

Does Industry Gender Composition Influence CEO Compensation?

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ABSTRACT

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A persistent ethical issue in society is the gender compensation gap—the income inequality between men and women at the same organization performing equal work. The worldwide increase of women CEOs coupled with worldwide advocacy and interest for income and gender equality makes understanding the CEO gender compensation gap vital. The tendency of men and women to select different jobs leads to industry gender composition – the distribution of men and women workers within occupations. Very few studies that examined CEO compensation considered industry gender composition. The purpose of this study was to examine the influence of industry gender composition on CEO compensation. I gathered data from public United States firms between 2010 and 2018, from Compustat and Execucomp. The final sample consisted of 3,277 firm-year observations (182 women CEOs and 3,095 men CEOs). Results have implications for women interested in pursuing top-level positions as well as human resource departments, particularly with regards to succession planning.

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Introduction

A persistent ethical issue in society is the gender compensation gap. This is the income inequality between men and women at the same organization performing equal work (Beal & Astakhova, 2017; Lips, 2013). Numerous scholars have researched the gender compensation gap between employees and found that women, on average, are compensated less than their male counterparts (Blau & Kahn, 2017; Kleinjans, Krassel, & Dukes, 2017). Compensation refers to the total payments, cash and non-cash, given to an employee. The majority of research on the gender compensation gap focuses on employees. It is only recently that researchers have begun studying the gender compensation gap among chief executive officers (CEOs). A CEO is the top executive of a company, responsible for the firm's performance, operations, management, and decision making (Farkas & Wetlaufer, 2014).

Research on the CEO gender compensation gap is limited compared to research on the employee gender compensation gap because in the past there were relatively few women CEOs, making it difficult for researchers to study the CEO gender compensation gap. However, as a result of socialization, the proportion of women CEOs is now increasing around the world (Gupta, Mortal, & Guo, 2018). In the United States, the percentage of women Fortune 500 CEOs increased from 0.2% in 1998 to 6.4% in 2017 (Donovan, 2015; Miller, 2018). The increase of women CEOs makes research on gender differences at the CEO level possible. This, coupled with worldwide advocacy and interest for income and gender equality, makes understanding the CEO gender compensation gap vital. CEO compensation is now considered a topic of international business research because it influences the decision-making strategies of CEOs from various institutional and cultural environments around the world (Buck, Liu, & Skovoroda, 2008).

Several studies have found a larger compensation gap between genders at the executive level, including CEOs and CFOs, compared to other positions (The Economist, 2017; Wang, Markóczy, Sun, & Peng, 2018). However, the findings for whether there is or is not a CEO compensation gap are mixed. Some papers found that there is a gap (Adams, Gupta, & Leeth, 2010; Bertrand & Hallock, 2001; Elkinawy & Stater, 2011; Hill, Upadhyay, & Beekun, 2015; Mohan & Ruggiero, 2003; Mohan & Ruggiero, 2007; Wang et al., 2018) while others found there is no gap (Adams, Gupta, Haughton, & Leeth, 2007; Bugeja, Matolcsy, & Spiropoulos, 2012; Gupta et al., 2018) when it comes to the compensation of men and women CEOs. In addition to

mixed results, the impact of gender on CEO compensation is under-researched compared to other employment levels (Mohan, 2014). Furthermore, several papers that studied the impact of gender on CEO compensation did not solely measure CEO compensation but rather combined other top executives with CEOs in their analysis (Adams et al., 2010; Bertrand & Hallock, 2001; Elkinawy & Stater, 2011).

The majority of research on CEO compensation is based on agency theory, but this theory does not provide guidance on gender compensation differences (Bugeja et al., 2012; Tosi, Katz, & Gomez-Mejia, 1997). Wang et al. (2018) use role congruity theory to analyze the CEO compensation gap. The role congruity theory posits that people who act in accordance with their gender and social role will be evaluated positively (Eagly & Diekmann, 2005; Eagly & Karau, 2002). However, Wang et al. (2018) analyzed Chinese publicly listed firms between 2004 and 2010 (inclusively) and it is not clear whether or not the findings would generalize to a North American sample. Not only are there social and cultural differences but women CEOs are underrepresented more in the United States than in China (Wang et al., 2018). Thus, one of the goals of this paper is to analyze publicly traded United States firms while using role congruity theory to see if this theory can explain, and be extended to, CEO compensation research in the United States.

The purpose of this paper is to examine the influence of industry gender composition on CEO compensation. Men and women tend to select different jobs, which leads to industry gender composition—that is, the distribution of men and women workers within occupations (Grund, 2015). Previous literature on CEO compensation categorizes male-dominated industries as those with more than 50% male employees thus making men a large group of the stakeholders (Adams et al., 2010; Cumming, Leung, & Rui, 2015; Skalpe, 2007; Wang et al., 2018). The reverse is true for female-dominated industries. Some examples of female-dominated industries are social assistance, education, and health services (Cumming et al., 2015; U.S. Bureau of Labor Statistics, 2017; Wang et al., 2018). In addition to the limited and mixed results of papers examining the impact of gender on CEO compensation, few considered industry gender composition. Thus, the question remains: how does industry gender composition influence CEO compensation?

Industry gender composition must be considered when measuring gender gaps in compensation. Munoz–Bullon (2010) analyzed the gender gap of high-level executives', including CEOs', compensation of over 2,200 companies in the United States from 1992 to 2006

and found that women earned approximately 50% less than men. However, after controlling for variables such as industry gender composition, this gap narrowed to 7% (Munoz–Bullon, 2010).

Kleinjans et al. (2017) argued that industry gender composition affects the gender compensation gap because women often work in occupations that pay less than men. Despite having the same level of education, women and men gravitate towards different occupations. For example, women on average have a stronger preference for occupations that are targeted to help others and make a difference in the community (Kleinjans et al., 2017).

In accordance with the role congruity theory, the more you are perceived as fitting your role (in this case the role of CEO) the better others perception of your performance and therefore the better your pay (Eagly & Karau, 2002). Since female-dominated industries value women characteristics more than male-dominated industries and have a larger proportion of women employees and thus fewer biases towards women, a woman CEO is more likely to be perceived as fitting the CEO role in a female- compared to a male-dominated industry. Thus, in a female-dominated industry a woman CEO's performance may be perceived more favourably and she will then be compensated more similarly to a man CEO. On the other hand, a woman CEO in a male-dominated industry may not be perceived as fitting the role of CEO as well as a man and therefore will be perceived as worse performing and be compensated less.

The low proportion of women CEOs coupled with a gender-based compensation gap could discourage women from aspiring, and applying, to these positions which could influence firm performance. For an organization to excel, every part of it must cooperate and work together. Leadership is one of the most important parts of an organization. Leaders can hinder or stimulate growth, cooperation, and change (Martin, 2015). Thus, it is generally agreed that top leaders can be critical to the organization's success.

Despite the pressure and importance of hiring a good leader, companies are less likely to promote or hire women leaders. There is a higher proportion of men in leadership roles, even in professions dominated by women (Cabrera, Sauer, & Thomas-Hunt, 2009). Women must work harder and be more qualified than their male counterparts to even be considered for leadership positions (Eagly, 2007). This is partly because society's perception of leaders is largely masculine. On average, people rate men more favorably as leaders than women and perceive men as having more leadership potential (Cabrera et al., 2009). Gender stereotypes about characteristics often associated with men and women contribute to this perception. Women, for

example, are often associated with being more understanding, cooperative, nurturing, and empathetic. On the other hand, men are associated with being more independent, analytical, and assertive (Christov-Moore et al., 2014; Paustian-Underdahl, Walker, & Woehr, 2014). Gender stereotypes also contribute to the gender stereotyping of occupations. That is, men and women gravitate to occupations that are more consistent with the characteristics associated with their gender thus conforming to the stereotype (Stoker, Van der Velde, & Lammers, 2011). However, according to the U.S. Bureau of Labor Statistics (2017), most of the highest paying jobs are male-dominated, and women make less money than men weekly at these jobs.

Society more generally, and board of directors specifically, should be aware of possible gender biases, because in large public companies, the board of directors' recommendations usually determine CEO pay (Nobel, 2015; Schoen, 2006). Determining the effects of industry gender composition on CEO compensation will not only be filling an important gap in the existing literature, but it will also further our understanding of the gender compensation gap and how to prevent it. From a practical perspective, this research has implications for women interested in pursuing CEO positions as well as human resource departments, particularly with regards to succession planning. It could also prepare women CEOs for negotiations about their pay and inform human resources of possible pay discrepancies and biases (Ren & Zhu, 2010). Furthermore, gender discrimination at the CEO level may hinder women's access to these positions and discourage them from aspiring to these promotions (Shin, 2012). As a result, organizations may be missing out on competent women leaders.

In addition, if only men are being compensated appropriately, it discourages women candidates from applying to these positions. Pay equity not only broadens the applicant pool but it can also reduce the time and cost of recruiting qualified individuals (Chicha, 2006). Companies want to attract the best candidates. Thus, the compensation gap is counterproductive and limits the applicant pool.

Morally, as a society, we should care if there is a CEO gender compensation gap. The United States Equal Pay Act of 1963 states that women and men workers employed in the same organization, performing equal work, have the right to equal pay (Blau & Kahn, 2017). However, firms only have one CEO at a time, so it is not as easy to compare men and women CEOs as it is to compare men and women employees to determine if they are receiving equal compensation. For this reason, the United States Equal Pay Act of 1963 does not directly apply to CEOs.

Although gender-based compensation differences between CEOs are not illegal, it remains unfair and equal work should be equal pay.

Theoretical Development

Role Congruity Theory

Role congruity theory revolves around the perceived congruity between gender and social roles (Eagly & Karau, 2002), in this case, leadership roles. Social roles refer to socially shared expectations towards people of a certain social category or in a particular social position whereas gender roles are established beliefs about the characteristics, behaviors, and attributes of men and women (Eagly & Chryala, 1986; Eagly & Steffen, 1984). Women and men are taught to socialize and act according to the expectations attached to their gender roles (Elsesser & Lever, 2011). For example, society often frowns upon men for being overly emotional and talkative because these qualities are associated with women. In contrast, society frowns upon women for being overly dominant, competitive, and aggressive because these qualities are associated with men. Gender roles are more than just beliefs, they are normative expectations that entail the desirable qualities expected of men and women (Eagly & Karau, 2002). An example of this is the socially shared expectation that women are more sympathetic, caring, communal, gentler, and helpful than men. Thus, women are often perceived as less risk-taking, competitive, and aggressive. Men, in contrast, are associated with being more dominant, confident, controlling, ambitious, and forceful (Heilman & Okimoto, 2007; Ho, Li, Tam, & Zhang, 2015; Oakley, 2000; Wang et al., 2018). These differences are what influences people's fit perception of men and women in leadership roles (Eagly & Karau, 2002). Gender roles also contribute to gender stereotyping of occupations. That is, men and women gravitate to occupations that are more consistent with the characteristics associated with their gender thus conforming to the stereotype (Stoker, Van der Velde, & Lammers, 2011).

According to Eagly and Karau (2002), the perceived relationship between characteristics of social group members and social role requirements of said group members is how prejudices arise. Prejudices exist when individuals believe stereotypes about a social group that contradict the characteristics required to be successful within certain classes of social roles. The inconsistency that arises when a person connects an incongruent social role and stereotyped group member lowers the group member's evaluation as a potential or actual social role

occupant. Many people perceive an incongruity between leader role requirements and women characteristics which leads to prejudices towards women leaders (Eagly & Karau, 2002).

Persuasive stereotypes that men “take charge” while women “take care” are resilient (Heilman, 2001; Hoyt, 2010; Hoyt, Johnson, Murphy, & Skinnell, 2010). Leaders are often perceived as influential and dominant, which are characteristics often associated with men. Most leader stereotypes are masculine. For example, one stereotype is that leaders are assertive, competitive, and aggressive (Lee & James, 2007; Wang et al., 2018). Meanwhile, women are associated with being more community-oriented and nurturing which contradicts leadership stereotypes. This contradiction further influences people’s perceptions of women leaders (Eagly & Karau, 2002; Elsesser & Lever, 2011).

Eagly, Karau, and Makhijani (1995) conducted a meta-analysis and found that men and women are overall equally effective leaders but are more effective leaders in gender congruent roles. Specifically, women are more effective leaders in female-dominated industries in roles that are less-masculine such as social services, education, and governmental organizations than men. In contrast, men are more effective leaders and women are less effective leaders in male-dominated industries (Eagly et al., 1995). Multiple studies since then have also found that people find leaders more effective when they fit the position and society’s gender-based expectations of them (Ostroff & Atwater, 2003; Paustian-Underdahl et al., 2014). Particularly, Eagly and Carli (2003) found that women’s leadership style is more cooperative and less direct than men. They also found that women’s leadership style works best in groups of mostly women subordinates and in positions that require cooperation, that is, in female-dominated industries. In contrast, people perceive men as better leaders when the position involves direction and control (Eagly & Carli, 2003), which are typical in male-dominated industries.

Employees’ responses to the leader are crucial for effective leadership. If the leader does not fit the employees’ perception of a leader, they are less likely to respect, follow, and accept him/her, thus reducing the leader’s effectiveness (Hoyt, 2010). Women leaders’ performance evaluations are reduced in male-dominated industries (Adams et al., 2010; Ostroff & Atwater, 2003; Paustian-Underdahl et al., 2014) even if a woman has an authoritarian leadership style that is more masculine and in line with male-dominated industries. Studies have found that women who adopt a more masculine leadership style are penalized by receiving less favorable

evaluations and being less liked because it contradicts their gender role (Elsesser & Lever, 2011; Heilman, Wallen, Fuchs, & Tamkins, 2004; Johnson, Murphy, Zewdie, & Reichard, 2008).

Irrespective of the fact that male-dominated industries may have more difficulty accepting women leaders, people in general have difficulty perceiving women as leaders because there are more negative gender biases associated with women than men (Koch, D'Mello, & Sackett, 2015; Koenig, Eagly, Mitchell, & Ristikari, 2011). Regarding CEOs, society is used to seeing a man CEO and the phenomenon of women CEOs is still relatively new. The overproportion of men to women CEOs is drastic. Thus, the social role of a CEO is often associated with the gender role of a man. This is also partly why women are perceived as being more effective as mid-level leaders than upper-level leaders (Eagly & Karau, 2002; Paustian-Underdahl et al., 2014). Women must also work harder and be more qualified than their male counterparts to even be considered for leadership positions, let alone the CEO position (Eagly, 2007). Despite this effort and hard work, people on average rate men more favorably as leaders than women and on average perceive men as having more leadership potential (Cabrera, Sauer, & Thomas-Hunt, 2009). Regardless of the industry gender composition, men do not have as hard of a time getting promoted to CEO as women.

In addition to the difficulty women face being promoted to leadership positions, they are subject to stereotypes and scrutinized when promoted to CEO. The stereotypes associated with leadership and women may influence women's performance evaluation, therefore influencing their compensation (Eagly, Makhijani, & Klonsky, 1992; Lyness & Heilman, 2006). Due to the infrequency and lack of women CEOs, they face more criticism and skepticism than men CEOs (Abdullah, Ismail, & Nachum, 2016; Gao, Lin, & Ma, 2016; Hoobler, Masterson, Nkomo, & Michel, 2018). Gender-based expectations of women and their social role increase the scrutiny that women CEOs experience, further discounting their expertise and experience (Eagly, Johannesen-Schmidt, & Van Engen, 2003; Ryan & Haslam, 2007). In general, women CEOs are appreciated less than men which could influence their compensation (Eagly & Carli, 2012; Lanaj & Hollenbeck, 2015, Wang et al., 2018). The criticisms and prejudices women CEOs face seem to be worsened in male-dominated industries, where there is a disproportion of men to women employees.

Since most leader stereotypes are masculine, women CEOs may display behaviors that are not in accordance with their gender stereotype. According to role congruity theory, this may

negatively affect women's compensation. More specifically, women CEOs contradict gender and leader stereotypes, women will not be perceived as fitting the CEO role which could reduce people's perceptions of their performance and therefore their compensation. However, having women CEOs manage successful companies thus showing that masculine traits are not necessary to be a good leader may work in favor of women and in abolishing these stereotypes. In addition, successful women CEOs leading companies can change society's perception of fit between women and leadership roles (Appelbaum, Audet, & Miller, 2003; Oakley, 2000; Wessel, Hagiwara, Ryan, & Kermond, 2015). Furthermore, since the majority of employees in female-dominated industries are women, the contributions of women are emphasized. Therefore, having a woman CEO could provide useful insights into the workforce and improve internal coordination which may lead to strategic improvements towards employees, customers, and trading partners (Cumming et al., 2015; Wang et al., 2018). The unique perspective of women CEOs may also enable them to analyze strategic options more thoroughly and improving decision quality (Hill et al., 2015; Koenig et al., 2011). Women CEOs may bring useful insights to female-dominated industries, which may improve the contextual alignment of women CEOs. Being a woman rather than a man offers different perceptual views and solutions. Since the majority of firms have men CEOs, having a woman CEO may certainly bring a new managerial perspective (Perryman, Fernando, & Tripathy, 2016).

Furthermore, the traits admired and expected in leaders may vary depending on the context, particularly whether the industry is female- or male-dominated (Eagly & Karau, 2002; Hoobler et al., 2018; Lee & James, 2007). Female-dominated industries, for example, often appreciate and put more emphasis on community and communication (Koenig et al., 2011; Wang et al., 2018). Thus, these industries may be more aligned with gender stereotypes associated with women, which could reduce the role incongruity women CEOs face in male-dominated industries (Rosette & Tost, 2010). Women's leadership styles may be perceived as fitting better in female-dominated industries where women's characteristics are more aligned with the company (Adams et al., 2010). Therefore, women CEOs in female-dominated industries may experience performance evaluations that are more reflective of their expertise which could lead to their compensation being more congruent to that of a man CEO. As mentioned above, society is used to seeing men CEOs which is why they do not face the same skepticism and criticism that women CEOs face. However, because of the value women CEOs bring to female-dominated industries,

the reduced role incongruity, gender biases, and likelihood that their performance evaluations will be more reflective of their expertise, women CEOs may be compensated more similarly to men CEOs in female-dominated industries.

Women leaders are less accepted in male-dominated industries and their performance evaluations tend to be reduced in male-dominated industries (Adams et al., 2010; Ostroff & Atwater, 2003; Paustian-Underdahl et al., 2014). Moreover, the perceived fit between the social and gender roles of a woman CEO is reduced in a male-dominated industry. As previously discussed, if the leader does not fit employees' "leader image", they are less likely to respect, follow, and accept him/her, thus reducing the leader's perceived effectiveness, which may then reduce their compensation because performance perceptions influence compensation (Hoyt, 2010). Since the majority of employees in male-dominated industries are men, the social and gender roles of women CEOs may be incongruent and may not fit employees' perceptions as much as men CEOs.

Hypothesis. Female-dominated industries have less of a CEO compensation gap compared to male-dominated industries.

Method

Overview

From a methodological perspective, studying CEOs has many advantages. First, every company in the United States that is publicly traded must disclose their CEO's yearly salary, bonuses, pension, and stock benefits (Wharton Research Data Services, 2015). As well, many CEOs' career and personal history are publicly available. Second, one of the biggest drawbacks of analyzing the gender compensation gap is trying to isolate the effect of gender. However, CEOs are a relatively homogenous group therefore differences between men and women can largely be attributed to gender (Shin, 2012).

This study analyzed data from public United States firms between 2010 and 2018, inclusively. The data for this study were collected from the Compustat and Execucomp databases. These databases are reputable and widely sourced in academic journals (Elsaid, 2015; Jalbert, Jalbert, & Furumo, 2013; Vähämaa, 2017; Vieito, 2012). They have been widely used for multiple research projects, including leading business and compensation research (Ozkan, 2009). Execucomp includes executive compensation data extracted from each company's annual proxy

(DEF14A SEC form). This includes time series data for over 3,462 organizations, since 1992, of detailed information on CEO pensions, stock options, salaries, bonuses, and other compensation items (Wharton Research Data Services, 2015). Compustat provides thousands of annual income statements, pensions, balance sheets, descriptive, and cash flow data for over 84,000 companies (Wharton Research Data Services, n.d.). All the data collected is in 1992 constant United States dollars.

The data from Compustat and Execucomp were merged using the global company key (GVKEY) and the year (Gupta et al., 2018). Every company is assigned a GVKEY which is a unique number used to identify companies in Execucomp and Compustat (Stanford Graduate School of Business, n.d.). CEOs whose tenures were less than one fiscal year were removed from the sample as were CEOs whose total compensation was blank. Control variables were modelled after Mangel's (2017) research on CEO performance evaluations. After each calculation for the control variables was complete using either SAS or SPSS, a spot check of twenty at random were manually calculated to verify that every calculation for the control variables was correct. Z-scores of +/- 3.29 standard deviations were considered outliers and removed from the sample. On this basis, nine observations were deleted. The final sample consisted of 3,277 firm-year observations (182 women CEOs, 3,095 men CEOs) between 2010 and 2018.

Measures

Independent Variables

Gender. CEO gender was presented under 'gender' as either man or woman in the Execucomp database and was an indicator variable coded as 1 for women and 0 for men.

Industry gender composition. This was determined by first looking at the 'NAICS code' and 'Description of NAICS Code' in Execucomp. These were then matched to the U.S. Bureau of Labor Statistics (2017) labor force statistics from the 2017 survey, which was organized by NAICS description and code, to determine the gender composition of the industry (Ko, Kotrba, & Roebuck, 2015). If an industry had more than 50% women employees, it was categorized as "female-dominated". The reverse was true for male-dominated industries (Wang et al., 2018). Industry gender composition was an indicator variable coded as 1 for female-dominated and 0 for male-dominated. If the 'Description of NAICS Code' did not match verbatim with the U.S. Bureau of Labor Statistics (2017) labor force statistics, a cross-reference guide for NAICS codes

was consulted. The cross-reference guide provided similar classifications and codes for similar industries that might apply to the NAICS code in question (NAICS Association, n.d.; Smith, n.d.). If a NAICS code could not be matched to the U.S. Bureau of Labor Statistics (2017) labor force statistics, the observations were removed from the data. Secondary market financing, conglomerate, photography studios portrait, and unclassified establishments were removed from the data because they could not be matched. Gasoline stations were also removed from the data because it consisted of 50% women and 50% men employees (U.S. Bureau of Labor Statistics, 2017).

Dependent Variable

CEO compensation is the dependent variable. In Execucomp, total annual compensation is listed as ‘TDC1’ which is recorded in units of \$1000 (Wharton Research Data Services, 2015). This includes the total value of stocks, bonuses, incentive payouts, benefits, salary, and all other compensation. The natural log of this variable was used as the dependent variable, per the suggestions of specification tests and the economic theory (Adams et al., 2007; Gupta et al., 2018; Heckman & Polachek, 1974).

Individual (Within-Firm) Control Variables

Individual CEO characteristics that influence compensation were controlled.

CEO Tenure. The first individual control variable was CEO tenure. This was controlled because CEOs with less tenure may not have as much influence over the board of directors as CEOs with longer tenure. Since CEOs with longer tenures have known their board of directors for longer they typically have stronger relationships with them which could influence their compensation (Grinstein & Hribar, 2004). Execucomp displayed CEO tenure as ‘date became CEO’ and ‘date left as CEO’. The years between these two dates were calculated to compute CEO tenure.

CEO Chairman. The second individual control variable was CEO chairman, which was an indicator variable coded as 1 when the CEO is the chairman or vice-chairman and 0 if not. Execucomp displays CEO chairman as ‘chairman’ under ‘TITLEANN’ (WRDS, 2015). This needed to be controlled because CEOs who act as the board chairperson tend to receive higher compensations due to their greater influence over the board (Bebchuk & Fried, 2003; Bugeja et al., 2012; Grinstein & Hribar, 2004; Walker, 2002).

Organizational-Level (Between-Firm) Control Variables

Several economic characteristics that influence compensation were also controlled.

Sales. The first economic control variable was sales, represented as net sales. The item ‘SALE’ in Compustat represents gross sales minus allowances to customers, returned sales, and cash and trade discounts (WRDS, 2015). The natural logarithm of ‘SALE’ at the end of $t - 1$ was calculated to create the variable sales (Mangen, 2017).

Firm Risk. The second economic control variable was volatility also known as firm risk. This was calculated by computing the standard deviation of annual stock returns for five years before t (Gupta et al., 2018; Mangen, 2017). The item ‘PRCC_F’ in Compustat displays annual fiscal price close (WRDS, 2015). For this variable, $[(PRCC_F \text{ in current year} - PRCC_F \text{ in previous year}) / PRCC_F \text{ in previous year}]$ was calculated then the standard deviation over five years was calculated.

Growth Options. The third economic control variable was the book-to-market ratio, also known as growth options. This was calculated by computing the natural logarithm of $[AT/(MKVALT-CEQ+AT)]$ at $t - 1$. The item ‘AT’ in Compustat represents total assets/liabilities. Total market value is represented by ‘MKVALT’ in Compustat. Lastly, common/ordinary equity total ‘CEQ’ in Compustat represents common shareholders’ interest in the company (WRDS, 2015).

Firm Size. The fourth economic control variable was firm size which needed to be controlled for because smaller firm CEOs often receive less compensation than CEOs of larger firms. The reason larger firm CEOs are compensated more is that they usually have more demands and responsibilities (Smith & Watts, 1992). The natural logarithm of ‘AT’ at $t - 1$ was calculated for the firm size control variable (Hill et al., 2015; Lee, 2004).

Stock Return. The fifth firm control variable was stock return. The variable ‘TRT1M’ in Compustat represents the total monthly return of a firm (WRDS, 2015). Twelve monthly observations of ‘TRT1M’ were totaled to calculate a firm’s returns of one year.

Year. The final control variable was the year of the total compensation value.

Test of Hypothesis

Since the dependent variable is a continuous variable and the two independent variables are dichotomous, ANOVA (or ANCOVA, with control variables) would appear appropriate.

However, ANOVA assumes the independence of the error terms, which is not the case with the current dataset because the error terms are likely correlated within firms. In other words, the variables are at different levels: total compensation is measured within firms and may vary each year, as does gender of the CEO, whereas industry composition is a between-firm variable that does not vary within firms. Hierarchical linear modeling (HLM) is recommended when testing cross-level relationships within- and between-firms (Hofmann, 1997; Raudenbush & Bryk, 2002; Woltman, Feldstain, MacKay, & Rocchi, 2012). HLM clusters the data while ANOVA does not. HLM results will be presented as recommended by Gupta et al. (2018) who highlighted the importance of clustering data.

Results

Overview

First, descriptive statistics are reported. Next, correlation results are discussed. This is followed by the reporting and discussion of HLM results which was calculated using HLM 8 software (Raudenbush, Bryk, Cheong, & Congdon, 2019).

Descriptive Statistics

Table 1 shows total compensation means and standard deviations broken down by gender and industry composition. Table 2 presents overall descriptive statistics and intercorrelations among all variables of interest. The sample included 3095 men CEO and 182 women CEO firm-year observations. Industry-wise the sample consisted of 2737 firm-year male-dominated industries and 540 firm-year female-dominated industries.

Correlations

Table 2 presents the correlations among variables. Gender was not significantly related to total compensation ($r(3275) = -.02, p = 0.270$) but industry composition was significantly related to total compensation ($r(3275) = .07, p = 0.000$). Every control variable was statistically related to total compensation at the 0.01 level (see Table 2). This suggests that gender did not influence CEO compensation whereas industry composition and other firm-level and individual-level factors influenced the amount CEOs earned.

Hierarchical Linear Modeling

Table 3 presents the HLM results. The hypothesis stipulated that female-dominated industries have less of a CEO compensation gap compared to male-dominated industries. In this hypothesis, a within-firm variable (CEO total compensation) is predicted by a between-firm variable (industry composition). Before any cross-level effects could be examined, significant between-firm variance in the dependent variable (total compensation) must be established. Thus, a null model including only the dependent variable and no predictors for total compensation was necessary to demonstrate a meaningful between-firm variance (Singer & Willett, 2003). This is represented by the following equation:

$$\text{Total compensation}_{ti} = \beta_{00} + r_{0i} + e_{ti} \quad (1)$$

Total compensation_{ti} is the individual-level outcome, β_{00} is the intercept, r_{0i} is the residual variance at level-2, and e_{ti} is the level-1 error term. The within-firm variance component was .16, while the between-firm variance component was .68 ($\chi^2(447) = 13366.68, p < .001$). Thus, 80.71% of the total variance was between firms. This was calculated by dividing the between-variance component by the total variance (between-firm variance plus within-firm variance). Taken together, this means that 80.71% of total compensation varies systematically between firms. The significant effect justified the examination of firm-level effects for total compensation. The test of the hypothesis was conducted using the following equation, where r_{5i} is the residual variance in gender slope:

$$\begin{aligned} \text{Total compensation}_{ti} = & \beta_{00} + \beta_{01} (\text{Industry composition}_i) + \beta_{10} (\text{Year}_{ti}) \\ & + \beta_{20} (\text{Stock return}_{ti}) + \beta_{30} (\text{CEO chairman}_{ti}) + \beta_{40} (\text{Tenure}_{ti}) + \beta_{50} (\text{Gender}_{ti}) \\ & + \beta_{51} (\text{Industry composition}_i)(\text{Gender}_{ti}) + \beta_{60} (\text{Firm risk}_{ti}) + \beta_{70} (\text{Growth options}_{ti}) \\ & + \beta_{80} (\text{Firm size}_{ti}) + \beta_{90} (\text{Sales}_{ti}) + r_{0i} + r_{5i} (\text{Gender}_{ti}) + e_{ti} \end{aligned} \quad (2)$$

Robust standard errors were used in the analysis. All the variables were within-firm (level-1) predictors except industry composition which was a between-firm (level-2) predictor. All predictors were specified as fixed effects, except for gender, which was random (its effect was allowed to vary across firms). GVKEY was used to link level-1 and level-2 predictors.

Results showed that the interaction between the effects of gender and industry composition on total compensation was not statistically significant at the $p < .05$ level ($t(439) = 0.56, p = .577$). Gender did not have a significant effect on total compensation at the $p < .05$ level ($t(439) = -0.64, p = .525$) and neither did industry gender composition ($t(439) = -1.11, p = .269$). These results suggest that CEOs' total compensation is not influenced by gender or whether the industry is male- or female-dominated. Rather, what was significant was the effects that year ($t(2284) = 3.02, p = .003$), CEO chairman ($t(2284) = 2.03, p = .043$), firm risk ($t(2284) = -4.39, p < .001$), growth options ($t(2284) = -8.31, p < .001$), firm size ($t(2284) = 23.46, p < .001$), and sales ($t(2284) = 2.07, p = .038$) had at the $p < .05$ level on CEOs total compensation. Altogether, the results suggest that CEO total compensation has little to do with the CEO's gender and the industry gender composition and is instead influenced by the CEO and company's performance, specifically growth options, firm size, risk, sales, and whether the CEO is also the chairman.

After including all of the predictors, the remaining within-firm variance was .15, while the between-firm variance component was .19 ($\chi^2(25) = 105.18, p < .001$). The total percent of the variance between firms accounted for by all predictor variables is calculated by subtracting the null between-firm variance component (presented in the previous model) by the remaining between-firm variance; this total is then divided by the null between-firm variance component. Based on these calculations, 71.95% of the total percentage of the variance in total CEO compensation between firms was accounted for by all predictor variables.

Discussion

I am unable to reject the null hypothesis of no difference between men and women CEOs compensations and do not find that industry composition and gender influence CEO compensation. Specifically, the compensation of men and women CEOs is not influenced by their gender or whether the industry is female- or male-dominated but rather is influenced by the firm's risk, size, sales, growth options, and whether the CEO is also the chairman. Furthermore, year also influences CEO compensation, with compensation typically increasing every year.

Contrary to some research results suggesting that CEO gender influences compensation (Adams et al., 2010; Bertrand & Hallock, 2001; Elkinawy & Stater, 2011; Hill et al., 2015; Mohan & Ruggiero, 2003; Mohan & Ruggiero, 2007; Wang et al., 2018), the present study contributes to recent research which finds that CEO gender does not influence compensation

(Adams et al., 2007; Bugeja et al., 2012; Gupta et al., 2018; Leszczynska & Chandon, 2019). The studies that find there is a CEO gender compensation gap have smaller samples, methodologies that are less rigorous, and they do not analyze CEO compensation separately from executive compensation. For example, Adams et al. (2010), Bertrand and Hallock (2001), and Elkinawy and Stater (2011) include executives in their analyses and do not measure the gap with only CEOs. Mohan and Ruggiero's (2003) sample includes 47 women CEOs from publicly traded companies with matched pairs of comparable men CEOs. Similarly, Mohan and Ruggiero's (2007) sample includes 40 companies with a matched sample of men to women CEOs. Wang et al.' (2018) sample was composed of Chinese executives, which might not be comparable to the United States. Lastly, Hill et al.'s (2015) sample is from 1996-2005. However, the studies that do not find a CEO gender compensation gap analyze CEO compensation separately from executive compensation, have larger and more recent samples, more rigorous methods, and their analyses extend further in time. Using a matched sample of men to women CEOs, Leszczynska and Chandon (2019) analyze 54 women CEOs in the United States 2014 Fortune's 1000 report. This is a slightly larger and more recent sample compared to Mohan and Ruggiero (2003) and Mohan and Ruggiero (2007) who also use a matched comparison of men and women CEOs. In comparison to Hill et al. (2015), Adams et al.'s (2007) sample include 1992-2008 and Bugeja et al.'s (2012) sample is from 1998-2010. Thus, Adams et al.'s (2007) and Bugeja et al.'s (2012) samples are larger, more recent, and extend further in time. Lastly, Gupta et al. (2018) replicate and extend Hill et al. (2015) by analyzing CEOs from 1996-2014 with more rigorous methods. The results of this study are aligned with the findings of the aforementioned rigorous studies that also find there is no CEO gender compensation gap.

Of the above studies that do not find a CEO gender compensation gap, none refer to or use a theory in their hypothesis development or discussion. As previously mentioned, one of the goals of this paper is to extend and apply the role congruity theory to CEO compensation research. Men and women are socialized, and behave, differently, which influences people's perceptions of gender roles (Wang et al., 2018; Wrangham & Peterson, 1996). This paper focuses on gender perceptions and gender roles and its influence on CEO compensation in an attempt to extend the findings of Wang et al. (2018) to the United States and using role congruity theory. Although the compensation of men and women CEOs is not influenced by their gender or

whether the industry is female- or male-dominated, as originally hypothesized, it is possible that the interpretation of role congruity theory in hypothesis development could be done differently.

In the hypothesis development section, it was explained that people, in general, have difficulty perceiving women as leaders because there are more negative gender biases associated with women than men (Koch et al., 2015; Koenig et al., 2011). Many people perceive an incongruity between women's characteristics and leader role requirements because women are often associated with being more community-oriented and nurturing, which contradicts leadership stereotypes. This contradiction influences people's perceptions and prejudices towards women leaders (Eagly & Karau, 2002; Elsesser & Lever, 2011). On average, people rate men more favorably as leaders than women and they perceive men as having more leadership potential (Cabrera et al., 2009). Some studies suggest that the leader role violates the characteristics of being supportive and nurturing often associated with women thus making it unlikely that they will be compensated similarly to men who better fit the role (Adams et al., 2007; Dennis & Kunkel, 2004; Eagly et al., 1992; Eagly et al., 1995; Eagly & Karau, 2002; Paustian-Underdahl et al., 2014). Studies have also found that both genders are overall equally effective leaders but are more effective when they fit the position and society's gender-based expectations of them (Eagly et al., 1995; Ostroff & Atwater, 2003; Paustian-Underdahl et al., 2014). However, gender stereotypes have changed. A recent meta-analysis of United States opinion polls on gender stereotypes from 1946 to 2018 found that perceived gender equality in competence increased over time and men's advantage in agency (i.e. courageous, ambitious) over women decreased (Eagly, Nater, Miller, Kaufmann, & Sczesny, 2020). Additionally, CEOs are a relatively homogenous group of highly skilled and accomplished individuals, therefore differences between men and women can largely be attributed to gender (Shin, 2012). As such, perhaps research on leaders cannot be extended readily to CEOs. There are different levels of organizational management, each with its own leader, but there is usually only one CEO and she/he is the top executive (Farkas & Wetlaufer, 2014). It is possible that research on leader perceptions and stereotypes do not apply the same way to CEOs or that gender stereotypes in general are changing and that is why gender does not influence CEO compensation.

It could be that once women make it to the highest level of a company, CEO, they do not face the same discrimination as other women leaders. Regardless of gender, the CEO position is extremely hard to get and holds a lot of power. It could be that people's perceived fit between the

gender and social role of being a leader is different for CEOs. This may be especially true since women must work harder and be more qualified than their male counterparts to even be considered for the CEO position (Eagly, 2007). The prestige, education, and authority associated with the CEO role may supersede gender stereotypes of women being community-oriented and nurturing. Thus, the people who do become CEOs are seen as being aligned with the role regardless of their gender or the industry.

The argument that the social role of CEO is often associated with the male gender role because society is used to seeing men CEOs and the phenomenon of women CEOs is still relatively new, was also discussed in hypothesis development. This was associated with increased skepticism and criticism women CEOs face due to their scarcity compared to men CEOs (Abdullah et al., 2016; Gao et al., 2016; Hoobler et al., 2018). However, this also gets women CEOs special media attention in addition to the media coverage CEOs normally get (Hill et al., 2015).

Following the Hill et al. proposition, (2015), a possible explanation for the compensation parity between men and women CEOs may be the visibility of the position. Information about CEOs of publicly-traded United States firms is easily accessible to the public, including CEO compensation. There are laws in place that require public United States companies to disclose the compensation of their CEOs in a comprehensive and understandable manner (U.S. Securities and Exchange Commission, 2011). Since the compensation of CEOs is more visible than other positions, companies may be more aware of possible ramifications from stakeholders and the public if they compensated their CEOs inequitably. CEOs of large publicly traded firms also receive more media coverage than CEOs of smaller or private firms (Dixon-Fowler, Ellstrand, & Johnson, 2013; Hill et al., 2015; Lee & James, 2007). This could influence their desire to be viewed at the forefront of social movements such as gender equality (Hill et al., 2015; King, 2008; McDonnell & King, 2013). The small number of women compared to men in leadership positions, particularly in the CEO position, has become an ethical issue. Thus, how women are compensated has ethical connotations and is under scrutiny (Gao et al., 2016; Oakley, 2000; Wang et al., 2018).

Although there is still a larger proportion of men to women CEOs, it is possible that having women CEOs manage successful companies may have lessened the stereotype that masculine traits are needed to be a good leader. As previously stated in hypothesis development,

having successful women CEOs lead companies can change society's perception of the fit of women in leadership roles (Appelbaum et al., 2003; Oakley, 2000; Wessel et al., 2015). Perhaps this has already happened, especially since researchers have argued that having a woman CEO provides workforce insights and can improve internal coordination which can lead to strategic improvements among trading partners, employees, and customers (Cumming et al., 2015; Wang et al., 2018). Women CEOs may bring useful insights to industries, different from what men CEOs could bring, further improving the contextual alignment of women CEOs. Being a woman offers different perceptual solutions and views. Women CEOs may improve decision quality because their unique perspective may enable them to analyze strategic options more thoroughly (Hill et al., 2015; Koenig et al., 2011). Lastly, having a woman CEO may provide a competitive advantage and bring a new managerial perspective since the majority of firms have men CEOs (Perryman et al., 2016).

Compensation is often seen as a measure of one's worth and value to a company (Adams et al., 2007). Large public United States companies are compensating CEOs for their inimitability, value, and rarity (Hill et al., 2015). However, discrimination and systematic biases in promoting and hiring women CEOs may be present as there are very few women compared to men CEOs (Hill et al., 2015). Thus, one should be cautious when interpreting these findings to mean that women CEOs do not face discrimination. This finding shows that gender discrimination towards pay may have been overcome in the United States, at least for CEOs in large public firms. This study contributes to the literature on CEO compensation and ascertains that women CEOs do not appear to be discriminated against in terms of compensation as gender did not influence their compensation (Hill et al., 2015). Interestingly, whether the industry was male- or female-dominated also did not influence CEO compensation. Thus, gender in any sense does not seem to influence CEO compensation.

Limitations and Future Research

This research has some limitations that should be acknowledged and taken into consideration for future research. First, the stock return control variable is not adjusted for market returns because this information is unavailable on Compustat. A more proximate measure of stock return would strengthen the results.

Second, the data were collected from a single country, the United States, compromising generalizability. The data were collected from United States firms and not Canadian firms

because publicly traded Canadian companies, unlike the United States, are not required to disclose publicly their CEOs' compensation (Cook, Ingersoll, & Glass, 2019; Tuzyk & Childs, 2019). The generalizability of these findings for men and women CEOs in less egalitarian societies that are more or less encouraging towards women in business can not be assumed and requires further investigation (Adams et al., 2010; Gupta et al., 2018). Future researchers could extend these findings by examining the compensation of men and women in female- and male-dominated industries in other executive roles and other societies.

Third, the data did not include privately held companies or non-profit organizations, further limiting generalizability. Although firm size was controlled, extending these analyses to smaller and private companies would be a promising focus for future researchers to pursue and could add insights to compensation theories. Future researchers could investigate the cultural and management characteristics of other countries and smaller companies to further understand variations in CEO compensation (Leszczynska & Chandon, 2019).

Although industry gender composition does not influence CEO compensation, understanding industry differences in promoting women would be an interesting avenue for future researchers to pursue (Adams et al., 2007). Future researchers could analyze why some companies, over others, promote women to CEO positions and whether the demographic composition of the board of director is correlated with the promotion of women CEOs (Bertrand & Hallock, 2001). Another avenue for future studies is to analyze whether the promotion of women to CEO positions impacts gender pay discrepancies throughout companies. For example, does having a woman CEO improve pay equality between genders throughout the company? Do companies with women CEOs have more equitable pay and less of a gender compensation gap throughout the company? This will further extend our knowledge of the gender pay gap.

Although beyond the scope of the current research, internal and external forces driving CEO compensation were not analyzed. Exploring the role that hiring committees and compensation consultants have in CEO compensation could add insights to compensation theories (Gupta et al., 2018). A potential avenue for additional research would be to analyze the different ways women become CEOs and which promotion path, internal or external, is the most efficient and common (Leszczynska & Chandon, 2019).

Implications

Gender and its influence on compensation is a topic that grabs the attention of regulators, academics, the government, media, and society at large. The reason for this is that, morally, equal work deserves equal pay, regardless of gender. Additionally, companies should want to attract the best candidates and paying based on merit rather than gender broadens the pool of applicants. The findings show that women who reach the CEO level are compensated not based on gender or industry composition but most likely on performance. Women CEOs of publicly-traded United States firms do not appear to face gender biases when it comes to pay. This is encouraging news for women aspiring to a CEO position and hoping for equitable compensation. This study not only contributes to research on CEO compensation, but also a greater understanding of the gender pay gap in general. There is mixed and limited research on the CEO gender compensation gap compared to the gap in other organizational positions (Mohan, 2014; Wang et al., 2018). For example, an abundance of research suggests that minorities, including women, are compensated less throughout organizational structures (Bishu & Alkadry, 2017; Buchanan, 1997; Poelmans, Greenhaus, & Maestro, 2013; Stamarski, Hing, & Leanne, 2015). This current study improves our understanding of the gender compensation gap and the boundary conditions of it. The findings go against the common wisdom that men earn substantially more than women working in the same position with similar qualifications (Abraham, 2017). It contradicts the persistent and universal concern of a gender compensation gap (Lips, 2013) and highlights the circumstances in which there may be equal compensation between genders (Gupta et al., 2018). The commercial and economic implications of this research are important because it implies that gender discrimination in compensation, in large United States companies, may have been overcome at the CEO level (Leszczynska & Chandon, 2019). Furthermore, pay equality at the CEO level may have a positive spillover effect on other organizational levels and society in general (Wang et al., 2018).

Conclusion

Intense conversations surrounding the gender pay gap happen in both academic and everyday life (Gupta et al., 2018). This research suggests that there may not be a meaningful difference between the compensation of men and women CEOs, at least in publicly traded United States companies. The finding that CEO compensation is not influenced by gender or industry

composition but, rather, by the firm's and CEO's performance is interesting, especially when considering the research, policies, and advocacy towards pay equality between genders. Although there are few women CEOs, hopefully, this finding will encourage women aspiring to top-level positions and, in time, lessen the negative leader stereotypes associated with women in general.

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Appendix

Table 1

Means and Standard Deviations of CEO Total Compensation broken down by Gender and Industry Composition

	Gender								
	Men			Women			Total		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Male-Dominated Industry	2579	7394.11	6709.80	158	7976.93	6492.62	2737	7427.76	6697.68
Female-Dominated Industry	516	8617.59	6405.13	24	4205.58	2550.82	540	8421.50	6348.61
Total	3095	7598.09	6674.56	182	7479.61	6247.29	3277	7591.51	6650.70

Note. $N = 3277$. Multiply total compensation's mean and standard deviation by 1000 to get the dollar amount.

Table 2*Means, Standard Deviations, and Correlations among Variables*

	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Stock return	3267	1.14	4.94										
2. CEO chairman	3273	0.55	0.50	.01									
3. Tenure	3277	10.26	7.28	.05**	.27**								
4. Growth options	3186	-0.44	0.39	.04*	-.03 [†]	-.02							
5. Firm size	3186	8.51	1.85	-.08**	.23**	-.14**	.07**						
6. Sales	3186	7.87	2.20	-.07**	.15**	-.13**	-.18**	.48**					
7. Firm risk	3189	0.73	4.58	.11**	-.02	.03 [†]	.06**	-.03	-.02				
8. Total compensation	3277	7591.51	6650.70	-.06**	.21**	-.09**	-.17**	.73**	.52**	-.06**			
9. Gender	3277	0.06	0.23	-.00	-.03 [†]	-.08**	-.01	.01	.05**	-.02	-.02		
10. Industry composition	3277	0.16	0.37	-.02	.07**	.15**	.11**	.18**	-.21**	-.02	.07**	-.02	

Note. *N* = 3277. Multiply total compensation's mean and standard deviation by 1000 to get the dollar amount. **p* < .05. ***p* < .01. [†]*p* < .10

Table 3*Hierarchical Linear Modeling Results*

	Null model		Hypothesized model	
	Est. (SE)	t	Est. (SE)	t
Model for intercept (π_0)				
Intercept (β_{00})	8.54 (.04)	214.08**	-17 (8.48)	-2*
Industry composition (β_{01})			-.08 (.07)	-1.11
Model for year slope (π_1)				
Intercept (β_{10})			.01 (.00)	3.02**
Model for stock return slope (π_2)				
Intercept (β_{20})			.00 (.00)	0.95
Model for CEO chairman slope (π_3)				
Intercept (β_{30})			.07 (.03)	2.03*
Model for tenure slope (π_4)				
Intercept (β_{40})			.00 (.00)	.95
Model for gender slope (π_5)				
Intercept (β_{50})			-.04 (.06)	-.64
Industry composition (β_{51})			.09 (.16)	.56
Model for firm risk slope (π_6)				
Intercept (β_{60})			-.00 (.00)	-4.39**
Model for growth options slope (π_7)				
Intercept (β_{70})			-.36 (.04)	-8.31**
Model for firm size slope (π_8)				
Intercept (β_{80})			.34 (.01)	23.46**
Model for sales slope (π_9)				
Intercept (β_{90})			.02 (.01)	2.07*

Table 3 (continued).

	Variance Parameters	
	Null model	Hypothesized model
Level 2 variance (r_0)	.68**	.19**
Level 1 variance (e)	.16	.15
Gender slope variance (r_5)		.04
Variance explained at Level 2	80.71%	71.95%
Variance explained at Level 1	19.29%	10.81%

Note. $N = 3277$ (initial); after run-time deletion, $N(\text{level-1}) = 3277$ (null model), 3174 (hypothesized model), $N(\text{level-2}) = 441$; Est = Estimate; SE = Standard Error (robust standard errors). * $p < 0.05$ ** $p < 0.01$