

**THE GENDER PAY GAP IN THE BOARD OF DIRECTORS: AN ANALYSIS  
WITH HOMOGENEOUS GROUPS OF DIRECTORS AND COMPENSATION**

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# **The Gender Pay Gap in the board of directors: An analysis with homogeneous groups of directors and compensation**

## **ABSTRACT**

This study contributes to expand our knowledge about the gender pay gap in the board of directors. Specifically, it covers a gap in the study of gender pay gap, analysing homogeneous groups of individuals and compensation. We examined the compensation of directors of Spanish listed companies during the period 2013–2018. The results reveal that the gender pay gap exists at executive-director-level for fixed, variable and total compensation. However, the gap is non-existent for proprietary and independent directors for any type of compensation. Moreover, female executive directors are less likely to receive variable compensation than their male counterparts. The results may be useful for, among others, lawmakers, who should enact laws or regulations to eliminate the gender pay gap.

## **1. INTRODUCTION**

A fundamental principle of the Charter of the United Nations, approved in 1945, is “equal rights for men and women”. However, for the Organisation for Economic Co-operation and Development (OECD), progress in equality and the elimination of gender gaps is too slow, despite the awareness worldwide that women’s equality is a priority (OECD, 2019). In the opinion of the European Commission (EC), wage discrimination, although illegal, continues to fuel the gender pay gap (GPG). Management and supervisory positions are not unrelated to this reality, since they are mainly occupied by men, who are promoted more easily than women and, consequently, receive a higher salary. This trend is evident in the business organization chart, with less than 6% of women occupying CEO positions (European Commission, 2018). Therefore, there are two issues related to women in senior positions: first, there are few; and second, they earn less money than men (Mohan, 2014).

Yet the academic evidence substantiating these gaps in managerial roles is mixed. Some studies show that male managers or executives earn more than their female counterparts (Bell, 2005; Bertrand & Hallock, 2001; Carter, Franco, & Gine, 2017; Elkinawy & Stater, 2011; Hutchinson, Mack, & Verhoeven, 2017; Muñoz-Bullón, 2010; Vieito & Khan, 2012; Yanadori, Gould, & Kulik, 2016). Others demonstrate that there is no gender pay gap in managerial positions (Bowlin, Renner, & Rives, 2003; Jordan, Clark, & Waldron, 2007). Finally, there are those that confirm the gender pay gap in favour of women (Gayle, Golan, & Miller, 2012). Gupta, Mortal, and Guo (2018) point out the little research that has been carried out on gender pay gap at CEO-level. Thus, Hill, Upadhyay, and Beekun (2015) demonstrate the existence of a gender pay gap in favour of women, while the majority of the works maintain that the pay gap is non-existent (Bugeja, Matolcsy, & Spiropoulos, 2012; Geiler & Renneboog, 2015; Gupta et al., 2018; Yanadori et al., 2016). Moreover, research is even more scarce, if this is possible, when it focuses on the remuneration of the board of directors (Pucheta-Martínez & Bel-Oms, 2015). Thus, some papers have analysed the gender pay gap in executive directors (Geiler & Renneboog, 2015; Kulich, Trojanowski, Ryan, Alexander Haslam, & Renneboog, 2011), and others have focused on external or non-executive directors (Goh & Gupta, 2016). Only the work of García Martín and Herrero (2019) performs a detailed analysis of the gender pay gap, grouping the sample by type of directors. In general, these papers confirm that male directors earn more than female directors.

Criticism of much of the gender pay gap research has focused on the heterogeneity of the samples used. Thus, Grund (2015) points out that many studies have been based on quite heterogeneous individuals and positions, questioning whether they capture the main differences between men and women. This author proposes that the results of the gaps in the research be interpreted taking into account the heterogeneity in the sample, which could mean obtaining biased results. In this sense, Weichselbaumer and Winter-Ebmer (2005) indicate that restricting the sample to certain homogeneous groups has a great impact on gender pay gaps. For this reason, García Martín and Herrero (2019) separate the members of the boards of directors by categories (that is, executive, proprietary and independent directors), and the results confirm the existence of a gender pay gap at executive director-level, but not at proprietary and independent director-level. These authors also point out that it is only possible to consider a pay gap when the same organization pays different amounts to men and women in similar positions. For this, they propose the exclusion of those companies in which there are only men or only women for each type of director, since they point out that there can be no gender pay gap where there is no gender diversity.

Another criticism on the heterogeneity has to do with the types of remuneration included in the samples for computing the gender pay gap. Some bodies such as the OECD and the EC only consider fixed compensation, despite the fact that the EC recognizes that all individual compensation concepts that make up total remuneration must be taken into account in their measurement (Amado, Santos, & São José, 2018). By contrast, most research examines pay gaps considering full compensation. However, the gaps may differ between the different components that make up the total compensation. Grund's (2015) work studies both total compensation and individual compensation concepts among a group of highly educated professionals working in a specific industry. Among his results, he highlights that "*gender pay gaps are much more pronounced for bonus payments than they are for fixed salaries*", which leads him to suggest that future gender pay gap studies include various payment components (Grund, 2015, p. 188). Similarly, García Martín and Herrero (2019) plan to carry out new studies that analyse whether the gender pay gap is maintained in all the remuneration concepts of the boards of directors.

This paper tries to answer the points raised in the literature, presented above, taking into account the heterogeneity problems within the samples. Specifically, our aim is to analyse whether the gender pay gap occurs in homogeneous groups by types of directors (1) in total compensation, and (2) in the different remuneration components (that is, fixed, variable and other compensation). In addition, we require the presence of gender diversity in firms for each type of director, as there can be no gender pay gap where there is no gender diversity. To this end, we have analysed the compensation of all the directors belonging to the boards of directors of Spanish listed companies in the period 2013-2018. The importance of directors' compensation is key for companies, since they perceive it as reducing agency conflicts through an efficient control function, which consequently translates into an increase in the value of the firm (Hillman & Dalziel, 2003).

As a foretaste, the results demonstrate the existence of a gender pay gap among executive directors in terms of fixed, variable and total compensation; although there is no gap among proprietary and independent directors either in total compensation or in its components.

Our work contributes to understanding the influence of gender on the remuneration of directors. It also contributes to deepen the analysis of the gender pay gap from the formation of homogeneous groups: (1) of each type of director and (2) of each remuneration concept, for companies that present gender diversity in each of the types of director. Our results can be useful for companies when designing remuneration

policies for the board of directors; for lawmakers who should act to avoid the gender pay gap; for female directors who must be aware of the gender pay gap in order to defend their rights; and for investors concerned about good corporate governance practices of listed companies.

The rest of the paper is structured as follows. We provide a background in section 2. The methodology used and the research design are discussed in section 3. In the next section, the main results obtained are presented. Finally, the work concludes with the conclusions reached in section 5.

## **2. BACKGROUND**

### **2.1. Spanish regulatory framework on the boards of directors of listed companies**

In Spain, the consolidating text of the Capital Companies Law, approved by Royal Legislative Decree 1/2010 of 2 July, sets out that listed companies must be managed by a board of directors that will ensure that the selection procedures for their members favour diversity in matters such as age, gender, disability or training and professional experience. In particular, the selection of female directors will be facilitated in a number that allows achieving a balanced presence of women and men. Moreover, this law classifies directors into: executive directors (those who perform top management duties in the company); proprietary directors (appointed to be shareholders or representatives thereof); independent directors (appointed to carry out external advisory tasks that provide supervision, experience, knowledge and relationships to the company, without being conditioned by relationships with the company, its shareholders or its managers); and other directors (those who do not belong to the previous groups).

Regarding remuneration, this law also states that, unless otherwise provided in the statutes, the position of director of a listed company will necessarily be remunerated. The remuneration of each director will take into account the functions and responsibilities attributed to each director, as well as belonging to board committees and other circumstances deemed relevant. Listed companies must prepare and publish the Annual Remuneration Report that details the individual remuneration earned by each of the directors, and reports, among other matters, on the amount of the fixed and variable components. However, as will be seen later, this disaggregated information was not available until 2013, when a standardized remuneration document for listed companies was published by the National Stock Market Commission, in which the compensation of each director was broken down into different concepts (Order ECE/461/2013, of 20 March).

### **2.2. Literature review on the gender pay gap in the remuneration of board directors**

Overall, a large body of research supports the notion that there is a gender bias in the payment of employees in favour of men, both in managerial and executive compensation (Bell, 2005; Bertrand & Hallock, 2001; Carter et al., 2017; Elkinawy & Stater, 2011; Hutchinson et al., 2017; Muñoz-Bullón, 2010; Vieito & Khan, 2012; Yanadori et al., 2016) and in the compensation of board directors (García Martín & Herrero, 2019; Geiler & Renneboog, 2015; Goh & Gupta, 2016; Kulich et al., 2011; Pucheta-Martínez & Bel-Oms, 2015). However, the gender pay gap is not so evident at CEO-level, since the majority of studies maintain that it does not exist (Bugeja et al., 2012; Geiler & Renneboog, 2015; Gupta et al., 2018; Yanadori et al., 2016).

If we focus on the analysis of directors' compensation, which is the field of study of our research, Adams and Ferreira (2009) relate gender diversity to director compensation, for both the fraction of equity-based pay and the total pay, controlling for several factors. However, it is not a study on gender pay gap but on diversity and its effects on directors' compensation. For a sample of S&P-listed firms, these authors

conclude that there is strong evidence that the proportion of female directors is associated with more equity-based director pay, which is suggestive of a board that is more aligned with the interests of shareholders. They also find some weak evidence of higher total director compensation in boards with relatively more female directors.

Kulich et al. (2011) are the first to analyse the gender pay gap for board directors and relate it to company performance. For a matched sample of female and male executive directors of UK-listed firms and controlling for director and firm characteristics, they find the existence of gender pay disparities in directors' compensation and point out that company performance has a moderating impact on pay inequalities. Moreover, they conclude that female directors not only have lower base salaries than those of their male colleagues, but also that their variable pay (materialized in bonuses) is smaller. The variable compensation of male executive directors is also much more performance-sensitive than that of female executives, for whom variable compensation is virtually nil. However, this study is focused on the executive directors of the board and the regression analysis is limited to the absolute and relative size of the bonuses earned by these directors.

In this same vein, Geiler and Renneboog (2015), in an extensive paper on the gender pay gap for executive directors of UK-listed firms (controlling for position, tenure, age, industry, time period, marital status and parenthood), show that there is strong pay discrimination against female executive directors and it is visible in all components of pay: salary, bonus, and equity-based compensation. Moreover, the remuneration of executive directors is performance sensitive, but in this respect, there is no difference between male and female directors, unlike the work of Kulich et al. (2011). These authors also find that the gender pay gap is lower in firms with female non-executive directors on the board and in male dominated industries. However, this is higher in the case of marriage and parenthood.

In order to explain the gender pay gap for the boards of directors, Pucheta-Martínez and Bel-Oms (2015) analyse the explanatory factors for a sample of boards of Spanish listed companies. For this purpose, they measure the gender pay gap at firm or board level, as the difference between the compensation of male and female directors, comprising fixed and variable pay, as well as allowances. Their findings show that the percentage of female directors on the board of directors and the geographical region have no effect on the gender pay gap. In addition, the gender pay gap increases with women's presence on the nomination and compensation committee, the firm size, the board size and the performance; while this gap narrows when there are qualified independent directors on the board of directors, with the seniority of the female directors and when the company belongs to the financial and real estate sector. However, the study is carried out for boards of directors as a whole and not for each type of director and, furthermore, as the authors recognize for future lines of research, it would be convenient to distinguish between fixed and variable compensation, since it would be valuable to shed light on those compensation components that determine the gender pay gap.

Considering the importance of the role of non-executive directors in corporate governance and that little is known about how they are remunerated, Goh and Gupta (2016) study the remuneration of non-executive directors for a large sample of FTSE All-Share listed firms, using specific characteristics of the three dimensions of the role of non-executive directors (monitoring, service and resource dependence). They find there is a gender gap for both total pay and scale pay (measured by the remuneration compared to the average remuneration of non-executive board colleagues in the same firm), showing strong evidence of a gender gap in remuneration both examining inter- and intra-firm variations, as well as using a propensity-score matching procedure. In addition, this work does not differentiate between fixed and variable components, according to the authors, since the remuneration of non-executive directors in the UK is

almost entirely cash-based, with no performance-related element, suggesting that their remuneration is largely set ex-ante.

Finally, García Martín and Herrero (2019) also study the gender pay gap for board directors of Spanish-listed firms. However, this study focuses on directors, in contrast to the work of Pucheta-Martínez and Bel-Oms (2015) which focuses on boards of directors as a whole. In particular, these authors analyse separately the three main types of directors (executive, proprietary and independent), since each category of director has similar tasks and responsibilities on the board of directors. The results show that female executive directors present a pay gap compared to their male counterparts, which is not observed in the categories of proprietary and independent directors. However, the study examines total compensation, without disaggregating by compensation components. These authors, similar to Pucheta-Martínez and Bel-Oms (2015), also propose that future studies be carried out to examine whether the observed differences are maintained in all components of compensation, since it may be that the observed differences in the total remuneration of female executive directors is motivated by the existence of a gap in one remuneration component and not in another.

According to the previous studies presented above on the gender pay gap for board directors, and taking into account the indications of the works of Grund (2015) and Yanadori et al. (2016) on the homogeneity of the sample and the compensation components, we analyse the total compensation and its different compensation components in a disaggregated way for each type of board director (executive, proprietary and independent). In addition, according to García Martín and Herrero (2019), we require the presence of gender diversity in firms for each type of director, as there can be no gender pay gap where there is no gender diversity. This will allow us to analyse homogeneous samples of directors and types of compensation in order to examine in detail the extent to which female directors are worse off in terms of remuneration.

### **3. METHODS**

#### **3.1. Data**

Our database includes information on all the directors that belong to the board of directors of the Spanish listed companies. Companies belonging to the financial sector—namely banks, insurance companies, and investment companies—were deleted. This filter is justified by the special characteristics of these types of firms that may affect their remuneration policies (they are under special scrutiny by financial authorities that constrain the role of their board of directors and their special accounting practices). In addition, those companies that were in a liquidation process were not taken into account, because liquidation could lead to abnormal behaviour in the remuneration policy and board composition. In a third filter, companies that did not have information on their consolidated annual accounts were deleted, either because they presented only individual annual accounts or because they were companies with no obligation to publish accounting documents in Spain. Panel A of Table 1 shows this debugging process at firm level, while panel B contains the number of directors by type of director for the final sample of firms.

[Insert Table 1]

As a result, our final sample is composed of 7,221 director-year observations within 651 firm-year observations. In particular, executive and other directors represent respectively 15.12% and 7.41% (i.e. 1,092 and 535 of 7,221 director-year observations), while proprietary and independent directors account for respectively 38.67% and 38.80%. The data set covers a time period of 6 years, from 2013 up until 2018. We took the year 2013 as a starting point because it was the first year in which the National Stock Market Commission published a standardized remuneration document for listed

companies, in which the compensation of each director was broken down into different categories (Order ECE/461/2013, of 20 March). Previously, this information was incomplete and was scattered among the narrative information contained in the Annual Remuneration Report, so it was practically impossible to start the study before 2013.

Figure 1 illustrates the evolution in the number of female and male directors for each type of director. The data reveal that, in general, the presence of women on the boards of directors is infrequent (on average, below 15%), although it has been increasing during the last years. This increase has been mainly due to the greater female representation among independent directors and has been motivated by the objective of achieving 40% women directors by 2015, proposed by the Organic Law 3/2007, of 22 March, for the effective equality of women and men. However, this target was relaxed to 30% women directors by 2020 through the Unified Code of Good Governance (CNMV, 2015). The data also seems to confirm that this 30% target is unreachable by 2020, since female representation has gone from 11.70% in 2013 to 17.98% in 2018. In addition, this female representation is also unevenly distributed by types of directors, highlighting the low numbers of women among executive directors, which represents 3.66% (i.e. 40 female directors of 1,092 executive directors).

[Insert Figure 1]

Unlike most papers, where the total number of firms and directors have been chosen to perform the analyses, we have selected those firms and directors that incorporate gender diversity in each type of director, according to García Martín & and Herrero (2019), that is, those companies that have male and female directors for each of the categories (executive, proprietary, independent and other). Thus, we avoid the bias of comparing companies both with and without female directors. Consequently, from the 651 firm-year observations and 7,221 director-year observations, we took 3,449 directors in companies with gender diversity for each type of director (650 firm-year observations). Panel C and Panel D of Table 1 show this sample selected at both firm-level and director-level.

In terms of firms, the data reveal that gender diversity is rare among executive directors and other directors, since gender diverse companies represent 5.22% and 6.14% respectively (i.e. 34 and 40 of 651 firm-year observations), while among the proprietary directors and independent directors these values reach respectively 35.33% and 53.15%. In terms of types of directors, executive directors have the lowest gender diversity (with 8.33%, i.e. 91 of 1,092), followed by other directors (with 18.50%, i.e. 99 of 535), proprietary directors having almost 50% (with 49.43%, i.e. 1,380 of 2,792) and finally independent directors who slightly exceed 67% (with 67.06%, i.e. 1,879 of 2,802). For each type of director, female directors account for respectively 38.46% and 40.40% of executive directors and other directors (i.e. 35 out of 91 executive directors and 40 out of 99 other directors), while for proprietary directors and independent directors these values are 25.00% and 30.76% respectively (i.e. 345 out of 1,380 proprietary directors and 578 out of 1,879 independent directors). Therefore, as it has been observed, the executive directors show the lowest gender diversity, while at the other end are the independent directors. However, when gender diversity has already been achieved, women's representation is higher among executive and other directors than among proprietary and independent directors.

Taking into account this previously selected sample, we will focus the analysis on the gender pay gap in those companies that present gender diversity between their directors for each type of director. In particular, we select those directors who perform similar activities and have the same responsibilities, which are each of the categories of executive, proprietary and independent directors, without including the category of other director. This last category was not analysed since it is not homogeneous and contains those directors who cannot be included in the previous categories.

The data related to the compensation variables were manually collected from the Annual Remuneration Report, while the information corresponding to individual directors (gender, factor time, tenure, membership of different committees, CEO position, chairperson position, PhD studies, and relationships) and board of directors as a whole (board size, ownership held by the board of directors, independence of the nomination and compensation committee, presence of women on the nomination and compensation committee, and of good remuneration practices index) were manually taken from the Annual Corporate Governance Reports. For both documents, which are part of the Annual Report, the consolidated data was chosen. Finally, firm characteristics (firm size, leverage and performance) were obtained from the SABI database.

### 3.2. Variables

#### 3.2.1. Dependent variables

The variable to be explained in our work is compensation of directors. First, we examine the total remuneration of directors and, then, we distinguish between fixed, variable and other compensation. All these compensation variables were measured in thousands of euros and were also winsorized at 1% to neutralize the effect of outliers.

The main variable to analyse is *Totcomp*, which represents the total compensation earned by each director in one year. The total remuneration of each director is composed of a fixed compensation (*Fixcomp*), a variable compensation (*Varcomp*) and other remunerations (*Othcomp*). Therefore, *Totcomp* is calculated as:

$$\text{Totcomp} = \text{Fixcomp} + \text{Varcomp} + \text{Othcomp} \quad [1]$$

#### 3.2.2. Independent variables

Our main variable under study is *gender* of directors. We use a dichotomous variable that takes the value of one if the director is a woman and zero in the case of it being a man. In accordance with the theoretical framework set out above, a negative relationship between gender and compensation can be expected (García Martín & Herrero, 2019; Geiler & Renneboog, 2015; Goh & Gupta, 2016; Kulich et al., 2011).

#### 3.2.3. Control variables

The control variables used in this work are related to the individual characteristics of directors, board of directors' characteristics, and firm characteristics. Individual characteristics include factor time, tenure, committees' membership, CEO position, chairperson position, educational qualifications, and relationships. Board of directors' characteristics chosen were board size, ownership, independence of the nomination and compensation committee, presence of women in the nomination and compensation committee, good remuneration practices index, and CEO duality. Firm characteristics selected were firm size, leverage and performance. Finally, we included sector and year dummies as control variables to measure the industry and temporary effects in all of the proposed relationships. Table 2 summarizes the set of variables used in the analysis of results, as well as the measurement used for the variables and their expected relationship with respect to the compensation variable.

[Insert Table 2]

### 3.3. Methodology and empirical models

To analyse the gender pay gap in the board of directors, we propose a regression model where *gender* is the independent variable to be analysed. The following model was proposed:

$$\text{Compensation}_{it} = \beta_0 + \beta_1 \cdot \text{Gender}_{it} + \sum \beta_j \cdot \text{CV}_{jit} + \varepsilon_{it} \quad [2]$$

where  $\text{Compensation}_{it}$  are total compensation, fixed compensation, variable compensation, and other compensation—measured as the log (1 + compensation

variable)—for director  $i$  in year  $t$ ;  $\text{Gender}_{it}$  represents the sex of director  $i$  in year  $t$ , throughout a dummy variable; and  $\text{CV}_{jit}$  is the corresponding control variable  $j$  of director  $i$  in year  $t$ , which has been previously described. Finally,  $\varepsilon_{it}$  is the error term, which is split into three components: the individual effect ( $\eta_i$ ), the temporal effect ( $d_t$ ) and white noise or random disturbance ( $v_{it}$ ).

To examine the gender pay gap in each of the compensation components, we propose a panel data model with censored dependent variable of zero for the lower limit (Kulich et al., 2011), since the directors' compensation has a lower limit of zero for those directors who do not receive any compensation. The panel data methodology was used to avoid obtaining biased estimates, due to the problem of unobservable heterogeneity and the possibility of endogeneity of the regressors. These models with censored dependent variables were estimated through random effects.

In addition, given that in the categories variable compensation and other compensation a large proportion of directors do not receive any compensation (between 51.8% for variable compensation of male executive directors and 93.3% for other compensation of male proprietary directors, as will be shown below in the statistical description of the dependent variables), we propose a probit panel data model to study the gender pay gap, where the dependent variable becomes a binary variable equal to 1 if the director receives compensation and zero otherwise. In this way, we analyse whether the probability of earning a variable remuneration and other remuneration is lower in women than in men. This dichotomization of the dependent variables allows us to reduce the estimation biases that are present when we analyse them as continuous variables and only a few directors receive these types of compensation (between 6.7% for other compensation of male proprietary directors and 48.2% for variable compensation of male executive directors, as will be shown below in the statistical description of the dependent variables). These groups of regressions were also estimated through random effects.

Before beginning the analysis, we ran some tests to properly choose the estimation method. First, we ran a likelihood-ratio test which formally compares the pooled estimator (tobit) with the panel estimator. Second, we ran the Hausman test to compare the Within Groups (WG) estimator in fixed effects and the Feasible Generalized Least Squares (FGLS) estimator in random effects, under the null hypothesis that the difference in coefficients is not systematic. We cannot reject the null hypothesis, so the FGLS estimator in random effects is preferable because it is more efficient.

## 4. RESULTS

### 4.1. Descriptive statistics

Table 3 contains the descriptive statistics of directors' compensation for those directors that present gender diversity distinguishing between women and men for each type of director. As can be seen, the data indicate that the average values of the four compensation variables are much higher in men than in women for executive directors. This can also be observed through decile distribution, so the data points towards a gender pay gap in executive directors. However, these differences are not evident in the proprietary and independent directors, both in terms of average values and decile distributions.

[Insert Table 3]

In addition, the four compensation variables of executive directors are much higher than their counterparts of proprietary and independent directors, both in terms of average values and decile distributions. It can also be noted that the total and fixed compensation of independent directors are much higher than those of their counterparts of proprietary directors, both in terms of average values and decile distributions, while variable and other compensation are very similar.

Regarding variable compensation, it should be noted that this is present mainly in executive directors<sup>1</sup>, as can be seen both in average terms and decile distribution, and very specifically in male executives directors (that is, in male directors, variable compensation represents 49.17% of the total compensation and in female directors 28.34%). However, in proprietary and independent directors this compensation does not exceed 4.38% (that is, 3.29% for male proprietary directors and 4.38 for female proprietary directors, and 1.77% for female independent directors and 2.10% for male independent directors).

Finally, it should be noted that around 2% of executive and independent directors do not receive total compensation and fixed compensation, while this percentage rises substantially for proprietary directors (between 14.5% for total compensation of female directors and 19.9% for fixed compensation of male directors). Regarding the directors who do not receive variable compensation and other compensation, these percentages are substantially higher and are between 51.8% for variable compensation of male executive directors and 93.3% for other compensation of male proprietary directors.

Table 4 shows the gender pay gap for each type of compensation and of director. The data reveal that this gap is located in the executive directors and for the four compensation variables (i.e. total compensation, fixed compensation, variable compensation and other compensation), with the exception of other compensation for independent directors, which is also significant.

[Insert Table 4]

These mean difference tests between compensation of women and men for each type of compensation and of the director represent a first approximation for the study of the gender pay gap, which must be carried out by controlling several variables, as already anticipated previously.

## 4.2. Explanatory analysis

Table 5 shows the regression results of directors' compensation for executive directors, as well as the gender pay gap. The first three regressions are for total, fixed and variable compensation and were estimated through random effects for panel data models with censored dependent variable, while the fourth is for other compensation and was estimated through a pool model with censored dependent variable to avoid convergence problems.

[Insert Table 5]

The results of these regressions allow us to point out that director's gender presents a significant negative relationship with compensation, which means that female directors receive less compensation than their male counterparts do. In particular, women earn less fixed and variable pay, and consequently, less total compensation. However, the gender pay gap in the category of other compensation is not statistically significant. These results are in the same line as those obtained by García Martín and Herrero (2019) for total compensation, Kulich et al. (2011) for variable compensation, and Geiler and Renneboog (2015) in all remuneration components.

[Insert Table 6]

Table 6 shows the regression results for the group of proprietary directors. As can be seen, there is no gender pay gap for this group, since the gender variable is not statistically significant. It is important to point out that proprietary directors sit on the

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<sup>1</sup> The Unified Code of Good Governance of 2015 (CNMV, 2015) recommends non-executive directors to be excluded from variable remuneration linked to the performance of the company and the director, with some exceptions. The aim is to avoid potential conflicts of interest that would affect external directors when they have to make decisions that could alter the immediate results of the company, if such results and values had remunerative effects for them.

board of directors for owning an important part of the company. For this reason, it seems logical that both their participation and their remuneration are not conditioned by gender characteristics. These results are similar to those obtained by García Martín and Herrero (2019), who found no significant relationship between gender and total compensation in proprietary directors; and they are contrary to those obtained by Goh and Gupta (2016), who demonstrated the gender pay gap within non-executive directors in UK firms.

The last group of directors to analyse is that of independent directors. Table 7 shows the results of the regressions for this group. Similar to proprietary directors, there is no gender pay gap for independent directors, as can be seen through the gender variable. Companies hire independent directors according to their experience, skills, relationships, etc., so it seems clear that their remuneration should not be conditioned by gender, but rather by these individual characteristics that represent a greater value in their work. García Martín and Herrero (2019) also found no significant relationship between gender and total compensation in independent directors. However, Goh and Gupta (2016) demonstrated a gender pay gap at non-executive directors-level.

[Insert Table 7]

Finally, we re-estimated the previous regressions for variable compensation and other compensation, dichotomizing them. Thus, Table 8 shows the regressions for the three groups of directors (executive, proprietary and independent directors) for variable and other compensation; where the dependent variables take the value of 1 if the director receives that type of remuneration and 0 otherwise. We carry out this additional analysis because a large number of directors do not receive these types of compensation, so it is interesting to analyse them as limited dependent variables. In this way, we study whether the probability of earning variable compensation and other compensation is lower in women than in men. Note that for the group of executive directors, the *PhD* variable has been omitted. When this dichotomous control variable interacts with the dichotomous dependent variable, the crosstab of these two variables show 0 observations in one of the cells (i.e. there are no executive directors who have PhD studies and at the same time do not receive variable compensation and other compensation), so that variable drop to the estimates.

[Insert Table 8]

The results in Table 8 show that female executive directors are less likely to receive variable compensation than their male counterparts, although these differences do not exist for other compensation. According to Kulich et al. (2011), women are offered contracts that are less performance sensitive and more suited for risk averse managers. As for proprietary and independent directors, there are no gender-motivated differences in the likelihood of collecting these types of remuneration. The results are in line with those previously obtained in Tables 5, 6 and 7, where these variables were analysed as continuous variables.

## **5. DISCUSSION AND CONCLUSIONS**

The gender pay gap is an issue that persists around the world, despite the fact that gender equality is a priority for the Organisation for Economic Co-operation and Development (OECD, 2019). The gender pay gap also extends to highly qualified and well paid jobs, as is the case of the board of directors in listed companies. Furthermore, not only do women earn less than their male counterparts, but they also reach these positions much less frequently (Mohan, 2014).

This paper tries to correct the problem of heterogeneity through the study of homogeneous groups, analysing the gender pay gap within the board of directors. For this purpose, we analysed a sample of directors in Spanish listed companies during the period 2013-2018, taking into account only those companies where there is gender

diversity for each type of director. We study each type of director separately and, in addition, study their total compensation, breaking this compensation down into different remuneration components.

Our results corroborate the different behaviour both between individuals (i.e. between types of directors) and between compensations (i.e. between remuneration components). First, we show that executive directors receive much higher compensation than the rest of directors, likewise independent directors are remunerated higher than proprietary directors. Second, variable compensations are mainly present for executive directors, according to the recommendation of the Good Governance Code (CNMV, 2015). This type of remuneration represents, on average, almost half the total compensation for male executive directors and about 28% for female executive directors.

When analysing the gender pay gap through regression models, controlling by director, board and firm characteristics, our results suggest that a gender pay gap exists for executive directors in fixed, variable and total compensation (not in other compensations). Executive directors work within the company performing management tasks. This makes their remuneration policy much more complex than the rest of the directors and, therefore, it is easier to find remuneration gaps between the different individuals who belong to this category. For instance, variable compensation is used mainly for this group and is a discretionary element of remuneration, which can increase these differences. In this sense, we found no gender pay gap for proprietary or independent directors. On the one hand, proprietary directors have a place on the board by owning a part of the company, which gives them the right to participate in its decisions. Therefore, it is appropriate that all of them are remunerated in the same way in each board and, consequently, there should be no gender gap between male and female directors. On the other hand, independent directors are external directors of the company, who are hired for their skills, experience and qualification, among others. Accordingly, their remuneration should be based on these individual characteristics that add value to the company, and not based on gender. Therefore, it is logical that there is no pay gap due only to gender issues.

Moreover, we wanted to study whether the probability of earning variable compensation and other compensation is different between male and female directors, since they involve discretionary remuneration elements. The results continue to be in line with previous findings and suggest that female executive directors are less likely to receive variable compensation than their male counterparts. According to previous literature (Bertrand, 2011; Grund, 2015; Kulich et al., 2011), this may be due to greater risk aversion on the part of women, who prefer receiving a known fixed compensation rather than greater potential compensation based on performance.

Our results have different implications for the gender pay gap debate. First, they should be usefully taken into account by policymakers and regulators. These results should encourage them to promote laws or regulations that lead to effective participation and equal pay between men and women on the boards of directors. Equality between male and female directors has still not been achieved despite the objective of reaching 40% women directors by 2015, proposed by Organic Law 3/2007 for the effective equality of women and men, which was relaxed to 30% women by 2020 through the Unified Code of Good Governance (CNMV, 2015). Second, our results can be useful for companies when designing the remuneration policies of the board of directors in order to avoid these huge wage gaps. Third, female directors should be aware of the gender pay gaps in order to defend their rights and to negotiate their remunerations. Fourth, these results may also be of interest to investors concerned about good corporate governance practices of listed companies. Finally, an important implication that can be derived from our work is that a board of directors cannot be considered as a

homogeneous group. Similarly, considering the total compensation of directors as a whole, can lead to obtaining biased results by the different compensation components.

As limitations of this research, the low proportion of female directors in our sample of boards of directors should be noted, which further reduces our sample of board directors when we demand gender diversity in each type of director. In addition, we conducted the study in Spain, where a one-tier board system is established (i.e. all directors, executives and non-executives make up the board) and where there is no regulation that strictly requires reaching a quota of female directors. Further research should be conducted to compare the gender pay gap in different contexts (i.e. two-tier board system, countries with a gender quota in the board, common-law countries). Finally, the next step in research on the gender pay gap in homogeneous groups would be to analyse the determinants that may influence it.

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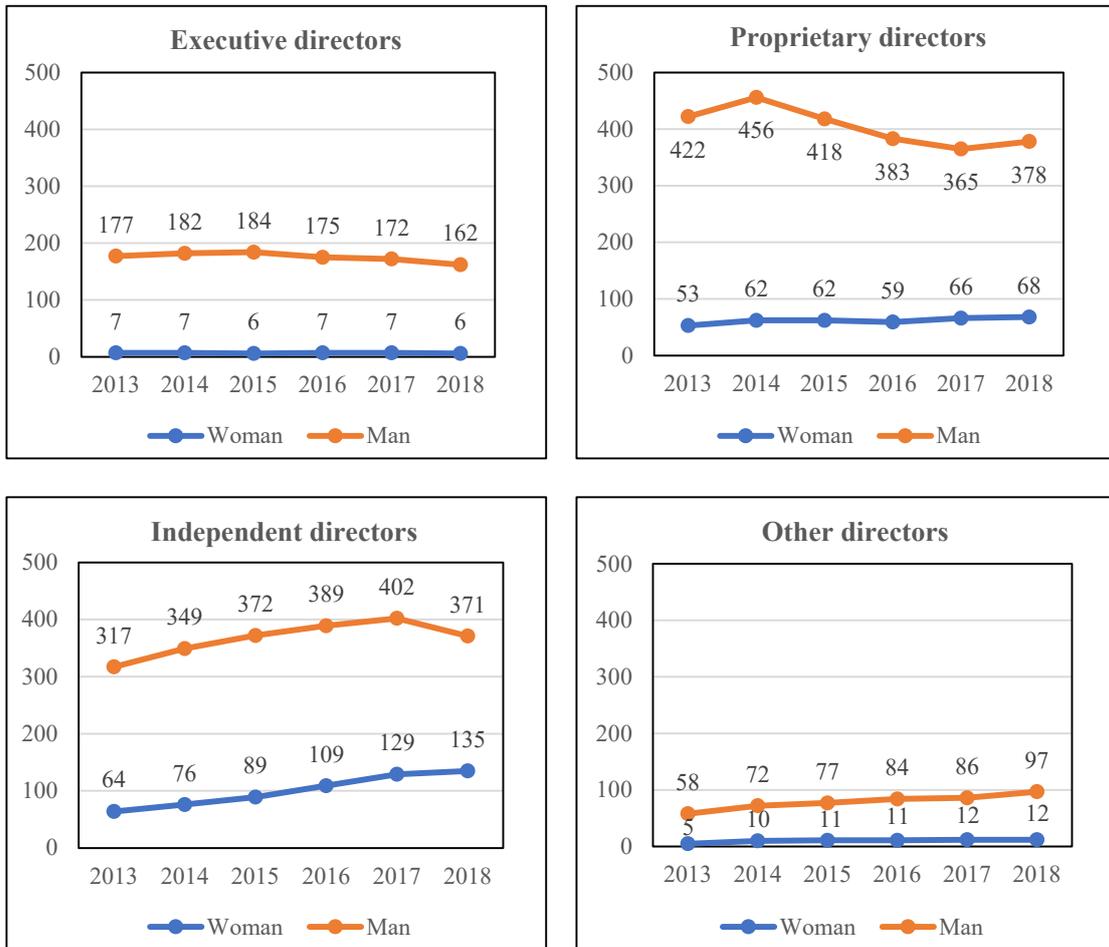
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**Table 1. Sample description**

	2013	2014	2015	2016	2017	2018	Total
<b>Panel A – Number of firms</b>							
Initial sample	137	153	152	148	150	143	884
First filter	-20	-23	-24	-21	-20	-19	128
Second filter	-9	-8	-2	-1	-1	0	21
Third filter	-11	-14	-15	-15	-15	-14	84
Final sample of firms	97	108	111	111	114	110	651
<b>Panel B – Number of directors by type of director</b>							
Executive directors	184	189	190	182	179	168	1,092
Proprietary directors	475	518	480	442	431	446	2,792
Independent directors	381	425	461	498	531	506	2,802
Other directors	63	82	88	95	98	109	535
Final sample of directors	1,103	1,214	1,219	1,217	1,239	1,229	7,221
<b>Panel C – Number of firms with gender diversity in each type of director</b>							
Executive directors	6	6	5	6	6	5	34
Proprietary directors	33	39	38	38	41	41	230
Independent directors	36	43	56	64	73	74	346
Other directors	2	7	6	8	9	8	40
<b>Panel D – Number of directors with gender diversity in each type of director</b>							
Executive directors							
Women	7	6	5	6	6	5	35
Men	12	11	8	10	8	7	56
Total	19	17	13	16	14	12	91
Proprietary directors							
Women	52	60	58	53	60	62	345
Men	179	108	171	152	156	169	1,035
Total	231	268	229	205	216	231	1,380
Independent directors							
Women	59	72	84	106	126	131	578
Men	142	159	203	247	281	269	1,301
Total	201	231	287	353	407	400	1,879
Other directors							
Women	2	7	6	8	9	8	40
Men	3	9	9	15	12	11	59
Total	5	16	15	23	21	19	99

This table shows the companies and directors that constitute our database for the period 2013-2018. The initial sample of companies is composed of all those listed on the Continuous Market of the Madrid Stock Exchange. The first filter eliminates those financial companies, the second the companies that were subject to liquidation and the third the companies that did not have information on their consolidated annual accounts. Gender diversity refers to the fact that women and men coexist in each type of director.

**Figure 1. Evolution of the number of female and male directors for each type of director**



**Table 2. Definition variables**

<b>Variable</b>	<b>Label</b>	<b>Measurement</b>	<b>Expected sign</b>
<b>Dependent variable</b>			
Total compensation	Totcomp	Log of (1 + total compensation)	
Fixed compensation	Fixcomp	Log of (1 + fixed compensation)	
Variable compensation	Varcomp	Log of (1 + variable compensation)	
Other compensation	Othcomp	Log of (1 + other compensation)	
<b>Independent variable</b>			
Gender	Gender	Dummy value (0 = Man; 1 = Woman)	–
<b>Control variable of directors</b>			
Factor time	Factime	Proportion of board time in a year	+
Tenure	Tenure	Log of the number of years that a director serves on the board	+
Squared tenure	Tenure2	(Tenure) <sup>2</sup>	–
Committees presence	Committees	Log of the number of committees in which a director participates	+
CEO position	CEO	Dummy value (0 = No; 1 = Yes)	+
Chairperson position	Chairperson	Dummy value (0 = No; 1 = Yes)	+
Educational qualification	PhD	Dummy value (0 = No ; 1 = Yes)	+
Relationships	Relationships	Log of the number of boards to which each director belongs	+
<b>Control variable of boards</b>			
Board size	Board_Size	Log of the number of directors in the board	+/-
Board ownership	Board_Own	Proportion of shares held by the board	+/-
Independence of the nomination and compensation committee	NCC_Indep	Proportion of independent directors in this committee	–
Women presence in the nomination and compensation committee	NCC_Women	Dummy value (0 = No; 1 = Yes)	–
Good remuneration practices index	GRP_Index	Proportion of compliance in remuneration recommendations	–
CEO and Chairperson duality	CEO_duality	Dummy value (0 = No; 1 = Yes)	+/-
<b>Control variable of firms</b>			
Firm size	Firm_Size	Log of the number of workers in the firm	+
Leverage ratio	Leverage	Total liabilities divided by total assets	+/-
Performance	Performance	EBIT divided by total assets (ROA)	+

This table contains the label and measure of dependent, independent and control variables. It also shows the expected sign for independent and control variables. The control variables are grouped taking into account the director, board and firm characteristics.

**Table 3. Summary statistics of directors' compensation for each type of director**

Variable	Mean	SD	D1	D3	D5	D7	D9	N
<b>Panel A – Executive directors</b>								
<b>Women</b>								
Totcomp	320.800	562.331	70.000	116.000	196.000	259.000	504.000	35
Fixcomp	225.771	232.697	65.000	102.000	175.000	248.000	363.000	35
Varcomp	90.914	342.424	0.000	0.000	0.000	0.000	42.000	35
Othcomp	4.114	11.499	0.000	0.000	0.000	0.000	8.000	35
<b>Men</b>								
Totcomp	1,311.69 6	1,635.52 8	187.00 0	326.000	695.500	1,234.00 0	4,230.00 0	56
Fixcomp	613.286	505.362	158.00 0	233.000	463.500	711.000	1,406.00 0	56
Varcomp	644.911	1,157.06 9	0.000	0.000	0.000	777.000	2,900.00 0	56
Othcomp	19.875	54.297	0.000	0.000	0.000	9.000	23.000	56
<b>Panel B – Proprietary directors</b>								
<b>Women</b>								
Totcomp	62.829	80.314	0.000	20.000	47.000	65.000	138.000	345
Fixcomp	51.307	51.704	0.000	17.000	39.000	62.000	115.000	345
Varcomp	2.754	12.434	0.000	0.000	0.000	0.000	0.000	345
Othcomp	2.255	13.030	0.000	0.000	0.000	0.000	0.000	345
<b>Men</b>								
Totcomp	64.317	93.061	0.000	11.000	38.000	66.000	146.000	1,035
Fixcomp	54.900	73.248	0.000	10.000	36.000	61.000	130.000	1,035
Varcomp	2.118	10.579	0.000	0.000	0.000	0.000	0.000	1,035
Othcomp	3.181	15.963	0.000	0.000	0.000	0.000	0.000	1,035
<b>Panel C – Independent directors</b>								
<b>Women</b>								
Totcomp	109.815	97.131	24.000	56.000	89.000	126.000	200.000	578
Fixcomp	105.083	95.463	19.000	54.000	84.000	120.000	196.000	578
Varcomp	1.939	8.180	0.000	0.000	0.000	0.000	0.000	578
Othcomp	2.389	10.580	0.000	0.000	0.000	0.000	2.000	578
<b>Men</b>								
Totcomp	116.506	90.863	26.000	61.000	95.000	135.000	247.000	1,301
Fixcomp	109.495	85.048	22.000	60.000	90.000	128.000	229.000	1,301
Varcomp	2.445	9.219	0.000	0.000	0.000	0.000	0.000	1,301
Othcomp	3.473	13.066	0.000	0.000	0.000	0.000	3.000	1,301

This table summarizes the statistical description of the four compensation variables (expressed in thousands of euros) for those directors that present gender diversity: total compensation (Totcomp), fixed compensation (Fixcomp), variable compensation (Varcomp) and other compensation (Othcomp), distinguishing between women and men for each type of director.

**Table 4. Gender pay gap by type of director**

Type of director	Variable	Women		Men		Differences between woman and men		
		N	Mean	N	Mean	Mean	%	t-test (p-value)
Executive directors	Totcomp	35	320.800	56	1,311.696	-990.896	-75.54%	-4.158 (0.000)***
	Fixcomp	35	225.771	56	613.286	-387.514	-63.19%	-4.959 (0.000)***
	Varcomp	35	90.914	56	644.911	-553.996	-83.32%	-3.356 (0.001)***
	Othcomp	35	4.114	56	19.875	-15.761	-79.30%	-2.098 (0.040)**
Proprietary directors	Totcomp	345	62.829	1,035	64.317	-1.488	-2.31%	-0.286 (0.775)
	Fixcomp	345	51.307	1,035	54.900	-3.592	-6.54%	-0.999 (0.318)
	Varcomp	345	2.754	1,035	2.118	0.636	30.03%	1.077 (0.394)
	Othcomp	345	2.255	1,035	3.181	-0.926	-29.11%	-0.411 (0.282)
Independent directors	Totcomp	578	109.815	1,301	116.506	-6.691	-5.74%	-1.405 (0.160)
	Fixcomp	578	105.083	1,301	109.495	-4.412	-4.03%	-0.955 (0.340)
	Varcomp	578	1.939	1,301	2.445	-0.506	-20.70%	-1.188 (0.235)
	Othcomp	578	2.389	1,301	3.476	-1.084	-31.19%	-1.902 (0.057)*

This table shows the gender pay gap (expressed in thousands of euros and percentage) for each type of compensation and of director. The four compensation variables are: total compensation (Totcomp), fixed compensation (Fixcomp), variable compensation (Varcomp) and other compensation (Othcomp). \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%

**Table 5. Compensation and gender pay gap for executive directors**

Independent variable	Dependent variable			
	Total compensation	Fixed compensation	Variable compensation	Other compensation
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Gender	-0.876** (0.037)	-0.702* (0.085)	-1.767*** (0.006)	-1.059 (0.356)
Factime	3.188*** (0.000)	2.955*** (0.000)	1.665 (0.262)	-1.308 (0.602)
Tenure	0.880 (0.210)	0.996 (0.104)	-2.376 (0.126)	2.987 (0.394)
Tenure2	-0.336* (0.072)	-0.352** (0.038)	0.866*** (0.006)	-0.903 (0.290)
Committees	0.666 (0.228)	0.302 (0.506)	3.371*** (0.001)	0.651 (0.748)
CEO	0.595*** (0.009)	0.342* (0.073)	5.117*** (0.000)	1.252 (0.278)
Chairperson	0.380 (0.343)	0.339 (0.319)	-5.215*** (0.000)	0.161 (0.899)
PhD	0.329 (0.791)	0.417 (0.723)	1.525 (0.289)	3.393 (0.392)
Relationships	0.257 (0.648)	0.146 (0.754)	4.656*** (0.000)	2.713 (0.198)
Board_Size	2.314* (0.054)	1.387 (0.185)	-4.311 (0.147)	3.485 (0.338)
Board_Own	-0.449 (0.653)	-0.459 (0.560)	-15.775*** (0.000)	1.157 (0.700)
NCC_Indep	-0.091 (0.853)	-0.023 (0.952)	-8.467*** (0.000)	-1.789 (0.404)
NCC_Women	0.222 (0.501)	0.257 (0.331)	2.656** (0.010)	-1.246 (0.284)
GRP_Index	0.465 (0.617)	0.334 (0.644)	-16.458*** (0.000)	-7.732** (0.023)
CEO_duality	-0.558** (0.025)	-0.484** (0.014)	-2.388*** (0.000)	-1.260 (0.290)
Firm_Size	-0.139 (0.282)	-0.097 (0.380)	-0.429* (0.053)	0.546 (0.229)
Leverage	-0.137 (0.155)	-0.145* (0.092)	-0.965 (0.249)	0.380 (0.137)
Performance	0.727 (0.351)	0.549 (0.392)	6.110*** (0.002)	-3.655 (0.200)
Constant	-1.382 (0.722)	0.544 (0.867)	41.136*** (0.003)	-6.439 (0.500)
Year dummies	Yes	Yes	Yes	No
Sector dummies	Yes	Yes	Yes	No
Observations	91	91	91	91
Rho ( $\rho$ )	0.8134	0.8837	0.9693	
Likelihood test	18.41*** (0.000)	27.61*** (0.000)	45.29*** (0.000)	

This table gathers the results of regressions on compensation and shows gender pay gap for executive directors. The dependent and explanatory variables were defined in Table 2. In total, fixed and variable compensation (first, second and third regressions), panel data models with censored dependent variable, in zero by the lower limit, were estimated through random effects. In other compensation (fourth regression), a pool model with censored dependent variable was estimated to avoid convergence problems. The rho coefficient ( $\rho$ ) computes the percentage contribution to the total variance of the panel data structure. The likelihood test quantifies the significance of the convenience of the panel data model with respect to a pooled model. \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%.

**Table 6. Compensation and gender pay gap for proprietary directors**

Independent variable	Dependent variable			
	Total compensation	Fixed compensation	Variable compensation	Other compensation
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Gender	-0.050 (0.768)	-0.052 (0.777)	-0.127 (0.878)	-0.833 (0.353)
Factime	2.247*** (0.000)	2.278*** (0.000)	1.950* (0.077)	1.071 (0.303)
Tenure	-0.156 (0.393)	-0.230 (0.210)	0.153 (0.915)	0.628 (0.619)
Tenure2	0.063 (0.285)	0.079 (0.180)	0.220 (0.578)	-0.188 (0.604)
Committees	0.127 (0.240)	0.124 (0.255)	0.293 (0.705)	1.131 (0.158)
CEO	-	-	-	-
Chairperson	0.307 (0.102)	0.096 (0.611)	2.188* (0.075)	2.728*** (0.005)
PhD	-0.068 (0.701)	-0.060 (0.750)	-1.301 (0.197)	-0.998 (0.380)
Relationships	0.081 (0.455)	0.098 (0.374)	0.387 (0.641)	-1.359 (0.179)
Board_Size	-0.007 (0.974)	0.159 (0.475)	-6.347*** (0.001)	-2.483 (0.186)
Board_Own	-0.249 (0.220)	-0.107 (0.600)	-2.401 (0.205)	0.297 (0.860)
NCC_Indep	-0.413*** (0.006)	-0.386*** (0.010)	-6.001*** (0.000)	2.509* (0.078)
NCC_Women	0.146* (0.097)	0.084 (0.350)	-1.007* (0.068)	0.898 (0.196)
GRP_Index	0.402** (0.035)	0.396** (0.038)	-1.780 (0.158)	0.924 (0.591)
CEO_duality	0.142 (0.240)	0.214* (0.077)	0.647 (0.515)	0.936 (0.227)
Firm_Size	0.133*** (0.000)	0.122*** (0.000)	0.027 (0.883)	1.201*** (0.000)
Leverage	0.455* (0.091)	0.519* (0.055)	1.700 (0.372)	-4.273* (0.090)
Performance	0.300 (0.258)	0.268 (0.315)	10.094** (0.024)	-3.756** (0.029)
Constant	-0.819 (0.249)	-1.254* (0.083)	-14.890 (0.992)	-36.974 (0.957)
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Observations	1,380	1,380	1,380	1,380
Rho ( $\rho$ )	0.8845	0.8881	0.9069	0.8535
Likelihood test	1,068.80*** (0.000)	1,135.60*** (0.000)	140.07*** (0.000)	163.98*** (0.000)

This table presents the results of regressions on compensation and shows gender pay gap for proprietary directors. The dependent and explanatory variables were defined in Table 2. Panel data models with censored dependent variable, in zero by the lower limit, were estimated through random effects in the four compensation variables. The rho coefficient ( $\rho$ ) computes the percentage contribution to the total variance of the panel data structure. The likelihood test quantifies the significance of the convenience of the panel data model with respect to a pooled model. \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%.

**Table 7. Compensation and gender pay gap for independent directors**

Independent variable	Dependent variable			
	Total compensation	Fixed compensation	Variable compensation	Other compensation
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Gender	-0.073 (0.181)	-0.083 (0.149)	0.171 (0.804)	-0.248 (0.646)
Factime	2.079*** (0.000)	2.030*** (0.000)	3.523*** (0.000)	1.026 (0.101)
Tenure	0.107 (0.243)	0.184* (0.053)	-2.679** (0.020)	1.380 (0.132)
Tenure2	-0.008 (0.794)	-0.051* (0.093)	0.994*** (0.005)	-0.189 (0.504)
Committees	0.298*** (0.000)	0.324*** (0.000)	-0.561 (0.363)	-0.364 (0.434)
CEO	-	-	-	-
Chairperson	0.788*** (0.000)	0.657*** (0.000)	3.395* (0.065)	1.859 (0.254)
PhD	-0.067 (0.259)	-0.033 (0.594)	-2.594** (0.031)	-0.157 (0.771)
Relationships	0.016 (0.684)	0.008 (0.845)	-0.283 (0.564)	0.593* (0.090)
Board_Size	0.165* (0.057)	0.175** (0.050)	-0.220 (0.877)	0.138 (0.902)
Board_Own	-0.642*** (0.000)	-0.695*** (0.000)	-2.825* (0.061)	0.218 (0.866)
NCC_Indep	-0.069 (0.374)	-0.072 (0.368)	0.276 (0.777)	1.525* (0.066)
NCC_Women	0.066* (0.084)	0.069* (0.079)	0.550 (0.177)	-0.334 (0.452)
GRP_Index	0.138 (0.125)	0.090 (0.327)	2.883** (0.017)	3.417*** (0.004)
CEO_duality	0.019 (0.632)	-0.015 (0.712)	1.990*** (0.000)	1.648*** (0.000)
Firm_Size	0.179*** (0.000)	0.183*** (0.000)	-0.363* (0.059)	0.955*** (0.000)
Leverage	0.052 (0.142)	0.067* (0.069)	-0.327 (0.667)	-0.621 (0.557)
Performance	0.327*** (0.000)	0.302*** (0.000)	8.142*** (0.002)	-1.207 (0.184)
Constant	0.706*** (0.008)	0.636** (0.021)	-8.229** (0.034)	-18.793*** (0.000)
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Observations	1,879	1,879	1,879	1,879
Rho ( $\rho$ )	0.6505	0.6738	0.8868	0.9168
Likelihood test	505.18*** (0.000)	699.56*** (0.000)	245.57*** (0.000)	377.51*** (0.000)

This table shows the results of regressions on compensation and shows gender pay gap for independent directors. The dependent and explanatory variables were defined in Table 2. Panel data models with censored dependent variable, in zero by the lower limit, were estimated through random effects in the four compensation variables. The rho coefficient ( $\rho$ ) computes the percentage contribution to the total variance of the panel data structure. The likelihood test quantifies the significance of the convenience of the panel data model with respect to a pooled model. \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%.

**Table 8. Compensation and gender pay gap for directors in the variable compensation and other compensation through probit panel data models**

Independent variable	Dependent variable					
	Executive directors		Proprietary directors		Independent directors	
	Variable comp.	Other comp.	Variable comp.	Other comp.	Variable comp.	Other comp.
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Gender	-8.950* (0.061)	-0.296 (0.469)	0.097 (0.860)	-0.337 (0.485)	0.128 (0.765)	-0.147 (0.721)
Factime	-15.342 (0.005)	-0.359 (0.677)	1.300 (0.108)	0.247 (0.696)	1.844** (0.012)	0.979* (0.075)
Tenure	-4.363 (0.511)	0.565 (0.631)	-0.187 (0.839)	0.580 (0.464)	-1.215 (0.140)	1.542* (0.057)
Tenure2	-0.455 (0.728)	-0.198 (0.492)	0.234 (0.349)	-0.166 (0.446)	0.513** (0.038)	-0.265 (0.272)
Committees	33.700*** (0.001)	-0.218 (0.766)	0.068 (0.887)	0.497 (0.280)	-0.309 (0.490)	-0.262 (0.495)
CEO	9.698*** (0.004)	0.297 (0.475)	-	-	-	-
Chairperson	7.337** (0.047)	0.248 (0.598)	1.155 (0.118)	1.342** (0.022)	1.665 (0.178)	0.934 (0.445)
PhD	-	-	-1.549* (0.059)	-0.490 (0.499)	-1.618** (0.031)	0.033 (0.936)
Relationships	4.169 (0.500)	1.095 (0.189)	0.016 (0.977)	-0.982* (0.097)	-0.193 (0.603)	0.364 (0.211)
Board_Size	45.110* (0.053)	0.801 (0.556)	-3.739*** (0.001)	-1.743 (0.118)	-0.012 (0.990)	-0.248 (0.771)
Board_Own	-119.786* (0.072)	0.940 (0.386)	-1.876* (0.095)	0.215 (0.812)	-1.367 (0.170)	-0.533 (0.593)
NCC_Indep	-26.083 (0.149)	-0.725 (0.349)	-3.989*** (0.000)	1.188 (0.186)	-0.321 (0.662)	0.678 (0.318)
NCC_Women	3.478 (0.691)	-0.378 (0.359)	-0.749* (0.074)	0.332 (0.459)	0.478 (0.170)	-0.623* (0.077)
GRP_Index	6.246 (0.774)	-2.814** (0.029)	-0.736 (0.466)	0.586 (0.562)	2.700*** (0.006)	3.091*** (0.001)
CEO_duality	-12.945** (0.027)	-0.403 (0.345)	0.602 (0.302)	0.345 (0.479)	1.414*** (0.000)	1.460*** (0.000)
Firm_Size	-2.872* (0.075)	0.289* (0.080)	0.137 (0.208)	0.815*** (0.000)	-0.214* (0.091)	0.826*** (0.000)
Leverage	-130.669* (0.058)	0.163* (0.075)	0.295 (0.802)	-2.924** (0.046)	-0.034 (0.935)	-0.720 (0.370)
Performance	75.457*** (0.001)	-1.479 (0.144)	6.740** (0.022)	-2.439*** (0.016)	3.959** (0.024)	-0.986 (0.154)
Constant	73.666 (0.254)	-1.981 (0.567)	2.941 (0.299)	-7.692*** (0.004)	-6.509** (0.018)	-14.366*** (0.000)
Year dummies	Yes	No	Yes	Yes	Yes	Yes
Sector dummies	Yes	No	Yes	Yes	Yes	Yes
Observations	91	91	1,380	1,380	1,879	1,879
Rho ( $\rho$ )	0.9771		0.9300	0.8906	0.8868	0.9168
Likelihood test	9.01** (0.001)		153.92*** (0.000)	153.40*** (0.000)	245.57*** (0.000)	377.51*** (0.000)

This table shows the results of regressions on compensation and shows gender pay gap for directors in the variable compensation and other compensation through probit panel data models. The dependent and explanatory variables were defined in Table 2. Probit panel data models, where the dependent variable is a binary variable equal to one if the director receives compensation and zero otherwise, were estimated through random effects for the first and last four regressions, while in the second regression a probit pool model was estimated to avoid convergence problems. The rho coefficient ( $\rho$ ) computes the percentage contribution to the total variance of the panel data structure. The likelihood test quantifies the significance of the convenience of the panel data model with respect to a pooled model. \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%.