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Shattering Glass Ceiling: Unveiling the Power of Female Leaders in Male-Dominated and Non-Dominated Industries

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ABSTRACT

Despite the efforts to achieve gender inclusivity and equality in executive positions, female leaders remain rarely welcomed to the board of directors. In this study, I explore the gender compensation gap as well as the impact of board gender diversity and female CEOs on firm performance in male-dominated and non-dominated industries. I discover that the total direct compensation of female executives is lower compared to their male counterparts. Additionally, I determine a positive effect of female board members and CEOs on firm's Tobin's Q and return on assets. Lastly, some evidence indicates that in male-dominated industries gender compensation gap and the positive effect of board gender diversity on firm performance may be lower compared to non-dominated industries. Consequently, I emphasize that striving for gender equality in executive positions goes beyond inclusivity and integrity by additionally benefiting companies' performance.

Keywords: Female CEO, Gender Diversity, Gender Compensation Gap, Male-dominated Industries

JEL codes: J7, M12, L25

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CHAPTER 1 Introduction

According to the United Nations Department of Economic and Social Affairs achieving gender equality is among the highest priorities for global sustainable development (THE 17 GOALS | Sustainable Development, n.d.). Thus, some of the Sustainable Development Goals proposed by the UN in 2015 are targeted at eliminating all types of discrimination against females and ensuring equal participation and leadership possibilities for women (Goal 5, n.d.). Nevertheless, measures aimed at tackling gender inequality existed for a long time. Thus, in the USA according to "Title VII of the Civil Rights Act of 1964" it is unlawful for an "employer to discriminate someone because of sex", including discrimination in the hiring and promotion process as well as in compensation and benefits (Civil Rights Division | Laws We Enforce, 2015).

Despite the efforts, gender inclusivity and equality goals remain unreached. According to Haan (2023), wage differences for female and male workers still exist, reaching 17% in 2022, and are expected to persist till 2059. The situation for executive-level managers is similar, with female managers earning 15% less than males in the same position (Cook, 2022). Moreover, women are heavily unrepresented in executive positions. Thus, according to the U.S. Bureau of Labour Statistics in 2022 just 29% of chief executive positions were female, despite women representing 51.5% of workers in management occupations (*Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity: U.S. Bureau of Labor Statistics*, 2023). An even worse situation is present in the largest companies. For example, the threshold of 10% of Fortune 500 companies being headed by women was for the first time surpassed on January 2023 (Hinchliffe, 2023). On top of that, certain male-dominated occupations and industries contribute to the issue by being prone to female-hostile stereotypes and beliefs about leadership abilities (Cook, 2022). This leads to a rather harmful environment: only 6.5% of full-time workers in male-dominated positions are women (Hegewisch & Mefferd, n.d.)Therefore, the gender wage gap and underrepresentation of female top managers are current and urgent socioeconomic problems, with the issue possibly even more pronounced in male-dominated industries.

The goal of this research is to access the existing gender inequality in CEO compensation and examine the current status of female CEOs and corporate board members in the USA. To do so, I first focus on evaluating the gender compensation gap among executives. Additionally, I investigate the effect that board gender diversity and CEO gender have on firm performance. Finally, considering the notions of male-dominated industries I reexamine the aforementioned questions and explore whether findings vary for sectors with different gender employment structures. With this research, I aim to contribute to the broader set of literature that focuses on female leadership and board gender diversity, as well as to emerging topic of female executives' positions in male-dominated industries.

CHAPTER 2 Theoretical Framework

2.1 Gender Wage Gap and CEO Gender Compensation Gap

Despite the recent emergence of studies, awareness that female and male wages are different is not new for socioeconomics researchers. One of the seminal studies that pawed the path for future research on labour market discrimination was "The Economics of Discrimination" written by Becker in 1957 (Charles and Guryan, 2008). The next significant step in the research field was two independent studies by Blinder (1973) and Oaxaca (1973) published in the same year. Despite the difference in findings[1] these researches have greatly contributed to the modernization of methodology used in the analysis of the gender wage gap.

Nowadays studies that evaluate the gender wage gap represents a diverse and extensive field with a focus both on national and international level, as well as different sectors and occupations (Blau and Kahn, 2017). Therefore, considering the immense number of research, various factors that influence the difference in male and female compensation have been discovered and examined throughout the years. For the purpose of this study, I will first begin by examining possible factors that affect the overall gender wage gap and then will focus on aspects that are explicitly connected to compensation discrepancies between female and male CEOs.

2.1.1 Education

Numerous studies highlight the importance of the reduction in educational gender differences in the second half of the last century and its positive effect on lowered gender wage gap (Blau and Kahn, 2017; Gill and Leigh, 2000; Loury, 1997). According to Blau and Kahn (2017) from 1971 to 2011 number of women with bachelor's and master's degrees in the USA increased by around 15 and 20 percentage points respectively, whereas the number of female PHDs increased threefold. While reasons for that change may be various, such as advances in contraception (Goldin and Katz, 2002), transformations in legislation and social norms (Blau and Kahn, 2017), various studies suggest that resulting educational advances facilitated female employment in better-paying and formerly male professional jobs (Blau and Kahn, 2017).

[1] Blinder (1973) suggested that gender wage gap originate from the age-wage profile. Thus, women's salaries remain relatively constant through their lifecycle compared to increasing salaries of men.
Oaxaca (1973) presented a different view, stating that a significant part of the gender wage gap could be ascribed to discrimination, mainly in terms of higher female placement in underpaid positions.

Additionally, some studies suggest that other educational factors such as gender differences in a choice of study programmes and place, as well as cognitive skills have a significant effect on the wage gap (Bobbitt-Zeher, 2007). For example, certain researchers argue that despite the increased openness of university programmes, they remain relatively gender-segregated (Bradley, 2000; Charles and Bradley, 2002; Jacobs, 1995). Thus, female students often specialize and select jobs in fields that are rewarded by comparatively lower salaries (Bradley, 2000; Davies and Guppy, 1997; Brown and Corcoran, 1997; Daymont and Andrisani, 1984). In a similar vein, other scholars discover that men are more inclined to apply to prestigious universities (Davies and Guppy, 1997), which positively affects their income later in life (Jacobs, 1999).

Moreover, number of studies propose that income disparities are influenced by variations between men's and women's cognitive capacities, notably in math and science (Farkas et al., 1997; Paglin and Rufolo, 1990). Thus, some scholars suggest that as the U.S. economy has been changing, the role of math skills as a predictor of income has increased, resulting in greater compensation for those who are proficient in the field (Mitra, 2002; Murnane et al., 1995). Therefore, despite the lowering gender difference in those competencies (Blau and Kahn, 2017), there may still be lasting discrepancies that lead to the wage gap between men and women, particularly as those skills become ever-more appreciated (Murnane et al., 1995)

2.1.2 Work Experience and Work Hours

Other noticeable factors that many scholars believe are related to the gender wage gap are work experience and work hours (Mincer and Polachek, 1974; Phelps, 1972; Aigner and Cain, 1977; Royalty 1996). According to Mincer and Polachek (1974), women’s careers are relatively shorter and more fragmented due to family-related duties assigned by traditional gender roles. Consequently, women are more likely to select occupations with lower requirements for firm-specific training and where the loss of skills during periods of absence from the workforce is minimized (Polachek, 1981, Altonji and Spletzer, 1991; Barron et al., 1993). This may contribute to the gender wage gap, as such selection may result in diminished investments in human capital and decreased experience within the labour market (Mincer and Polachek, 1974). Additionally, some researchers argue that employers’ uncertainty about workers’ stability and productivity may lead to discrimination against women (Phelps, 1972; Aigner and Cain, 1977; Royalty, 1996).

Furthermore, results by Goldin (2014) suggest that the effect of women's career fragmentation may additionally affect the gender wage gap through work hours and flexibility requirements. According to the findings, certain occupations have disproportionately higher compensation for working either specific

or additional amounts of time due to job characteristics (e.g., strict adherence to deadlines and schedules and the importance of interaction with colleagues and clients). Therefore, Goldin (2014) argues that for such occupations in some sectors, especially business and law, increasing flexibility of working time and schedule may be particularly damaging. Similarly, longer work time and consistency in the workforce might indicate a stronger desire to put in extra effort, thus giving a positive signal to an employer and reducing screening costs. Therefore, as responsibility for aforementioned family-related duties falls primarily on female workers, Goldin (2014) argues that the necessity for higher flexibility may result in penalties leading to relatively lower compensation for women.

Finally, some studies suggest that despite a higher proportion of women workers in part-time jobs (Blau and Kahn, 2017), there is no significant evidence that the difference between full-time and part-time workers varies across genders when worker and job characteristics are controlled for (Hirsch, 2005).

2.1.3 Children, Family, Gender Role

Other factors that scholars believe have a substantial effect on women's employment and compensation are conventional gender roles and greater commitment to family life. One such important aspect is a motherhood wage penalty, which refers to the adverse effect that having children has on women's salaries (Sigle-Rushton and Waldfogel, 2007; Fuchs, 1988; Korenman and Neumark, 1992; Waldfogel, 1998). Firstly, after bearing a child, women tend to either quit their current jobs or change to positions that give higher flexibility with childcare duties (Waldfogel, 1998), leading to a loss of job-specific training and any benefits of being especially suitable for the position (Korenman and Neumark, 1992). Moreover, some scholars argue that parenthood may adversely affect women’s productivity, work schedule and interest in promotion (Becker, 1985; Albanesi and Olivetti, 2009). Finally, some evidences suggest that mothers may face disadvantage during the application process due to their parental status (Correll et al., 2007).

Furthermore, family location is another influencing aspect that affects women's earnings (Compton and Pollak, 2007; Frank, 1978; Mincer, 1978; Sandell, 1977). Thus, if the husband’s career is considered to be of greater importance, the wife’s wage may decline, as she may agree to relocate even if it adversely affect her career or reject an opportunity even if expected benefits are greater in another place (Blau and Kahn, 2017). Moreover, Compton and Pollak (2007) find that this holds even for college-educated couples, that are more inclined to assist both careers.

Finally, interesting results were obtained by Benson (2014) regarding a partner’s career and its effect on women’s career selection. According to the results, women still are more likely to enter into

geographically flexible occupations (e.g., accountants and managers) than those that are more clustered and specialized (e.g., engineers and scientists) (Benson, 2014).

2.1.4 Psychological Attributes

Finally, some researchers believe that the difference in psychological traits and noncognitive skills plays a crucial role in explaining the wage gap (Reuben et al., 2015; Manning and Swaffield, 2008; Fortin, 2008; Mueller and Plug, 2006). For example, certain studies note that the propensity to negotiate for better compensation or position is much lower for female workers (Leibbrandt and List, 2015 Bertrand, 2011; Croson and Gneezy, 2009). Among the reasoning for such behaviour, some researchers suggest that social factors and gender expectations may play a fundamental role (Leibbrandt and List, 2015; Bowles et al., 2007). Additionally, lower bargaining by female workers may be potentially explained by lesser expected results due to the prejudice existing in the labour market (Blau and Kahn, 2017).

Another psychological factor that studies consider to be important in explaining the gender wage gap is the difference in competitiveness. Thus, some argue that women are relatively less inclined towards the competition potentially leading to decreased payoffs (Flory et al., 2015; Bertrand, 2011; Croson and Gneezy, 2009). Similarly, certain scholars highlight the importance of women's relatively higher risk aversion and its negative effect on their earnings (Bertrand, 2011; Croson and Gneezy, 2009).

2.1.5 CEO Gender Wage Gap

Despite the aforementioned immense source of researches regarding the overall gender wage gap, studies on differences between female and male CEOs' compensation are much more limited. The common explanation for this dissimilarity is the lag in women participation in leading company roles that occurs despite the increasing female participation in the overall workforce (Lyness and Thompson, 2000; Goldin, 2006; Juhn and Murphy, 1997) and declining gender difference across various factors (Blau and Kahn 2013, 2006).

Nevertheless, studies that explicitly focus on the gender gap in CEO compensation exist and suggest some additional factors that potentially contribute to the wage difference. For example, some scholars argue that since CEO positions have been historically dominated by white men, it has led to the creation of biases and stereotypes against minorities such as women (Fiske and Taylor, 1991; Dreher et al., 2011; Heilman and Okimoto, 2007). Therefore, if board members are prone to stereotypes towards female CEOs, they may wrongly relate positive results linked with CEO’s performance to external factors (e.g., pure luck), while adverse results would be ascribed to CEO’s poor abilities or wrong actions (Greenhaus and Parasuraman, 1993; Hom et al., 2008; Regan et al., 1974). Thus, evaluation for female CEOs may be

biased, making women less likely to get the reward in terms of salary or bonus raise that corresponds to their performance. Additionally, Both et al. (2003) propose the "sticky floor" theorem and suggest that female CEOs that face gender discrimination may struggle to transition to less biased firms due to family responsibilities. Therefore, even non-discriminatory firms may engage in paying lower salaries to women directors compared to equally qualified men, especially if the CEO is a married woman with kids (Both et al., 2003)

2.1.6 Opposing views

Nevertheless, the results of some of the analyses contradict the aforementioned findings. Thus, certain studies find no evidence for a statistically significant gender wage gap at the CEO level (Adams et al., 2007; Bugeja et al., 2012) Furthermore, some scholars suggest that female CEOs earn more than their male counterparts (Hill et al., 2015). Thus, according to Hill et al. (2015), female CEOs benefit from their minority status, as different stakeholders pressurise companies to include more women in high-ranking positions. Therefore, their relatively higher remuneration may be considered as a symbolic act aimed at gaining favour and attracting the interest of various groups.

Thus, the aforementioned literature suggests mixed reasons as well as evidence of the CEO gender wage gap. Additionally, shifts towards greater gender equality and inclusivity in recent years may have led to significant changes in the wage difference for male and female directors. Therefore, to assess the current situation and its development the following research question is formulated:

Research Question 1: ***Does the difference in compensation between female and male CEOs exist even after accounting for individual and firm specific characteristics?***

2.2 Board Gender Diversity and Firm Performance

The topic of board gender diversity and women on corporate boards (WOCBs) has been under active discussion in academia, especially since the Global Financial Crisis in 2007-2008 (Nguyen et al., 2020). The rising interest in the WOCBs is reflected in the number of publications: starting with just 8 research in 2008 and 2009 it has steadily risen to an average of 70 publications per year in 2017-2019 (Nguyen et al., 2020).

2.2.1 WOCB and Corporate Financial Performance

According to certain scholars, among the most popular theoretical frameworks used by academics to study the effect of WOCB on corporate financial performance (CFP) are two corporate governance perspectives: agency and resource dependence theory (Nguyen et al., 2020). According to agency theory (AT) conflicts between shareholders and managers negatively affect CFP due to occurring agency costs. Nevertheless, certain studies propose that women are more capable of advising and monitoring managers (Bear et al., 2010; Cumming et al., 2015). Therefore, some researches suggest that increased female representation on the corporate board positively affects the supervision of executives, thus minimising agency costs and enhancing CFP (Reguera-Alvarado et al., 2017; Farag and Mallin, 2018). Moreover, some researchers find a positive effect of WOCB on CFP approaching the question from the resource dependence theory perspective (RDT) (Carter et al., 2010; Kakabadse et al., 2015). According to the theory, firms may financially benefit from increasing the number of female directors due to enhanced connection with the external environment and increased provision of critical resources (e.g., wise guidance) (Bear et al., 2010; Hussain et al., 2018; Liao et al., 2018).

Likewise, according to studies that utilize RTD, WOCB may enhance companies' decision-making capabilities due to gender differences in directors' competencies and perceptions (Ali et al., 2014; Carter et al., 2010; Kim and Starks, 2016; Post and Byron, 2015). For example, Kim and Starks (2016) suggest that female directors are superior in human resources and risk management, as well as legal compliance and corporate social responsibility.

Similar findings are made in studies that utilize Human Capital Theory (HCT) and Upper Echelons Theory (UET). According to HCT, every person possesses a unique combination of education, skills and experience (Carter et al., 2010). Therefore, assigning directors from diverse backgrounds may expand organizations' human capital and increase CFP (Farag and Mallin, 2018; Isidro & Sobral, 2015). Rather similar observations are made by applying UET, which states that the composition of the directors' board is strongly linked with firms' decision-making tactics (Graham et al., 2017; Perryman et al., 2016; Post and Byron, 2015). Thus, some scholars argue that increasing board gender diversity may result in more balanced corporate decisions (Graham et al., 2017) and have a positive impact on CFP.

2.2.2 Opposing views

Alternatively, several studies (e.g., Carter et al., 2010; Chapple & Humphrey, 2014) suggest that agency theory does not explicitly endorse the idea that WOCBs favourably affect corporate financial performance. Moreover, according to contingency theory, there is no universal solution when it comes to company organization and structure as it depends on the circumstances and time (Carter et al., 2010).

Thus, some scholars suggest the effect of WOCBs on CFP may range from positive to negative or no effect at all (Labelle et al., 2015; Marinova et al., 2016; Carter et al., 2010; Adams and Ferreira, 2009). Hence, as the current literature suggests mixed results, the following research question is formulated:

Research Question 2: ***Does the higher board gender diversity have a positive effect on the company's performance?***

2.3 CEO Gender and Firm Performance

The research on the influence of CEO gender on companies' performance is a relatively new branch of studies with Khan and Vieito (2013) being one of the first scholars to explicitly focus on the topic. Nevertheless, the theoretical background for this seminal as well as later research mainly follows ideas that are similar to those used in studies that examine gender board diversity and its effect on firm performance. As many of those theories were already mentioned in the previous section, I will focus on additional factors suggested in studies that explicitly focus on female CEOs.

2.3.1 Female CEOs and Firm Performance

In their research Khan and Vieito (2013) argue that higher risk aversion, greater concern for the company funds allocation and lower self-interest of female CEOs are among the reasons for higher firm financial performance compared to the companies run by male CEOs. Additionally, according to Fan et al (2013), female CEOs are more likely to be assigned due to their specialized expertise, rather than managerial functions. Lam et al (2013) develop that idea, stating that this expertise may relatively better prepare women for leadership position, thus leading to increased company profitability. Finally, various studies suggest that female CEOs are associated with better supervision (Frye and Pham, 2018; Adams and Ferreira, 2009), lower levels of systematic risk (Adhikari, 2012), lesser earning volatility (Faccio et al., 2016), as well as greater innovation levels (Chen et al., 2018)

Considering the aforementioned aspects as well as studies that found a significant and positive association between female CEO and firm performance (Khan and Vieito, 2013; Lam et al., 2013; Ullah et al., 2020), the following research question is formulated:

Research Question 3: ***Do companies run by female CEOs have better performance than firms managed by male CEOs?***

2.4 Male-dominated industries

Despite the previously mentioned advances in facilitated female employment in formerly male professional jobs (Blau and Kahn, 2017), certain sectors still remain male-dominated. Thus, according to the U.S. Bureau of Labor Statistics in 2022 less than 20 percent of female workers are employed in mining, oil and gas extraction sector as well as metal, wood, petroleum and coal products manufacturing and machinery production. Additionally, less than 30 percent of workers employed in transportation, warehousing, wholesale trade, furniture and electrical equipment production sectors were female (*Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity: U.S. Bureau of Labor Statistics*, 2023). Nevertheless, studies that cover the CEO gender wage gap, as well as the effect of board gender diversity and female CEOs on firm performance in male-dominated industries are rather limited or close to non-existent, with the only noticeable example being a rather new study by Kräft (2022). Therefore, to overcome the existing literature gap, I will focus on a broader set of studies that cover female employment and career advancement perspectives in male-dominated industries.

2.4.1 Female workers in male-dominated industries

A reoccurring notice across various studies is that male-dominated industries are rarely welcoming to female workers. Thus, some scholars suggest that prejudices and stereotypes that persist in male-dominated industries regarding women workers are among the greatest obstacles that limit their career development as well as delay their advancement to the top level (Carr et al.,2013; Ward, 2008; Valian, 2004). Additionally, certain unofficial customs within a company may consolidate gender dominance by favouring males and reinforcing their leadership positions (Piggott and Pike, 2020). As a result, women in male-dominated are commonly expected to exceed their male coworkers as well as show greater proficiency and efficiency (Buse et al., 2013; Clerc and Kels. 2013; Esser et al., 2018).

Thus, according to the studies, it seems that male-dominated industries should be associated with lower levels of board gender diversity as well as a smaller number of female CEOs. Nevertheless, whether enhancing those metrics would result in greater performance is still a question. Similarly, the topic of the gender CEO compensation gap in male-dominated industries seems rather untouched in current studies. Therefore, to address the existing gap in the literature, the following research questions are formulated:

Research Question 4: ***Is the difference in compensation between female and male CEOs larger or smaller in male-dominated compared to non-dominated industries?***

Research Question 5: ***Is the effect of higher board gender diversity on the company performance higher or lower in male-dominated compared to non-dominated industries?***

Research Question 6: ***Is the effect of female CEO on the company performance higher or lower in male-dominated compared to non-dominated industries?***

CHAPTER 3 Data

3.1 Data

To address the aforementioned research questions, I use Wharton Research Data Services (WRDS) to access Compustat and BoardEx datasets as well as data from the U.S. Bureau of Labor Statistics. BoardEx is a global leadership database that contains individual and firm specific information for 1.7 million executives across 2.2 million organizations. For the study, I utilized BoardEx to obtain information on CEO's individual profile, including gender, age, time in role and time on board. Additionally, BoardEx was used to collect data on the gender composition of the board and the CEO's annual remuneration in the form of total compensation, total direct compensation and total awards for the period. Compustat database is another source used as it provides market and financial data for over 80,000 public North American companies. For the analysis, I used Compustat to receive necessary financial state items for publicly traded U.S. companies. Information from balance sheet items was used to obtain data on companies' total assets, book value per share and total common equity, while information from income statements was used to acquire net income and total dividends. Similarly, Compustat was utilized to get companies' total market value, annual share closing price and common shares outstanding. Additionally, Compustat was used to obtain information on companies' industry classification defined by North American Industry Classification System (NAICS). Finally, data from the U.S. Bureau of Labor Statistics was used to assess average female employment by industry in 2022.

The resulting database for this study consists of the panel data of currently active and inactive publicly traded U.S firms from 2010 to 2021. Financial and utility services firms are excluded due to regulatory discrepancy (e.g., Perryman et al., 2016; Hill et al. 2015), as well as CEOs for whom certain personal or firm specific data was missing are omitted. Thus, the final database is comprised of 6728 firm-year observations covering 713 unique firms and 1,512 unique CEOs with 90 of them being female.

3.2 Variables

Dependent variables

Following Perryman et al. (2016), *Total Direct Compensation* and *Tobin's Q* are used as measures of CEO compensation and corporate financial performance. *Total Direct Compensation* is measured as a logarithm of Salary plus Bonus plus Other Compensation plus Retirement Contribution. *Tobin's Q* is calculated as Total Assets + Market Value of Equity − Total Common Equity scaled by Total Assets. Additionally, to test the robustness of the results I use two alternative measures for each dependent variable. Thus, as an alternative for CEO compensation, I also use Total Compensation (logarithm of Salary plus Bonus) and Total Awards for the Remuneration Period (logarithm of Total Compensation plus sum of total Stock, Option and Long-Term Incentive Plans awards). Furthermore, as alternatives for

corporate financial performance measurements, I use return on assets (ROA) measured as Net Income scaled by Total Assets as well as return on equity (ROE) calculated as Net Income scaled by the product of Common Shares Outstanding and Share Closing Price.

Independent variables

The main independent variables used in the analysis are *Gender* and *Gender Ratio*. *Gender* is an indicator variable that takes a value of 1 if the CEO is female and 0 if male. Next, the *Gender Ratio* is a continuous variable that takes a value between 0 and 1 and represents the proportion of female directors in the company.

Control variables

For the purpose of analysis, I also control for certain CEO-specific variables (executive age, time in role, time on board) as well as firm-specific variables (firm size, firm age, return on assets, annual growth of the stock price, market-to-book ratio, dividends). Moreover, for models that cover research questions focused on male-dominated industries I use an additional set of indicator variables. Finally, in all models, we control for year and industry dummies.

A broader definition for dependent, independent and control variables is available in Table 1.

Table 1
Variable Definitions

Variables	Label	Definition
Dependent Variables		
CEO's Total direct compensation	TDCompensation	Total Direct Compensation= ln (Salary + Bonus + Other Compensation + Retirement Contribution)
CEO's Total compensation	TCompensation	Total Compensation= ln (Salary + Bonus)
CEO's Total Awards for the Renumeration Period	TAwards	Total Awards= ln (Salary + Bonus + Value of Equity Awarded + Intrinsic Value of Options Awarded + Value of Long-Term Incentive Plans)
Tobin's Q	TQ	Tobin's Q = (Total Assets + (Common Shares Outstanding * Book Value Per Share) - Shareholder's Equity) / Total Assets
Return on assets	ROA	ROA= Net Income/ Total Assets
Return on equity	ROE	ROE= Net Income/ (Common Shares Outstanding * Share Closing Price)
Independent variables		
CEO gender	Gender	An indicator variable that is equal to 1 if the firm has female CEO, and zero otherwise
Gender composition of the board of directors	GenderRatio	Proportion of female directors on the board of directors
Male-dominated industry	MaleDominated20	An indicator variable that is equal to 1 if the company operates in the industry where less than 20% of workers are female, and zero otherwise
	MaleDominated15	An indicator variable that is equal to 1 if the company operates in the industry where less than 15% of workers are female, and zero otherwise
	MaleDominated30	An indicator variable that is equal to 1 if the company operates in the industry where less than 30% of workers are female, and zero otherwise
Individual level control variables		
CEO age	ExAge	The age of the CEO
CEO tenure	TimeRole	Amount of time that individual has been the CEO in the company (years)
CEO term as of board member	TimeBoard	Amount of time that individual has been a member of board of directors in the company (years)
Firm level control variables		
Firm size	Size	Size= ln(Total Assets)
Return on assets	ROA	ROA= Net Income / Total Assets
Annual growth in the stock price	RET	RET= (Share Closing Price at $Year_t$ - Share Closing Price at $Year_{t-1}$) / Share Closing Price at $Year_{t-1}$
Market-to-book value	MTB	MTB= (Total Assets - Total Common Equity + (Shares Outstanding* Share Share Closing Price) / Total Assets
Length of the company life	FirmAge	Natural logarithm of the number of years since the firm was established or incorporated
Access to capital	Dividend	An indicator variable that is equal to 1 if the company has paid dividends in the respective year, and zero otherwise
Other control variables		
Industry level	Industry	Firm industry classification according to NAICS two-digit code
Year	Year	Year of the data

CHAPTER 4 Method

The methodology used in this study largely follows the methods applied by Perryman et al. (2016). As the Research Question 1 (RQ1) focuses on the difference in compensation between female and male CEOs, I use the following model to evaluate the gender wage gap:

Model 1:

$$TDCompensation_{eft} = \beta_0 + \beta_1\, Gender_{eft} + \beta_2\, GenderRatio_{ft} + \beta_3\, ExAge_{eft} + \beta_4\, TimeRole_{eft} + \beta_5\, TimeBoard_{eft} + \beta_6\, Size_{ft} + \beta_7\, ROA_{ft} + \beta_8\, RET_{ft} + \beta_9\, MTB_{ft} + Industry + Year$$

Thus, the dependent variable is 'TDCompensation' defined as the logarithm of total direct compensation of executive e, from firm f, in year t. The main variable of interest is 'Gender' and its coefficient, which when negative and significant would imply that female CEOs have lower compensation than their male counterparts. Following Perryman et al. (2016), CEO-specific control variables to account for executive experience such as 'ExAge' (age of CEO) and 'TimeBoard' (tenure on board) are included. I also include 'TimeRole', as some researches indicate that longer CEO tenure is associated with greater control over own compensation (Ozkan, 2011; Hill and Phan, 1991). Additionally, 'Size', 'ROA' and 'RET' are included to control for company size and performance (Perryman et al., 2016; Balsam et al,, 2011), while 'MTB' serves as a proxy for market growth prospects (Perryman et al., 2016; Gaver and Gaver, 1993; Smith and Watts, 1992). Finally, as some scholars propose that there may be a gender disparity in the CEO compensation structure (Khan and Vieito, 2013), two alternative measures of remuneration are introduced to assess the robustness of the results. Thus, I also test for 'TCompensation' and 'TAwards' as independent variables to reflect a difference in compensation risk.

An additional model proposed by Perryman et al. (2016) is used to evaluate the effects of board gender diversity (RQ2) and female CEOs (RQ3) on firms performance. In both Model 2 and Model 3 dependent variable is represented by 'TQ' (Tobin's Q) from firm f, in year t.

Model 2:

$$TQ_{ft} = \beta_0 + \beta_1\, GenderRatio_{ft} + \beta_2\, Size_{ft} + \beta_3\, FirmAge_{ft} + \beta_4\, Dividend + \beta_5\, Industry_{ft} + \beta_6\, Year_t$$

Model 3:

$$TQ_{ft} = \beta_0 + \beta_1\, Gender_{eft} + \beta_2\, Size_{ft} + \beta_3\, FirmAge_{ft} + \beta_4\, Dividend + \beta_5\, Industry_{ft} + \beta_6\, Year_t$$

The variable of interest in Model 2 is 'GenderRatio' and its coefficient, which when positive and significant would indicate that higher board gender diversity has a beneficial impact on the company's performance. Similarly, a positive and significant coefficient for the independent variable 'Gender' in Model 3 would imply that companies run by female CEOs have better performance than firms managed by male executives. Moreover, following Perryman et al. (2016), 'Size' and 'FirmAge' are introduced as control variables, to account for smaller Tobin's Q in larger and younger firms (Lang & Stulz, 1994). Furthermore, total dividend dummy variable is included ('Dividend') to indicate the firm's reachability for capital (Servaes, 1996). Finally, despite the proposed benefits of using TQ as a performance measure (Brown & Caylor, 2006; Lang & Stulz, 1994), alternative measures to assess the robustness of Models 2 and 3 are employed. Thus, following Ullah et al. (2020) firm performance is additionally proxied by returns on assets ('ROA') and return on equity ('ROE').

Lastly, to address Research Questions 4-6, I extend Models 1-3 by including an interaction variable between the respective independent variable and male-dominated industry dummy ('MaleDominated'). Therefore, a significant coefficient β_2 in Model 4 would signalize about either mitigating or aggravating effect that male-dominated industries have on the executive gender wage gap. Similarly, the significant coefficient for the interaction variable in Models 5 and 6 would suggest that the effects of board gender diversity and female CEOs on firm performance are larger or smaller in male-dominated industries compared to those that are not primarily occupied by men.

Model 4:

$$Compensation_{eft} = \beta_0 + \beta_1\, Gender_{eft} + \beta_2\, Gender_{eft} * MaleDominated25_{ft} + \beta_3\, GenderRatio_{ft} + \beta_4\, ExAge_{ft} + \beta_5\, TimeRole_{ft} + \beta_6\, TimeBoard_{ft} + \beta_7\, Size_{ft} + \beta_8\, ROA_{ft} - + \beta_9\, RET_{ft} + \beta_{10}\, MTB_{ft} + \beta_{11}\, Industry_{ft} + \beta_{12}\, Year_t$$

Model 5:

$$TQ_{ft} = \beta_0 + \beta_1\, GenderRatio_{ft} + \beta_2\, GenderRatio_{ft} * MaleDominated25_{ft} + \beta_3\, Size_{ft} + \beta_4\, FirmAge_{ft} + \beta_5\, Dividend + \beta_6\, Industry_{ft} + \beta_7\, Year_t$$

Model 6:

$$TQ_{ft} = \beta_0 + \beta_1\, Gender_{eft} + \beta_2\, Gender_{eft} * MaleDominated25_{ft} + \beta_3\, Size_{ft} + \beta_4\, FirmAge_{ft} + \beta_5\, Dividend + \beta_6\, Industry_{ft} + \beta_7\, Year_t$$

Finally, the exact sex ratio for the industry to be considered gender-dominated varies across studies, ranging from 15:85 (Kanter, 1977) to 30:70 (Roche et al., 2016). Nevertheless, none of the companies in our sample that are located in industries with less than 15 percent of female workers are currently managed by female CEOs . Therefore, the benchmark of a 25:75 female/male ratio is used as a main indicator for the industry to be male-dominated (‘MaleDominated25’), while ‘MaleDominated20’ and ‘MaleDominated30’ are used for robustness check.

CHAPTER 5 Results & Discussion

5.1 Descriptive Statistics and Correlation Matrix

Descriptive statistics for the sample are represented in Table 2. Thus, only 5 percent of CEO and 21 percent of board directors in the sample are female, supporting the idea that women are underrepresented in executive positions. Additionaly, results suggest that an average firm has Tobin's Q of 2.32 as well as returns on assets and returns on equity of 0.05 and 0.03 respectively. Moreover, mean value for CEOs total direct compensation is approximately 1.6 million dollars, while average total compensation and total awards are roughly 1.3 and 15.4 million dollars. Finally, 25 percent of the firms in the sample are located in sectors where less than 25 percent of employed are women, while companies in sectors with less than 20 and 30 percent of female employment represent 11 and 33 percent of firms in the sample.

Table 2

Descriptive Statistics

Variables		Mean	Median	SD	Quartile 1	Quartile 3	Observations
Independent Variables	TDC (in $ '000)	1606.18	1191.00	2353.88	943.00	1557.00	6,727
	TDCompensation	7.11	7.08	0.67	6.85	7.35	6,727
	TQ	2.32	1.71	2.28	1.26	2.59	6,728
	TC (in $ '000)	1358.34	1050.00	1582.28	860.00	1338.00	6,727
	TCompensation	6.99	6.96	0.66	6.77	7.20	6,671
	TA (in $ '000)	15417.14	11354.00	21429.48	6619.00	18440.00	6,654
	TAwards	9.26	9.34	0.97	8.80	9.82	6,632
	ROA	0.05	0.05	0.22	0.02	0.09	6,728
	ROE	0.03	0.05	0.33	0.03	0.07	6,712
Dependent Variables	Gender	0.05	0.00	0.22	0.00	0.00	6,728
	GenderRatio	0.21	0.20	0.10	0.14	0.27	6,728
	MaleDominated20	0.11	0.00	0.32	0.00	0.00	5,978
	MaleDominated25	0.25	0.00	0.43	0.00	1.00	5,978
	MaleDominated30	0.33	0.00	0.47	0.00	1.00	5,978
Control Variables	ExAge	57.12	57.00	6.56	53.00	61.00	6,728
	TimeRole	4.70	3.30	4.82	1.40	6.50	6,728
	TimeBoard	7.85	5.70	7.38	2.60	10.80	6,053
	Size	9.78	9.67	1.49	8.84	10.66	6,728
	ROA	0.05	0.05	0.22	0.02	0.09	6,728
	RET	0.16	0.11	1.32	-0.06	0.29	5,144
	MTB	2.32	1.71	2.28	1.26	2.59	6,728
	FirmAge	4.01	4.03	0.74	3.50	4.63	6,724
	Dividend	0.78	1.00	0.41	1.00	1.00	6,728

Note: TDC = Total Direct Compensation with TDCompensation= ln(TDC); TC = Total Compensation with TCompensation=ln(TC), TA=Total Awards with TAwards= ln(TA). For further clarification and definition of other variables see Table 1

For control variables, results suggest that on average CEO is 57 years old, with 4.7 years in executive role and 7.85 years of board tenure. Furthermore, average size of the company is 9.78 with mean logarithm of firm age equal to 4.01, mean annual growth in the stock price of 16 percent and average market-to-book value of 2.32. Lastly, 78 percent of companies paid dividends in the respective year.

Further, Table 3 and 4 provides results for the correlation analysis of variables used in the models. According to Table 3, there is a positive yet insignificant correlation between 'Gender' and 'TDCompensation'. Additionaly, significant correlation coefficients were found for the following control variables: positive for 'GenderRatio', 'ExAge', 'TimeRole', 'Size', 'ROA' as well as negative for 'MTB'.

Table 3

Correlation Matrix (Model 1 and 4)

Variables	TDComp	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TDComp	1										
(1) Gender	0.0134	1									
(2) GenderRatio	0.0805 [a]	0.2131 [a]	1								
(3) ExAge	0.1396 [a]	-0.0281 [b]	0.0651 [a]	1							
(4) TimeRole	0.0365 [b]	-0.0792 [a]	-0.0589 [a]	0.3511 [a]	1						
(5) TimeBoard	0.0208	-0.0863 [a]	-0.0732 [a]	0.4197 [a]	0.6778 [a]	1					
(6) Size	0.3627 [a]	0.0743 [a]	0.2386 [a]	0.0972 [a]	-0.0116	-0.0262 [b]	1				
(7) ROA	0.0696 [a]	0.0090	0.0568 [a]	0.0147	0.0406 [a]	0.0382 [a]	0.1346 [a]	1			
(8) RET	0.0036	-0.0058	-0.0015	-0.0301 [b]	-0.0166	-0.0185	-0.0239 [c]	-0.0060	1		
(9) MTB	-0.1772 [a]	-0.0155	0.0110	-0.0730 [a]	0.0568 [a]	0.0457 [a]	-0.3739 [a]	-0.0607 [a]	0.0987 [a]	1	
(10) MD25	0.0088	0.0035	-0.0992 [a]	0.0054	-0.0783 [a]	-0.1008 [a]	0.0489 [a]	-0.0468 [a]	-0.0194	-0.1973 [a]	1

Notes: TDComp stands for TDCompensation, MD25 stands for MaleDominated25. See Table 1 for variables definition. a = $p < 0.01$, b = $p < 0.05$, c = $p < 0.1$

Furthermore, Table 4 demonstrates significant positive correlation effect between 'GenderRatio' and 'TQ', while coefficient on Gender is insignificant and negative. Additionally, negative and significant correlation coefficients were found for 'Size', 'FirmAge', 'Dividend' and 'MaleDominated25' control variables.

Table 4

Correlation Matrix (Model 2,3,5,6)

Variables	TQ	Gender	GenderRatio	Size	FirmAge	Dividend	MaleDominated25
TQ	1						
Gender	-0.0166	1					
GenderRatio	0.0288 [b]	0.2131 [a]	1				
Size	-0.3940[a]	0.0743 [a]	0.2386 [a]	1			
FirmAge	-0.2391 [a]	0.0390 [a]	0.2108 [a]	0.3283 [a]	1		
Dividend	-0.2680 [a]	0.0559 [a]	0.1671 [a]	0.3314 [a]	0.4358 [a]	1	
MaleDominated25	-0.1973 [a]	0.0035	-0.0992 [a]	0.0489 [a]	0.1696 [a]	0.1391 [a]	1

Note: See Table 1 for variables definition. a = $p < 0.01$, b = $p < 0.05$, c = $p < 0.1$

Therefore, according to outcomes, board gender diversity is significantly and positively correlated with Tobins' Q. Additionaly, signs suggest that female CEOs may be positively correlated with total direct compensation and negatively with Tobin's Q, however those correlation coefficients are not statistically significant.

5.2 CEO Gender Compensation Gap

To address Research Question 1, I first evaluate raw average difference in female and male CEOs compensation with results represented in Table 5. According to the results, evidences on the gender compensation discrepancies between executives are rather mixed. Thus, on average total direct compensation for male CEOs is higher than of their female colleagues, however total compensation and total awards for female executives are relatively larger. Additionaly, higher logarithm of all compensation measures for women suggest that female executives earn relatively more.

Table 5

Average Gender Compensation Gap (Female-Male)

		TC	TDC	TA	TCompensation	TDCompensation	TAwards
Total		42.93	-80.55	1527.43	0.09	0.04	0.14
Year	2010	244.47	187.49	2002.01	0.28	0.24	0.42
	2011	-391.72	-469.73	1145.87	-0.04	-0.19	0.24
	2012	-291.13	-423.41	-1162.48	0.02	-0.13	0.11
	2013	-81.94	-196.54	1603.73	0.00	-0.10	0.26
	2014	352.14	259.19	1551.12	0.28	0.24	0.28
	2015	139.35	68.78	4250.65	0.19	0.16	0.22
	2016	183.34	47.47	7309.81	0.15	0.12	0.28
	2017	129.59	-0.21	1049.18	0.06	0.04	0.03
	2018	87.19	-46.45	-4868.14	0.05	0.05	0.08
	2019	183.35	-44.26	-1611.31	0.10	0.08	-0.10
	2020	-121.48	-301.63	-4995.42	-0.02	-0.06	-0.19
	2021	139.66	-18.63	14958.16	0.29	0.19	0.14

Note: TDC = Total Direct Compensation with TDCompensation= ln(TDC); TC = Total Compensation with TCompensation= ln(TC), TA=Total Awards with TAwards= ln(TA). For further clarification and definition of other variables see Table 1

Finally, as some of the aforementioned studies propose that gender wage gap may be narrowing, I additionally represent gender compensation differences by year. Obtained results are even more contradicting: total direct compensation for male executives was on average higher in 2011-2013 and 2017-2021 (8 out of 11 years or 72%), while female CEOs gained higher mean total compensation and total awards in 72% of years. Moreover, results on logarithms of compensation measures suggest further evidence that average compensation is higher for female CEOs. Thus, female executives on average earned more in term of total compensation, total direct compensation and total awards in 81%, 63% and 81% of years respectively. Therefore, overall results for raw mean gender compensation gap contradict the suggestion that remuneration of female CEOs is relatively lower.

Nevertheless, regression results for the effect of CEO gender on compensation (Model 1) diverge from previously discussed findings. As indicated in Table 6, the association between Gender and 'TDCompensation' is negative and significant (-0.0750*). Thus, results suggest that female CEOs receive a significantly lower compensation compared to male counterparts. Additionaly, the sign for alternative compensation proxies (TCompensation and TAwards) suggest similar negative association, however those coefficients are statistically insignificant.

Table 6

CEO gender and compensation differences

Variables	**TDCompensation**	**TCompensation**	**TAwards**
Gender	-0.0750* (0.045)	-0.0441 (0.044)	-0.0468 (0.063)
GenderRatio	0.0081 (0.105)	0.0634 (0.101)	0.1992 (0.146)
ExAge	0.0131*** (0.002)	0.0174*** (0.002)	0.0061** (0.002)
TimeRole	-0.0024 (0.002)	-0.0068*** (0.002)	-0.0256*** (0.003)
TimeBoard	-0.0042** (0.002)	-0.0087*** (0.002)	0.0026 (0.002)
Size	0.1734*** (0.008)	0.1411*** (0.007)	0.1961*** (0.011)
ROA	0.4175*** (0.133)	0.3688*** (0.129)	0.9275*** (0.185)
RET	0.0120* (0.006)	0.0113* (0.006)	0.0234*** (0.009)
MTB	0.0040 (0.006)	-0.0094 (0.006)	0.0901*** (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	22.90*** (6.910)	17.33*** (6.705)	-21.91** (9.63)
R-squared	0.1500	0.1438	0.1156
Adjusted R-squared	0.1478	0.1416	0.1134
Observations	4,378	4,335	4,349

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Concerning control variables, the significant positive association between CEO age and all compensation proxies is found, suggesting that older executives have a relatively higher remuneration. Additionally, there is a negative association between 'TDCompensation' and executive board tenure. Finally, all compensation proxies have a positive and significant association with firm size, ROA and RET

5.3 Board Gender Diversity and Firm Performance

Regression results for the effect of the board gender diversity and firm performance (Model 2) are represented in Table 7. According to the results, the association between 'GenderRatio' and 'TQ' is positive and significant (1.516***). Thus, such results indicate that by increasing number of female directors firms may enhance their performance. Additionaly, similar positive association is found for alternative performance variables (ROA and ROE), however coefficients for ROE are statistically insignificant.

Table 7

Board gender diversity and firm performance

Variables	TQ	ROA	ROE
GenderRatio	1.5616*** (0.218)	0.0566*** (0.012)	0.0410 (0.035)
Size	-0.4858*** (0.149)	-0.0139*** (0.001)	0.0097*** (0.002)
FirmAge	-0.1347*** (0.031)	-0.0017 (0.002)	-0.0040 (0.005)
Dividend	-0.5688*** (0.054)	0.0135*** (0.003)	0.0128 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-139.51*** (13.288)	2.81*** (0.717)	8.62*** (2.155)
R-squared	0.2431	0.0543	0.0109
Adjusted R-squared	0.2423	0.0534	0.0099
Observations	6,196	6,196	6,193

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

For control variables, all associations (Size, FirmAge, Dividend) with Tobin's Q are found to be significant and negative. Thus, results propose that larger and older firms are negatively associated with Tobin's Q which is line with assumptions made by Perryman et al. (2016). Moreover, there is a negative association between dividends being paid out and 'TQ'. Nevertheless, sign and significance of regression coefficients for control variables vary when performance is proxied by ROA and RET.

5.4 CEO Gender and Firm Performance

Regression results for the effect of CEO gender on firm performance (Model 3) are represented in Table 8. According to the results, the association between Gender and TQ is positive and significant (1.793***). Thus, the results indicate that companies managed by female CEOs have a relatively better performance compared to organizations managed by male chief executives. Additionaly, similar positive association is found for alternative performance variables (ROA and ROE), however coefficients for ROE is statistically insignificant.

Table 8

CEO gender and firm performance

Variables	TQ	ROA	ROE
Gender	0.1793** (0.089)	0.0086* (0.005)	0.0050 (0.014)
Size	-0.4687*** (0.015)	-0.0135*** (0.001)	0.0100*** (0.002)
FirmAge	-0.1095*** (0.031)	-0.0006 (0.002)	-0.0032 (0.005)
Dividend	-0.5609*** (0.054)	0.0143*** (0.003)	0.0140 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-179.18*** (12.061)	1.38** (0.649)	7.58*** (1.946)
R-squared	0.2348	0.0513	0.0107
Adjusted R-squared	0.2341	0.0504	0.0097
Observations	6,196	6,196	6,193

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Moreover, associations of all control variables and Tobin's Q are significant and negative coinciding with results of Model 2 regression (Table 7). Similarly, sign and significance of regression coefficients continue to differ when performance is proxied by ROA and RET.

5. 5 Male Dominated Industries

To examine whether difference in gender CEO compensation gap is larger or smaller in male-dominated industries compared to non-dominated sectors (Research Questions 4), I begin with examining average compensation differences represented in Table 9.

Table 9

Average Gender Compensation Gap (Female-Male) in male-dominated and non-dominated industries

		TC	TDC	TA	TCompensation	TDCompensation	TAwards
Total		42.93	-80.55	1527.43	0.09	0.04	0.14
MaleDominated	20	-107.78	-183.46	-4516.71	-0.04	-0.03	-0.33
	25	27.37	-36.70	-297.23	-0.01	0.03	-0.02
	30	138.41	97.20	-1682.44	0.11	0.14	0.14
MaleNonDominated	20	42.79	-97.45	1982.32	0.09	0.04	0.12
	25	43.32	-109.70	2740.65	0.11	0.03	0.15
	30	-11.84	-186.86	3740.82	0.06	-0.02	0.09
Dominated - Non Dominated	20	-150.57	-86.01	-6499.03	-0.14	-0.07	-0.46
	25	-15.95	73.00	-3037.88	-0.12	0.00	-0.17
	30	150.25	284.06	-5423.26	0.05	0.16	0.05

Note: TDC = Total Direct Compensation with TDCompensation= ln(TDC); TC = Total Compensation with TCompnesation=ln(TC), TA=Total Awards with TAwards= ln(TA). For further clarification and definition of other variables see Table 1

Thus, results indicate that raw average gap in total direct compensation between female and male CEO is present both in male-dominated (-36.70) and non-dominated (-109.70) industries if dominated sectors are defined as those having less than 25 percent of female workers. Interestingly however, raw average total direct compensation gap appears to be larger for firms in non-dominated industries, namely by 73 thousand dollars. Nevertheless, alternative proxies for compensation and different ratios for accessing industry gender dominance imply that findings are rather mixed. Thus, only for companies that operate in sectors with 20/80 female-male workers ratio, all compensation proxies suggest that gender difference in executive remuneration is larger in male-dominated industries.

Given the mixed results, I continue with examining this question using Model 4 with regression results represented in Table 10.

Table 10

CEO gender and compensation differences in male-dominated and non-dominated industries

Variables	**TDCompensation**	**TCompensation**	**TAwards**
Gender	-0.0867* (0.052)	-0.0288 (0.049)	0.0272 (0.070)
MaleDominated25	0.0165 (0.025)	0.0440* (0.024)	-0.0220 (0.034)
Gender*MaleDominated25	0.0821 (0.098)	-0.0171 (0.093)	-0.1888 (0.133)
GenderRatio	0.0181 (0.108)	0.0935 (0.103)	0.1921 (0.147)
ExAge	0.0131*** (0.002)	0.0182*** (0.002)	0.0098*** (0.002)
TimeRole	0.0038 (0.002)	0.0027 (0.002)	-0.0074** (0.003)
TimeBoard	-0.0027 (0.002)	-0.0075*** (0.002)	0.0018 (0.002)
Size	0.1797*** (0.008)	0.1483*** (0.007)	0.2144*** (0.011)
ROA	0.5000*** (0.138)	0.4455*** (0.131)	0.9993*** (0.187)
RET	0.0134** (0.007)	0.0130** (0.006)	0.0244*** (0.009)
MTB	0.0020 (0.006)	-0.0114* (0.006)	0.0793*** (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	19.79*** (7.068)	14.45** (6.731)	-19.68** (9.611)
R-squared	0.1589	0.1580	0.1261
Adjusted R-squared	0.1562	0.1553	0.1233
Observations	4,131	4,089	4,102

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Thus, regression outcome provides negative and significant coefficient for 'Gender' (-0.0867*) , while coefficient of the interaction variable 'Gender*MaleDominated25' is positive and insignificant (0.0165). These results imply that while female CEO earn relatively lower total direct compensation, there is no significant evidences that this difference in compensation is larger in male-dominated industries. Nevertheless, alternative compensation measurements (TCompensation and TAwards) suggest that both

coefficients are insignificant. Finally, further in work it is checked whether these and later results are robust to alternative ratios for industry gender dominance.

Further, I continue with Research Question 5 and examine whether the effect of board gender diversity on the company's performance is higher or lower in male-dominated industries. To do so Model 5 is used, with regression results available in Table 11.

Table 11

Board gender diversity and firm performance in male-dominated and non-dominated industries

Variables	**TQ**	**ROA**	**ROE**
GenderRatio	1.4993*** (0.245)	0.0478*** (0.013)	0.0376 (0.038)
MaleDominated25	-0.3939*** (0.111)	-0.0222*** (0.006)	-0.0370 (0.023)
GenderRatio*MaleDominated25	-1.1140** (0.494)	-0.0202 (0.026)	0.0116 (0.114)
Size	-0.4699*** (0.154)	-0.0135*** (0.001)	0.0096*** (0.003)
FirmAge	-0.1263*** (0.032)	-0.0007 (0.002)	-0.0013 (0.005)
Dividend	-0.5893*** (0.057)	0.0131*** (0.003)	0.0928(0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-143.35*** (13.771)	2.68*** (0.737)	8.78*** (2.258)
R-squared	0.2592	0.0692	0.0128
Adjusted R-squared	0.2582	0.0680	0.0115
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

According to the regression results, coefficient for 'GenderRatio' is positive and significant (1.49993***) while coefficient for the interaction variable 'GenderRatio*MaleDominated25' is also significant, but negative (-0.3939***). Hence, findings suggest that higher number of women on the board of directors positively affects companies' Tobin's Q, but this effect is smaller for companies located in male-dominated industries. Nonetheless, using 'ROA' as performance measurements, coefficient for the interaction variable becomes insignificant. Moreover, both coefficients are insignificant when using 'ROE'.

Finally, to examine whether the effect CEO gender on firm performance is greater or smaller in male-dominated industries (Research Question 6), Model 6 is applied with regression outcomes depicted in Table 12.

Table 12

CEO gender and firm performance in male-dominated and non-dominated industries

Variables	TQ	ROA	ROE
Gender	0.2382** (0.111)	0.0115** (0.006)	0.0062 (0.018)
MaleDominated30	-0.4145*** (0.048)	-0.0146*** (0.003)	-0.0046 (0.008)
Gender*MaleDominated30	-0.2027 (0.190)	-0.0106 (0.010)	0.0030 (0.031)
Size	-0.4618*** (0.155)	-0.0133*** (0.001)	0.0105*** (0.003)
FirmAge	-0.1172*** (0.032)	-0.0003 (0.002)	-0.0008 (0.005)
Dividend	-0.5835*** (0.058)	0.0129*** (0.003)	0.0085 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-176.79*** (12.472)	1.50*** (0.665)	7.76*** (2.028)
R-squared	0.2454	0.0579	0.0108
Adjusted R-squared	0.2444	0.0566	0.0094
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Thus results suggest that coefficient for 'Gender' is positive and significant (0.2176**) while coefficient for the interaction variable 'Gender*MaleDominated25' is negative and insignificant (-0.1922). Thus, findings suggest that companies led by female CEOs have a relatively larger Tobin's Q compared to those run by male directors with no significant differences between male-dominated and non-dominated sectors. Similar findings are obtained using 'ROA' as a performance measure. Lastly, both coefficients are insignificant when using 'ROE'.

5. 6 Sensitivity Analysis

With alternative measures for compensation and firm performance already used in previous subsections, I employ the additional sensitivity analysis to test the robustness of Model 4,5,6 for alternative ratios of male dominance in industries. Therefore, in this subsection I examine whether our results hold when male-dominated industry is defined as one that have 20/80 and 30/70 female-male workers ratio (MaleDominated 20 and MaleDominated 30).

First, Model 4 is re-estimated using MaleDominated 20 and MaleDominated 30 as a proxy for male-dominated industries (Table 13 and 14 respectively). According to the results in Table 13, coefficients for both 'Gender' and 'Gender*MaleDominated20' are insignificant for all compensation proxies, suggesting that CEO compensation gap between genders is negligible.

Table 13

Robustness check of CEO gender and compensation differences using alternative proxy of male-dominated industries (MaleDominated20)

Variables	TDCompensation	TCompensation	TAwards
Gender	-0.0571 (0.046)	-0.0203 (0.044)	0.0033 (0.062)
MaleDominated20	0.0467 (0.298)	0.0962*** (0.028)	0.0545 (0.041)
Gender*MaleDominated20	-0.0998 (0.200)	-0.1302 (0.190)	-0.5007 (0.271)
GenderRatio	0.0298 (0.108)	0.1101 (0.102)	0.2239 (0.147)
ExAge	0.0131*** (0.002)	0.0182*** (0.002)	0.0097*** (0.002)
TimeRole	0.0040 (0.002)	-0.0030 (0.002)	-0.0072** (0.003)
TimeBoard	-0.0028 (0.002)	-0.0075*** (0.002)	0.0018 (0.002)
Size	0.1804*** (0.008)	0.1496*** (0.007)	0.2152*** (0.011)
ROA	0.4995*** (0.137)	0.4507*** (0.131)	1.0174*** (0.187)
RET	0.0134** (0.006)	0.0130** (0.006)	0.0244*** (0.009)
MTB	0.0020 (0.006)	-0.0114* (0.006)	0.0812*** (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	20.25*** (7.068)	15.04** (6.731)	-18.45** (9.614)
R-squared	0.1591	0.1597	0.1265
Adjusted R-squared	0.1565	0.1570	0.1237
Observations	4,131	4,089	4,102

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

By contrast, results depicted in Table 14 show a negative coefficient for 'Gender' (-0.1178**) and positive for 'Gender*MaleDominated30' (0.1545) with both being significant. Therefore, if male-dominated industry is defined by 30/70 female-male workers ratio, findings imply that female CEO receive relatively lower total direct compensation, however gender remuneration gap being is lower in male-dominated industries. Nevertheless, when total compensation and total awards are used as a proxy, coefficients for both 'Gender' and 'Gender*MaleDominated30' become insignificant.

Table 14

Robustness check of CEO gender and compensation differences using alternative proxy of male-dominated industries (MaleDominated30)

Variables	TDCompensation	TCompensation	TAwards
Gender	-0.1178** (0.055)	-0.0550 (0.053)	-0.0247 (0.075)
MaleDominated30	-0.0440** (0.022)	-0.0265 (0.021)	-0.0454 (0.030)
Gender*MaleDominated30	0.1545* (0.091)	0.0674 (0.086)	0.0092 (0.123)
GenderRatio	-0.0156 (0.108)	0.0588 (0.103)	0.1757 (0.147)
ExAge	0.0131*** (0.002)	0.0183*** (0.002)	0.0098*** (0.002)
TimeRole	0.0037 (0.002)	0.0025 (0.002)	-0.0075** (0.002)
TimeBoard	-0.0029 (0.002)	-0.0076*** (0.002)	0.0018 (0.002)
Size	0.1790*** (0.008)	0.1480*** (0.007)	0.2143*** (0.011)
ROA	0.4900*** (0.137)	0.4280*** (0.131)	1.0060*** (0.187)
RET	0.0131** (0.006)	0.0127** (0.006)	0.0242*** (0.009)
MTB	0.0001 (0.006)	-0.0139** (0.006)	0.0789*** (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	18.45*** (7.069)	13.28** (6.745)	-20.20** (9.622)
R-squared	0.1598	0.1577	0.1261
Adjusted R-squared	0.1571	0.1550	0.1233
Observations	4,131	4,089	4,102

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

To summarize findings for Model 4, impact of alternative gender employment ratios on the findings is significant, influencing both the direction and statistical significance of the effect. Similarly, results are rather volatile for alternative compensation proxies. Thus, Table 10 and 14 suggest that female CEOs earn a lower total direct compensation with no significant gender gap in total compensation and total awards (Tables 10, 13, 14). Additionally, difference between female and male CEOs' total direct compensation may be smaller (Table 14) or the same (Table 10) for firms operating in male-dominated industries compared to non-dominated .

Following previous steps, Model 5 is re-estimated with results represented in Table 15 and 16

Table 15

Robustness check of board gender diversity and firm performance using alternative proxy of male-dominated industries (MaleDominated20)

Variables	TQ	ROA	ROE
GenderRatio	1.5313*** (0.236)	0.0514*** (0.013)	0.0376 (0.038)
MaleDominated20	-0.2703* (0.144)	-0.0178** (0.008)	-0.0370 (0.023)
GenderRatio*MaleDominated20	-1.0663 (0.703)	-0.0327 (0.037)	0.0116 (0.114)
Size	-0.4879*** (0.155)	-0.0143*** (0.001)	0.0096*** (0.003)
FirmAge	-0.1333*** (0.033)	-0.0009 (0.002)	-0.0013 (0.005)
Dividend	-0.6076*** (0.058)	0.0125*** (0.003)	0.0928(0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-141.97*** (13.880)	2.67*** (0.739)	8.78*** (2.258)
R-squared	0.2477	0.0627	0.0128
Adjusted R-squared	0.2467	0.0614	0.0115
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

According to Table 15 and 16 coefficient for 'GenderRatio' is positive and significant when 'TQ' and 'ROA' are used as performance measurements. Nevertheless, coefficients of the interaction variables remain insignificant for both 'MaleDominated20' and 'MaleDominated30'.

Table 16

Robustness check of board gender diversity and firm performance using alternative proxy of male-dominated industries (MaleDominated30)

Variables	TQ	ROA	ROE
GenderRatio	1.5912*** (0.258)	0.0540*** (0.014)	0.0457 (0.042)
MaleDominated30	-0.2608*** (0.101)	-0.0117** (0.005)	-0.0079 (0.016)
GenderRatio*MaleDominated30	-0.6310 (0.437)	-0.0108 (0.023)	0.0231 (0.071)
Size	-0.4734*** (0.155)	-0.0137*** (0.001)	0.0100*** (0.003)
FirmAge	-0.1430*** (0.033)	-0.0013 (0.002)	-0.0018 (0.005)
Dividend	-0.5999*** (0.058)	0.0124*** (0.003)	0.0079 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-140.65*** (13.845)	2.80*** (0.740)	9.12*** (2.258)
R-squared	0.2501	0.0601	0.0111
Adjusted R-squared	0.2490	0.0588	0.0097
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Summarizing all outcomes for Model 5, significance of coefficients for 'GenderRatio' and interaction variable is rather dependent on the choice of gender employment ratios and compensation proxies. Nevertheless, Tables 11, 15 and 16 suggest that greater number of female directors has a positive and significant impact on firm's Tobin's Q and return on assets, as well as positive but insignificant effect on return on equity. Additionally, results imply that the effect that higher board gender diversity may have on firms Tobin's Q may be smaller (Table 11) or similar (Tables 15 and 16) in male-dominated sectors compared to non-dominated industries.

Finally, 'MaleDominated 20' and 'MaleDominated30' are used to re-estimate Model 6 with outcomes represented in Table 17 and 18

Table 17

Robustness check of CEO gender and firm performance using alternative proxy of male-dominated industries (MaleDominated20)

Variables	**TQ**	**ROA**	**ROE**
Gender	0.1482 (0.092)	0.0073 (0.005)	0.0058 (0.015)
MaleDominated20	-0.5088*** (0.067)	-0.0249*** (0.004)	-0.0355 (0.011)
Gender*MaleDominated20	-0.1518 (0.450)	-0.0225 (0.024)	-0.0335 (0.073)
Size	-0.4767*** (0.155)	-0.0139*** (0.001)	0.0099*** (0.003)
FirmAge	-0.1059*** (0.032)	-0.0001 (0.002)	-0.0005 (0.005)
Dividend	-0.5907*** (0.058)	0.0130*** (0.003)	0.0097 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-179.05*** (12.492)	1.43*** (0.664)	7.78*** (2.026)
R-squared	0.2426	0.0604	0.0127
Adjusted R-squared	0.2416	0.0591	0.0113
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

Thus, only Table 18 suggest significant and positive coefficient for 'Gender' (0.2382** for 'TQ' and 0.0115** for 'ROA'), while coefficients for both interaction variables across all performance proxies remains insignificant (Table 17 and 18).

Table 18

Robustness check of CEO gender and firm performance using alternative proxy of male-dominated industries (MaleDominated30)

Variables	TQ	ROA	ROE
Gender	0.2382** (0.111)	0.0115** (0.006)	0.0062 (0.018)
MaleDominated30	-0.4145*** (0.048)	-0.0146*** (0.003)	-0.0046 (0.008)
Gender*MaleDominated30	-0.2027 (0.190)	-0.0106 (0.010)	0.0030 (0.031)
Size	-0.4618*** (0.155)	-0.0133*** (0.001)	0.0105*** (0.003)
FirmAge	-0.1172*** (0.032)	-0.0003 (0.002)	-0.0008 (0.005)
Dividend	-0.5835*** (0.058)	0.0129*** (0.003)	0.0085 (0.009)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-176.79*** (12.472)	1.50*** (0.665)	7.76*** (2.028)
R-squared	0.2454	0.0579	0.0108
Adjusted R-squared	0.2444	0.0566	0.0094
Observations	5,855	5,855	5,852

Note: See Table 1 for variables definition. Standard errors in parentheses. *** p < 0.01, ** p < 0.05,* p <0.1

To summarize all findings for Model 6, significance of coefficients for 'Gender' and interaction variable also depends on the selection of employment ratios and compensation measures. Thus, Tables 12 and 18 suggest that companies managed by female CEOs have a relatively higher Tobin's Q and ROA than those run by male executives. Nevertheless, evidences that this effect may be different for firms in male-dominated industries compared to non-dominated are insignificant (Tables 12, 17, 18).

CHAPTER 6 Conclusion

6. 1 Conclusion

The goal of this study was to evaluate the existing gender inequality in CEO compensation and examine the current status of female CEOs and corporate board members in the USA. Following the methodology by Perryman et al. (2013), I analysed 713 active and inactive publicly traded U.S firms from 2010 to 2021, covering 713 firms and 1,512 CEOs with 90 of them being women. This study supports previous observations of gender inequality in top managerial positions (Lyness and Thompson, 2002). According to the results, only 5 percent of CEOs and 21 percent of board directors in the sample are female.

Additionally, findings provide support for the existing gender gap in CEO compensation. Thus, there is significant evidence that total direct compensation for female CEOs is lower compared to male counterparts after accounting for individual and firm specific factors. Moreover, a negative yet statistically insignificant association between female CEOs and other compensation measures is found. These discoveries are in line with previous studies that argued that female CEOs may face gender stereotypes of unfitness for the position, resulting in biased performance evaluation and lower compensation (Greenhaus and Parasuraman, 1993; Hom et al., 2008; Regan et al., 1974).

Furthermore, results suggest that there is a positive effect of board gender diversity on firm performance. According to the findings, a higher number of female board directors is associated with an increase in Tobin's Q and return on assets. Similarly, a positive yet insignificant association between board gender diversity and returns on equity is discovered. Such findings coincide with academic literature, that suggests that by increasing the number of women on corporate boards firms may enhance their financial performance due to better monitoring (Reguera-Alvarado et al., 2017; Farag & Mallin, 2018), more balanced corporate decisions (Graham et al., 2017) and increased decision-making capabilities (Ali et al., 2014; Carter et al., 2010; Kim and Starks, 2016; Post et al., 2015).

Moreover, some results suggest that companies run by female CEOs have better performance in terms of Tobin's Q and return on assets compared to firms managed by male CEOs. This may be potentially explained by higher risk aversion, greater concern for the company funds allocation and lower self-interest of female CEOs (Khan and Vieito, 2013) as well as higher expertise requirements for women to be assigned as a CEO (Fan et al., 2013; Lam et al, 2013)

Finally, the results on whether the gender compensation gap as well as the effects of female CEO and gender board diversity are different in male-dominated industries are rather inconclusive. Thus, findings

suggest that the difference between female and male CEOs' compensation may be smaller or comparable for firms operating in male-dominated industries. Moreover, the effect that higher board gender diversity may have on firms Tobin's Q may be smaller or similar in male-dominated sectors compared to non-dominated industries. Lastly, no evidence is found that the effect that female CEOs have on firm performance differs between male-dominated and non-dominated industries.

To summarize, striving for greater gender equality in leadership positions is not just a question of inclusivity and integrity. This study offers significant evidence that by increasing gender diversity in executive positions firms may additionally enhance their financial performance through various backgrounds, abilities, views and skills that are brought to the board.

6. 2 Limitations and suggestions for further research

As was previously noted, female CEOs and director board members are relatively sparse making data on female-led firms limited. Thus, obtained results may be biased, as those women who become chief executives and director board members might represent a rather selected group of individuals with special attributes uncaptured by the models. Similarly, used models do not account for some individual characteristics (education, family and children, psychological attributes) that certain studies suggest may be structurally different among genders. Lastly, the sample for this study includes only publicly traded companies, which likely affects the external validity of the findings and makes them ungeneralizable for other company types.

Nevertheless, women's participation in leadership positions steadily increases across the globe, presenting wider opportunities for future studies. Thus, subsequent research may focus on the role of education and psychological attributes of female and male CEOs as well as their influence on firm performance and the executive compensation gap. Furthermore, significant practical implementations could be obtained from studies that reexamine this paper's research questions for other company types. Finally, an important contribution to academia would bring studies that explore gender inequality in executive compensation as well as the status of female CEOs and corporate board members in other countries.

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