Corporate Governance: An International Review, 2012, 20(1): 46–63

Gender, Top Management Compensation Gap, and Company Performance: Tournament versus Behavioral Theory

Joao Paulo Torre Vieito*

ABSTRACT

Manuscript Type: Empirical
Research Question/Issue: This study is among the first to investigate the impact of gender on the relationship between the compensation gap of the CEO and Vice-Presidents on company performance, testing if companies managed by a female CEO or a male CEO follow tournament or behavioral theory. Tournament theory suggests that a large compensation gap between CEO and company Vice-Presidents (VPs) leads to higher company performance; behavioral theory states that higher performance may be achieved with a small compensation gap between CEO and VPs. Additionally the study also investigates if companies managed by a female CEO perform better, or not, than those managed by a male CEO, and if the factors that explain the compensation gap between CEO and VPs in these two groups of companies are the same, or not. Data for the investigation emanated from the USA during the period 1992 to 2004.
Research Findings/Insights: The results reflect something quite new in the area – on average, companies managed by a female CEO perform better, and have a smaller compensation gap between the CEO and VPs than companies managed by a male CEO. In companies managed by a female CEO, a smaller difference in the total compensation gap between CEO and Vice-Presidents leads, on average, to higher company performance, however, when the CEO is a male, a higher compensation gap is required to obtain higher company performance. The results provide empirical support that the behavioral theory is predominant in companies managed by a female whereas tournament theory is predominant in companies managed by a male.
Theoretical/Academic Implications: The paper fills an important gap in the existing literature by providing econometric evidence that males and females CEOs have a different impact on the relationship between CEO and VPs compensation gap and company performance, and that it is not indifferent to choosing a male or a female CEO in terms of company performance.
Practitioner/Policy Implications: This study offers an insight to practitioners and policy makers suggesting that gender influences the relationship between the CEO and Vice-Presidents compensation gap and company performance. Boards may be able to improve company performance if they limit the compensation gap between CEO and VPs when the CEO is a female and extend it, when it is a male.

Keywords: Corporate Governance, Executive Compensation Gap, Company Performance, Tournament Theory, Behavioral Theory

INTRODUCTION

Until now, only a small number of studies, most of which are in the area of labor economics, have analyzed the impact of the compensation differential between CEO and Vice-Presidents (VPs) on company performance (Main, O'Reilly, & Wade, 1993; Henderson & Fredrickson, 2001; and Kale, Reis, & Venkateswaran, 2009, among others). Nonetheless none of these have used gender as a control variable.

Tournament theory suggests that a big compensation gap between CEOs and Vice-Presidents will increase the competitiveness among these Vice-Presidents to obtain the CEO's position in the future, and that this competition will lead to an improvement in company performance. An opposite theory – the behavioral theory – suggests that only small differences in terms of compensation between CEO and

*Address for correspondence: Joao Paulo Torre Vieito, Department of Finance and Accounting, Polythecnic Institute of Viana do Castelo, Valença, 4930, Portugal. Tel: 351-251-800840; Fax: 351-251-800841; E-mail: joaovieito@esce.ipvc.pt

doi:10.1111/j.1467-8683.2011.00878.x

Vice-Presidents promotes collaboration and coordination between them and performance will be greater when this gap is reduced.

Literature would suggest that this study is the first to analyze if the size of the differential between what is paid to the CEO and to Vice-Presidents (VPs) has the same impact, or not, on company performance, when the company is managed by a female or a male CEO. I also investigate if companies managed by a female CEO perform better than companies managed by a male CEO and if the factors that explain CEO and VPs compensation gap in companies managed by a female or male CEO are identical.

This result describes something quite new in the area. On average, companies with a female CEO have higher performance than companies managed by a male CEO. Companies with a female CEO and a small compensation gap between the CEO and Vice-Presidents show, on average, higher performance, however when the CEO is a male, it is a high, and not a small, compensation gap that leads to high company performance. The findings provide empirical evidence that behavioral theory is predominant in companies managed by a female, whereas tournament theory is predominant in companies managed by a male.

Companies managed by a female CEO on average appear to have a smaller total compensation gap between the CEO and Vice-Presidents than companies managed by a male CEO. The Chow test also provide empirical evidence that factors which explain the compensation gap between the CEO and company VPs are not identical in companies managed by a female CEO and those managed by a male CEO.

The findings are extraordinarily important to Boards, as they provide empirical evidence that the question of gender is not indifferent in terms of the impact of compensation gap on company performance.

The study begins with a literature review and specific research hypotheses in Section 2. Section 3 presents the methodology used in the research. Section 4 describes the analysis and discusses the results. Section 5 draws a summary and the conclusion, and Section 6 provides bibliographic references.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

During the last few years, a significant number of models (tournament theory, managerial theory, behavioral theory, and social theory) have tried to explain internal company compensation schemes. This investigation focuses on the two most predominant theories: tournament theory and behavioral theory, in an attempt to investigate if high or low compensation gaps between CEO and Vice-Presidents have different impacts in terms of company performance. Additionally, the major differences between genders are also described.

In the past, companies have been organized on the basis of a significant number of hierarchical levels. The number of hierarchical levels was greater in larger companies than in small companies (e.g., Simon, 1957). It was assumed that each hierarchical level had different responsibilities and that greater responsibility should be remunerated with higher compensation. Currently, due to recent economic development and organizational restructuring, companies have made the management level leaner to respond quickly to environmental uncertainties and changes. Accordingly when analyzing the CEO's responsibilities, it is the number of employees and not the number of organizational levels that must be taken into account. According to this model of company organization, the number of employees competing for the position of CEO is greater, and normally the prize for the winner increases when the number of competitors also increases (Bognanno, 2001).

Shrader, Blackburn, and Iles (1997) report that companies are currently facing increasing international competitive pressures, unstable markets and new and complex technologies, and that societies are also changing substantially. According to Carpenter and Sanders (2002) top teams are more effective in dealing with such competitive circumstances when they work as a group with common interests, as they unite individual efforts, exchange information, take on a cooperative behavior, and also make joint decisions (Hambrick, 1995). Working as a team and cooperating may be a better option to manage the inherent difficulties of a large organization than a CEO working alone.

Having collected information on communication between American and Japanese executives, employees and customers, Tannen (1990) reports that "in America, men's talk, or "report talk" is distinguished from women's talk, or "rapport talk" (Tannen, 1990:50). Men use a direct, confrontational style while women resort to a more indirect, cooperative style (Howden, 1994). According to these authors, women suggest and men demand. Having also analyzed the competitive and cooperative communication style of American and Japanese men and women, Howden states that "individualists believe that they can survive on their own; collectivists know they cannot survive without group membership, whether in the workplace, family, or community" (Howden, 1994:55). Females have also been taught that they are dependent on others, and that others depend on them, while "responsibility for a man is taking the blame, or the glory, as an individual; for a female, it is caring and providing for others" (Howden, 1994:55). Rosener (1995) states that females in top management are more flexible and better able to deal with ambiguity than males and these abilities to motivate team building and be flexible are essential factors for the success of any modern business that is conducted in an uncertain context. Based on this information the first hypothesis is proposed:

> *Hypothesis 1. On average, when a company is managed by a female CEO, the company performance is higher than when the CEO is a male.*

The expectation is that, due to the aforementioned personal characteristics, females are better able to deal with modern businesses that are conducted in uncertain contexts and consequently firms with females CEOs will on average perform better than firms with males CEOs.

Tournament theory, also known as the economic theory, was developed by Lazear and Rosen (1981) and O'Reilly, Main, and Crystal (1988), and explains remuneration differences in terms of marginal productivity. It suggests that

individuals inside the company will compete for promotions and rewards and that very large compensation differences among hierarchical levels will lead to a higher company performance while a small gap difference reduces performance. Tournament structures imply that prizes are defined before the tournament begins and are paid according to a ranking order at the finish, and not based on the absolute performance of the participants in the competition. Transposing this theory to top company management, as normally only one person may be CEO in a company at a time, Vice-Presidents will compete among themselves to obtain this position in the future and also to receive the higher compensation paid to the CEO. This competition among Vice-Presidents, according to the authors, will lead to better performance. O'Reilly et al. (1988) state that on the day when a given individual is promoted from Vice-President to President or CEO, their salary may triple, and it is difficult to argue that their skills have also tripled in that one-day period. The main reason CEOs receive substantially more than other employees is due to their added responsibility for the performance of the company, and this may have a price. Hannan, Krishnan, and Newman (2008) also report that when competition participants are remunerated on the basis of a tournament scheme they will perform better than when they are remunerated on the basis of an individual compensation. Vandegrift and Brown (2005) however, have found that females are more risk-averse than males and thus they normally adopt fewer strategies that could lead to tournament competition.

The tournament theory has been analyzed in various different contexts. Melton and Zorn (2000) found a positive relationship between the size of the prize and the player's performance in golf while Becker and Huselid (1992) found the same relationship in car racing. Gnyawali, Offstein, and Lau (2008) also found a positive relationship between what was paid to the CEO and the rest of the top management team as well as competitive behavior in the pharmaceutical industry. Jans and Otten (2008) found evidence of tournament behavior from data that was collected from the UK.

Kale et al. (2009) claim that this relationship is stronger when the CEO is near retirement age and less positive when the company hires a new external CEO and that the probability of promotion of Vice-Presidents has a significant impact on the pay gap. Srivastava and Insch (2007) also found evidence of tournament theory in 100 US banks, and a positive relationship between environmental uncertainty and a gap in compensation between the CEO and Vice-Presidents. Conyon, Peck, and Sadler (2001) report that the differential in terms of compensation between CEO and other board executives was positively related to the number of participants in the tournament, however, the changes in executive team compensation are only in part related to company performance.

An opposite theory to tournament theory – the behavioral theory – suggests that a small gap in terms of compensation between the CEO and other top executives promotes collaboration and coordination among them. In other words, performance will be higher when the gap decreases. The behavioral theory is supported by the deprivation theory developed by Cowherd and Levine (1992) and it is also part of distributive justice (Greenberg, 1987). The deprivation theory documents that employees will compare their personal compensation with the compensation of other employees in terms of hierarchical rank level. If lower level workers perceive that they receive less compensation than they deserve, they will feel deprived and this will lead to more absenteeism and cooperation with higher rank members will thus reduce. In other words, they will be less committed to the goals of the CEO if the CEO receives a lot more than other executives.

According to Pfeffer and Langton (1993), it is easy to identify the compensation gap between top team members, however, it is not easy to find how much each employee contributes in terms of work. Martin (1982) defends that in certain situations, even if there are significant differences in the productivity of employees, the compensation differences are a source of dissatisfaction. In other words, the deprivation theory suggests that even if the CEO produces a lot more than other management team members, the fact that they receive substantially more than other members can be perceived as unjust even if they deserve it. According to this theory, only on the basis of a small compensation gap, is it possible to reduce sabotage and promote cooperation and teamwork (Milgrom & Roberts, 1988).

Based on data from 200 US companies Main et al. (1993) investigated which theory (behavioral or tournament) was predominant in these companies and only found evidence of tournament in top management teams. Henderson and Fredrickson (2001) found that a balance between economic (tournament theory) and behavioral views could be predictors of company performance. Carpenter and Sanders (2002) claim that the behavioral theory is the best methodology to ensure that all top team members collaborate on the future performance of the company.

From the literature on tournament and behavioral theory it is possible to conclude that none of these studies analyzed the impact of the CEO's gender. Certain literature, essentially from the area of psychology describe males as being more overconfident than females (Beyer, 1990; Beyer & Bowden, 1997) and females as more cooperative (Howden, 1994) than males. The overconfidence of males has also been documented in the area of investments in financial markets by Barber and Odean (2001) who report that males are more likely to trade in financial markets than females. Garrat and Weinberger (2009) also state that young males are more likely to enter a competitive race with cash prizes, while young females, elderly males, and especially elderly females avoid competitive behaviors. Niederle and Vesterlund (2007) state that this difference in terms of competitiveness and confidence between males and females may have an impact on the firm's performance; however, similar to other investigations, they did not analyze the impact of the CEO's gender. Rosener (1995) claims that females in top management are more flexible and better able to deal with ambiguity and according to this same author, the ability to motivate team building and be flexible, are essential factors when dealing with modern businesses that are conducted in uncertain contexts.

Overall it is possible to conclude that tournament theory suggests that a big compensation gap between the CEO and Vice-Presidents (VPs) leads to a high company performance and behavioral theory states that better performance may be

achieved with a small compensation gap between CEO and VPs, and also that males are more competitive and females are more cooperative. Based on this information the second hypothesis is proposed:

Hypothesis 2. The impact of the extent of the total compensation gap between the CEO and Vice-Presidents on the company performance is different when the company is managed by a female or a male CEO.

If males are more competitive and females more cooperative (Howden, 1994), it is expected that a substantial difference between what is paid to the CEO and Vice Presidents will make these Vice Presidents work harder to obtain the position of the CEO and the corresponding compensation in the future. As such, a high compensation gap between the CEO and VPs will likely lead to better performance in firms managed by a male CEO. In other words, it is expected that tournament theory will be predominant in firms managed by a male CEO. As the literature describes females as being more cooperative and working well within a team environment, it would appear that the behavioral theory will be predominant. In other words, if there is a small compensation gap between the females CEO and VPs it is expected that it will lead to better company performance as females work well in teams since they are more cooperative, and according to Carpenter and Sanders (2002), the behavioral theory is the best methodology to ensure that all top team members collaborate on the future performance of the cmpany. Thus a small, rather than a large gap, between what is paid to females CEOs and VPs it is expected that will lead to better performances.

Several studies have described females and males as being different in several aspects. One of the key aspects of this investigation is to discover if these differences along with the compensation level of top management influence the firm's performance. First of all, it is important to state that the number of females who have obtained top management positions in the US has slowly increased in the past few years, even though these numbers continue to be quite limited when compared to the percentage of males. According to Vieito and Khan (2010) females in top management teams in US listed companies increased from 1.2 per cent in 1992 to 6.15 per cent in 2004. Bertrand and Hallock (2002) state that females, on average, receive less than males, however 75 per cent of the gender gap can be explained by the fact that females normally manage smaller companies than males and are less likely to be CEO, Chair, or President of these companies. The unexplained gender gap can be reduced to less than 5 per cent when one further accounts for the fact that female executives are younger and have less seniority than male executives. These two variables, executive age and the size of the firm, are two important factors, which according to the same author can explain the compensation gap between executive males and females. Nonetheless the impact of these variables on the size of the gap between the CEO and VPs has not been analyzed taking the CEO's gender into consideration. Another difference between males and females described in the literature is that females seem to be more risk averse then males (Bernasek & Shwiff, 2001, among several others) and this difference, for example, may be seen when they invest in pension plans. There is a tendency for females to invest in pension plans and mutual funds that have a lower percentage of stock when compared to males, implying that males are less risk averse than females when making personal financial investments. Palia (2001) claims that company risk affects executive compensation as does age and firm size, however, when analyzing the impact of the company's risk level on the size of the compensation gap between the CEO and VPs, the gender of the CEO has not been taken into consideration.

Harjoto and Jo (2008) report that CEO dualities influence the company's value in a positive manner and Brick, Palmon, and Wald (2006) state that CEO duality is related with entrenchment. Companies with entrenched CEOs need more monitoring as an entrenched CEO may have greater control over the board and therefore reduce the efficacy of directors' monitoring. These authors also found that in these companies, directors receive larger total compensations and that the number of board meetings is positively related with the directors' compensation. Hallock (1997) reports a positive relationship between CEO compensation and being part of two boards (interlocked) at same time and Etiennot (2009) reports that CEO duality increases the compensation gap between CEO and non-CEO executives. Albanesi and Olivetti (2006) point out that top female executives receive a larger fraction of total compensation in the form of salary and a smaller fraction of their pay in the form of delayed compensation. The literature states that males and females are different in terms of ethics in economic decisions. Glover, Bumpus, Logan, and Ciesla (1997) states that females more likely to favor ethical over economic decisions when compared to males and Berrone, Surroca, and Tribó (2007) claim that corporate ethical identity behavior has a positive influence on the financial performance of a company. Lee (2009) found a positive correlated relationship between company profit rates and company size, holding company and industry-specific characteristics constant. It is thus possible to conclude from literature that duality and interlock seem to affect the compensation gap between the CEO and VPs, however, these studies did not assess if the gender of the CEO could have led to different results. If one takes into consideration that females have been described as more likely to favor ethnical over economic decisions, then it would be probable that these variables would impact differently on the size of the total compensation gap in companies managed by male or female CEOs.

Another interesting finding is that the percentage of female employees in a company has a negative impact on the compensation of both males and females (Holst & Busch, 2009). However, the percentage of females in top management was not considered nor do we know if the percentage of females influences the compensation gap between what is paid to the CEO and VPs. In other words, does the percentage of females in top management affect the size of the gap between what is paid to CEOs (male or female) or not?

Finally, Guy (2000) reports a strong positive relationship between the salary of a CEO and the change of return to shareholders in 99 British companies. This information was based on data retrieved during the period 1972 to 1989. Murphy (2003) also claims that the compensation of CEOs is more closely related with company performance than the

compensation of other top executives, however, as in similar studies, the gender of the CEO has not been taken into account.

If factors such as firm size, the age of the executive, firm risk, the percentage of females on staff, among several other factors, affect the compensation level in a firm and if males and females have different characteristics which affect how they do business, do these aspects affect or influence the size of the compensation gap when the company is managed by a female or male CEO? This is the basis of the last proposed hypothesis:

Hypothesis 3. The factors that explain the CEO and Vice-President compensation gap are different when the company CEO is a female or a male.

As males and females have been described as being difference in several aspects, it is expected that the size of the compensation gap (total, long-term, and short term compensation gap) between CEO and VPs will be influenced by different factors when the CEO is a male or a female.

RESEARCH METHODOLOGY

Data and Sample Selection

Data used for this study emanated from the ExecuComp database during the period 1992 to 2004. The database contains information on the top five most well paid executives from 1,500 public US companies. This database collected information on executive compensation sub-divided into seven different components (salary, bonus, stock options, restricted stocks, long term incentive plans, other annual compensation, and all other compensations not included in the latter) and several other variables. The final sample is composed of 62,418 observations and it is an unbalanced panel data as not all executives remained with the same company during the sampling period.

The sample was winsorized by excluding 1 per cent of the extreme values in order to extract the effect outliers. According to Kale et al. (2009), the CEO is defined as the Chief Executive Officer of a company – the variable was extracted from the Execucomp database (CEOANN = CEO) – and Vice-Presidents as all other executives. Using the Consumer Price Index (CPI) compiled by the Bureau of Labor Statistics, the monetary variables were adjusted to the price level for the year 2004.

Variables Definitions and Measurement

The dependent variables that were used in this research are the natural logarithm of Total, and the Long Term and Short Term Compensation gap between the CEO and the Vice-President of a company. The dependent variable Return On Assets (ROA) was also employed along with a binary variable "CEOW" which is equal to one when the CEO was a female and zero when the CEO was a male. Independent variables include several financial and governance variables. All these variables were obtained from the ExecuComp database.

Dependent Variables

According to Kale et al. (2009), short term compensation is the sum of salaries, bonuses, and other annual compensations, and long term compensation is composed by stock and options grants and other long-term incentive payouts. To compute the compensation gaps, a methodology similar, but more precise than that employed by Kale et al. (2009), Bognanno (2001) and Bloom and Milkovich (1996), was used. The authors calculate the compensation gap between CEO and Vice-Presidents by computing the differences between CEO compensation and the average compensation of all company Vice-Presidents. In this case, the gap between the CEO and each one of the company Vice-Presidents compensation for each year was manually calculated, for 62,418 observations, and not the difference between the average year compensation of all company Vice-Presidents and the CEO compensation. The reason this methodology was chosen is owed to the fact that the use of the average compensation of all the company Vice-Presidents will not capture the real impact of this compensation gap on company performances. Some of the company VPs may receive more and work harder than others to obtain the CEO position in the future. The compensation gaps are:

$$\text{Total Compensation Gap} = \text{CEO Total Compensation} - \text{VP Total Compensation} \quad (1)$$

$$\text{Long Term Compensation Gap} = \text{CEO Long Term Compensation} - \text{VP Long Term Compensation} \quad (2)$$

$$\text{Short Term Compensation Gap} = \text{CEO Short Term Compensation} - \text{VP Short Term Compensation} \quad (3)$$

As in certain cases the gap was negative (3,383 observations), implying that the CEO received less than the Vice-Presidents, and as it was not possible to use natural logarithms with negative values, the methodology employed by Slemrod (1990), Cassou (1997), and Hartman (1984) was used in this situation. First, all the values were transformed by adding a positive value which is equal to the maximum negative value to each gap observation. This guarantees that all of the observations are positive. Following that, the natural logarithm of these values was calculated. As the minimum value that was added to all of the variables was, in absolute terms, a high number, when the value was transformed to the natural logarithm and regression analysis was performed, the value of the coefficients was very small. As such, based on the methodology employed by the above mentioned authors, the final values are multiplied by 100 to solve this problem. Thus, the dependent variables are:

$$\text{LN (Total Compensation Gap)}$$

$$\text{LN (Long Term Compensation Gap)}$$

$$\text{LN (Short Term Compensation Gap)}$$

Other dependent variables were also used. To investigate the factors that explain the relationship between gender and the impact of compensation gap on company performance, a binary "CEOW" was employed, which assumes the value equal to 1 when the company CEO is a female and zero when it is a male, in order to investigate which factors drive a company to have a female as CEO.

To analyze tournament versus behavioral theory the variable ROA was employed, which is the Net Income before Extraordinary Items and Discontinued Operations divided by Total Assets. This quotient is then multiplied by 100. To measure the company performance, several variables have been used across the years. Wei and Varela (2003) use the variables Earning Per Share (EPS) while Wang, Xu, and Zhu (2004) use ROA and Return On Sales (ROS) to analyze company performance. According to Ng, Yuce, and Chen (2009), the use of the variable EPS to analyze the company performance is questionable as the number of shares may vary from owner to owner based on several different reasons. They also document that the use of EPS is a weak variable to analyze the earnings of a company as it only reports the "earnings to shareholders and not earnings to the corporate balance sheet of assets or equity" (Ng et al., 2009:424). According to the authors, the best variable to measure the performance of a company is ROA.

Measurement of Independent Variables

One of the most important variables that has been used to explain executive compensation is company size. Stathopoulos, Espenlaub, and Walker (2004), Ittner, Lambert, and Larker (2003), Murphy (2003), among others, have tested the impact of the company size on executive compensation. One of the following variables is generally used to measure the impact of the company size on executive compensation: LN (MK) – the natural logarithm of the market value (Datta, Iskandar-Datta, & Raman, 2005); LN (SAL) – the natural logarithm of net annual sales (Aggarwal & Samwick, 2003; Elston & Goldberg, 2003); LN (AS) – the natural logarithm of the total assets (Anderson & Bizjak, 2003). One of the main problems that these researchers encountered when using one of these variables, and not any of the others, was that they were unable to convey to the reader the idea that if they used one of the other variables they could have probably obtained a more accurate result. Another problem is that when using, for example, the natural logarithm of company market value (LN(MK)), market fluctuations are not controlled. As these variables are highly correlated, they cannot be introduced at the same time to explain dependent variables. To solve this problem a new methodology was employed, similar to the one recently used by Erhemjamts, Minnick, and Wiggins III (2010), to analyze the impact of company size. Based on Principal Component Analysis a factor which contains optimal information from the three variables was extracted.

To apply the Principal Components analysis, it is necessary to have a high correlation among the variables. In all the cases the correlations are higher than 79 per cent. The Kaiser-Meyer-Olkin (KMO) test was used as it compares the correlation among the variables. The statistics only provided one factor with Initial Total Eigenvalues superior to 1 that captures 87.84 per cent of the total variance of the three variables. The vector is:

$$\begin{aligned} FSC = {} & 0.938 * LN(SAL) + 0.947 * LN(AS) \\ & + 0.927 * LN(MV) \end{aligned} \quad (4)$$

Using this Company Size Component (CSC) variable, several problems which were previously described may be avoided. These variables were also used to analyze the impact of company size to explain why a company has a female CEO. Based on the findings of Bertrand and Hallock (2002), according to whether a female, rather than a male, obtained top positions in smaller companies, it is expected that the company size is negatively related with the binary dependent "CEOW." One also expects a positive relationship between company size and the total, long, and short term compensation gap between the CEO and Vice-Presidents of a company. However, this only happens in companies with a male CEO, meaning that when the company size increases, the compensation gap also increases, as the literature describes males as being more competitive and females as more cooperative (Howden, 1994). Females have also been described as taking more ethical economic decisions than males (Glover et al., (1997). This is the reason why a statistically significant relationship between compensation gaps in companies managed by a female CEO and company size is not expected. In other words, it is anticipated that females will not take personal financial advantages when the company increases its size. Lee (2009) found a positive correlation between company size and the rate of profitability. Based on these findings, a positive relationship between these two variables is also expected.

Palia (2001) claims that the level of company risk affects executive compensation. Vandegrift and Brown (2005) describe females as more risk averse than males and normally less prone to adopt strategies of tournament. Based on this information, the LN(BV) variable is also used in this research. It is the natural logarithm of Black and Scholes Volatility that is calculated using the Black-Scholes Options Pricing Model using the returns from the prior 60 months. The variable is used to investigate the impact of company risk level on the compensation gap between the CEO and the Vice-Presidents. It appears that the company risk has a positive influence on the total compensation gap and long term compensation gap, as normally CEOs receive more compensation based on performance – such as stock options – than other executives (Murphy, 2003). Bernasek and Shwiff (2001) state that females are more risk averse than males when they make personal financial investments, placing money in pension plans and mutual funds with less percentage of stock than males. Palia (2001) reports that the level of company risk affects executive compensation. Thus, if a CEO receives, on average, more compensation based on stock options, and if females are more risk averse than males, a negative relationship between company risk level and compensation gap may be expected in companies where the CEO is a female.

To investigate the impact of company growth on compensation gap and company performance, the variable S3Y is

also used, which is the 3-year least square annual growth rate of company sales. A positive relationship between company sales growth and all the compensation gaps between CEOs and Vice-Presidents is expected. Sridharan (2006) states that CEO compensation levels are essentially a function of CEO influence over the board, the growth in sales and the size of the company. If sales grow, as males have been described as more competitive, male CEOs will probably try to extract a better personal compensation than VPs for their efforts to make the company grow. In the case of females, as they have been described as being more cooperative, and taking less personal advantages than males, one would thus expect a positive relationship in the compensation gap between CEO and VPs and sales growth.

Time effect was also controlled following Barron and Waddel's (2003) methodology, by inserting a binary variable for each year between 1993 and 2004 (YD). Time can be an important factor to explain company performance. In boom years, when the general economy and stock market flourish, the executives' compensation also flourishes. Vieito and Khan (2010) state that the compensation gap between males and females reduced following 2000. The year 2000 witnessed the NASDAQ crash and, on average, the compensation of several CEOs was reduced due to the fact that these employees are better paid based on performance than other employees (Murphy, 2003). Also in 2002 the Sarbanes Oxley Act was introduced in the US to solve corporate governance problems. Accordingly, one can expect a negative and statistically significant relationship with the year binary variables in the total and long term compensation gap for companies predominantly managed by male CEOs, after the year 2000. If the value of the options owned by CEOs reduces, the compensation gap between CEOs and VPs also reduces, due to the fact that CEOs receive more compensation based on performance than other executives (Murphy, 2003). The year binary variables were also used to analyze the time effect on company performance. A negative relationship between company performance and year dummies is expected, essentially after the year 2000, due to the NASDAQ crash effect. It is probable that there will be a stronger effect on companies managed by male CEOs as females have been described as being more concerned with the way company money is spent, and less likely to extract personnel financial benefits from the company.

To control the industry effect, the 48 Fama and French (1997) industry classification dummies (ID) were used, which is a classification system that links the existing SIC groups based on 4-digits to 48 industries. Industry may be one of the factors that explains the differences between the compensation of CEOs and Vice-Presidents. The reason the Fama and French (1997) classification was chosen in lieu of others, such as the Global Industry Classification Standard (GICS), is due to the fact that this classification aggregates industries according to differences in terms of cost of capital. This may be an important factor when situations such as compensation and performances are analyzed. Industry is also a very important variable to control as male and female workers tend to be consistently concentrated in particular industries. Hodson and England (1986) found that females tend to be employed in industries with fewer unions, which are not capital intensive. Burress and Zucca (2004) state that the percentage of male executives is significantly higher than expected in sectors such as mining and chemical, manufacturing, trucks, electrical, aerospace, and oil and gas industries, whereas females fill significantly more executive positions than expected in sectors such as healthcare, hardware, housing, publishing, and retail industry.

Governance Variables

INT is a binary variable that assumes the value of one when the executive is on two different company boards at the same time (Interlocked) and zero when they are not. Hallock (1997) finds that CEOs obtain a higher compensation when they are in two different boards at same time. Based on these findings, one may expect to trace a positive relationship between compensation gap and executives being interlocked and, in the case of females, a negative relationship. If CEOs who are in two different boards at the same time receive more, a higher compensation gap may be expected, consequently, a positive relationship between interlock and compensation gap is also expected.

Ln (Total Comp. Gap) is the natural compensation gap between CEO and VPs. The variable is used to investigate the impact of the compensation gap between CEO and VPs in terms of company performance, in companies managed by male or female CEOs. According to the literature, it appears that this relationship will be positive for companies managed by a female or a male CEO. However, there should be a stronger relationship in the case of males, as they have been described as more competitive than females (Howden, 1994) – a larger difference in terms of compensation between the CEO and the company VPs may clearly lead to a better performance. In the case of companies managed by a female CEO, a positive relationship may be expected, however with a lower intensity, implying that females are more cooperative, and a narrower compensation gap can lead to a higher performance. In other words, tournament theory may be predominant in companies managed by males – a higher compensation gap between CEO and Vice-Presidents will lead to an increased competition among the VPs to obtain the position and remuneration of the CEO in the future – and behavioral theory will be predominant in companies managed by a female CEO – high performances may be achieved with smaller compensation gaps.

LN (TN) is the natural logarithm of the number of years that the executive has been on the job (Tenure). Chidambaran and Prabhala (2003), Ryan Jr. and Wiggins III (2004), among others, use this variable with or without the natural logarithm to explain the executive compensation. Bertrand and Hallock (2002) describe female executives as having less seniority than male executives. Based on these findings, a negative relationship is expected between the binary "CEOW" and the variable LN (TN).

AGE is the number of years in terms of age of the executive. According to Bertrand and Hallock (2002), on average, female executives are younger than male executives. Based on this information, one may also presume that females who are awarded top positions are younger that males. Garrat and Weinberger (2009) report that "young males are more likely to enter a competitive race with cash prizes, while young females, older males, and especially older

females show competition-avoiding behavior" (p. 9). Accordingly, a negative relationship may result between the compensation gap and the age of the executive, but only in the case of males.

The binary CEOCH is employed, which assumes the value equal to 1 when the CEO is also the Chairman of the Board and zero when not, to investigate the impact on compensation gaps and also on company performance. Harjoto and Jo (2008) find that CEO dualities positively influences the company value, however, they do not consider the gender factor. Brick et al. (2006) defend that when the CEO is simultaneously the CEO and Chairman of the board, he/she is more likely to be entrenched, and companies with entrenched CEOs need more monitoring as an entrenched CEO may have greater control over the board and therefore reduce the efficacy of the monitoring of directors. They find that if the CEO is Chairman, the directors of the company will receive a larger total compensation. Based on this information, a positive relationship is expected between the CEOCH binary variable and compensation gaps.

In order to explain which factors drive companies to have a female CEO, the variable LN (NM) is used, which was also used in studies carried out by Davidson III, Pilger, and Szakmary (1998). It is the natural logarithm of the number of board meetings held during the indicated fiscal year. Smith, Smith, and Verner (2006) report that the proportion of females in top management positions has a positive effect on the company performance. Brick and Chidambaran (2010) report that the number of board meetings positively influences the company value. Brick et al. (2006) find a positive relationship between the compensation of the directors and the number of meetings; however, they do not differentiate between companies with a male or female CEO. Thus, it is expected that more meetings will increase the compensation gap between CEOs and Vice-Presidents, as CEOs normally receive additional compensation to attend each meeting.

RTS is the one-year total return to shareholders, including the monthly reinvestment of dividends. Guy (2000) finds a strong positive relationship between CEO's pay and the change of the return to shareholders. Based on this information, one may presume that the higher the return to shareholders, the narrower the compensation gap will be between the CEO and the Vice-Presidents of a company.

In this investigation the impact of the percentage of females as Vice-Presidents on the compensation gap between CEO and VPs and company performance was also analyzed. The variables that were used to control these factors are: WVP < 25 per cent; WVP 25 per cent–50 per cent and WVP > 50 per cent which assumes the value equal to 1 when it is true, and zero when not. Holst and Busch (2009) find that the percentage of female employees in a company has a negative impact on compensation of both males and females. Based on these findings, it is expected that the number of female VPs will lead to a reduction in terms of compensation gap.

Finally, the impact of the percentage of female VPs on the company performance was also analyzed. Smith et al. (2006) document that the proportion of females in top management has a positive effect on company performance. Consequently a positive relationship between the percentage of female VPs and company performance may be expected.

RESULTS AND ANALYSIS

Descriptive Statistical Analysis

This section describes the average compensation gaps (total, long, and short term gap) between CEO and company Vice-Presidents and references the results of the Independent-Samples T-tests, to compare the means of each one of these components for companies where the CEO is a male or a female. To analyze the effect of the company size on the compensation gaps between CEO and VPs, a separate analysis was carried out on large (S&P 500 listed companies) medium and small sized companies (S&P MidCap and S&P SmallCap listed companies). Companies were divided as to their size, as literature suggests that females who work in top positions are essentially employed in smaller companies (Bertrand & Hallock, 2002). The independent-Samples T-test was used to compare the compensation gap between CEO and VPs, when the CEO is a male or a female, and to verify if this difference, if any, is statistically significant.

From this table (Table 1) it is possible to verify that total and short term gaps between CEO and company Vice-Presidents are different when the CEO is a male or a female in large, medium, and small sized companies, meaning that when these companies have a male as CEO, on average, this compensation differential between CEO and company Vice-Presidents is higher than when the CEO is a female. Long Term Compensation gap is also higher in companies managed by males in large, medium, and small sized companies, however the difference is not statistically significant.

To better understand the predominance of females and males in terms of industry, the Burress and Zucca (2004) methodology was employed. Certain industries may have the propensity to have females in top management teams. In order to control the industry effect, Fama and French's (1997) 48 industry classifications was employed. The information is described in Table 2.

From the table, it is possible to verify that a total of 62,177 males and 2,706 females (4.35 per cent of total observation) were observed. This implies a very small percentage of females hold executive positions when compared to males. Industries such as utilities, business services, electronic equipment, retail and banking have a significant number of males in top management teams. While, retail, business services, utilities, insurance, pharmaceutical products, and consumer products have the highest percentage of females in top management teams.

The Impact of Gender on Firm Performance

Table 3 demonstrates the results for testing of Hypothesis 1: On average, when a company is managed by a female CEO, the company performance is higher than when the CEO is a male.

It is possible to observe that on average large companies which have a female CEO perform better than companies where the CEO is a male (male CEO: mean = 6.42; female CEO: mean = 9.12; mean difference = –2.70; $p < .001$). Results are identical in medium and small sized companies (male CEO: mean = 5.43; female CEO: mean = 6.49; mean difference = –1.06; $p < .10$). These results support the

TABLE 1
Average Compensation Gap between CEO and VPs (Thousands of Dollars)

Variables	Companies with a male CEO			Companies with a female CEO			T test of equality of means	
	No. Obs.	Mean	Std Dev	No. Obs.	Mean	Std Dev.	Mean Difference	Sig.
Panel A. Large companies								
Total gap	61859	2,227.01	3,754.12	557	1,812.00	3,236.29	415.00	.00**
Long term gap	61861	1,419.13	3,054.21	557	1,262.75	2,804.15	156.38	.19
Short term gap	61862	703.61	1,101.26	557	530.53	699.41	173.08	.00***
Panel B. Medium and small sized companies								
Total gap	35495	1,266.30	2,231.90	375	984.56	1,584.44	281.74	.00**
Long term gap	35495	713.82	1,790.01	375	606.13	1,358.79	107.69	.25
Short term gap	35495	479.17	753.89	375	349.47	404.54	129.72	.00***

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.

hypothesis that, on average, when the company is managed by a female CEO, performance is higher than when it is a male. In other words, the results support the theory that the CEO gender is important in terms of company performance.

Tenure is also different and statistically significant in large and also in medium and small sized companies. In the case of large companies, when the company is managed by a male CEO, tenure is shorter than when the CEO is a female (male CEO: mean = 11.88; female CEO: mean = 22.03; mean difference = –10.15, p < .001), however when analyzing medium and small sized companies the situation is inverted: tenure is longer in companies managed by a male CEO (male CEO: mean = 11.94; female CEO: mean = 8.43; mean difference = 3.51, p < .001).

Large companies with a male CEO, on average, have younger executives than companies with a female CEO (male CEO: mean = 56.74; female CEO: mean = 61.26; mean difference = –4.52, p < .001). In the case of medium and small sized companies, the average executive age is higher in companies managed by a male (male CEO: mean = 56.01; female CEO: mean = 55.03; mean difference = .98, p < .10). The results are congruent with Bertrand and Hallock (2002) findings, although only for medium and small size companies.

To be simultaneously CEO and Chairman of the board is more frequent in large companies managed by males (male CEO: mean = .32; female CEO: mean = .27; mean difference = .05, p > .10), however, the situation is inverted when analyzing medium and small sized companies (male CEO: mean = .28; female CEO: mean = .30; mean difference = –.02, p > .10). In both situations, the differences are not statistically significant.

The average level of risk of large companies managed by male CEOs is higher than in companies managed by females CEOs (male CEO: mean = –1.15; female CEO: mean = –.97; mean difference = –.18, p < .001), and in medium and small sized companies the situation is similar (male CEO: mean = –.94; female CEO: mean = –.95; mean difference = .01, p > .10), however the differences in these cases are not statistically significant.

The sales growth during the last three years in large companies is higher when the company is managed by a male CEO (male CEO: mean = 14.91; female CEO: mean = 7.71; mean difference = 7.20, p < .001), and the difference is statistically significant. The same situation occurs in medium and small sized companies (male CEO: mean = 13.56; female CEO: mean = 5.85; mean difference = 7.71, p < .001).

In addition to controlling company size (large, medium, and small size), a comparison is also made based on Company Size Component (CSC), the average size of companies managed by male or female CEOs inside each one of these two groups. In both cases, the results are congruent with the literature (e.g., Bertrand & Hallock, 2002), according to which females obtain top positions more frequently in small to medium sized companies than in large companies.

In terms of the return to shareholders (RTS), companies managed by a female CEO have a higher return to shareholders, however, the results are not statistically significant in both large, medium or small sized companies.

Finally, also analyzed is the percentage of female Vice-Presidents in companies managed by females and males, in large, medium, and small sized companies. On average, large companies managed by a female CEO have more female VPs than companies managed by a male CEO. The preponderance is to have less than 25 per cent of female VPs (male CEO: mean = .14; female CEO: mean = .39; mean difference = –.25, p < .001). Curious is the fact that in large companies, no company managed by a female CEO has more than 50 per cent of female VPs (male CEO: mean = .02; female CEO: mean = .00; mean difference = .002, p > .10). When the analysis covers medium and small sized companies, the percentage of female VPs less than 25 per cent is higher in companies managed by a female CEO (male CEO: mean = .16; female CEO: mean = .31; mean difference = –.15, p < .001). The same situation occurs in the case of VPs between 25 per cent and 50 per cent (male CEO: mean = .03; female CEO: mean = .10;

TABLE 2
Industry Affiliation of males and Females Executives (Fama & French, 1997, 48 Industry Classifications)

Major industry	Male executives		Females executives		All executives	
	Number	% of industry	Number	% of industry	Number	% of industry
Agriculture	46	.07%	0	.00%	46	.07%
Aircraft	450***	.72%	9	.33%	459	.72%
Alcoholic beverages	152***	.24%	6	.22%	158	.24%
Apparel	874***	1.41%	76	2.81%	950	1.41%
Automobiles trucks	1232***	1.98%	16	.59%	1248	1.98%
Banking	3660***	5.89%	202	7.46%	3862	5.89%
Business services	4739***	7.62%	315	11.64%	5054	7.62%
Business suppliers	2726***	4.38%	67	2.48%	2793	4.38%
Candy and soda	99	.16%	0	.00%	99	.16%
Chemicals	1925***	3.10%	56	2.07%	1981	3.10%
Coal	62	.10%	0	.00%	62	.10%
Computers	1868***	3.00%	95	3.51%	1963	3.00%
Construction	943***	1.52%	17	.63%	960	1.52%
Construction materials	1076***	1.73%	23	.85%	1099	1.73%
Consumer goods	1108***	1.78%	127	4.69%	1235	1.78%
Defense	231***	.37%	7	.26%	238	.37%
Electrical equipment	741***	1.19%	15	.55%	756	1.19%
Electronic equipment	3691***	5.94%	79	2.92%	3770	5.94%
Entertainment	381***	.61%	6	.22%	387	.61%
Fabricated products	160***	.26%	10	.37%	170	.26%
Food products	1230***	1.98%	40	1.48%	1270	1.98%
Healthcare	826	1.33%	43	1.59%	869	1.33%
Insurance	2756***	4.43%	112	4.14%	2868	4.43%
Machinery	2468***	3.97%	56	2.07%	2524	3.97%
Measuring and control equip	1351***	2.17%	32	1.18%	1383	2.17%
Medical equipment	1375***	2.21%	49	1.81%	1424	2.21%
Miscellaneous	393***	.63%	17	.63%	410	.63%
Non metallic mining	279***	.45%	13	.48%	279	.45%
Personal services	571***	.92%	33	1.22%	604	.92%
Petroleum and natural gas	2293***	3.69%	47	1.74%	47	3.69%
Pharmaceutical products	2146***	3.45%	114	4.21%	2260	3.45%
Precious metals	64	.10%	0	.00%	64	.10%
Printing & publishing	905***	1.46%	86	3.18%	991	1.46%
Real estate	58***	.09%	3	.11%	61	.09%
Recreational products	524***	.84%	28	1.03%	552	.84%
Restaurant / hotel / motel	1296***	2.08%	83	3.07%	1379	2.08%
Retail	3909***	6.29%	388	14.34%	4297	6.29%
Rubber & plastics products	304***	.49%	3	.11%	307	.49%
Shipbuilding & railroad Eq.	157	.25%	0	.00%	157	.25%
Shipping containers	259***	.42%	5	.18%	264	.42%
Steel work	1306***	2.10%	4	.15%	1310	2.10%
Telecommunications	980***	1.58%	30	1.11%	1010	1.58%
Textiles	234***	.38%	2	.07%	236	.38%
Tobacco products	347***	.56%	12	.44%	359	.56%
Trading	1606***	2.58%	77	2.85%	1683	2.58%
Transportation	1665***	2.68%	33	1.22%	1698	2.68%
Utilities	4851***	7.80%	217	8.02%	5068	7.80%
Wholesale	1860***	2.99%	53	1.96%	1913	2.99%
Total	62177	100%	2706	100%	62577	100%

Significantly more men (women) than expected based on the sample distribution, measured by a chi-squared test, †p < .10; *p < .05; **p < .01; ***p < .001.

TABLE 3
Company and CEO Characteristics of Companies Managed by a male or a female CEO

	Male CEO			Females CEO			T test of equality of means	
	N° Obs.	Mean	Std	N° Obs.	Mean	Std	Mean Difference	Sig.
Panel A. Large companies (monetary values: thousands of dollars)								
ROA	26346	6.42	11.42	182	9.12	7.88	–2.70	.00**
TN	7452	11.88	8.76	54	22.03	17.36	–10.15	.00***
AGE	5363	56.74	7.20	58	61.26	10.28	–4.52	.00***
CEOCH	26366	.32	.47	182	.27	.48	.05	.19
LN(BS)	25598	–1.15	.40	172	–.97	.30	–.18	.00***
S3Y	26322	14.91	42.20	182	7.71	7.10	7.20	.00***
CSC	26285	24.61	3.31	182	24.08	3.31	.53	.06†
RTS	26510	26.54	337.26	182	15.98	38.29	10.56	.67
INT	26366	.02	0,14	182	0,00	.00	.02	.00***
WVP < 25%	26366	.14	.34	182	.39	.49	–0,25	.00***
WVP 25–50%	26366	.02	.13	182	.05	.22	–.03	.06†
WVP > 50%	26366	.02	.05	182	.00	.00	.00	.53
Panel B. Medium and small sized companies								
ROA	35491	5.43	11.90	375	6.49	8.15	–1.06	.09†
TN	9061	11.94	9.13	93	8.43	4.22	3.51	.00***
AGE	8050	56.01	5.17	93	55.03	5.17	.98	.08†
CEOCH	35495	.28	.45	375	.30	.46	–.02	.52
LN(BS)	33719	–.94	.44	344	–.95	.41	.01	.76
S3Y	35459	13.56	25.53	375	5.85	10.35	7.71	.00***
CSC	35359	18.74	2.47	375	17.49	2.27	1.26	.00***
RTS	35239	26.07	327.60	375	12.32	49.28	13.75	.42
INT	35494	.03	.17	375	.08	.27	.05	.00**
WVP < 25%	35395	.16	.36	375	.31	.46	–.15	.00***
WVP 25–50%	35495	.03	.16	375	.10	.46	–.07	.00***
WVP > 50%	35495	.00	.06	375	.01	.10	–.01	.17

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.
Data obtained from the ExecuComp database. ROA that is the firm Return On Assets. Tenure (TN) is the number of years that the executive has been on the job. AGE is the executive age. CEOCH is a binary variable that assume the value of 1 when the executive is at same time Chairman of the board and 0 when not. LN (BS) is the company's stock return volatility. CSC is the company size component. S3Y is the company sales growth during the last three years. RTS is the one-year total return to shareholders, including the monthly reinvestment of dividends. Interlock (INT) is a binary variable that assumes the value 1 when the executive is at same time in two different Boards and 0 when not. WVP < 25 per cent", "WVP < 25–50 per cent" and "WVP > 50 per cent" are binary variables which assume the value 1 when the number of total females Vice-Presidents is less than 25 per cent, between 25 per cent and 50 per cent and more than 50 per cent, and zero when not.

mean difference = –.07, p < .001) and more than 50 per cent (male CEO: mean = .003; female CEO: mean = .10; mean difference = –.007, p > .10), however, in the latter case the difference is not statistically significant.

Multivariate Statistical Analysis

Tournament versus Behavioral Theory. Table 4 displays the results for testing of Hypothesis 2: The impact of the extent of the total compensation gap between the CEO and company Vice-Presidents on the company performance is different when the company is managed by a female or a male CEO. In other words, the predominant theory is tested–tournament versus behavioral. As previously described, tournament theory proposes that a higher compensation gap between CEOs and Vice-Presidents will lead to better performance, while the behavioral theory points to the opposite relationship.

$$\text{Firm Performance} = \beta_0 + \beta_1 * \text{LN (Total Comp. Gap)} + \beta_2 * \text{FSC} + \beta_3 * \text{WVP} < 25\% + \beta_4 * \text{WVP } 25\%–50\% + \beta_5 * \text{WVP} > 50\% + \beta_{6\ldots17} * \text{YD}_{(1993..2004)} + \beta_{18\ldots65} * \text{ID} + \varepsilon \quad (5)$$

TABLE 4
Determinants of Company Performance – Impact of Total Compensation Gap

Variable	Dependent variable: ROA			
	Females CEO		Male CEO	
	Coef.	t-Stat	Coef.	t-Stat
CONST	–921.68	–4.01***	–54.00	–5.91***
LN (TOTAL COMP. GAP)	74.35	4.00***	4.91	6.68***
CSC	.38	2.59***	.08	6.41***
WVP < 25%	.87	1.10	–.23	–1.66†
WVP 25–50%	.22	.15	1.04	3.25***
WVP > 50%	2.20	.66	1.38	1.56
Year 1993	4.24	2.30*	–.93	–1.61
Year 1994	1.39	.80	–.49	–.86
Year 1995	1.22	.76	–.65	–1.15
Year 1996	–.39	–.25	–1.16	–2.05*
Year 1997	–1.12	–.67	–1.46	–2.59**
Year 1998	4.95	3.55***	–2.35	–4.19***
Year 1999	1.38	1.04	–1.65	–2.95***
Year 2000	.90	.71	–2.38	–4.28***
Year 2001	–2.08	–1.78*	–5.53	–9.93***
Year 2002	–3.91	–3.45***	–5.83	–10.50***
Year 2003	–.29	–.27	–4.69	–8.46***
Year 2004			–3.41	–6.15***
IND. DUMMIES (ID)	Yes	Yes	Yes	Yes
Number of observations	567		62897	
Adjusted R-squared	33.17%		6.07%	
	Chow Test			
F(30; 63368)	2.60			
p-value	.00			

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.
Data obtained from the ExecuComp database. OLS regression with dependent variables are used. ROA that is the firm Return On Assets. LN (TOTAL COMP. GAP) is the natural logarithm of total executive compensation gap between CEO and firm VPs. "WVP < 25 per cent", "WVP < 25–50 per cent" and "WVP > 50 per cent" are binary variables which assume the value 1 when the number of total females Vice-Presidents is less than 25 per cent, between 25 per cent and 50 per cent and more than 50 per cent, and zero when not. Based on Fama and French's (1997) 48 Industry classification, the industry effect (ID) is control as is the time effect by inserting a binary for each year between 1993 and 2004.

Table 4 describes something quite new in the area: in a company managed by a female CEO, a lower increase in the total compensation gap leads to a higher increase in company performance; however, when the company is managed by a male CEO, a higher increase in the total compensation gap is needed to obtain greater performance. In other words, the significance level supports the hypothesis that the total compensation gap between the CEO and VPs has a different impact on company performance when the CEO is a female or a male (LN (TOTAL COMP. GAP): male CEO: coef = 4.91, t = 6.68, p < .001; female CEO: coef = 74.35, t = 4.00, p < .001). The results thus suggest that the behavioral theory is predominant in companies managed by females and that tournament theory prevails in companies managed by males.

The impact of company size upon performance is positive and statistically significant in companies managed both by male or female CEOs (male CEO: t = 6.41, p < .001); female CEO: t = 2.59, p < .001). The impact of the percentage of females as VPs upon the company performance was also taken into consideration. In the case of companies managed by a female CEO, the relationship between the percentage of female VPs and company performance is positive although not statistically significant. In companies managed by male CEOs, when the percentage of females is less than 25 per cent, the relationship is negative and statistically significant

(t = –1.66, p < .10); however, when the percentage lies between 25 per cent and 50 per cent, the relationship is positive and statistically significant (t = 3.25. p < .001).

Essentially, in companies with a male CEO, and following 1998, time has a negative influence upon the company performance. In companies with a female CEO, time has a positive effect upon the company performance along the years.

Determinants of the Compensation gap by CEO Gender and the Influence of the Number of Female Vice-Presidents on the Compensation Gap. Table 5 demonstrates the results for testing of Hypothesis 3: The factors which explain that CEO and Vice-President compensation gaps are different when the company CEO is a female or a male. If males and females have been described as different in many aspects by authors such as Niederle and Vesterlund (2007), Beyer (1990), Beyer and Bowden (1997), among several others, it is expected that the factors that explain these compensation gaps will also be different when the CEO is a male or a female.

The investigation was first carried out with a sample of companies with a male CEO, followed by companies with a female CEO. The Chow test, developed by Chow, 1960 was used to analyze if the coefficients of the independent variables were different and if these differences were statistically significant.

The model used for regression of Table 5 is:

$$\begin{aligned} \mathrm{LN(Compensation\ Gap)} &= \beta_0 + \beta_1 * \mathrm{CEOCH} + \beta_2 * \mathrm{FSC} \\ &+ \beta_3 * \mathrm{RTS} + \beta_4 * \mathrm{INT} + \beta_5 * \mathrm{LN(BS)} \\ &+ \beta_6 * \mathrm{LN(NM)} + \beta_7 * \mathrm{AGE} \\ &+ \beta_8 * \mathrm{S3Y} + \beta_9 * \mathrm{WVP} < 25\% \\ &+ \beta_{10} * \mathrm{WVP}\ 25\% - 50\% \\ &+ \beta_{11} * \mathrm{WVP} > 50\% \\ &+ \beta_{12\ldots23} * \mathrm{YD}_{(1993..2004)} + \beta_{24\ldots72} * \mathrm{ID} + \varepsilon \end{aligned} \quad (6)$$

The Compensation Gap can assume the variables Total Compensation Gap, Long Term Compensation Gap, and Short Term Compensation between CEO and company Vice-Presidents. Executive total compensation includes the variables: salary, bonuses, stock options, restricted stocks, long term incentive plans, other annual compensation and all other compensations not included in the latter. As such, total compensation is the sum of all these variables. Long-Term Compensation is the sum of stock options, restricted stocks, and long term incentive plans and short term compensation is the sum of salary and bonuses. The compensation gaps are calculated based on the difference of CEO and each of the Vice Presidents compensation.

According to Table 5, the Chow test, which analyzed if the independent variables from companies with female CEOs and male CEOs are statistically different, found that this difference is statistically significant in total, long and short term compensation. In other words, as expected, the factors that explain compensation gaps are not equal when the company has a female or a male CEO.

The size of the company has a strong and positive impact on the total compensation gap, but only in companies with a male CEO. In the case of companies with a female CEO, the relationship is not statistically significant (male CEO: t = 35.70, p < .001; female CEO: t = .20, p > .10). The results demonstrate that when the company grows in terms of size, the difference between what is paid to the CEO and the company Vice-Presidents also grows, however, only in companies managed by male CEOs. The same situation occurs with long term compensation. A positive and statistically significant relationship was only found in companies with a male CEO (male CEO: t = 34.73, p < .001; female CEO: t = .81, p > .10). In the case of short term compensation, the relationship is positive and statistically significant in companies managed by female and male CEOs (male CEO: t = 32.00, p < .001; female CEO: t = 3.01, p < .001).

The results are congruent with initial expectations, i.e., when company size increases, as males are more competitive, the male CEO will attempt to increase their personal benefits according to the proportion of the company growth, whereas females will not extract additional benefits based on this growth, as they are more cooperative and ethical (Glover et al., 1997). Females CEOs seem to receive a small additional compensation based on short term compensation, however, this amount is not statistically significant when the total compensation gap is analyzed.

To be CEO and Chairman of the Board at the same time has a strong negative relationship with the total compensation gap between CEO and company Vice-President (male CEO: t = –43.52, p < .001; female CEO: t = –4.41, p < .001) and this relationship is stronger when the CEO is a male. In the case of long term compensation gap, the relationship is negative and statistically significant (male CEO: t = –24.52, p < .001; female CEO: t = –3.66, p < .001) both in companies managed by a male or a female CEO. The same relationship occurs with short term compensation gap (male CEO: t = –38.89, p < .001; female CEO: t = –5.83, p < .001). The results are congruent with initial expectations. Brick et al. (2006) also found that being a CEO and Chairman simultaneously, negatively influences the compensation gap between CEO and VPs as the latter receives a higher total compensation.

The variable one year return to shareholder has a negative relationship with total compensation gap in companies with a male CEO and a positive one when the CEO is a female, but the relationship is not statistically significant in both cases (male CEO: t = –.53, p > .10; female CEO: t = .06, p > .10). The variable is also negative, but not statistically significant, with long term compensation gap (male CEO: t = –1.06, p > .10; female CEO: t = –.15, p > .10), and positively related, but also not statistically significant with short term compensation gap (male CEO: t = .75, p > .10; female CEO: t = 1.12, p > .10).

Hallock (1997) found a positive relationship between being CEO in two different boards at same time and the pertaining compensation. Contrary to expectations, it seems that interlock does not affect all the compensation gaps between CEO and company Vice-Presidents.

As expected, the company risk level, measured by the variable LN(BS) is positive and statistically significant with the total compensation gap in companies with male and female CEOs, but only statistically significant in companies with a male CEO (male CEO: t = 3.54, p < .001; female CEO: t = –.06, p > .10). The higher the company risk level is, the higher the difference between what is paid to the CEO and

TABLE 5
Factors that Explain the Total Compensation Gap between CEOs and VPs and Chow Test whether there is a Significant Difference between Regression Coefficients

Independent variables	Dependent variable											
	LN(total comp. gap)				LN(long term comp. gap)				LN(short term comp. gap)			
	Females CEO		Male CEO		Females CEO		Male CEO		Females CEO		Male CEO	
	Coefficient	t Stat	Coefficient	t Stat	Coefficient	t Stat	Coefficient	T Stat	Coefficient	t Stat	Coefficient	t Stat
CONST	8.81	7.95***	7.88	62.12***	9.67	34.83***	19.56	283.03***	9.61	17.37***	9.67	65.88***
CSC	.01	.20	.04	35.70***	.01	.81	.01	34.73***	.00	3.01***	.00	32.00***
CEOCH	−.50	−4.41***	−.37	−43.52***	−.10	−3.66***	−.05	−24.52***	−.03	−5.83***	−.04	−38.89***
RTS	.00	.06	−.00	−.53	−.00	−.15	−4.42	−1.06	.00	1.12	.00	.75
INT	.03	.09	−.03	−1.54	−.03	−.38	−.00	−.37	−.01	−.39	.00	.11
LN(BS)	−.03	−.06	.05	3.54***	−.10	−1.37	.02	7.04***	.00	.10	.00	.38
LN(NM)	.23	1.04	.02	2.08†	.05	.94	.01	2.55**	.01	.82	.00	.64
AGE	−.02	−1.46	−.00	−6.76***	−.00	−1.30	−.00	−1.36	−.00	−.15	−.00	−11.29***
S3Y	.01	.63	−.00	−3.04***	−.00	−.31	−.00	−.82	.00	.80	−.00	−3.31***
WVP < 25%	.31	1.73*	.01	1.04	.08	1.72†	.01	2.95***	.00	.20	−.00	−.21
WVP 25–50%	−.12	−.40	.13	4.67***	−.05	−.72	.03	3.54***	−.01	−.85	.02	7.32***
WVP > 50%	.83	1.68†	.18	2.32*	.10	.79	.04	1.64	.04	1.63	.01	.83
YEAR1993	−.09	−.31	−.07	−1.08	−.03	−.42	−.05	−3.01***	.01	.45	.02	2.03†
YEAR1994	.05	.22	−.09	−1.47	−.03	−.54	−.04	−2.34*	.00	.32	.01	.99
YEAR1995	−.03	−.13	−.10	−1.61	−.04	−.62	−.04	−2.54*	.00	.24	.01	.94
YEAR1996	.07	.29	−.07	−1.18	−.02	−.24	−.03	−1.91†	.00	.27	.01	.75
YEAR1997	.16	.63	−.07	−1.08	−.02	−.32	−.03	−1.86†	.01	.72	.01	.81
YEAR1998	.23	1.04	−.10	−1.68†	.05	.83	−.03	−1.94†	.00	.40	.00	.60
YEAR1999	−.45	−1.87†	−.08	−1.38	−.06	−.96	−.02	−1.35	−.01	−.53	.00	.44
YEAR2000	−.16	−.58	−.13	−2.10*	−.03	−.45	−.03	−1.97†	−.01	−.61	−.00	−.27
YEAR2001	−.29	−1.23	−.12	−1.95†	−.07	−1.21	−.02	−1.53	−.02	−1.65	−.01	−.89
YEAR2002	−.10	−.50	−.15	−2.51**	−.04	−.68	−.04	−2.37†	−.01	−.49	−.01	−.65
YEAR2003	−.25	−1.39	−.18	−3.07***	−.08	−1.69*	−.05	−3.05***	−.01	−.90	−.01	−.87
YEAR2004			−.19	−3.15***			−.05	−3.04***			−.01	−.87
IND. DUMMIES (ID)	Yes		Yes		Yes		Yes		Yes		Yes	
Number Observations	124		12526		124		12526		124		12525	
R Square Adjusted	48.17%		24.40%		29.90%		16.03%		53.96%		23.04%	
Chow test stability (male CEO versus females CEO sample)												
F-Statistic	F(31;12547) = 1.56				F(71;12507) = 114.66				F(71;12506) = 17.64			
p-value	.03				.00				.00			

Note1: †p < .10; *p < .05; **p < .01; ***p < .001.

Data obtained from the ExecuComp database. OLS Regression has been used with dependent variables LN (Total Comp. Gap); LN (Long Term Comp. Gap) and LN (Short Term Comp. Gap), which are the natural logarithm of total, long term and short term executive compensation gap between CEO and VPs. Using Principal Component Analysis, I extract a factor (Company Size Component, CSC) that contains optimal information from the three variables normally used to explain company size impact on total compensation (LN (SA), LN (MK) and LN(AS)). CEOCH is a binary that assumes the value 1 when the executive is simultaneously CEO and Chairman of the Board. RTS is the one year return to shareholders. INT is a binary variable that assumes the value 1 when the executive is simultaneously in two different company boards and zero in the opposite case. LN(BS) is the company's stock return volatility. LN (NM) is the natural logarithm of the number of board meetings during a year. AGE is the age of the executive. S3Y is the company sales growth during the last three years. Three dummies "WVP < 25 per cent", "WVP 25–50 per cent" and "WVP > 50 per cent" are also used, which assume the value 1 when the company has less than 25 per cent, between 25 per cent and 50 per cent, and more than 50 per cent women Vice-Presidents, and zero in the opposite case. The industry effect (ID) is controlled using Fama and French's (1997) 48 Industry classification while time effect is controlled by inserting a binary for each year between 1993 and 2004.

to VPs. Also, in the case of long term compensation gap, the relationship is positive and statistically significant in companies with a male CEO (male CEO: $t = 7.04$, $p < .001$; female CEO: $t = -1.37$, $p > .10$). In both cases, short term compensation gap is positively related, although the relationship is not statistically significant (male CEO: $t = .38$, $p > .10$; female CEO: $t = .10$, $p > .10$). Results are in accordance with the authors expectations and congruent with Bernasek and Shwiff's (2001) findings, namely that females are more risk averse than males, with the fact that if a CEO receives, according to Murphy (2003), more compensation based on stock than other top executives, it is natural that when the company risk increases stock options value will also increase as will total compensation indirectly. Albanesi and Olivetti (2006) report that female top executives receive a larger fraction of total compensation in the form of salary and a smaller fraction of their pay in the form of delayed compensation. The results are congruent with their findings.

The number of board meetings during a year has a positive and statistical relationship with the total compensation gap, although only when the company has a male CEO (male CEO: $t = 2.08$, $p < .05$; female CEO: $t = 1.04$, $p > .10$). This implies that the higher the number of meetings, the higher the compensation gap in companies managed by a male. This relationship also occurs in long term compensation gap (male CEO: $t = 2.55$, $p < .05$; female CEO: $t = .94$, $p > .10$). Short term compensation gap is not significantly related with compensation gaps in statistical terms (male CEO: $t = .64$, $p > .10$; female CEO: $t = .82$, $p > .10$). Brick et al. (2006) also find a positive relationship between compensation of directors and the number of meetings, but do not differentiate between companies with male or female CEOs.

The age of the executive negatively influences the total compensation gap in companies managed by male and female CEOs, however, the relationship is only statistically significant in companies managed by male (male CEO: $t = -6.76$, $p < .001$; female CEO: $t = -1.46$, $p > .10$). The same relationship occurs with long term compensation (male CEO: $t = -1.36$, $p < .01$; female CEO: $t = -1.30$, $p > .10$) and short term compensation (male CEO: $t = -11.29$, $p < .001$; female CEO: $t = -.15$, $p > .10$), although the relationship is only statistically significant in the latter case in companies with male CEOs. The results are congruent with Garrat and Weinberger 2009, who states that young males are more likely to enter a competitive race with cash prizes, while young females, older males, and especially older females avoid competition behaviors.

The relationship between the sales growth during the last three years and the total compensation gap between CEO and company VP is negative for companies with a female CEO and positive in the case of companies managed by a male CEO (male CEO: $t = -3.04$, $p < .01$; female CEO: $t = .63$, $p > .10$). The relationship of this variable with long term compensation growth is negative, although not statistically significant in companies managed by a male or a female CEO (male CEO: $t = -.82$, $p > .10$; female CEO: $t = -.31$, $p > .10$). As far as short term compensation is concerned, the relationship is positive in companies with a female CEO and negative in companies with a male CEO, although only statistically significant in the latter case (male CEO: $t = -3.31$, $p < .001$; female CEO: $t = .80$, $p > .10$). If sales increase along the last three years, as males are more competitive than females, male CEOs, contrarily to female CEOs, will obtain more personal compensation than VPs for their efforts to make the company grow.

The impact of the proportion of female VPs on the total compensation gap was also taken into consideration. For a percentage of female VPs less than 25 per cent, the relationship with total compensation gap is positive, and only statistically significant in companies with females CEOs (male CEO: $t = 1.040$, $p > .10$; females CEO: $t = 1.73$, $p < .10$). In the case of long term compensation gap, the relationship is positive in either situations with a male or a female CEO (male CEO: $t = 2.95$, $p < .001$; female CEO: $t = 1.72$, $p < .10$). The relationship with short term compensation gap is not statistically significant.

If the analysis concerns companies with more than 25 per cent and less than 50 per cent of female VPs, the relationship is positive and statistically significant for total, long term and short term compensation gap, however only when the firm has a male CEO.

In the case of companies with more than 50 per cent female VPs a positive and statistically significant relationship was also found between the compensation gap in the case of total compensation and for both male and females CEO (male CEO: $t = 2.32$, $p < .05$; female CEO: $t = 1.68$, $p < .10$).

To control time effect, a binary variable was inserted for each year between 1993 and 2004. The relationship is negative in both cases, although only statistically significant essentially after the year 2000, and for companies with a male CEO, with a decrease in the total compensation gap for the last years in the analyzed period. Results are in accordance with initial expectations: Following the year 2000 (NASDAQ crash), remuneration paid to several male executives in companies managed by a male CEO decreased. Murphy (2003) reports that CEOs receive more stock options than other executives. Year 2004 binary variable, in firms with female CEOs, has multicollinearity and this is the reason why is not included on the regression.

Based on Table 3 and the literature (Burress & Zucca, 2004; Hodson & England, 1986), females work essentially in specific sectors. To control the industry effect, Fama and French's (1997) 48 binary variables were utilized. In the case of total compensation gap and in the case of companies with a female CEO, no industry demonstrated a statistically significant relationship. In companies with a male CEO a positive and statistically relevant relationship was found with industries such as Defense ($t = 3.378$, $p < .001$), Measuring and Control Equipment ($t = 2.43$, $p < .05$), and Real Estate ($t = 2.95$, $p < .05$). Using the dependent variable long term compensation gap, in the case of companies with a female CEO, no industry had a statistically significant relationship. In companies with a male CEO a positive and statistically relevant relationship was found with industries such as Health Care ($t = 1.759$, $p < .10$), Pharmaceutical Products ($t = 2.00$, $p < .05$), Defense ($t = 2.54$, $p < .05$), Measuring and Control Equipment ($t = 2.77$, $p < .01$) and Real Estate ($t = -3.83$; $p < .001$). Finally, using the short term compensation dependent variables, in the case of companies with female CEOs no industry had a statistically significant rela-

tionship. In companies with a male CEO a positive and statistically relevant relationship was found with industries such as Shipbuilding Railroad Equipment ($t = 1.78$; $p < .10$), Non-metallic Mining ($t = -1.92$, $p < .10$), Computers ($t = -1.78$, $p < .10$), Transportation ($t = -1.78$, $p < .10$), Wholesale ($t = -1.66$, $p < .10$), Retail ($t = -1.89$, $p < .10$), and Real Estate ($t = 12.04$, $p < .001$).

SUMMARY AND CONCLUSIONS

This research is among the first to investigate the impact of gender on the relationship between the compensation gap of the CEO and Vice-Presidents and the performance of the company. To be more precise, if the amount of the total compensation gap between CEO and company Vice-Presidents impacts differently upon company performance, when the company is managed by a female or a male CEO. Tournament's theory suggests that a large gap in terms of average compensation between the CEO and company Vice-Presidents will increase competition between Vice-Presidents aiming, in the future, to obtain the position and compensation of a CEO. This competition will make company performance increase. The opposite theory – the behaviour theory – suggests that a small compensation gap between the CEO and company Vice-Presidents promotes collaboration and coordination between Vice-Presidents and the CEO, and such collaboration among employees can also lead to higher performances. In other words, performance is greater when the gap is reduced.

Another relevant issue examined in this research is if when a company is managed by a female CEO, the company performance is higher than when the CEO is a male and, as females and males have been described by several authors as behaving differently in several aspects, if the factors that explain the CEO and Vice-President compensation gap are different when the company CEO is a female or a male.

The results describe something quite new in the area. On average, companies managed by a female CEO perform better than companies managed by males in large, medium, and small sized companies. In companies managed by a female CEO, a small difference in the total compensation gap between CEO and company VPs will produce a higher increase in the company performance; however, when the company is managed by a CEO, a higher compensation gap is necessary to obtain higher performance. The results suggest that the behavioural theory is predominant in companies managed by females and tournament theory prevails in companies managed by males.

Companies managed by a male CEO also have, on average, a higher total compensation gap between CEO and Vice-Presidents than companies managed by a female CEO. Results from the Chow test also suggest that the factors that influence the total compensation gap and long term compensation gap are not the same when a company employs a male or female CEO.

This study presents, however, certain limitations which must be considered. The first one is related to the sources – in fact, the data for the study emanated from only one country and this compromised the generalization of the results as the research is based on data from 1,500 public US companies listed on the S&P 1500. Further evidence from other countries is needed to strengthen these arguments. The second limitation is that the variables used to analyze which factors could explain the compensation gap between CEO and VPs when the company was managed by a female or male were solely based on the Execucomp database. Several other financial variables from other databases should be added to this analysis. Whether the relationships found in this study may be replicated in other national contexts is an interesting option for future research.

Theoretical and Practical Implications

Despite these limitations, I believe that this study makes a valuable contribution to corporate governance literature. Until the moment literature about tournament and behavioral theory does not includes the gender of the CEO. This investigation found that behavioral theory is predominant in firms with a female CEO and tournament theory in firms with a male CEO. This suggests that firms with female CEOs must be analyzed with behavioral theory and firms with a male CEO with a tournament theory.

The central practical implication of this study is that women should be given more consideration by boards of directors for the CEO role. As Rosener (1995) generalized, women may be more flexible and better able to deal with ambiguity than males. These traits appear to be increasingly important in the competitive environments which confront today's organizations. In a world where males and females start to have access to same educations levels, the males' higher confidence and competitiveness levels seems to be one of the most congruent explanation to boards choose just a small number of females to be CEO. The actual world business context, characterized by rapid changes and uncertainty, gives space to women to be so, or even more succeeded has males and boards must be aware of these characteristics when they choose the person to manage your company.

Another practical implication that emanates from the results of this investigation is that in companies managed by a male CEO a high compensation gap between what is paid to the CEO and VPs lead to an high performances, but when the company is managed by a female CEO is a small, and not a big, compensation gap between what is paid to CEO and VPs that lead to high firm performances. This way, in order to increase company performance boards must limit the compensation gap between CEO and VPs when the CEO is a female and extend the gap when the CEO is a male.

REFERENCES

Aggarwal, R. & Samwick, A. 2003. Performance incentives within the companies: The effects of managerial responsibility. ***Journal of Finance***, 58(4): 1613–1649.

Albanesi, S. & Olivetti, C. 2006. ***Gender and dynamic agency: Theory and evidence on the compensation of female top executives***. Working Paper WP2006-061: Boston University.

Anderson, R. & Bizjak, J. 2003. An empirical examination of the role of the CEO and the compensation committee in structuring executive pay. ***Journal of Banking & Finance***, 27(7): 1323–1348.

Barber, B. & Odean, T. 2001. Boys will be boys: Gender, overconfidence, and common stock investment. ***Quarterly Journal of Economics***, 116(1): 261–292.

Barron, M. & Waddel, G. 2003. Executive rank, pay, and project selection. ***Journal of Financial Economics***, 67: 305–349.

Becker, B. & Huselid, M. 1992. The incentive effects of tournament compensation systems. ***Administrative Science Quarterly***, 37: 336–350.

Bernasek, A. & Shwiff, S. 2001. Gender, risk, and retirement. ***Journal of Economic Issues***, 35(2): 345–356.

Berrone, P., Surroca, J. & Tribó, J. 2007. Corporate ethical identity as a determinant of company performance: A test of the mediating role of stakeholder satisfaction. ***Journal of Business Ethics***, 76: 35–53.

Bertrand, M. & Hallock, K. 2002. The gender gap in top corporate jobs. ***International Labor Relations Review***, 55(1): 3–21.

Beyer, S. 1990. Gender differences in the accuracy of self-evaluations of performance. ***Journal of Personality and Social Psychology***, 59(5): 960–970.

Beyer, S. & Bowden, E. 1997. Gender differences in self-perceptions: Convergent evidence from three measures of accuracy and bias. ***Personality and Social Psychology Bulletin***, 23: 157–172.

Bloom, M. & Milkovich, G. 1996. Issues in managerial compensation research. ***Journal of Organizational Behavior***, 3: 23–48.

Bognanno, M. 2001. Corporate tournaments. ***Journal of Labor Economics***, 19(2): 290–315.

Brick, I. & Chidambaran, N. 2010. Find that board meetings, committee structure, and company value. ***Journal of Corporate Finance***, 16(4): 533–553.

Brick, I., Palmon, O. & Wald, J. 2006. CEO compensation, director compensation, and company performance: Evidence of cronyism? ***Journal of Corporate Finance***, 12(3): 403–423.

Burress, J. & Zucca, L. 2004. The gender equity gap in top corporate executive positions. ***Mid-American Journal of Business***, 19(1): 55–62.

Carpenter, M. & Sanders, G. 2002. Top management team compensation: The missing link between pay and company performances. ***Strategic Management Journal***, 23: 367–375.

Cassou, S. 1997. The link between tax rates and foreign direct investment. ***Applied Economics***, 29: 1295–1301.

Chidambaran, N. & Prabhala, N. 2003. Executive stock option repricing, internal governance mechanisms, and management turnover. ***Journal of Financial Economics***, 69(1): 153–189.

Chow, G. 1960. Test of equality between sets of coefficients in two linear regressions. ***Econometrica***, 28(3): 591–605.

Conyon, M., Peck, S. & Sadler, G. 2001. Corporate tournaments and executive compensation: Evidence from the UK. ***Strategic Management Journal***, 22(8): 805–815.

Cowherd, D. & Levine, D. 1992. Product quality and pay equity between low-level employees and top management: An investigation of distributive justice theory. ***Administrative Science Quarterly***, 37: 302–320.

Datta, S., Iskandar-Datta, M. & Raman, K. 2005. Managerial stock ownership and the maturity structure of corporate debt. ***Journal of Finance***, 60(5): 2333–2350.

Davidson, W., III, Pilger, T. & Szakmary, A. 1998. Golden parachutes, board and committee composition, and shareholder wealth. ***Financial Review***, 33(4): 17–32.

Elston, J. & Goldberg, L. 2003. Executive compensation and agency costs in Germany. ***Journal of Banking & Finance***, 27(7): 1391–1410.

Erhemjamts, O., Minnick, K. & Wiggins, III, R. 2010. Bridging the gender gap: Using non-discriminatory factors to explain the unexplainable. FMA Annual Conference Proceedings, New York.

Etiennot, H. 2009. Top-management teams' compensation. IAE Business School – Austral University, Working paper.

Fama, E. & French, K. 1997. Industry costs of equity. ***Journal of Financial Economic***, 43: 153–193.

Garrat, R. & Weinberger, C. 2009. The state street mile: Age and gender differences in competition-aversion in the field. University of California Economics Working Papers Series N°784706.

Glover, S., Bumpus, M., Logan, J. & Ciesla, J. 1997. Re-examining the influence of individual values on ethical decision making. ***Journal of Business Ethics***, 16: 1319–1329.

Gnyawali, D., Offstein, E. & Lau, R. 2008. The impact of the CEO pay gap on company competitive behavior. ***Group & Organization Management***, 33(4): 453–484.

Greenberg, J. 1987. A taxonomy of organizational justice theories. ***Academy of Management Review***, 12: 9–12.

Guy, F. 2000. CEO Pay, shareholder returns, and accounting profits, international. ***Journal of Economics and Business***, 7(3): 263–274.

Hallock, K. 1997. Reciprocally interlocking boards of directors and executive compensation. ***Journal of Financial and Quantitative Analysis***, 32(3): 331–343.

Hambrick, D. 1995. Fragmentation and the other problems CEOs have with their top management teams. ***California Management Review***, 37(3): 110–127.

Hannan, R., Krishnan, R. & Newman, A. 2008. The effects of disseminating relative performance feedback in tournament and individual performance compensation plans. ***The Accounting Review***, 83(4): 893–914.

Harjoto, M. & Jo, H. 2008. Board leadership and firm performance. ***Journal of International Business and Economics***, 8(3): 143–154.

Hartman, D. 1984. Tax policy and foreign direct investment in United States. ***National Tax Journal***, 37: 475–488.

Henderson, A. & Fredrickson, J. 2001. Top management team coordination needs and the CEO pay gap: A competitive test of economic and behavioural views. ***Academy of Management Journal***, 44(1): 96–118.

Hodson, R. & England, P. 1986. Industrial structure and sex differences in earnings. ***Industrial Relations***, 25: 16–32.

Holst, E. & Busch, A. 2009. Glass ceiling effect and earnings – the gender gap in managerial positions in Germany. The German Social – Economic Panel (SOEP) Paper 201, Berlin.

Howden, J. 1994. Competitive and cooperative communicative style: American men and women, American men and Japanese men. ***Intercultural Communication Studies***, 4(1): 49–58.

Ittner, C., Lambert, R. & Larker, D. 2003. The structure and performance consequences of equity grants to employees of new economy companies. ***Journal of Accounting and Economics***, 34: 89–127.

Jans, R. & Otten, R. 2008. Tournaments in the UK mutual fund industry. ***Managerial Finance***, 34(11): 786–798.

Kale, J., Reis, E. & Venkateswaran, A. 2009. Rank-order tournaments and incentive alignment: The effect on company performance. ***Journal of Finance***, 64(3): 1479–1512.

Lazear, E. & Rosen, S. 1981. Rank-order tournaments as optimum labor contracts. ***The Journal of Political Economy***, 89(5): 841–865.

Lee, J. 2009. Does size matter in company performance? Evidence from US public companies. ***International Journal of the Economics Business***, 6(2): 189–203.

Main, B., O'Reilly, C. & Wade, J. 1993. Top executive pay: Tournament or teamwork? ***Journal of Labor Economics***, 11(4): 606–628.

Martin, J. 1982. The fairness of earnings differentials: An experimental study of the blue collar workers. ***Journal of Human Resources***, 17: 110–122.
Melton, M. & Zorn, T. 2000. Risk taking in tournaments. ***Managerial Finance***, 26(7): 52–62.
Milgrom, P. & Roberts, J. 1988. An economic approach to influence activities in organizations. ***American Journal of Sociology***, 94: 154–179.
Murphy, K. 2003. Stock-based pay in new economy companies. ***Journal of Accounting and Economics***, 34(1): 129–147.
Ng, A., Yuce, A. & Chen, E. 2009. Determinants of state equity ownership, and its effects on value/ performance: China privatized companies. ***Pacific-Basin Finance Journal***, 17(4): 413–443.
Niederle, M. & Vesterlund, L. 2007. Do women shy away from competition? Do men compete too much? ***The Quarterly Journal of Economics***, 122(3): 1067–1101.
O'Reilly, C., Main, B. & Crystal, G. 1988. CEO Compensation as tournament and social comparison: A tale of two theories. ***Administrative Science Quarterly***, 33: 257–274.
Palia, D. 2001. The endogeneity of managerial compensation in company valuation: A solution. ***Review of Financial Studies***, 13(3): 735–764.
Pfeffer, J. & Langton, N. 1993. The effect of wage dispersion on satisfaction, productivity, and working cooperatively: Evidence from college and university faculty. ***Administrative Science Quarterly***, 38(2): 382–407.
Rosener, J. 1995. ***America's competitive secret: Utilizing women as a management strategy***. New York: Oxford University Press.
Ryan, J. H. & Wiggins, R, III. 2004. Who is in whose pocket? Director compensation, board independence, and barriers to effective monitoring. ***Journal of Financial Economics***, 73(3): 497–524.
Shrader, C., Blackburn, V. & Iles, P. 1997. Women in management and firm performances: An exploratory study. ***Journal of Managerial Issues***, 9(3): 355–373.
Simon, H. 1957. ***Administrative behavior***. New York: Free Press.
Slemrod, J. 1990. ***Tax effect of foreign direct investment in United States: Evidence from a country-cross comparison, taxation in global economy***. Chicago: University Chicago Press.
Smith, N., Smith, V. & Verner, M. 2006. Do women in top management affect company performance? A panel study of 2500 Danish companies. ***International Journal of Productivity and Performance Management***, 55(7): 569–593.
Sridharan, U. 1996. CEO influence and executive compensation. ***Financial Review***, 31(1): 51–66.
Srivastava, A. & Insch, G. 2007. Executive compensation differentials: Testing tournament theory. ***International Journal of Business Research***, 7(2): 187–193.
Stathopoulos, K., Espenlaub, S. & Walker, M. 2004. UK Executive compensation practices: New economy versus old economy. ***Journal of Management Accounting Research***, 16(1): 57–92.
Tannen, D. 1990. ***You just don't understand: Women and men in conversation***. New York: William Morrow.
Vandegrift, Y. & Brown, P. 2005. Gender differences in the use of high-variance strategies in tournament competition. ***Journal of Socio-Economics***, 34: 834–849.
Vieito, J. & Khan, W. 2010. Executive compensation and gender: S&P 1500 listed companies. ***Journal of Economics and Finance***, DOI: 10.1007/s12197-010-9123-1 [Epub ahead of print].
Wang, X., Xu, L. & Zhu, T. 2004. State-owned enterprises going public the case of China. ***The Economics of Transition***, 12(3): 467–487.
Wei, Z. & Varela, O. 2003. State equity ownership and firm market performances: Evidences from China new privatized companies. ***Global Finance Journal***, 14: 65–82.

Joao Paulo Torre Vieito, PhD, is Professor of Finance at School of Business Studies, Polytechnic Institute of Viana do Castelo (Portugal), where he serves as the Dean. He is also the Chairman the World Finance Conference.