlier literature indicates that men are generally more overconfident than women, particularly in masculine domains (see Bonner, 2008 for a review). Thus, the gender differences in overconfidence may also cause female audit partners to charge higher fees.

Despite the recent gender equality development, the world of business is still mainly a world of men. Thus, because the literature has reported a tendency of executives to hire subordinates like him/herself (see e.g. Anderson-Gough et al., 2005), it can be more difficult for female auditors to achieve high positions, such as partnerships (Fogarty, 1996; Collin et al., 2007). This may lead to the females having fewer possibilities to charge higher fees, and thus a negative relationship between female auditors and audit fees could exist. Finally, if the well-documented gender wage gap also affects the audit fees, the female auditors could be associated with lower audit fees (e.g. Blau et al., 1992, 2000; Munasinghe et al., 2008). However, particularly in the engagements with large audit teams, the gender wage gap may not necessarily have any significant effect in the audit pricing context, as the salary of the responsible audit partner is only a part of the total audit fees charged from the client.

Finally, it should be noted that the audit market is highly competitive, and potential individual partner effects may be mitigated by the firm level competition and audit tenders. Thus, due to the market competition the individual auditors may not necessarily have any effect on audit fees. Also, the exploratory nature of the study may influence the interpretation of the results.

2.2 Hypothesis

The existing literature indicates that audit fees are a function of audit staff effort, audit staff labor costs, and client risk (see e.g. Niemi, 2002; Hackenbrack & Hogan, 2005). As the audit fee is preliminarily determined before the audit engagement, it is calculated using budgeted hours of each grade of auditing personnel and budgeted unit prices. However, due to the nature of audit fee formation, planning and risk-assessment can significantly impact the final audit fee.

Given the components affecting the audit fees and assuming that individual audit engagement partner characteristics may have an effect on decisions regarding the audit fees, it is of interest to examine the relationship between the gender of the audit engagement partner and audit fees. Thus, the hypothesis to be examined in this paper is:

> *H_1: There is a relation between the gender of the audit engagement partner and the audit fees.*

If there indeed exists an association between the gender of the audit engagement partner and the audit fees, it may be either positive or negative, as suggested by the gender-based differences reported in earlier studies. A positive relation is sup-

ported by the literature suggesting that the diligence, more thorough preparation, lower level of overconfidence, and the higher risk aversion of females would imply that women require a higher level of audit investment or risk premium, thereby leading to an increase in the audit fees (Wood et al. 1985; Levin et al. 1988; Blau et al., 1992, 2000; Powell & Ansic, 1997; Huse et al., 2006; Schubert, 2006; Bonner, 2008; Munasinghe et al., 2008). Furthermore, the better communication skills of females (see e.g., Wood et al., 1985; Maznevski, 1994; Fondas, 1997; Schubert, 2006) may give them an advantage in the bidding phase, as they may be able to convince the client to accept a higher priced audit, or for example to reassure the client that a more thorough and thus also more costly audit has to be performed.

By contrast, however, also a negative relationship between female auditors and audit fees is supported by the earlier studies. Provided that the audit fees are a function of audit team effort, audit team labor costs, and client risk, the existing literature on gender differences suggests that better communication and team work skills of women, together with the gender wage gap, may reduce the effort needed and, as a result, decrease the cost of the audit engagement (see e.g., Wood et al., 1985; Blau et al., 1992, 2000; Maznevski, 1994; Fondas, 1997; Schubert, 2006). Thus, the proposed superior communication skills of females may cause differences in audit fees for either direction. Moreover, the tendency for homophily in the hiring process of audit partners may give women less opportunities for charging high audit fees and, thus, lead to a negative relationship between female auditors and audit fees (Anderson-Gough et al., 2005). Finally, the potential partner effects may be cancelled out by the competition in the audit market. Thus, this empirical study is largely exploratory in nature.

3 Data and methodology

The initial sample used in the empirical analysis consists of 1210 firm-year observations from firms listed in the NASDAQ OMX exchanges in Denmark, Finland, and Sweden as of the end of 2007. OMX Nordic Exchange is a part of the NASDAQ OMX Group Inc that operates in the Nordic and Baltic countries. The data used in the analysis cover the fiscal years 2005–2006. Following prior research, we exclude financial institutions (SIC codes 6000–6900) from the sample due to their unique features (396 firm-year observations excluded). Next, we exclude observations with insufficient data (99 observations excluded). This leaves us with a sample of 715 engagements from two years, which are classified by country and industry in Table 1.

We utilize data from these countries because of the regulatory feature they provide for studying how the characteristics of an audit engagement partner affect the charges of the audit services. In the Nordic countries, the auditors are required to personally sign the audit reports on behalf of the audit firm and, thus, we are able to identify the audit partner(s) responsible for each engagement. This is in contrast with the regulation in many other countries, e.g. the U.S. and the U.K., where only the name of the audit firm responsible for the audit is public information. Interestingly, the issue of publishing the audit engagement partner signatures is on the agenda of the Public Company Accounting Oversight Board (PCAOB) and, as a consequence, the engagement partner signatures may become obligatory in the United States as well (PCAOB, 2009).

The data on audit engagement partner gender are manually gathered from the firms' audit reports. In the Nordic countries, the audit report must be signed by at least one auditor, even if an audit firm is appointed. The signing auditor(s) is (are) here defined as the engagement partner(s), and by reviewing the signatory auditors' names the gender of the engagement partner(s) can be identified. For some engagements, the audit report is signed by more than one auditor from the same firm and in some cases also from two separate firms. In the engagements with multiple auditors signing the audit report, the clients have voluntarily opted for more than one audit partner or for more than one audit firm for the engagement.

Table 1. Distribution of observations by country, industry, year, and audit partner gender.

	Engagements per country		Engagements with female auditor (*FDUM*)		Engagements with female and male auditor (*MIXED*)		Engagements with female auditor only (*FGROUP*)		Engagements with male auditor(s) only (*MGROUP*)	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
swe	185	208	21	26	11	13	10	13	164	182
fin	78	90	9	8	4	4	5	4	69	82
den	70	84	13	15	12	14	1	1	57	69
total	333	382	43	49	27	31	16	18	290	333
%			12.91	12.83	8.11	8.12	4.80	4.71	87.09	87.17

	Engagements per industry		Engagements with female auditor (*FDUM*)		Engagements with female and male auditor (*MIXED*)		Engagements with female auditor only (*FGROUP*)		Engagements with male auditor(s) only (*MGROUP*)	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
0100–1700	19	21	2	4	1	2	1	2	17	17
2000–3900	210	235	21	25	15	17	6	8	189	210
4000–4900	31	36	5	6	2	4	3	2	26	30
5000–5900	39	48	6	7	5	5	1	2	33	41
7000–8900	34	42	9	7	4	3	5	4	25	35
Total	333	382	43	49	27	31	16	18	290	333
%			12.91	12.83	8.11	8.12	4.80	4.71	87.09	87.17

Countries: SWE–Sweden, FIN–Finland, and DEN–Denmark. Industries: 100–1700 Mining; 2000–3900 Construction; 4000–4900 Manufacturing; 5000–5900 Transportation, communications, electric, gas, and sanitary services; 7000–8900 Wholesale trade.

The legislation does not necessitate joint audits or multiple audit engagement partners in any of the three countries. The Danish legislation, however, required joint auditing (two audit firms) for the listed firms until the end of 2004 and, as a consequence, compared to the other two countries the Danish firms still have joint auditing more often. Opting for a joint audit may also be caused by financial mat-

ters, as suggested by Thinggaard and Kiertzner (2008). Their results indicate that joint audits, where both auditors are responsible for a significant part of the audit task, tend to reduce audit fees in larger firms, as compared to audits where one auditor is in charge of the audit. Additionally, it is worth noting that, consistent with most of the other markets around the world, a great majority of the firms in our sample are audited by Big-4 auditors.

The legal environment, as well as the listing requirements concerning corporate governance, financial reporting, and auditing in the three sample countries (Denmark, Finland, and Sweden) are relatively homogenous and, thus, they can be analyzed as one group. La Porta et al. (1998) consider the Nordic countries (Denmark, Finland, Norway, and Sweden) to have similar laws to each other, but distinct from other countries. In contrast, Sinani et al. (2008) find significant differences in the formal board and ownership structures between the Scandinavian countries (Denmark, Norway, and Sweden). The main difference in ownership structure of the Nordic companies is that the Swedish firms have, on average, a higher proportion of family ownership, whereas the state ownership is higher in Denmark and Finland (La Porta et al. 1998; Sinani et al. 2008). Moreover, the NASDAQ OMX Nordic Exchange Statistics from year 2007 reveal that based on the market capitalization, measured in the number of firms, as well as the total value of the yearly trades, the Swedish stock exchange alone is as big as the Finnish and Danish exchanges together. This can also be noted from our sample, as over half of it consists of Swedish firms (NASDAQ OMX, 2008).

However, despite the observed differences in formal structures, Sinani et al. (2008) suggest that the corporate governance practices have strong similarities in these countries. The reason for this, according to Sinani et al. (2008), is the similarity in key corporate governance characteristics, such as trust, quality of enforcement, absence of corruption, quality of government, and freedom of speech, which are all results of the countries' equal small size and ethnical homogeneity. Our sample countries have close similarities in the requirements for becoming a CPA and, moreover, they comply with the Eight Directive of the European Union. In all of the three sample countries, before being certified the auditors need to have the required theoretical education, professional experience, and a passed practical examination.

The relationship between audit fees and the gender of the responsible auditor is examined by employing cross-sectional panel regressions. Consistent with the literature on audit fees (see e.g. Simunic 1980; Abbot et al. 2003), our model includes firm-specific variables to control for the known factors affecting audit fees. Furthermore, we also control for the industry-, country-, and year-specific factors

by including corresponding control variable dummies in the equation. Thus, the following model is applied to examine the possible relation between auditor gender and audit fees:

$$
\begin{aligned}
AFEE_{j,t} = {} & \alpha_0 + \beta_1 FEM_{j,t} + \beta_2 INVREC_{j,t} + \beta_3 LEV_{j,t} + \beta_4 LOSS_{j,t} + \beta_5 SIZE_{j,t} \\
& + \beta_6 ROA_{j,t} + \beta_7 FOROP_{j,t} + \beta_8 JOINT_{j,t} + \beta_9 CHANGE_{j,t} + \beta_{10} BIG4 \\
& + \beta_{11} NAS_{j,t} + \beta_{12} YEAR_{2005} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{c=1}^{n-1} \omega_c COUNTRY_j^c + \varepsilon_{j,t}
\end{aligned} \tag{1}
$$

where $AFEE_{j,t}$ denotes the natural logarithm of audit fees for firm j at t, $INVREC_{j,t}$ is the receivable and inventory intensity, $LEV_{j,t}$ is the percentage of total debt to total assets, $LOSS_{j,t}$ is a dummy variable which equals one if the net income of firm j during year t is negative, $SIZE_{j,t}$ is the natural logarithm of total assets, $ROA_{j,t}$ is the percentage of return on assets, $FOROP_{j,t}$ is the percentage of foreign assets (i.e. the assets owned by the firm abroad) to total assets, $JOINT_{j,t}$ is a dummy variable, which gets a value of one if at least two audit partners from different audit firms signed the audit report and each is responsible for a minimum of 20 % of the task, $CHANGE_{j,t}$ is a binary variable, which is one if the responsible audit firm(s) changed compared to the previous year, $BIG4_{j,t}$ is a dummy variable, which is assigned to one if the responsible audit firm is one of the Big-4 group and, thus, the variable is considered to control for the auditor reputation and quality[6], $NAS_{j,t}$ is the natural logarithm of non-audit service fees, $YEAR_{2005}$ is a binary variable that indicates fiscal years, SIC_j^k is a dummy variable according to industry classification (SIC) codes, and $COUNTRY_j^c$ is a dummy variable indicating the company's country of origin. The data on the financial control variables are obtained from Thomson Financial Worldscope, and the data on audit firm-specific factors are manually gathered from the firms' annual reports.

The test variable in our equation is the female representation variable $FEM_{j,t}$, which varies in different model specifications. We define four binary variables and a ratio to measure female audit engagement partner representation, and mod-

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[6] Several studies indicate that Big-4 firms provide a better quality audit, since their clients are documented to for example have a better earnings quality (Becker, DeFond, Jiambalvo & Subramanyam, 1998; Francis & Wang, 2008). Big-4 auditors are suggested to be more sensitive to the costs caused by client misreporting and its impact on auditor reputation, and are therefore suggested to enforce higher earnings quality (Francis & Wang, 2008).

els from 2 to 6 are organized in an order of decreasing female representation: *FGROUP* equals one if only women are acting as responsible auditors, *FRATIO* measures the share of female auditors compared to the number of auditors signing the audit report, *FDUM* equals one if a female audit partner participates in or is responsible for signing the audit report alone or together with a male, *MIXED* is set to one if a female audit partner is engaged with a male audit partner, and *MGROUP* is set to one if only male auditors sign the audit report. Only one female representation variable is included in the equation at a time in order to avoid possible multicollinearity problems. Therefore, we estimate six different regression specifications, where female variables are as follows: (i) no female variable, (ii) *FGROUP*, (iii) *FRATIO*, (iv) *FDUM*, (v) *MIXED*, and (vi) *MGROUP*. The data on female representation are gathered from the annual reports of the firms.

Throughout the panel regressions, a three-way fixed-effects specification is used, because it allows for a different intercept for each industry in the sample. The method also controls for the country-specific effects and for the possible change in audit fees from one year to another. Moreover, in order to account for contemporaneous correlation and different variances in the disturbances of each cross-section, we employ the White cross-section robust covariances in the regression specifications.

4 Results

4.1 Descriptive statistics

The descriptive statistics for the female audit engagement partner variables, as well as for the control variables, are reported in Table 2. Panel A shows the statistics for the entire sample of 715 observations. The statistics demonstrate that the observations are relatively heterogeneous in all respects. For example, the largest audit fees paid amounts up to 14.491 million Euros, whereas the smallest fee is only 0.004 million Euros. In terms of total assets the range is from 0.513 million to 41.528 billion Euros.

Panel B of Table 2 presents the descriptive statistics for four sub-samples of the observations, which are categorized by female audit engagement partner representation. Some interesting remarks can be made on this table. For example, in the three sub-samples with female audit partner representation the means and medians of audit fees, total fees, and total assets are in general smaller than in the sample as a whole. The median values of the mixed group are an exception to this, as the median values are larger for the mixed sub-sample than for the sample as a

whole. Furthermore, it can be noted that the firms in the sub-sample with only male auditors are larger in terms of both audit fees and total assets. Finally, one interesting remark is that in the sub-sample with female audit partners only, the mean of *LOSS* is significantly higher than in the sample as a whole or the other sub-samples. In Panel C, we tabulate the summary statistics by country. There are significant differences between countries in the amount of leverage and joint auditing. Furthermore, fewer of the Finnish firms have reported loss and they have a higher proportion of foreign operations than the sample in general (significance levels noted by *s).

Table 3 reports the pairwise correlations for the variables used in the regressions. As expected, *SIZE* is strongly correlated with our dependent variable audit fees (and total fees). Additionally, *SIZE* is negatively correlated with *LOSS*. *FOROP* is positively correlated with audit fees and total fees, which is natural, as firms with significant international operations require a more time-consuming and, thus, a more expensive audit, which again increases the audit fees. Not surprisingly, our female representation variables are correlated with each other.

Table 2. Descriptive statistics.

Panel A of the table contains the descriptive statistics for 715 firm-year observations for firms listed in OMX Nordic Exchange. Financial institutions (SIC codes 6000-6900) are excluded. Panel B reports the statistics for sub-samples with different female audit engagement partner involvement. Panel C reports the statistics for three country specific samples. The statistically significant differences between total sample in Panel A and subsamples in Panels B and C are denoted by asterisks. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. Swedish (SEK) and Danish Kronas (DKK) are converted into Euros using fiscal year end exchange rates. TOTFEE is the natural log of total fees charged by the auditor, AFEE denotes the natural log of audit fees, SIZE is the natural log of total assets, INVREC is the receivable and inventory intensity, LEV is the percentage of total debt to total assets, LOSS is a dummy variable which equals one if the net income of firm is negative, ROA is the percentage of return on assets, FOROP is the percentage of foreign assets to total assets, JOINT is a dummy variable, which gets a value of one if at least two audit partners from different audit firms signed the audit report, CHANGE is a binary variable which is one if the responsible audit firm(s) changed compared to the previous year, BIG4 is a dummy variable which is assigned to one if the responsible audit firm is one of the BIG4 group, and NAS is the natural log of non-audit service fees.

Panel A. Summary statistics for all firms (n=715 observations)

Variable	Mean	Median	Max	Min	Std.dev.
Total fees (in € millions, TOTFEE)	0.970	0.247	19.500	0.008	2.116
Audit fees (in € millions, AFEE)	0.602	0.162	14.491	0.004	1.339
Total assets (in € millions, SIZE)	998.335	82.172	41528.300	0.513	3415.356
Inventory and receivables to total assets (INVREC)	0.372	0.373	0.888	0.002	0.197
Leverage (LEV)	21.374	18.366	447.543	0.000	23.359
Loss (LOSS)	0.213	0.000	1.000	0.000	0.409
Return on assets (ROA)	3.285	7.048	125.015	-158.003	22.356
Foreign assets (FOROP)	18.890	0.000	99.776	0.000	25.977
Joint auditing (JOINT)	0.077	0.000	1.000	0.000	0.267
Auditor change (CHANGE)	0.049	0.000	1.000	0.000	0.216
Big-4 (BIG4)	0.918	1.000	1.000	0.000	0.274
Non-audit services (NAS)	0.367	0.081	14.300	0.000	0.942

Table 2 cont. Descriptive statistics.

Panel B. Summary statistics based on the female auditor representation

Variable	Mean		Median	Max	Min	St.dev.
Female Dummy (n=92 observations)						
Total fees (in € millions)	0.714		0.171	7.800	0.018	1.285
Audit fees (in € millions)	0.432		0.137	4.900	0.015	0.750
Total assets (in € millions)	563.733		80.977	15189.000	3.228	1721.620
Inventory and receivables to total assets	0.357		0.353	0.772	0.010	0.200
Leverage	20.855		18.256	78.274	0.000	18.171
Loss	0.261		0.000	1.000	0.000	0.442
Return on assets	6.745		8.274	106.821	-77.231	21.047
Foreign assets	13.577		0.000	90.607	0.000	23.410
Joint auditing	0.055		0.000	1.000	0.000	0.229
Auditor change	0.033		0.000	1.000	0.000	0.180
Big-4	0.956		1.000	1.000	0.000	0.206
Non-audit services	0.282		0.058	3.200	0.000	0.560
Female Group (n=34 observations)						
Total fees (in € millions)	0.572		0.105	7.800	0.018	1.672
Audit fees (in € millions)	0.339		0.061	4.900	0.015	0.969
Total assets (in € millions)	509.797		15.286	15189.000	3.228	2596.655
Inventory and receivables to total assets	0.259		0.218	0.723	0.010	0.176
Leverage	21.307		19.329	55.196	0.000	16.620
Loss	0.353		0.000	1.000	0.000	0.485
Return on assets	5.278		7.134	106.821	-65.299	26.382
Foreign assets	5.141		0.000	54.512	0.000	14.064
Joint auditing	0.000		0.000	0.000	0.000	0.000
Auditor change	0.000		0.000	0.000	0.000	0.000
Big-4	0.882	*	1.000	1.000	0.000	0.327
Non-audit services	0.233		0.033	3.200	0.000	0.723
Firms with mixed (n= 58 observations)						
Total fees (in € millions)	0.797		0.278	4.560	0.035	0.999
Audit fees (in € millions)	0.487		0.185	2.414	0.023	0.588
Total assets (in € millions)	595.351		183.274	3921.619	4.219	908.619
Inventory and receivables to total assets	0.414		0.461	0.772	0.023	0.192
Leverage	20.591		18.123	78.274	0.000	19.158
Loss	0.207		0.000	1.000	0.000	0.409
Return on assets	7.621		8.326	74.721	-77.231	17.311
Foreign assets	18.522		0.000	90.607	0.000	26.326
Joint auditing	0.086		0.000	1.000	0.000	0.283
Auditor change	0.052		0.000	1.000	0.000	0.223
Big-4	1.000	**	1.000	1.000	1.000	0.000
Non-audit services	0.311		0.091	2.146	0.008	0.442

Table 2 cont. Descriptive statistics.

Panel C. Summary statistics for firms by country

Variable	Mean		Median	Max	Min	Std.dev.
Denmark (n= 154 observations)						
Total fees (in € millions)	1.006		0.305	10.053	0.008	1.693
Audit fees (in € millions)	0.540		0.192	4.560	0.007	0.853
Total assets (in € millions)	1272.254		163.817	41528.300	0.644	4773.912
Inventory and receivables to total assets	0.386		0.396	0.888	0.008	0.233
Leverage	27.836	***	23.187	447.543	0.000	38.911
Loss	0.234		0.000	1.000	0.000	0.425
Return on assets	2.433		6.034	74.721	-158.003	23.152
Foreign assets	18.877		0.000	99.776	0.000	26.022
Joint auditing	0.258	***	0.000	1.000	0.000	0.439
Auditor change	0.099	*	0.000	1.000	0.000	0.300
Big-4	0.882		1.000	1.000	0.000	0.324
Non-audit services	0.466		0.133	6.568	0.000	0.898
Finland (n= 168 observations)						
Total fees (in € millions)	1.125		0.293	19.500	0.025	2.312
Audit fees (in € millions)	0.630		0.183	5.300	0.018	1.045
Total assets (in € millions)	783.393		8.741	21606.000	2.552	2810.899
Inventory and receivables to total assets	0.382		0.391	0.844	0.023	0.170
Leverage	24.209		23.653	69.904	0.000	15.250
Loss	0.131	**	0.000	1.000	0.000	0.338
Return on assets	4.617		7.718	125.015	-116.833	21.076
Foreign assets	21.280	**	13.351	84.777	0.000	23.861
Joint auditing	0.012	***	0.000	1.000	0.000	0.111
Auditor change	0.037		0.000	1.000	0.000	0.189
Big-4	0.946		1.000	1.000	0.000	0.226
Non-audit services	0.495		0.095	14.300	0.000	1.400
Sweden (n= 393 observations)						
Total fees (in € millions)	0.889		0.213	18.251	0.010	2.178
Audit fees (in € millions)	0.615		0.142	14.491	0.004	1.586
Total assets (in € millions)	982.881		86.331	27848.770	0.513	2989.247
Inventory and receivables to total assets	0.361		0.362	0.861	0.002	0.192
Leverage	17.631	***	14.144	77.582	0.000	16.430
Loss	0.239		0.000	1.000	0.000	0.427
Return on assets	3.044		7.161	106.821	-150.929	22.605
Foreign assets	17.874		0.000	98.625	0.000	26.811
Joint auditing	0.032	***	0.000	1.000	0.000	0.176
Auditor change	0.034		0.000	1.000	0.000	0.183
Big-4	0.921		1.000	1.000	0.000	0.271
Non-audit services	0.274		0.056	6.497	0.000	0.669

Table 3. Correlations.

The table reports pairwise correlations for the variables used in regressions. (i) The dependent variable A*FEE* is the natural log of audit fees, and *TOTFEE* used in the robustness checks is the natural log of total fees. (ii) Firm-specific control variables are defined as follows: *INVREC* is inventory and receivables to total assets, *LEV* is the percentage of total debt to total assets, *LOSS* is a dummy variable that equals one if the firm has incurred loss, *SIZE* is the natural log of total assets, *ROA* is the percentage of return on assets, *FOROP* is the percentage of foreign assets to total assets, *JOINT* two or more signing audit partners from different audit firms, *CHANGE* is a dummy variable that equals one if the firm has changed the auditor, *BIG4* is a dummy variable that equals one if the firm has a Big-4 auditor, *NAS* is the natural log of non-audit fees. (iv) The dummy variables for female audit engagement partner representation are defined as follows: *FGROUP* equals one if only female audit partner(s) are engaged, *FRATIO* is the proportion of female audit engagement partners of all audit partners, *FDUM* equals one if the audit engagement partner (or one of them) is female, *MIXED* equals one if the female audit partner is accompanied by a male audit partner, and *MGROUP* equals one if only male audit partner(s) are engaged.

Variable	TOTFEE	INVREC	LEV	LOSS	SIZE	ROA	FOROP	JOINT	CHANGE	BIG4	NAS	FGROUP	FRATIO	FDUM	MIXED	MGROUP
AFEE	0.977	0.041	0.074	-0.112	0.875	0.062	0.441	0.031	0.024	0.145	-0.053	-0.127	-0.085	-0.034	0.058	0.034
TOTFEE		0.000	0.075	-0.099	0.877	0.074	0.440	0.056	0.018	0.163	0.164	-0.131	-0.090	-0.038	0.056	0.038
INVREC			0.087	0.006	-0.088	-0.027	0.059	0.005	-0.065	-0.020	-0.188	-0.130	-0.081	-0.026	0.070	0.026
LEV				-0.006	0.063	-0.067	0.100	0.126	0.152	0.054	0.006	-0.005	-0.016	-0.012	-0.009	0.011
LOSS					-0.249	-0.142	-0.161	-0.015	-0.072	-0.023	0.052	0.080	0.065	0.049	-0.002	-0.049
SIZE						0.127	0.458	0.059	0.039	0.189	0.057	-0.159	-0.115	-0.060	0.051	0.060
ROA							0.051	0.029	0.004	0.047	0.062	0.019	0.047	0.061	0.059	-0.061
FOROP								-0.047	0.006	0.168	0.018	-0.121	-0.116	-0.090	-0.016	0.090
JOINT									0.114	-0.149	0.117	-0.064	-0.062	-0.028	0.016	0.028
CHANGE										-0.010	-0.027	-0.052	-0.041	-0.029	0.005	0.029
BIG4											0.090	-0.038	0.013	0.046	0.086	-0.046
NAS												-0.028	-0.290	-0.023	-0.006	0.023
FGROUP													0.840	0.582	-0.068	-0.582
FRATIO														0.925	0.478	-0.925
FDUM															0.772	-1.000
MIXED																-0.772

4.2 Regression results

The estimation results of our alternative fixed-effects panel regressions are reported in Table 4. We report regression results with six different model specifications, where our dependent variable audit fees is first regressed on our set of control variables and, then, in Models 2–6 we include one of our five different variables for female audit engagement partners to the equation. In Model 1, audit fees (*AFEE*) is regressed on firm-specific control variables (*INVREC*, *LEV*, *LOSS*, *SIZE*, *ROA*, *FOROP*, *JOINT*, *CHANGE*, *BIG4*, and *NAS*) and additional controls for industry, country, and year. As can be seen from the table, all our control variables are statistically significant at least at the 5 % level, and they have the expected signs. Furthermore, our control variables have a good explanatory power for audit fees, since the adjusted R^2 is 87.2 % and the *F*-statistic is significant at the 1% level. Consistent with most of the literature following Simunic (1980), the inherent risk, leverage, and firm size are all positively associated with audit fees. Interestingly, the findings of Thinggaard and Kiertzner (2008) seem to hold also in our sample, as opting for a joint audit seems to significantly reduce the audit fees.

In Models 2–6, we examine the relationship between female audit engagement partners and audit fees by regressing the audit fees on a female audit engagement partner variable and the firm control variables. In Model 2 the female audit engagement partner variable is *FGROUP*, which equals one if the responsible auditor(s) is (are) female. The estimation results indicate that audit fees are higher when a female audit partner is engaged. The coefficient for *FGROUP* is positive and statistically significant at the 1 % level. All the control variables appear as expected and are statistically significant, and the explanatory power of the model is 87.2 %.

In Model 3, we use a ratio for female audit engagement partner representation (*FRATIO*) for each firm-year observation, and in Model 4 the female representation variable is *FDUM*, which equals one if the firm has at least one female audit engagement partner. Consistent with Model 2, the results for Models 3 and 4 presented in Table 4 also show that female audit engagement partner representation increases audit fees. Again, the results are statistically significant at the 1 % level.

In Model 5, we introduce the female representation variable *MIXED*, which equals one if the firm has appointed both female and male audit partner(s). Interestingly, the estimation results concerning our test variable turn out to be insignificant, thereby indicating that if both male and female partner(s) are assigned to the task the auditor gender does not have a statistically significant impact on audit fees.

Finally, Model 6 further confirms the results of our previous models by suggesting that firms with male audit engagement partners (*MGROUP*) have statistically significantly lower audit fees. In all models, the *F*-statistics and adjusted R^2's indicate a good fit of the specification and, moreover, the results for all the female variables, except for *MIXED*, are statistically significant at the 1 % level.

Table 4. Regression results.

The table reports the estimates of alternative versions the following regression specification:

$$\begin{aligned} AFEE_{j,t} = {} & \alpha_0 + \beta_1 FEM_{j,t} + \beta_2 INVREC_{j,t} + \beta_3 LEV_{j,t} + \beta_4 LOSS_{j,t} + \beta_5 SIZE_{j,t} \\ & + \beta_6 ROA_{j,t} + \beta_7 FOROP_{j,t} + \beta_8 JOINT_{j,t} + \beta_9 CHANGE_{j,t} + \beta_{10} BIG4_{j,t} \\ & + \beta_{11} NAS_{j,t} + \beta_{12} YEAR_{2005} + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{c=1}^{n-1} \omega_c COUNTRY_j^c + \varepsilon_{j,t} \end{aligned}$$

where $AFEE_{j,t}$ denotes natural log of audit fees for firm *j* at *t*, $INVREC_{j,t}$ is the receivable and inventory intensity, $LEV_{j,t}$ is the percentage of total debt to total assets, $LOSS_{j,t}$ is a dummy variable which equals one if the net income of firm *j* during *t* is negative, $SIZE_{j,t}$ is the natural log of total assets, $ROA_{j,t}$ is the percentage of return on assets, $FOROP_{j,t}$ is the percentage of foreign assets to total assets, $JOINT_{j,t}$ is a dummy variable, which gets a value of one if at least two audit partners from different audit firms signed the audit report, $CHANGE_{j,t}$ is a binary variable which is one if the responsible audit firm(s) changed compared to the previous year, $BIG4_{j,t}$ is a dummy variable which is assigned to one if the responsible audit firm is one of the BIG4 group, $NAS_{j,t}$ is the natural log of non-audit service fees, $YEAR_{2005}$ is a binary variable that indicates fiscal years, SIC_j^k is a dummy variable according to industry classification (SIC) codes, and $COUNTRY_j^c$ is a dummy variable indicating the company's country of origin. The female representation variable $FEM_{j,t}$ varies in different model specifications: *FGROUP* equals one if only female audit partners are acting as responsible auditors, *FRATIO* measures the share of female auditors compared to the number of auditors signing the audit report, *FDUM* gets a value of one if a female audit partner participates in or is responsible for signing the audit report, *MIXED* is one if at least one male and female is responsible for the engagement, and *MGROUP* is set at one if only male auditors sign the audit report. The t-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	Exp. sign	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Constant		-4.669	***	-4.691	***	-4.702	***	-4.669	***	-4.622	***	-4.709	***
		-(39.00)		-(37.12)		-(39.44)		-(37.49)		-(44.23)		-(42.87)	
Control variables:													
INVREC	+	0.899	***	0.902	***	0.910	***	0.899	***	0.902	***	0.923	***
		(16.11)		(16.37)		(16.34)		(14.44)		(16.37)		(15.32)	
LEV	+	0.284	*	0.284	*	0.282	*	0.285	*	0.284	*	0.277	*
		(1.93)		(1.89)		(1.87)		(1.89)		(1.89)		(1.81)	
LOSS	+	0.285	***	0.282	***	0.282	***	0.285	***	0.282	***	0.280	***
		(6.87)		(6.86)		(6.98)		(6.81)		(6.86)		(7.07)	
SIZE	+	0.665	***	0.666	***	0.666	***	0.665	***	0.666	***	0.667	***
		(187.84)		(206.60)		(195.26)		(174.83)		(206.60)		(161.11)	
ROA	-	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***
		-(3.80)		-(3.72)		-(3.97)		-(3.31)		-(3.72)		-(4.05)	
FOROP	+	0.005	***	0.005	***	0.005	***	0.005	***	0.005	***	0.005	***
		(8.05)		(8.40)		(8.14)		(8.42)		(8.40)		(7.89)	
JOINT	-	-0.170	***	-0.165	***	-0.162	***	-0.170	***	-0.165	***	0.163	***
		-(131.9)		-(242.0)		-(65.2)		-(239.2)		-(242.0)		-(74.30)	
CHANGE	-	-0.057	***	-0.053	***	-0.051	***	-0.057	***	-0.053	***	-0.048	**
		-(3.04)		-(3.17)		-(2.83)		-(3.13)		-(3.17)		-(2.33)	
BIG4	+	0.003		-0.004		-0.001		0.002	**	-0.004		0.005	
		(0.38)		-(0.76)		-(0.20)		(2.42)		-(0.76)		(0.74)	
NAS	-	-0.327	**	-0.322	**	-0.320	**	-0.326	**	-0.322	**	-0.322	**
		-(2.54)		-(2.49)		-(2.52)		-(2.49)		-(2.49)		-(2.55)	
SIC1	?	-0.562	***	-0.558	***	-0.558	***	-0.562	***	-0.558	***	-0.561	***
		-(8.43)		-(8.31)		-(8.38)		-(8.10)		-(8.31)		-(8.03)	
SIC2	?	-0.070		-0.062		-0.060		-0.069		-0.062		-0.060	
		-(1.16)		-(1.04)		-(1.04)		-(1.11)		-(1.04)		-(1.07)	
SIC3	?	-0.214	***	-0.210	***	-0.209	***	-0.214	***	-0.210	***	-0.209	***
		-(2.75)		-(2.71)		-(2.76)		-(2.71)		-(2.71)		-(2.86)	
SIC4	?	-0.158	**	-0.153	**	-0.151	**	-0.157	**	-0.153	**	-0.150	**
		-(2.02)		-(1.98)		-(2.00)		-(1.99)		-(1.98)		-(2.00)	
FIN	?	-0.914	***	-0.906	***	-0.909	***	-0.914	***	-0.906	***	-0.917	***
		-(41.45)		-(36.70)		-(40.88)		-(30.75)		-(36.70)		-(41.27)	
SWE	?	0.201	***	0.209	***	0.206	***	0.202	***	0.209	***	0.198	***
		(3.78)		(3.79)		(3.87)		(3.32)		(3.79)		(3.61)	

Table 4 cont. Regression results.

Variable	Exp. sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Female representation variables:							
FGROUP	?		0.165 ***				
			(4.98)				
FRATIO	?			0.116 ***			
				(56.85)			
FDUM	?				0.069 ***		
					(3.17)		
MIXED	?					0.006	
						(0.10)	
MGROUP	?						-0.069 ***
							-(3.17)
Adjusted R^2		0.872	0.872	0.872	0.872	0.871	0.872
F-stat.		272.022 ***	257.495 ***	257.154 ***	256.954 ***	256.524 ***	256.954 ***

The results reported in Table 4 generally indicate that female audit engagement partners may have a positive effect on the audit fees. The coefficient estimates for our female auditor representation variables are positive and statistically highly significant, whereas the coefficient for male auditor representation variable is negative and statistically significant. The results for mixed group are not statistically significant. The female representation variables seem to be important in our regressions, as they have a high significance level in all the model specifications, except for *MIXED*. In fact, according to our results, the gender variables seem to be even more important than leverage in explaining the cross-sectional variation in audit fees. In all, our results may indicate that the female auditors charge higher audit fees than the male auditors. The observed phenomenon may be caused by several factors. After describing our additional tests, we discuss the possible alternative explanations based on the literature on audit fees and gender differences.

4.3 Robustness checks

The regression results presented in Table 4 indicate that the gender of the responsible auditor may have an effect on the size of the audit fees. In the following, we examine the robustness of our results by conducting several additional tests. First, we test whether our results hold if the dummies for industry and country are removed from the models. The results of these regression specifications (not tabulated) are very similar to those presented in Table 4, and again in Model 4 the female representation variable *MIXED* lacks significance. The adjusted R^2's are still close to 80 % in all models, and the *F*-statistics are significant at the 1 % lev-

el, suggesting that the model fits the purpose well even after removing the variables controlling for country and industry of the company.

In order to test that the results are not caused by a few outlying observations, we winsorize the audit fees and the control variables at the 0.5 % and 99.5 % levels, and re-estimate the six alternative models presented in Table 4. Furthermore, we also winsorize the data at the 2.5 % and 97.5 % levels to confirm that the results are not based on the winsorizing percentage. The results (not tabulated) further confirm our previous findings on gender-based differences in audit fee pricing.

We have divided our sample into small and big firms to see if the audit pricing differs between the two groups. The regression results for the two subgroups (not tabulated) are similar to those presented in the paper. However, they mainly lack significance, because the variances in female dummy variables become substantially low. For this reason, we have also run our regression specifications including an interaction term between the alternative gender variables and client size, e.g. *FGROUP×SIZE*. These tests provide rather similar results as those reported in Table 4, the main difference being that the coefficient for *MIXED* is here positive and significant at the 1 % level.

Furthermore, we have also gathered data for auditor-specific factors, namely auditor experience and tenure.[7] Unfortunately, these data are available only for the Swedish firms, and thus we are unable to use the variables in the full sample regressions. We have, however, run a regression including the variables experience and tenure for the Swedish firms. When considering only one country from our sample, the small amount of female observations becomes a problem. Therefore, we focus on testing these two additional variables in the model specification including the female representation ratio (*FRATIO*). *FRATIO* is chosen for these analyses because it has more variance than the dummy variables and, thus, it may be more useful in a smaller sample. This regression gives similar results to those presented in Table 4, i.e. the coefficient for *FRATIO* is positive. The results, however, lack significance and no conclusions can be drawn based on them. In general, it seems that experience tends to decrease the audit fees, whereas tenure has no impact on the fees. The negative impact of experience on audit fees can be explained by the routine and knowledge of the more experienced partners. Fur-

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[7] We use the natural logarithm of the engagement partner's age as a proxy for experience. The mean age of the engagement partners in the Swedish sample is about 52 years. As the measure of tenure we use the natural logarithm of the number of years the engagement partner has signed the audit report of the same client firm. The mean tenure in the Swedish sample is about six years.

thermore, if there is a market segment where the price competition is higher or, alternatively, if there are clients that are known to focus only on the price, the more experienced engagement partners may be able to perform the audit at a lower cost due to improvements in the efficiency of the engagement and, thus, they may be able to gain or maintain clients.

As explained above, we have chosen to use the White cross-section robust covariances and to hold the firm-specific effects fixed in our models. To examine whether our results depend on the panel estimation specifications, we re-estimate the models presented in Table 4 with the ordinary coefficient covariance method, and with no fixed-effects specifications. These regressions (not tabulated) further indicate that the female audit engagement partners charge higher audit fees. These results, however, lack significance in the majority of the model specifications.

We used the natural logarithm of the audit fees as our dependent variable throughout the regressions. In addition to audit fees, the companies often also pay their auditing companies other fees e.g. for consulting. Next, we re-estimate the models presented in Table 4, but this time using the natural logarithm of total fees as our dependent variable. Our regression results indicate that the firms with female auditors pay higher total fees than the firms with male auditors. The results, however, are insignificant in some of our model specifications (not tabulated). In all, the regression results with total fees as a dependent variable give results similar to those regressions with audit fees as a dependent variable.

To complete our robustness checks, we re-estimate the models presented in Table 4 by including an interaction between the female representation variables and different risk measures, added one at the time to the model. The risk measures used here are the return on assets (ROA) and two common bankruptcy prediction measures developed by Altman (1968) and Zmijewski (1984). All of these variables are considered to measure the financial viability of the client. These tests are fairly consistent in showing that even after controlling for the riskiness of the client, the female audit engagement partners still have significantly higher fees. Summarizing the additional tests, we conclude that these robustness analyses generally provide support to the regression results reported in Table 4, as the estimated coefficient for the female variables appear positive and significant in most of our additional regressions.

4.4 Interpretation of the results

In general, our results suggest that female auditors are associated with higher audit fees and, next, possible explanations for the findings are discussed. First, fol-

lowing prior literature on audit planning (Davidson & Gist, 1996) and gender differences that may affect the amount of resources allocated on planning (Fondas & Sassalos, 2000; Huse & Solberg, 2006), it may be argued that female audit engagement partners may invest more in planning the engagements, which could increase the audit effort and, therefore, also the audit fees.

The higher risk aversion of females documented in e.g. the behavioral finance literature (Johnson & Powell, 1994; Powell & Ansic, 1997; Jianakoplos & Bernasek, 1998; Schubert, 2006) suggests that female auditors may assess some of the clients' risk components higher than their male counterparts. Higher assessed level of risk may affect the composition of the audit fees by either increasing the audit investment or increasing the risk premium (Houston et al. 1999, 2005; Johnstone & Bedard, 2001, 2003). Given that the audit engagement partners' assessment of the client's business risk affects the audit fees, our results may indicate that female auditors have a lower level of risk tolerance.

Moreover, the gender differences in overconfidence (see Bonner, 2008 p. 104 for a review), may have an impact on the audit fees. Men are documented to be more overconfident than women, which can cause the female auditors to invest more time and effort in a task before being prepared to give the auditor's opinion. Thus, the lower overconfidence level of females can result in higher audit fees in the audits with a female audit partner.

These exploratory findings do raise many questions, which are left to be answered by future research. Most importantly, perhaps, from the demand side perspective it is of interest why would any firm hire a female auditor in a competitive audit market, if a male auditor is cheaper. First, this could be simply because of ignorance, as this kind of evidence has not, to the best of our knowledge, been discussed in the prior audit literature. Second, as the audit fees may also contain a flexible component, which is determined by the findings during the audit process, the prices may be difficult to estimate and compare beforehand. Third, if female audit partners are indeed more risk averse, they may increase audit testing more as a response to any risk component observed during the audit procedures.

Finally, a female auditor can, however, also be hired because she is considered to provide actual or perceived benefits to the client. If, for example, female auditors are able to communicate in their tender that they are charging a higher audit fee because of more exhaustive audit testing, they may provide the quality-conscious clients benefits and, thus, justify accepting a more expensive audit engagement. In addition, females may, e.g. due to the well-documented gender-based differences, be perceived to produce a higher quality audit or to perform a more efficient audit of equal quality. Moreover, by hiring a female auditor the company may also at-

tempt to gain social benefits comparable to those of e.g. nominating females to executive positions, such as boards of directors. Nevertheless, it should be kept in mind when interpreting our empirical findings, that the analysis is largely exploratory in nature.

5 Conclusions and limitations

This paper examines whether the gender of the audit engagement partner affects audit fees. Following earlier studies related to audit fees and gender-based behavioral differences in communication, overconfidence, decision-making, and risk-taking, we empirically examine the potential relationship between the gender of the audit engagement partner and the audit fees. We use a sample of NASDAQ OMX Nordic Exchange listed firms to study the relationship between the gender of the audit engagement partner(s) and audit fees. This setting enables us to identify the audit engagement partners for each firm from their audit reports. The results provide exploratory insights to the question of how the audit engagement partner attributes, rather than audit firm- or office-level attributes, may affect audit fees.

Our empirical findings suggest that the gender of the audit engagement partner may have an effect on the audit fees. In particular, after controlling for the client attributes, the female audit partners are documented to have significantly higher audit fees. This is an interesting finding, however, interpretations should be made with caution due to the lack of evident and convincing theoretical explanations. Our general theoretical background is drawn from psychology, management, and corporate finance literatures. Thus, the reported empirical findings have to be regarded as somewhat exploratory and more work on the relationship between auditor gender and audit fees is needed. Our findings may suggest that gender differences related to the planning, preparation, and diligence affect the engagement partner's decisions concerning the audit investment. Alternatively, the auditor's risk assessment of the client may be an important determinant in explaining the relationship between audit partner gender and audit fees. Previous studies suggest that the auditor assessed riskiness of the client may increase the audit investment (i.e. number of audit hours) or the risk premium included in the audit fees and, therefore, the gender differences in risk tolerance may be a significant factor affecting the relationship between the auditor gender and audit fees.

In interpreting the findings of this study, it is also necessary to consider the following limitations. First, an important assumption made in this study is that individual audit engagement partners are able to influence the audit fees, at least to

some extent. Although the bidding process is obviously regulated to a certain extent by the headquarters, we find it reasonable to assume that the audit partner in charge of the engagement is integrated in the process and has an influence on the audit investment or the risk premium. This view is also supported by the ISA (IAASB, 2009), the auditor's code of ethics (IESBA, 2009), and our interviews with Big-4 auditors. Second, our sample consists of NASDAQ OMX listed firms from Denmark, Finland, and Sweden and, therefore, it is uncertain to which extent our results apply in other settings. Finally, our analysis may suffer from a self-selection bias. We have controlled for a set of client attributes which, according to the previous literature, affect the audit fees. However, it is possible that we have omitted some variables, or that some firm characteristics simultaneously affect the appointment of female audit engagement partners and audit fees. Especially, we acknowledge that auditor experience, specialization, and tenure may have an impact on the formation of the audit fees. These limitations should be considered when interpreting our findings, until corroborated by future research.

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CEO AND CHAIRPERSON CHARACTERISTICS AND FIRM PERFORMANCE[☆]

ABSTRACT

This paper focuses on the relationship between executive characteristics and firm performance. Specifically, the study examines the association between the characteristics of the Chief Executive Officer (CEO) and the chairperson of the board and firm performance. Using a sample of S&P 500 firms, the evidence found suggests that demographic and experience-related executive characteristics may be associated with the market valuation and financial performance of the firm. In particular, the reported results indicate a positive relationship between the presence of female executives and firm performance, thus suggesting that gender-based differences may affect an executive's success. Moreover, the findings concerning the age of the executive are mixed, while the executive's experience and quality appear positively related to firm performance. Interestingly, an executive holding multiple board seats is negatively associated with firm performance, whereas CEO duality has a positive relationship with Tobin's Q and the return on assets (ROA) of the firm.

Keywords: corporate governance, executive characteristics, executive gender, firm performance

1 Introduction

The purpose of this paper is to study the relationship between the characteristics of the Chief Executive Officer (CEO) and the chairperson of the board and firm performance. Prior literature suggests that specific characteristics of an executive may have an impact on her/his behavior. For instance, widely reported gender-based differences have been suggested to cause differences in the performance of firms led by men and women (see, e.g., Campbell and Minguez-Vera 2008, 2010; Carter et al. 2003). In general, these studies indicate that female participation in management improves corporate governance and firm performance.

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The great majority of studies examining the relationship between executives and firm performance concentrate on only one characteristic of the executive, namely, gender. However, a number of earlier studies have reported evidence indicating that executive features other than gender may affect firm performance. For example, an executive's age, experience, quality, and busyness have been indicated to influence her/his decision-making and the ability to perform her/his work (see, e.g., Baysinger and Hoskisson 1990; Bertrand and Schoar 2003; Bhagat and Bolton 2008; Davidson et al. 2007; Gibbons and Murphy 1992; Jiraporn et al. 2008; Kim et al. 2009; Ryan and Wiggins 2001; Virtanen 2010). In general, executive experience and quality have been found to have a positive impact on firm performance, whereas executive busyness tends to decrease firm performance.

Bertrand and Schoar (2003) document that manager characteristics in general are important determinants of several corporate variables. Moreover, these researchers believe that several individual characteristics may be relevant to executives' decision-making processes, but conducting these types of studies is challenging due to data constraints. The existing literature has yet to provide a covering study of the possible influence of executives' characteristics on firm performance, and the role of the chairperson's characteristics in particular is still unclear. Thus, this paper contributes to the existing literature by assessing whether, and if so how, individual executive characteristics namely, age, experience, busyness, quality, and gender influence firm performance. In addition, the impact of CEOs and chairs is compared.

CEOs are natural research targets, as they are in many aspects the most powerful and visible executives of a firm. Chairpersons, however, were often ignored in earlier literature, or alternatively examined only as one of the board members (see, e.g., Adams and Ferreira 2009; Adams and Flynn, 2005; Brammer et al., 2007; Campbell and Minguez-Vera, 2010). In fact, a chairperson of the board is often a very experienced, highly educated long-term member of the company's administration and has authority within the firm. Hence, in examining the impact executives may have on firm performance, chairpersons should also be investigated.

The study is conducted by employing cross-sectional panel regressions on a five-year sample of S&P 500 firms. The reported empirical results suggest that firms with female executives may outperform male-led firms. Moreover, the busyness of the executive seems to be negatively related to Tobin's Q and ROA, whereas results concerning executive age are mixed. Executive experience and quality and CEO duality are positively related to firm performance. These results are consistent with earlier studies in suggesting that female-controlled firms outperform

male-controlled firms (see, e.g., Krishnan and Park 2005; Smith et al. 2006). Additionally, the results are partly supported by previous literature on executive age, experience, quality, and busyness (see e.g., Ahn et al. 2010; Baysinger and Hoskisson 1990; Bertrand and Schoar 2003; Bhagat and Bolton 2008; Kim et al. 2009). In general, the empirical findings reported in this paper indicate that executive characteristics should be considered as being among the determinants of a firm's success.

2 Related literature

2.1 Gender-based differences and their impact on firm performance

Perhaps the single most examined executive feature is gender. A vast body of earlier corporate finance literature indicates that gender-based differences may affect a person's success at work. For instance, Brennan and McCafferty (1997) suggest that female executives may have a better understanding of consumer behavior and customers' needs, which may create a competitive advantage for female-controlled firms. Researchers have also proposed in the literature that women tend to have higher expectations of their responsibilities, and that women have to demonstrate extra competence in order to reach executive positions (Dunn 2010; Eagly and Carli 2003; Fondas and Sassalos 2000).

The psychology literature indicates that women have better communication skills, and that women tend to perform better in group problem-solving and decision-making tasks, which are understandably important skills in management (see e.g., Dallas 2002; Fondas 1997; Maznevski 1994; Robinson and Dechant 1997; Schubert 2006; Wood et al. 1985). Moreover, researchers have argued that in today's business world, women's more cooperative leadership style may be more productive than men's competitive style (see e.g., Eagly and Carli 2003).

The literature on gender differences provides evidence suggesting that women are more conservative and risk-averse than men (see, e.g., Byrnes et al. 1999; Jianakoplos and Bernasek 1998; Johnson and Powell 1994; Levin et al. 1997; Snyder and Chapman 1988; Sunden and Surette 1998). Schubert (2006) argues that women tend to avoid losses and are less willing to take extreme risks than men are. Interestingly, Martin et al. (2009) suggest that the market is aware of the gender differences in risk aversion, as these researchers find that changes in risk following CEO appointments are significantly lower for female CEOs. Overall, gender-based differences in an executive's risk tolerance may have a widespread impact on the financial performance and reporting of the firm.

Evidence from the psychology literature further indicates that people are prone to overestimating their talent and abilities (see, e.g., Fischhoff et al. 1977; Lichtenstein et al. 1982). Bonner (2008) suggests that men are more prone to overconfidence than women, and the phenomenon is found to be particularly significant in masculine domains, such as the business environment. Thus, the gender-based differences in levels of overconfidence can possibly be seen in the way the executives operate, which again can lead to differences in the performance of female- and male-controlled firms.

Perhaps the most relevant to the current study are examinations of the effects that women have on firm performance, for example, by Campbell and Minguez-Vera (2008, 2010), Carter et al. (2003), Dezsö and Ross (2008), and Francouer et al. (2008). Dezsö and Ross (2008) examine the relationship between female participation the management and firm performance, and document that female participation below the CEO level improves Tobin's Q. In contrast, however, they find no relationship between female CEOs and firm performance. Finally, Campbell and Minguez-Vera (2008) and Carter et al. (2003) suggest that the gender diversity of the board has a positive impact on firm value.

2.2 Executive age

The possible impact of executive age on a firm's success has gained attention in the literature, as it can be assumed that older executives have a competitive advantage compared to younger executives, who inevitably have less experience in business. In a seminal paper, Davis (1979) examines the relation between executive age and corporate performance, and finds no connection between the two. However, in a more recent study, Bertrand and Schoar (2003) suggest that older executives are more conservative in their work, which may have an impact on firm performance. The impact, however, can be either positive or negative.

Davidson et al. (2007) examine the impact of an executive's career horizon on the firm's earnings management, and interestingly, they find that firms with CEOs nearing retirement age have large discretionary accruals in the year before turnover. Gibbons and Murphy (1992) suggest that older CEOs are prone to choosing projects that pay off before their retirement. In a similar vein, Hirshleifer (1993) proposes that younger CEOs may also want to focus on the short-term goals, an effect driven by the desire to build their reputations. Thus, prior literature in general indicates that the age of the executive may influence firm performance, but the empirical evidence is mixed.

2.3 Executive experience and quality

Some studies have reported a positive relationship between executive experience and firm performance. For example, Baysinger and Hoskisson (1990) suggest that as an executive's tenure advances, the executive has more firm-specific knowledge and a better ability to monitor and provide valuable resources, which may improve the firm's financial performance. In contrast, however, researchers have also documented that hiring a new executive may have a positive effect on firm performance (see, e.g., Huson et al. 2004). Moreover, Ryan and Wiggins (2001) suggest that CEOs with long tenures may have entrenched positions, which would enable the CEOs to pursue personal interests, while possibly harming firm performance.

Bhagat and Bolton (2008) propose that executive quality may have a positive impact on firm performance. They use executive tenure divided by executive age as a measure of quality, as in their opinion an executive with a five-year tenure at the age of 50 is of a different quality and the executive may have a different amount of equity than, for example, an executive having an equally long tenure at the age of 60. Empirical evidence on this is provided, for example, by Gibbons and Murphy (1992), who argue that executives with the same tenure at different ages have different incentives, reputation, and career concerns, all of which may affect the executives' work performance.

2.4 Executive busyness

Executive and director busyness and its impact on a firm have gained increasing attention in the literature during the past few years. Jiraporn et al. (2008) assert that director busyness is inversely related to the firm value, that is, firms where board members hold multiple board seats at other firms are negatively affected by board member busyness. Interestingly, the busyness of external and internal board members seems to have different impacts on firm performance. Sarkar and Sarkar (2009) report that an external board member holding multiple board seats correlates positively with firm value, whereas a situation where multiple directorships are held by internal executives relates negatively to firm performance. In addition, executives with multiple board seats tend to miss more board meetings than executives with no external commitments (Jiraporn et al. 2009).

Executive busyness within a firm can be measured through CEO duality, that is, the same person holds the CEO and chairperson positions. On one hand, duality leadership may cause agency conflicts and increase the need for an efficient corporate governance system in order to ensure shareholder rights. Thus, CEO duali-

ty may hurt firm performance (see, e.g., Chanine and Tohmé 2009; Elsayed 2007). On the other hand, duality leadership may cause the executive to consider the firm's success as a personal challenge, and serve the firm and its shareholders more effectively (see e.g., Davis et al. 1997). Moreover, CEO duality leadership has been documented as having a positive impact on the firm in terms of increasing corporate diversification into unrelated industries (see, e.g., Kim et al. 2009). Overall, previous empirical studies have reported mixed results on the impact of CEO duality on the firm, as is also noted by Peng et al. (2007).

2.5 Hypotheses

The earlier literature suggests that executive characteristics may have important implications in many areas of business. In particular, the importance of executive gender has been highlighted in the literature. In this paper, it is assumed that executive gender, age, experience, quality, and busyness may have an effect on firm performance. Since the results reported by earlier studies on executive characteristics and firm performance are rather mixed, the hypotheses of this study are presented as non-directional. Thus, the research hypotheses to be examined are as follows:

> *Hypothesis 1: Controlling for other characteristic variables, firms with female CEOs are associated with better firm performance.*
>
> *Hypothesis 2: Controlling for other characteristic variables, firms with female board chairs are associated with better firm performance.*

The CEO is the highest ranking executive within a firm, and is responsible for supervising the organization. Therefore, CEOs are important research targets when firm performance is examined. In addition to CEOs, the paper also examines the impact the chairperson may have on firm performance. The chairperson of the board is usually considered a board member, and not a powerful and experienced long-term executive of a firm, which often is the case. For example, Brickley et al. (1999) report that about 16% of retiring CEOs continue to serve as the chairpersons of the board of their own companies. Thus, a large proportion of board chairs are in fact either current or past CEOs of the company. Since the chairs lead the board of directors, they may have a significant impact on board decision-making and, consequently, on firm performance. Finally, the earlier literature has documented that good governance leads to better firm performance (see, e.g., Bauer et al. 2004, 2008; Bebchuk et al. 2009; Bhagat and Bolton 2008; Brown and Caylor 2006, 2009; Gompers et al. 2003; Renders et al. 2010). Thus, even if the chairperson is seen as performing more of a governance role, it is a

role that may have a significant impact on firm performance through corporate governance mechanisms.

3 Methodology

The relationship between executive characteristics and firm performance is examined with cross-sectional panel regressions. The measures of firm performance used in this study are Tobin's Q (Tobin 1969) and return on assets (ROA). Tobin's Q is a ratio relating the market value of the firm to its book value, and is calculated as (market value of equity + book value of debt + book value of preferred stock) divided by the book value of total assets. ROA is calculated as the net income divided by the total assets of the firm.

After estimating the performance of a firm using Tobin's Q and ROA, the relation between the executive characteristics and firm performance is examined with the following cross-sectional panel regression:

$$PERF = \alpha_0 + \beta(CHARACTERISTICS) + \gamma(CONTROLS) + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2007}^{2010} \omega_y YEAR_j^y + \varepsilon_{j,t} \quad (1)$$

where $PERF_{j,t}$ is either Tobin's Q or ROA for firm j in year t. The characteristic variables employed in the alternative model specifications are defined as follows: *FCEO* and *FCHAIR* are binary variables, which are assigned to one if the examined executive (CEO or chair) is female, *EXECAGE* is the age of the executive in years, *EXECEXP* is the experience of the executive, which is measured by the years the executive has served in the same position, *EXECQUAL* is the executive quality, measured as a ratio of executive tenure to executive age, *EXECBSEATS* is the number of board seats the examined executive holds at firms other than their employer, and *DUAL* is a binary variable, which is assigned to one if the CEO and the chairperson of the board positions are held by the same person. The control variables are defined as follows: *LEV* is the financial leverage of the firm measured as total liabilities divided by total assets, *RD* is the ratio of research and development expenses (R&D) to sales, *SGROWTH* is the one-year sales growth rate, and *SIZE* is the natural logarithm of total assets. Finally, SIC_j^k is a dummy variable according to the standard industry classification codes (SIC) and $YEAR_j^k$ is a binary variable indicating the fiscal years.

To examine the possible impact of executive characteristics on firm performance, eight different model specifications are estimated. Thus, in addition to the non-varying controls, the regression specifications include the following executive feature variables: (i) *FCEO, CEOAGE,* and *CEOEXP*, (ii) *FCEO, CEOAGE, CEOEXP, CEOBSEATS,* and *DUAL*, (iii) *FCHAIR, CHAIRAGE,* and *CHAIREXP*, (iv) *FCHAIR, CHAIRAGE, CHAIREXP, CHAIRBSEATS,* and *DUAL*, (v) *FCEO* and *CEOQUAL*, (vi) *FCEO, CEOQUAL, CEOBSEATS,* and *DUAL*, (vii) *FCHAIR,* and *CHAIRQUAL*, and (viii) *FCHAIR, CHAIRQUAL, CHAIRBSEATS,* and *DUAL*. Owing to the high correlation of the CEO and chair characteristic variables, they are not employed simultaneously. Moreover, the age and experience variables are employed in different models than the quality measure, as it is calculated based on these two variables.

The chosen characteristic variables present demographics (gender and age) as well as educational factors (experience and quality). Following Davis (1979), the executive age is measured in years, and similar to Bertrand and Schoar (2003), the executive experience is defined as years served in the examined position. The employed quality measure is estimated following Bhagat and Bolton (2008), who demonstrate that the ratio of tenure to age is an estimate of executive quality. The included control variables are selected based on the earlier literature. Leverage is a proxy for the financial condition of the firm (Bhagat and Bolton 2008) and, thus, important when firm performance is estimated. The amount of research and development expenses is commonly reported to influence firm performance, and the association may vary from one period to another and between different performance measures (Anderson and Reeb 2003). The sales growth rate is commonly positively related to firm performance (Rose 2007). Finally, firm size is reported to have a significant impact on firm performance (Adams and Santos 2006). Moreover, Becker et al. (1998) suggest that firm size may also act as a surrogate for various omitted variables.

In all of the regression specifications, a two-way fixed-effects method is used, because it permits a different intercept for each industry, and the method controls for the possible change in firm performance from one year to another. Moreover, the two-way fixed effects method allows each firm to have an individual effect, which cannot be explained by the control variables. In fact, the fixed effects model requires that there are unique effects of individual firms, which are not caused by random variation and are constant over time (Hsiao et al. 1999; Madalla 2001) and, thus, is an appropriate method in this research setting. White cross-section robust covariances are used in the regression specifications, because the method is robust to contemporaneous correlation and different error variances in each cross-section.

4 Data

The sample used in the empirical analysis consists of S&P 500 firms. Following earlier studies, the financial institutions (SIC codes 6000–6900) are excluded from the sample due to their special features. Furthermore, observations with insufficient data are also excluded from the analysis. The sample period extends from 2006 to 2010. The final sample consists of 388 firms and 1940 firm-year observations. The data on executive characteristics are hand-collected from the AuditAnalytics database. In the case of data availability problems, the executive data are completed by accessing the firms' annual reports and press releases. The financial statement data are obtained from Thomson Reuters Worldscope.

The descriptive statistics of the sample are reported in Table 1. The variables are winsorized at the 0.5 % and 99.5 % levels to avoid the results being affected by a few underlying observations. As can be seen from Panel A of the the table, the CEO has a median age of 54 years, and typically has five years of experience. The chairpersons are on average a little more experienced (7 years) and slightly older than the CEOs (57 years). Both the CEO and chairperson typically hold one external board seat. Only 4.2 % of the examined CEOs and 3.7 % of the chairs are female. Finally, CEO duality is very common within the sample, as the dummy's mean value is as high as 0.568.

Table 1. Descriptive statistics.

The table reports the summary statistics for the entire sample of 1940 yearly observations of 388 S&P 500 companies. Financial institutions (SIC codes 6000–6900) and firms with inadequate data are excluded from the sample. The included variables are defined as follows: (i) The dependent variable measuring firm performance is *Q* (Tobin's Q) or return on assets (*ROA*). (ii) The characteristic variables are defined as follows: *FCEO* equals one if the chief director officer of the company is female, *FCHAIR* is set to one if the chairperson of the board is female, *CEOAGE* is the age of the CEO of the company in years, *CEOEXP* is the number of years the current CEO of the company has served in that position, *CEOQUAL* is *CEOEXP/CEOAGE*, *CEOBSEATS* is the number of board seats the CEO holds outside the firm of employment, *CHAIRAGE* is the age of the chairperson in years, *CHAIREXP* is the number of years the acting chairperson of the company has served in that position, *CHAIRQUAL* is the chairperson's tenure divided by her/his age, *CHAIRBSEATS* is the number of board seats the corporate board chair holds in other firms, and *DUAL* is a binary variable, which is assigned to one if the CEO and chair positions are occupied by the same executive. (iii) Firm-specific control variables are defined as follows: *LEV* is total liabilities di-

vided by total assets. *RD* is research and development expenses to sales. *SGROWTH* is the sales growth rate, and *SIZE* is the natural logarithm of total assets.

Panel A. Summary statistics for all firms (n=1940 observations)

Variable	Mean	Median	Std.dev.	Max	Min
Q	1.683	1.425	1.047	8.264	0.149
ROA	0.064	0.072	0.097	0.344	-0.906
CEOAGE	54.304	54.000	6.208	82.000	36.000
CEOEXP	6.784	5.000	7.489	47.000	0.000
CEOQUAL	0.120	0.085	0.121	0.652	0.000
CEOBSEATS	0.728	1.000	0.753	4.000	0.000
CHAIRAGE	57.531	57.000	7.477	84.000	40.000
CHAIREXP	10.083	7.000	9.771	47.000	0.000
CHAIRQUAL	0.169	0.127	0.149	0.652	0.000
CHAIRBSEATS	0.835	1.000	0.819	4.000	0.000
LEV	0.233	0.217	0.164	1.420	0.000
RD	5.481	2.283	7.318	41.300	0.000
SGROWTH	6.291	6.281	17.430	157.051	-77.326
SIZE	5.963	4.420	2.681	13.569	2.895
Binary variables					
FCEO	0.042	0.000	0.201	1.000	0.000
FCHAIR	0.037	0.000	0.188	1.000	0.000
DUAL	0.568	1.000	0.460	1.000	0.000

Table 1 cont. Descriptive statistics.

Panel B. Summary statistics based on executive gender.

Variable	Mean	Median	Std.dev.	Max	Min
Firms with female CEO (n= 81)					
Q	1.759	1.459	0.995	4.310	0.464
ROA	0.075	0.074	0.061	0.189	-0.146
CEOAGE	52.634	52.000	3.367	62.000	47.000
CEOEXP	3.415	2.000	3.317	12.000	0.000
CEOQUAL	0.066	0.043	0.066	0.231	0.000
CEOBSEATS	0.780	1.000	0.725	2.000	0.000
CHAIRAGE	54.439	54.000	7.376	70.000	40.000
CHAIREXP	6.707	6.000	5.255	20.000	0.000
CHAIRQUAL	0.121	0.125	0.084	0.286	0.000
CHAIRBSEATS	1.099	1.000	1.114	4.000	0.000
LEV	0.278	0.273	0.127	0.519	0.003
RD	2.965	0.729	4.542	18.732	0.000
SGROWTH	4.608	3.918	16.484	58.608	-44.158
SIZE	6.253	4.476	2.875	11.130	3.481
Binary variables					
FCHAIR	0.634	1.000	0.488	1.000	0.000
DUAL	0.585	1.000	0.499	1.000	0.000
Firms with male CEO (n=1859)					
Q	1.679	1.425	1.049	8.264	0.149
ROA	0.063	0.072	0.098	0.344	-0.906
CEOAGE	54.377	55.000	6.294	82.000	36.000
CEOEXP	6.932	5.000	7.586	47.000	0.000
CEOQUAL	0.123	0.087	0.123	0.652	0.000
CEOBSEATS	0.725	1.000	0.755	4.000	0.000
CHAIRAGE	57.667	57.000	7.460	84.000	40.000
CHAIREXP	10.231	7.000	9.898	47.000	0.000
CHAIRQUAL	0.171	0.127	0.151	0.652	0.000
CHAIRBSEATS	0.824	1.000	0.802	4.000	0.000
LEV	0.231	0.211	0.166	1.420	0.000
RD	5.592	2.312	7.398	41.300	0.000
SGROWTH	6.365	6.327	17.475	157.051	-77.326
SIZE	5.950	4.417	2.673	13.569	2.895
Binary variables					
FCHAIR	0.007	0.000	0.103	1.000	0.000
DUAL	0.702	1.000	0.458	1.000	0.000

Table 1 cont. Descriptive statistics.

Panel B. Summary statistics based on executive gender.

Variable	Mean	Median	Std.dev.	Max	Min
Firms with female Chair (n=62)					
Q	1.559	1.247	0.923	3.651	0.464
ROA	0.037	0.070	0.132	0.189	-0.427
CEOAGE	51.694	51.500	4.374	60.000	43.000
CEOEXP	4.111	3.000	3.412	12.000	0.000
CEOQUAL	0.079	0.060	0.066	0.231	0.000
CEOBSEATS	0.917	1.000	0.692	2.000	0.000
CHAIRAGE	54.972	54.000	6.050	72.000	47.000
CHAIREXP	7.611	7.500	5.531	18.000	0.000
CHAIRQUAL	0.133	0.140	0.088	0.140	0.277
CHAIRBSEATS	1.167	1.000	0.737	3.000	0.000
LEV	0.261	0.260	0.131	0.461	0.000
RD	3.385	0.705	5.759	19.553	0.000
SGROWTH	4.633	3.050	19.302	58.608	-44.158
SIZE	6.406	4.508	3.053	11.130	3.092
Binary variables					
FCEO	0.722	1.000	0.454	1.000	0.000
DUAL	0.667	1.000	0.478	1.000	0.000
Firms with male Chair (n=1878)					
Q	1.688	1.427	1.051	8.264	0.149
ROA	0.064	0.072	0.095	0.344	-0.906
CEOAGE	54.404	54.000	6.247	82.000	36.000
CEOEXP	6.886	5.000	7.584	47.000	0.000
CEOQUAL	0.122	0.086	0.123	0.652	0.000
CEOBSEATS	0.721	1.000	0.755	4.000	0.000
CHAIRAGE	57.629	57.000	7.512	84.000	40.000
CHAIREXP	10.177	7.000	9.887	47.000	0.000
CHAIRQUAL	0.170	0.125	0.151	0.652	0.000
CHAIRBSEATS	0.823	1.000	0.820	4.000	0.000
LEV	0.232	0.213	0.166	1.420	0.000
RD	5.562	2.317	7.362	41.230	0.000
SGROWTH	6.354	6.302	17.363	157.051	-77.326
SIZE	5.946	4.414	2.666	13.569	2.895
Binary variables					
FCEO	0.019	0.000	0.125	1.000	0.000
DUAL	0.698	1.000	0.459	1.000	0.000

Panel B of Table 2 presents the descriptive statistics based on executive gender. As can be noted from the table, female CEOs and chairs are on average younger than their male counterparts. Female executives are also less experienced than males. Interestingly, the firms with female CEOs often also have a female chair

(63.4% of the cases). This is mainly caused by the CEO duality, but it may also be that firms who hire a female CEO have female-friendly promoting practices and, thus, they may also be more likely to nominate females to other top positions within the firm.

Table 2 reports the pairwise correlations for the variables used in the estimations. With the exception of some of the characteristics variables and the positive correlation (0.431) between the performance variables Tobin's Q and ROA, there are no strong correlations between the variables that could distort the regression results.

The female executive dummies *FCEO* and *FCHAIR* are highly positively correlated. This may be because the same executive often serves in both positions simultaneously. Alternatively, if a firm has a positive attitude toward hiring a woman for a managerial position, the firm may be more likely to maintain a similar hiring policy for other senior positions. Thus, due to the high correlation of the female dummies *FCEO* and *FCHAIR*, to avoid multicollinearity they are not used in the same regression specifications. Moreover, the age and experience of the executive are positively correlated in the cases of the CEOs and chairs, as can be expected. Naturally, the executive quality measures correlate positively with the age and experience variables, as the quality measure is calculated based on the two.

If an executive is in demand as an outside board member, s/he is often considered highly competent. Interestingly, the chairwomen (*FCHAIR*) have a positive and significant correlation (0.079) with the board seat variable (*CHAIRBSEATS*). This relation may be caused by the shortage of females that are qualified to serve on corporate boards and, thus, the few experienced women may be on high demand.

Finally, the variables measuring the number of board seats held by the CEO and chair are highly positively correlated (0.686), which may be due to the CEO and chair positions being held by the same person, which is the case in 1102 firm-year observations. Alternatively, if the employer has a positive attitude towards executives participating in other firms' governance, the CEO and chairperson are likely to do so, which could be evident in a high positive correlation between the *CEOBSEATS* and *CHAIRBSEATS* variables.

Table 2. Correlations.

The table reports pairwise correlations for the variables used in the regressions. (i) The dependent variable measuring firm performance is *Q* (Tobin's Q). (ii) The characteristic variables are defined as follows: *FCEO* equals one if the chief director officer of the company is female, *FCHAIR* is set to one if the chairperson of the board is female, *CEOAGE* is the age of the CEO of the company in years, *CEOEXP* is the number of years the current CEO of the company has served in that position, *CEOQUAL* is *CEOEXP/CEOAGE*, *CEOBSEATS* is the number of board seats the CEO holds outside the firm of employment, *CHAIRAGE* is the age of the chairperson in years, *CHAIREXP* is the number of years the acting chairperson of the company has served in that position, *CHAIRQUAL* is the chairperson's tenure divided by her/his age, *CHAIRBSEATS* is the number of board seats the corporate board chair holds in other firms, and *DUAL* is a binary variable, which is assigned to one if the CEO and chair positions are occupied by the same executive. (iii) Firm-specific control variables are defined as follows: *LEV* is total liabilities divided by total assets. *RD* is research and development expenses to sales. *SGROWTH* is the sales growth rate, and *SIZE* is the natural logarithm of total assets. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	ROA	FCEO	FCHAIR	CEOAGE	CEOEXP	CEOQUAL	CEOBSEATS	CHAIRAGE	CHAIREXP
Q	0.431 ***	0.015	-0.023	-0.081 **	0.059 *	0.073 **	-0.060 *	-0.020	0.097 ***
ROA		0.026	-0.053 *	0.056 *	0.079 **	0.077 **	0.003	-0.033	0.056 *
FCEO			0.664 ***	-0.056 *	-0.094 ***	-0.094 ***	0.015	-0.087 ***	-0.072 **
FCHAIR				-0.082 **	-0.070 **	-0.067 **	0.049	-0.067 **	-0.050
CEOAGE					0.441 ***	0.321 ***	0.216 ***	0.484 ***	0.214 ***
CEOEXP						0.980 ***	0.121 ***	0.199 ***	0.626 ***
CEOQUAL							0.052 ***	0.118 ***	0.633 ***
CEOBSEATS								0.101 ***	-0.220
CHAIRAGE									0.491 ***

Table 2 cont. Correlations.

Variable	CHAIRQUAL	CHAIRBSEATS	DUAL	LEV	RD	SGROWTH	SIZE
Q	0.105 ***	-0.108 ***	-0.015	-0.100 ***	0.372 ***	0.260 ***	-0.123 ***
ROA	0.056 *	-0.077 **	0.086 ***	-0.203 ***	-0.014	0.206 ***	-0.030
FCEO	-0.067 **	0.067 **	-0.051	0.058 *	-0.072 **	-0.020	0.023
FCHAIR	-0.046	0.079 **	-0.013	0.034	-0.056 *	-0.019	0.032
CEOAGE	0.136 ***	0.119 ***	0.200 ***	0.035	-0.080 **	-0.102 ***	0.199 ***
CEOEXP	0.656 ***	0.000	0.220 ***	-0.122 ***	0.021	0.003	-0.080
CEOQUAL	0.648 ***	0.003	0.233 ***	-0.124 ***	-0.008	0.002	0.001
CEOBSEATS	-0.042	0.686 ***	0.170 ***	0.008	0.051	0.017	-0.006
CHAIRAGE	0.346 ***	0.122 ***	-0.480 ***	-0.071 **	0.178 ***	-0.019	0.142 ***
CHAIREXP	0.978 ***	-0.086 ***	-0.331 ***	-0.161 ***	0.112 ***	-0.033	0.014
CHAIRQUAL		-0.096 ***	-0.294 ***	-0.160 ***	0.097 ***	-0.023	0.002
CHAIRBSEATS			-0.032	0.062 *	0.074 **	-0.028	0.038
DUAL				0.073 **	-0.272 ***	-0.055 *	-0.010
LEV					-0.267 ***	-0.121 ***	0.061 *
RD						0.125 ***	-0.067 **
SGROWTH							-0.187 ***

5 Results

The estimation results of the panel regressions are reported in Table 3. The table illustrates that the control variables are mainly statistically significant and have the signs that can be expected based on the previous performance measurement literature. *SIZE* has a negative impact on Tobin's Q (in line, e.g., with Adams and Santos 2006) and a positive impact on *ROA*, whereas *SGROWTH* is positively associated with firm performance (Rose 2007). Leverage is mainly positively related to Tobin's Q and negatively related to ROA, which is in line with the earlier literature (Cui and Mak 2002). Moreover, the relation between R&D expenses and Tobin's Q is positive, while R&D and ROA are negatively associated. The relation between firm performance and R&D expenses may vary from time to time and from one performance measure to another, as is also indicated by the previous literature (see, e.g., Anderson and Reeb 2003). This is because an improvement in the firm performance caused by investing in R&D can often be seen only over a long period of time. Moreover, the R&D expenses may affect the performance differently depending on the chosen evaluation method.

Panel A of Table 3 presents the results of regression Models 1–4 based on Equation 1 that have Tobin's Q as a measure of firm performance. In these model specifications, the F-statistic is significant at the 1 % level in all the regression specifications. Moreover, the adjusted R^2 varies from 29.2 % to 31.6 % in the regressions. Panel B of Table 3 presents the results for the same model specifications with ROA as a dependent variable. Here, the explanatory power of the models varies from 13.8 % to 16.5 %. Overall, the results presented in Table 3 suggest that the characteristics of the CEO and chairperson of the board may account for differences in firm performance. These findings are mainly consistent with the prior literature concentrating on executive characteristics and their impact on firm performance (see, e.g., Baysinger and Hoskisson 1990; Davidson et al. 2007; Krishnan and Park 2005; Smith et al. 2006).

5.1 Executive gender

As Panel A of Table 3 depicts, the female executive dummies, *FCEO* and *FCHAIR*, appear positive throughout the model specifications, and are statistically significant in three models out of four. With ROA as a dependent variable (Panel B of Table 3), the female CEOs have positive and highly significant coefficients, whereas the female chairs have a negative impact on ROA in Model 3. In general, these results suggest that firms with female CEOs tend to outperform firms with male executives.

The previous literature on gender-based differences and corporate governance suggests that female executives may have superior leadership skills, as women are found to have better communication and listening skills (see e.g., Dallas 2002; Eagly and Carli 2003; Schubert 2006). Moreover, women are found to have a leadership style that is effective under contemporary conditions (Eagly and Carli 2003). Thus, differences in these features may help female-controlled firms outperform male-controlled firms. Previous studies also indicate that as the business world is controlled by men, women striving to achieve managerial positions have to demonstrate special talent. Thus, women may have to work harder than men to be nominated as a CEO or chairperson of the board, and therefore, the women in these positions are more talented and devoted than the male executives, which may lead to an increase in firm performance (see, e.g., Eagly and Carli 2003; Fondas and Sassalos 2000).

Table 3. Regression results.

The table reports the results of the alternative versions of the following regression model:

$$PERF = \alpha_0 + \beta(CHARACTERI\ STICS) + \gamma(CONTROLS) + \sum_{k=1}^{n-1} \alpha_k SIC_j^k + \sum_{y=2007}^{2010} \omega_y YEAR_j^y + \varepsilon_{j,t}$$

where $PERF_{j.t}$ is Tobin's Q or ROA for firm j in year t. The variables are defined in the caption of Table 1. SIC_j^k is a dummy variable according to industry classification codes (SIC), and $YEAR_j^k$ is a binary variable indicating the fiscal years. t-statistics are reported in parenthesis. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A. Dependent variable Tobin's Q.

Variable	Exp. sign	Model 1		Model 2		Model 3		Model 4	
Constant		2.509	***	2.334	***	3.358	***	2.675	***
		(11.90)		(10.26)		(10.02)		(8.75)	
Characteristics variables:									
FCEO	?	0.284	*	0.338	**				
		(1.79)		(2.06)					
FCHAIR	?					0.067		0.163	*
						(1.09)		(1.87)	
CEOAGE	?	-0.009	***	-0.003					
		(-6.26)		(-1.60)					
CEOEXP	?	0.012	***	0.006	**				
		(3.86)		(2.07)					
CEOBSEATS	?			-0.159	***				
				(-4.49)					
CHAIRAGE	?					-0.019	***	-0.008	***
						(-7.34)		(-3.12)	
CHAIREXP	?					0.009	***	0.007	***
						(6.35)		(4.68)	
CHAIRBSEATS	?							-0.135	***
								(-4.95)	
DUAL	?			0.287	***			0.268	***
				(7.05)				(4.72)	
Control variables:									
LEV	+	-0.049		0.021		0.041		0.155	
		(-0.18)		(0.09)		(0.19)		(0.76)	
RD	?	0.004	***	0.052	***	0.043	***	0.048	***
		(6.93)		(9.68)		(14.74)		(14.77)	
SGROWTH	+	0.021	***	0.022	***	0.020	***	0.020	***
		(5.12)		(4.86)		(5.10)		(5.53)	
SIZE	-	-0.119	***	-0.151	***	-0.154	***	-0.154	***
		(-2.83)		(-2.66)		(-3.57)		(-3.03)	
Adjusted R^2		0.294		0.316		0.292		0.314	
F-stat.		28.287	***	26.901	***	28.696	***	28.002	***
n		1940		1525		1905		1480	

Table 3 cont. Regression results.

Panel B. Dependent variable ROA.

Variable	Exp. sign	Model 5	Model 6	Model 7	Model 8
Constant		-0.012	-0.018	0.086 ***	0.023
		(-0.33)	(-0.59)	(5.04)	(0.73)
Characteristics variables:					
FCEO	?	0.020 ***	0.022 ***		
		(2.85)	(2.96)		
FCHAIR	?			-0.019 **	-0.013
				(-2.23)	(-1.25)
CEOAGE	?	0.001 ***	0.001 ***		
		(3.42)	(3.83)		
CEOEXP	?	0.001 ***	0.000		
		(3.82)	(1.54)		
CEOBSEATS	?		-0.003		
			(-1.01)		
CHAIRAGE	?			-0.001 **	0.000
				(-2.21)	(-0.02)
CHAIREXP	?			0.000	0.000 *
				(1.64)	(1.84)
CHAIRBSEATS	?				-0.003
					(-0.84)
DUAL	?		0.020 ***		0.027 ***
			(3.08)		(3.67)
Control variables:					
LEV	-	-0.155 ***	-0.156 ***	-0.153 ***	-0.149 ***
		(-7.49)	(-7.81)	(-6.82)	(-6.36)
RD	?	-0.001 *	-0.001	-0.001 ***	-0.001 **
		(-1.87)	(-1.50)	(-2.75)	(-2.15)
SGROWTH	+	0.002 ***	0.002 ***	0.001 **	0.002 **
		(2.74)	(2.96)	(2.27)	(2.36)
SIZE	+	0.008 **	0.008 ***	0.009 ***	0.010 ***
		(2.54)	(2.89)	(2.79)	(3.10)
Adjusted R^2		0.159	0.165	0.138	0.153
F-stat.		13.417 ***	12.108 ***	11.797 ***	11.704 ***
n		1940	1525	1905	1480

5.2 Executive age

Model 1 in Panel A of Table 3 suggests that CEO age has a negative impact on firm profitability, whereas in Model 2 CEO age seems to have no significant impact on Tobin's Q. Additionally, Models 3 and 4 indicate that the chairperson's age has a significant negative impact on the firm's success. Interestingly, Models 2 and 4 of Panel B in Table 3 indicate that the CEO age affects ROA positively,

while the chair age has a negative impact on ROA in Model 3. Hence, overall these results indicate that as executives age, the Tobin's Q of the firm tends to decrease, while ROA seems to increase.[8]

The negative relationship between executive age and firm performance is partly supported by the previous literature (see, e.g., Davidson et al. 2007). Older executives may be more prone to advancing their own goals and "enjoying the quiet life" (see, e.g., Bertrand and Mullainathan 2003), which may cause a lower performance of firms with older executives. Alternatively, the difference may be caused by the age-based differences in risk aversion. For example, Bernasek and Shwiff (2001) and Cohn et al. (1975) report a negative relationship between age and risk aversion, which could create differences in firm performance based on the age of the executive.

5.3 Executive experience

The coefficients for the executive experience variables (*CEOEXP* and *CHAIREXP*) are positive and statistically significant in all of the estimated model specifications with *Q* as the dependent variable and in Models 1 and 4 with *ROA* as the dependent variable. Therefore, these results support the argument that executives with long experience tend to outperform less-experienced executives. As indicated by, for example, Baysinger and Hoskisson (1990), experienced executives have more firm- and task-specific knowledge, and thus, they may help the firm improve its performance. Moreover, executives with longer tenures are likely to have vast networks of business contacts from which executives can benefit.

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[8] As explained above, the age and experience of the executives are measured in years. The same regressions are also estimated by using the logarithmic values of the variables *EXECAGE* and *EXECEXP* (as suggested, e.g., by Coles et al. 2008). The results are statistically significant (not tabulated) and very similar to those reported in Table 3, indicating that the choice of using logarithmic or principal values of the age and experience measures has no impact on the reported results. Moreover, as can be seen from the correlation matrix (see Table 3), the variables for executive age and experience are positively correlated (0.441 for the CEOs and 0.491 for the Chairpersons). Therefore, to confirm that these correlations do not distort the results, the regressions are re-estimated by including only the age or experience variable in the regression specifications. The results of the modified regressions (not tabulated) are consistent with the results reported in Table 3, although not statistically significant in all the regression specifications. Hence, these tests suggest that the age of the executive has a mixed relation to firm performance, whereas experience has a positive impact on the financial performance of the firm. Therefore, the estimation results presented in the paper are rather robust.

Thus, the reported results suggest that it is not the overall experience of life as measured by age that creates a competitive advantage for an executive. Instead, the firms seem to benefit from having executives with long tenures in the same position. A long tenure may provide an executive with richer and more comprehensive knowledge and an improved understanding of the firm, thereby increasing the executive's expertise (Finkelstein 1992).

5.4 Executive busyness

The busyness of an executive is examined through CEO duality and the number of external board seats. The results indicate that the number of board seats (*CEOBSEATS* and *CHAIRBSEATS*) an executive holds in firms other than the one employing them is negatively associated with Tobin's Q. The coefficients are statistically significant at least at the 1 % level, thus indicating that busy executives hurt firm performance. There is no significant relation between the firm's ROA and executive busyness measured as the number of board seats held. Interestingly, however, CEO duality has a positive impact on firm performance, and the results are statistically significant at the 1 % level.

Thus, the estimation results indicate that the executive's external commitments may have a negative impact on firm performance. In contrast, commitments within the firm of employment may improve firm performance, as CEO duality seems to boost the firm's Tobin's Q and ROA. This may be because holding external positions is likely to decrease the time and effort an executive invests in the employing firm, whereas holding both CEO and chair positions gives the executive immense opportunities to affect the firm's development. In addition, an executive holding both of the executive positions examined, s/he may consider good firm performance as a personal challenge and accomplishment, and may therefore be willing to invest more into the roles. Similar results on the impact of CEO duality on the firm have also recently been reported by Ahn et al. (2010) and Kim et al. (2009) among others.

5.5 Executive quality

Panels C and D of Table 3 report the estimation results of the regression Models 5–8. The F-statistics of the models presented in the table are significant at the 1 % level, and the R^2s vary from 27.9 % to 31.8 % for the models with *Q* as the dependent variable and from 13.6 % to 16.2 % for the model specifications with *ROA* as the dependent variable. As can be noted from the table, female executives again positively influence Tobin's Q, even though in Model 7 the result is not

statistically significant. As Panel D of the table depicts, female CEOs have a positive impact on *ROA*, while the chairperson gender is negatively associated with ROA in Model 7. Consistent with Panels A and B of the table, the number of board seats held by the executive negatively influences firm performance, while the CEO duality seems to boost Tobin's Q and ROA.

Table 3 cont. Regression results.

Panel C. Dependent variable Tobin's Q.

Variable	Exp. sign	Model 1	Model 2	Model 3	Model 4
Constant		2.074 ***	2.178 ***	2.319 ***	2.193 ***
		(9.60)	(7.21)	(8.54)	(7.17)
Characteristics variables:					
FCEO	?	0.300 *	0.345 **		
		(1.87)	(2.12)		
FCHAIR	?			0.092	0.184 **
				(1.36)	(2.03)
CEOQUAL	?	0.666 ***	0.393 **		
		(3.82)	(2.38)		
CEOBSEATS	?		-0.163 ***		
			(-4.93)		
CHAIRQUAL	?			0.238 ***	0.393 ***
				(2.78)	(3.90)
CHAIRBSEATS	?				-0.144 ***
					(-5.26)
DUAL	?		0.278 ***		0.314 ***
			(6.36)		(5.93)
Control variables:					
LEV	+	-0.062	0.026	0.031	0.164
		(-0.23)	(0.11)	(0.14)	(0.81)
RD	?	0.045 ***	0.052 ***	0.041 ***	0.048 ***
		(6.97)	(9.72)	(14.15)	(14.83)
SGROWTH	+	0.021 ***	0.022 ***	0.019 ***	0.020 ***
		(5.15)	(4.93)	(5.04)	(5.54)
SIZE	-	-0.128 ***	-0.154 ***	-0.153 ***	-0.154 ***
		(-2.96)	(-2.78)	(-3.33)	(-2.93)
Adjusted R^2		0.295	0.318	0.279	0.314
F-stat.		30.343 ***	28.703 ***	28.845 ***	29.607 ***
n		1940	1525	1905	1480

Table 3 cont. Regression results.

Panel D. Dependent variable ROA.

Variable	Exp. sign	Model 5	Model 6	Model 7	Model 8
Constant		0.032	0.025	0.044 **	0.025
		(1.36)	(1.15)	(2.00)	(1.10)
Characteristics variables:					
FCEO	?	0.018 ***	0.020 ***		
		(2.77)	(2.85)		
FCHAIR	?			-0.018 **	-0.013
				(-2.21)	(-1.44)
CEOQUAL	?	0.052 ***	0.029 **		
		(3.76)	(2.46)		
CEOBSEATS	?		-0.002		
			(-0.52)		
CHAIRQUAL	?			0.004	0.023 **
				(0.43)	(2.20)
CHAIRBSEATS	?				-0.003
					(-0.92)
DUAL	?		0.021 ***		0.027 ***
			(3.15)		(4.79)
Control variables:					
LEV	-	-0.152 ***	-0.154 ***	-0.154 ***	-0.150 ***
		(-7.13)	(-7.57)	(-6.77)	(-6.34)
RD	?	-0.001 *	-0.001	-0.001 ***	-0.001 **
		(-1.90)	(-1.49)	(-2.99)	(-2.16)
SGROWTH	+	0.002 ***	0.002 ***	0.001 **	0.002 **
		(2.27)	(2.89)	(2.31)	(2.35)
SIZE	+	0.010 ***	0.010 ***	0.009 ***	0.009 ***
		(2.80)	(3.36)	(2.71)	(3.07)
Adjusted R^2		0.155	0.162	0.136	0.154
F-stat.		13.929 ***	12.546 ***	12.338 ***	12.396 ***
n		1940	1525	1905	1480

In general, the reported findings indicate a significant relationship between Tobin's Q or ROA and executive characteristics. Interestingly, as can be seen from Panels C and D of Table 3, executive quality may have a positive impact on firm performance. However, this result is not significant in Model 7 of Panel D. These results are consistent with Bhagat and Bolton (2008), who report that executive quality influences firm performance. Relatively young executives with a long tenure in the position are likely to have different incentives and reputations than older executives with similar tenures, and thus, the younger executives' talent and devotion work in favor of the firm.

5.6 Robustness checks

Several additional tests are conducted in order to ascertain the robustness of the reported results. First, to ensure that the results are not caused by the data winsorization, the same regressions are examined based on the original data. The estimation results of these regressions (not tabulated) are broadly consistent with the results reported in Table 3. To estimate whether the results are driven by an industry bias, the Barber Lyon adjustment (1996) is employed. The results based on these industry-adjusted ROAs as a dependent variable are in line with the results reported in Table 3.

In addition to excluding the financial firms (SIC codes 6000–6999) from the examined sample, utilities (SIC codes 4000–4999) are excluded due to their unique regulation. The results of these tests (not tabulated) support the main findings reported in Table 3, thus indicating that the findings are not caused by the utility sector firms.

CEO or chair succession or partial promotion to a dual position could drive the results. Thus, observations with CEO or chair changes and partial promotions are excluded from the sample. These test results (not tabulated) are consistent with the results tabulated in Table 3, thus indicating that changes in the CEO and chair positions do not distort the findings.

5.7 Limitations

Despite the additional tests for robustness, several limitations need to be considered in interpreting the results presented in this paper. First, the sample consists of S&P 500 firms, and thus, the results may not be applicable to smaller firms or to firms operating outside the U.S. Second, since the characteristics data are hand-collected, the sample period is limited to five fiscal years, and thus, longer-term effects of executive characteristics on firm performance cannot be examined based on this data.

In addition, other executive-specific characteristics may have an impact on firm performance. Due to data constraints, additional analyses with other characteristic variables cannot be conducted here, but future studies could examine, for example, the effects of executive education, experience in other companies, career paths, whether the chair is the previous CEO of the firm, marital status, number of children, and wealth.

Finally, the characteristic variables could be endogenous. In particular, the choice of female CEOs or chairs may not be exogenous. Despite controlling for industry and size effects, some correlated variables may have been omitted, or certain firm-specific characteristics might simultaneously affect the choice of the executive and firm performance. Unfortunately, finding instruments for these types of tests is very problematic, especially in this case in which many characteristic variables are included in the research. Earlier literature indicates many statistical problems and highly misleading parameter estimates associated with weak instruments (Hahn and Hausman 2003; Larcker and Rusticus 2010), and therefore, using possibly weak instruments to control for endogeneity may do more harm than good. Thus, endogeneity tests could not be conducted in this study, and consequently, the reported results should be considered somewhat exploratory.

6 Conclusions

This paper examines the relationship between CEO and chairperson characteristics and firm performance. The study is motivated by earlier literature reporting that executives' demographic and experience-related characteristics may be related to firm performance. For instance, gender-based differences may have important implications for the working practices of an executive. Moreover, the existing literature suggests that other executive characteristics, such as age, experience, quality, and busyness, may have an impact on executives' ability to manage their work. It is therefore hypothesized that, controlling for other characteristics, the gender of an executive may be associated with better firm performance.

Based on a five-year sample of S&P 500 firms, the findings reported in this paper demonstrate that firms with female executives may outperform firms with male executives. The age of an executive is suggested to be negatively related to Tobin's Q and to have a positive relationship with ROA. Executive experience is positively associated with Tobin's Q and ROA. In addition, an executive's external commitments seem to have a negative relationship with firm performance, while executive busyness in terms of CEO duality seems to increase Tobin's Q and ROA. Finally, executive quality is reported to enhance firm performance.

The empirical findings of the paper are broadly in line with the previous literature on gender-based differences and firm performance, as, for example results from Krishnan and Parker (2005) and Smith et al. (2006) indicate that female-controlled firms may outperform firms with male executives. The results are further supported by psychology and management literature reporting gender-based differences in, for example, risk-aversion, decision-making, and overconfidence.

Moreover, the regression results concerning the age and experience of an executive are supported by a stream of previous studies. In particular, older executives are suggested to have a negative impact on firm performance, perhaps due to advancing their own goals and "enjoying the quiet life" instead of constantly focusing on developing the firm (see, e.g., Bertrand and Mullainathan 2003; Davidson et al. 2007). The positive impact of more experienced executives on firm performance is supported by them having more firm- and task-specific knowledge, which may help them in performing the work (Baysinger and Hoskisson 1990). Executives with long tenures may also have extensive business contacts that they can benefit from.

Moreover, executive quality is reported to be positively related to the firm's success, thus further indicating that the firm's executive choices are highly important. Finally, holding multiple board seats is suggested to harm firm performance (in line with, e.g., Ahn et al. 2010), while busyness within the firm in terms of CEO duality is proposed to boost the performance of the firm (Kim et al. 2009).

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