Increasing Gender Diversity in Corporate Boards: Are Firms Catering to Investor Preferences?

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Abstract

Corporate board gender diversity has steadily increased in the past two decades yet there is no clear consensus on the benefit of a diverse board and what is driving this increase. We examine the determinants of the increasing female board representation in U.S. corporations. From 1998 to 2016, the proportion of firms with women on their boards doubled from 41 to 82%, and the percentage of female directors more than tripled from 5 to 16%. We show that the progress was driven by the increasing propensity of firms to add more female directors, rather than firm characteristics becoming more appealing to female directors. We test if catering can explain the changing propensity of board gender diversity. The results show that companies with gender diversified boards have higher market valuation premium, and the variation of this premium positively drives board gender diversity decisions. Our study suggests that the investor demand created by impact investing such as ESG can be a meaningful force in promoting good corporate behavior.

1. Introduction

Female representation in the boardroom has received increasing attention in the last two decades. Several countries have implemented regulation on quotas for a minimum representation of women on corporate boards. Israel was the first country to require at least one woman on the board of directors (Board of Directors) of publicly traded companies in 1999. This requirement was extended to a 50% quota in 2007 with a compliance date of 2010. Norway was the first to implement a gender quota in 2003, which required that public limited liability companies have 40% female board representation by 2009. Other countries that have instituted mandatory female representation quotas include Australia, Belgium, Canada (Quebec), Denmark, Finland, France, Iceland, Israel, Italy, Kenya, the Netherlands, and Spain (Catalyst, 2011). Many of these countries impose stricter penalties, while others like Spain, Finland and the Netherlands have established quotas, but with weaker or no penalties. Additionally, as a part of a binding European Union Directive from 2013, large financial firms in the EU are required to set a target for the number of women on their board of directors. In India, a new norm set in October 2014 by Securities and Exchange Board of India requires every listed company to have at least one female director on its board. Other countries with voluntary board diversity targets include Canada, Japan, the UK and the US.[1]

While in the US there is no regulatory mandate for the proportion of women directors in corporate boards, gender diversity has been promoted by gender diversity organizations and activist investors. A new initiative, 2020 Women on Boards, targets to increase the percentage of women on board of directors (women on board) to 20% by 2020.[2] CalPERS and CalSTRS, the two largest public

[1] For a full list of countries with legislative requirements, regulatory rules and voluntary targets on Board Diversity see http://www.catalyst.org/knowledge/increasing-gender-diversity-boards-current-index-formal-approaches
[2] See http://www.2020WOB.com

pension funds in the US, have funded Diverse Director Data Source to seek qualified female director candidates. Facebook invited Sheryl Sandberg to join its board after CalSTRS strongly urged the company to add a woman to its all-male board. In 2004, the Alliance for Board Diversity (ABD), a collaboration of four leadership organizations: Catalyst, The Executive Leadership Council, the Hispanic Association on Corporate Responsibility, and Leadership Education for Asian Pacifics, Inc. was established with the goal "to enhance shareholder value by promoting inclusion of women and minorities on corporate boards".

Anecdotal evidence as well as recent research (Dezso and Ross, 2012) have documented a steady increase in the representation of women on corporate boards and in top management in U.S. companies over the past two decades.[3] For example, McKinsey's statistics show that while in 2005 the top 25 performers on gender diversity had a share of women on board of slightly over 10%, by 2016 this share had grown to over 40%. We contend that if firms act as rational economic agents and make corporate decisions to benefit shareholders, then absent mandatory women on board quota increasing female share in the board of directors (Board of Directors) in the U.S. implies that there are shareholder benefits from greater representation of women directors.[4]

The evidence on the impact of board gender diversity on performance is mixed. Adams and Ferreira (2009) find that board gender diversity does not enhance firm performance after controlling for the omitted variable bias. Ahern and Dittmar (2012) analyze the impact of mandatory gender quota imposed on Norwegian companies and find that firm performance deteriorates post-implementation of the quota. In contrast, Schmid and Urban (2015) examine the impact of change in board composition induced by an exogenous event and find that women

[3] For example, see Deloitte and The Alliance for Board Diversity (2016) and McKinsey & Company (2016).
[4] In our data, the percentage of female directors has tripled over the period 1998 to 2016.

directors have positive valuation effect. Similarly, Ghosh et al. (2017) differentiate the impact of female CEOs versus female directors, and using a more comprehensive sample than previous studies, find that non-CEO female board directors have a positive impact on corporate performance.

The lack of consensus on the benefits of women directors is not surprising as female board representation may not be one solution that fits all. Notwithstanding the lack of consensus of empirical studies on the benefits of board gender diversity, our data, based on a sample of firms from the S&P 1500 index, reveal that publicly traded U.S. firms have steadily added female directors to their boards for the past one and a half decades. The proportion of firms with women on their board of directors increased during 1998 - 2016 from 41% to 82%, while the proportion of female directors for the same firms increased from 5% to 16%. While the increase in board gender diversity is not surprising given the backdrop of the evolving regulatory environment, and societal and investor demand around the world, the underlying drivers of this trend, i.e. what contributes to increasing board gender diversity in the U.S. remains unexplored. Since earlier research has found several firm characteristics can influence board gender diversity (e.g. Farrell and Hersch (2005)), we ask if the higher gender diversity is a natural outcome of changing firm characteristics over time, or are firms becoming more inclined to appoint women directors. And if the latter, is the trend the same for all firms, or driven by the companies that would potentially benefit from adding female directors.

To differentiate between the change in female board representation due to changing firm characteristics versus change in propensity to include women on board we follow Fama and French (2001) methodology. We set the first five years of our sample (1998-2002) as the base period and estimate the board gender diversity (women on board presence or share) as a function of the firm's characteristics. Next, for each year from 2003-2016 we predict board gender diversity by applying the averages of the coefficients estimated in the first stage over the base period to the firm characteristics in the respective year.[5] [6]We posit that the difference between the actual and expected percentage of firms with women on board for a given year measures the change in propensity to install women on corporate boards. We find that U.S. firms' propensity to add female directors increases over our study period, and that the improvement in board gender diversity derives largely from firms with previously no women on board adding a female director, rather than companies increasing their existing share of women on board. Further, the propensity to increase women on board contributes more to the rise of gender diversity in corporate boards as opposed to changing firm characteristics, both in firms adding women on board for the first time and those increasing the existing share of women on board.

Based on our finding that the rising propensity to have women directors is the main driver of increasing board gender diversity, we invoke catering theory (Fama and French, 2001) to argue that firms increase the share of women on board to cater to investors' demand for greater female board representation. We construct a measure of gender diversity premium using an approach similar to Baker and Wurgler (2004) definition of dividend premium. We base our measure on market-to-book equity ratio and control for industry effects. Since board director- ship data is available for a relatively short period of time, compared to dividend data, we are not able to perform time-series regressions as in Baker and Wurgler (2004). Instead, we follow Li and Lie (2006) framework and consider the decision to increase or decrease board gender diversity at the firm level. Our analyses reveal that when board gender diversity premium is positive, firms are

[5] As Ghosh et al. (2017) point out, female CEOs and female directors have separate influence over the operation of a firm, and the appointment of a female CEO is a separate decision process from the appointment of a female director. Therefore, we examine only non-CEO female directors. Given the small number of female CEOs, including them in the analysis does not change our results.
[6] Since the decision to have women on board involves self-selection, we address the endogeneity bias in determining the percentage of female directors using Heckman two-stage regressions.

more likely to add female directors, while when board gender diversity premium is negative, firms are more likely to replace female directors with male directors. We also consider how the gender diversity premium impacts the change in women on board, and a positive relation between the lagged gender diversity premium and the change in gender diversity. These results are consistent with the prediction of the catering theory applied to board gender diversity.

To our knowledge, this paper is the first to examine the underlying motivation for and benefits from increasing board gender diversity by employing the catering theory. Our study contributes to the literature by showing that firms are rationally increasing women on board share when the gender premium is positive, without a regulatory mandate on board female representation.

The remainder of the paper is organized as follows. In Section 2, we review the related literature. In section 3, we describe our data and present evidence of increasing board gender diversity over time. We discuss our empirical methodology and analyze the propensity of firms to increase board gender diversity in Section 4. In Section 5, we examine whether firms are catering to investor demands to increase board gender diversity. We conclude in Section 6.

2. Related Literature

The importance of gender diversity in modern corporations is a relatively new and fast- growing area of research. A large volume of academic and applied research has been devoted to examining the effect of gender diversity on firms' corporate decision making, performance and valuation.[7] A number of studies find a positive relation between female directors and performance/valuation (Carter et al., 2003; Carter et al., 2008; Erhardt et al., 2003; Dezso and Ross, 2012; Schmid and

[7] The practitioner literature generally builds their case for higher gender diversity in top management and boardroom through the positive correlation between better financial performance and gender diversity, such as in the studies by Catalyst (2011), Credit Suisse (2012), Credit Suisse (2014) and McKinsey's (2007).

Urban, 2015; Ghosh et al., 2017), while others fail to find a significant relation (Farrell and Hersch, 2005; Rose, 2007; Adams and Ferreira, 2009).[8] Post and Byron (2015) perform meta-analysis on 140 studies and find mixed empirical evidence on the impact of female board representation on firm performance.

Parsing out the true impact of board gender diversity on firms' financial performance is challenging. As Adams and Ferreira (2009) point out, the observed relation can be caused by gender diversity correlating with omitted firm-specific variables such as corporate culture. For example, a more progressive firm may perform better and have more female directors. Huang and Kisgen (2013) make a similar point in their study of female executives. Although using instrumental variables (IV) can address the causality issue, the IV approach identifies causality only under restrictive and often unrealistic assumptions (Ferreira, 2010). Two recent studies address reverse causality by using natural experiments where the passage of a law or an event triggers a shock to the system. Ahern and Dittmar (2012) take advantage of the Norwegian law enacted in 2003 imposing a 40% female quota on corporate boards and find that firms suffer a significant reduction in market value after adopting this quota.[9] On the other hand, using a large dataset of corporate boards in 53 countries, Schmid and Urban (2015) analyze stock market reaction to the exogenous departure of female board members due to death and illness. The authors find that the stock market reacts more negatively to this type of departures by female directors, with the effect being more intense when the departing women are replaced by men.

While existing research has focused on analyzing the impact of gender diversity, to our knowledge no empirical studies have examined the drivers of including female directors on the board and

[8] For a more detailed review, please see Ferreira (2010) and Ghosh et al. (2017).
[9] Ferreira (2010) notes that a weakness of Ahern and Dittmar (2012) study is the absence of a randomly chosen control group.

separated the propensity to install a female board member from the effect of changing firm characteristics. Our study aims to fill this gap. We follow the methodology developed by Fama and French (2001) in studying the phenomenon of disappearing dividends - the dramatic decrease in the proportion of firms that pay cash dividends over the period 1978-1999. The authors show that while part of this decline was attributable to a re- duction in the proportion of firms that shares the characteristics of dividend payers, firms' lower propensity to pay dividends was an equally important factor for the decline. Fama and French distinguish these two sources - changing firm characteristics and declining propensity to pay dividends - by first estimating a logistic model of the decision to pay dividends on a set of characteristics of dividend paying firms using data during the early years of their sample. Next, they use the coefficients from the logistic model to predict the percentage of dividend payers in subsequent years. The difference between the actual and predicted percentage of payers in subsequent years represents firms' propensity to pay dividends. The authors find that the reduction in the predicted percentage of payers is comparable to the reduction in the propensity to pay.

Baker and Wurgler (2004) further developed the idea of Fama and French (2001) and examined the firm's propensity to pay dividends as determined by the "dividend premium" in the market - the difference in market-to-book ratio between dividend payers and non- dividend-payers. They proposed a "catering theory of dividends" to argue that a firm's dividend decision reflects the firm's catering to investors' demand for dividend. By regressing the time-series of firm dividend decisions on the lagged dividend premium, the authors found that, consistent with their hypothesis, the decline in a firm's propensity to pay dividends is related to the changes in its dividend premium. Li and Lie (2006) provide a stronger test for the catering theory by extending Baker and Wurgler

(2004) method to the firm's decision to change dividends and find corroborative evidence for the catering theory.

We consider investor catering theory to be a potential explanation of firms' propensity to increase board gender diversity. We posit that the investor demand for women on board drives a wedge between the equity valuation of firms with women on board and firms with all-male boards. Thus, similarly to Li and Lie (2006), we argue that a firm favors increasing gender diversity when the valuation gap between boards with women and all-male Board of Directors - gender diversity premium - is high.

3. Data and Descriptive Statistics

3.1 Sample and variable construction

We obtain corporate board director data from the Institutional Shareholder Services (ISS, formerly RiskMetrics and Investor Responsibility Research Center, or IRRC) over the period of 1998 to 2016. IRRC started to collect director data for S&P 500, S&P MidCap, and S&P Small- Cap firms in 1996.[10] The universe covers around 1,500 firms. We collect data on the director's gender, insider status, and whether the director is also the CEO of the firm. We aggregate director-level data to firm-level to obtain board size, percentage of independent directors, number and proportion of female directors, and CEO duality. Firm size, profitability, and valuation variables are obtained from Compustat. We measure firm size as the natural logarithm of total assets, profitability as return on equity (ROE), and valuation as Tobin's Q. Book equity is computed as stockholder's equity plus deferred taxes, investment tax credit, less preferred stock.[11] Tobin's Q is measured as

[10] We start our sample in 1998 because the earlier data contains some errors. For example, the field of gender is the same for all directors in 1996.

[11] We use redemption value of preferred stock. When this data is not available we use liquidation value, or book value of preferred stock, in order of availability.

total assets minus book value of equity plus market value of equity at fiscal year-end, divided by total assets. Risk is measured as the volatility of monthly stock returns over the previous 60 months before the fiscal year end. We require that at least 12 months of return data for each firm is available in CRSP. Data on director compensation and female executives are collected from ExecuComp. We obtain director compensation following Farrell et al. (2008), who add cash, stock, and option components, and average the sum over all directors. Institutional ownership is obtained from Thomson Reuters Institutional (13f) Holdings' 34 master file, summed over all institutional owners for each firm and then normalized by shares outstanding.

Following Hermalin and Weisbach (1988) and Fich and Shivdasani (2006), we exclude regulated industries such as finance and utilities with SIC codes between 6000 to 6999 and 4900 to 4949. Firms in these regulated industries may have systematic differences in their board composition with non-regulated firms. Furthermore, to reduce the influence of small firms, we require our sample firms to be listed on NYSE, AMEX, or NASDAQ, and have book value of equity greater than $250,000 and book value of asset greater than $500,000.

3.2 Descriptive statistics and the characteristics of firms with women on board

After merging data from all sources, our primary sample contains 19,812 firm-years from 1998 to 2016. Table 1 reports the summary statistics. Panel A contains all firm-years; Panel B presents the statistics for firm-years with no female directors on board, while Panel C dis- plays the statistics for firm-years with at least one female director on board.[12] The average percentage of firm-years with at least one female director on board is 61.2%, and the average proportion of female representation on board is 9.8%. This is comparable to 8.5% of female representation on board

[12] Note that we exclude female CEOs serving on the board in our analysis. Including female CEOs does not change materially our results.

seats in Adams and Ferreira (2009) from an earlier time period. Given that the percent of women in the labor force was approximately 57.2% (U.S. Bureau of Labor Statistics, 2013) the proportion of women on corporate boards under-represents women's participation in the labor market by a large margin.

Comparing the firm characteristics in Panels B and C, we note that firms with at least one female director have larger boards than firms with no female director. This is consistent with the notion that a large board can accommodate more gender diversity than a smaller one. We note, that firms with women on board are also larger. Larger firms are more likely to attract female directors. However, the univariate relation may reflect both the link between larger firms and larger boards, and the potential that larger firms, being more visible, are under greater pressure to promote gender equality. The average director compensation is approximately 43% higher for boards with women, which could be a result from larger firms paying higher compensation on average. The Equality Index proposed by Sugarman and Straus (1988) shows that firms with diversified boards are more likely to be headquartered in states that enjoy better gender equality.[13] We found firms have women on board averages slightly higher equality index. Among firms with female directors, 33.7% also have female executives, whereas the corresponding number for firms without women directors is only 22.4%. We observe a higher percentage of independent directors in firms with women on their boards (75.2% vs. 66.6%), which suggests that women are more likely to serve as independent directors, a pattern also noted by Farrell and Hersch (2005). The higher institutional ownership in

[13] Sugarman and Straus (1988) assign scores to gender equality in the economic, political, and legal spheres of life in each of the 50 U.S. states. The scores are combined to create an overall gender equality index, with a minimum of 19.2 and a maximum of 59.9, indicating a low or high gender equality, respectively. Following Huang and Kisgen (2013), we assign a gender equality index value to each firm, equal to the score of the state in which the firm is headquartered.

firms with gender-diverse boards is indicative of institutions' preference for boards with more female directors (Ferreira, 2010).

In our sample, profitability, measured by ROE, of firms with women on board is 37.8%, as opposed to 26.2% for firms without female directors. This result could be a reflection of profitable firms attracting female directors to their boards. Alternatively, gender diversity could lead to increased profitability. We find that Tobin' Q is slightly higher for firms without female directors (2.05 vs. 1.96), consistent with Adams and Ferreira (2009). Finally, the return volatility of firms with women directors is 0.380, vs. 0.493 for firms with all male boards. This is consistent with the notion that women are risk averse and they either choose to work for safer companies, or their influence induces managers to make less risky decisions.[14]

3.3 The time trend of board gender diversity and firm characteristics

Figure 1 depicts the time trend of firms with female directors and percentage of women on board over the period examined. Not only an increasing number of firms have appointed women on their boards, but they have also chosen to have more women in the board room. In 1998, 41% of the firms in our sample had female directors, and the average percent of women on corporate boards was 5%. These numbers increased steadily over the years. By 2016, 82% of the firms had at least one female director and the share of women on corporate boards became 16%. In comparison, Schmid and Urban (2015) report that the average proportion of women on corporate boards in their international sample increased from below 8% in 1998 to around 9% in 2010.

[14] The higher degree of risk aversion for women than men has been established in several studies. See for example Jianakoplos and Bernasek (2007), Byrnes et al. (1999), Eckel and Grossman (2008), Croson and Gneezy (2009) and Arano et al. (2010).

In Table 2, we report the average (panel A) and median (panel B) firm characteristics over four time periods for firms with (Y) and without (N) women on board. The first period is the first five years (1998 – 2002) used as the base period. The rest of the years are divided into three intervals (2003 - 2007, 2008 - 2012, and 2013 -2016). The reported statistics show that the mean (median) percentage of female directors among firms with women on board has increased steadily from 13.5% (11.1%) in 1998-2002 to 18.3% (16.7%) in 2013 - 2016. This increase implies that the increasing board gender diversity cannot solely driven by tokenism because firms would not have chosen to increase the number of female directors for tokenism.

Further examining the results in Table 2, several firm characteristics have exhibited persistent change over the four time periods. The means and medians of director compensation, proportion of firms with female executives, percentage of independent directors, and institution ownership have all experienced double-digit increase, while stock price volatility has double digit decrease. These firm characteristics are found to be positively correlated with firm's decision to add a female director (Farrell and Hersch, 2005). For example, increasing female executive share represents an increased labor pool for female directors. Similarly, in- creasing director compensation could attract competent female professionals to consider a director job. The overall decrease of firm risk is also more attractive for risk-averse female directors. These results suggest that changing firm characteristics can be a contributing factor to the increase of board gender diversity over time.

3.4 The time trend of board gender diversity by industry

Conventional wisdom and several studies reveal that different industries introduce a significant source of heterogeneity for board gender representation (e.g. Ferreira, 2010). Our data support this notion. In Figure 2 we plot the proportion of firms with women on board over 1998-2016 for the 12 industry groups identified by Fama and French. The evolution of board gender diversity for each industry shows large variation. For example, in the Business Equipment industry, the proportion of firms with female directors tripled from 25% to 76%. Although Energy remains the industry with the lowest proportion of firms with female directors, women board representation among energy firms still nearly doubled from 33% to 65%. One noteworthy observation is that, although there are large differences among industries in terms of the proportion of firms with women on board, this dispersion has been shrinking over the years. The bars show that the cross-industry standard deviation of the percentage of firms with women on board has decreased over the years. This decrease indicates that the improvement in board gender diversity is not limited to a few industries, but rather represents a broad cross-industry phenomenon, including industries such as manufacturing and energy with a traditionally low female representation.

In Figure 3, we plot the time trend of the average percentage of female directors on board by industry. Similarly to the trend in Figure 2, we observe that all industries have made improvements in gender diversity by adding more female directors. Business Equipment leads the increase in the proportion of female directors, going from a share of a meager 3% to 14%, almost a five-folds increase. A similarly large increase in the share of females on corporate boards is seen in Shops and Durable Goods. Although the increasing pattern of the share of women is similar to that of the increase of women board representation (having at least one female on board) we do not observe a convergence in the average percentage of women on board across industries. The dispersion in the percentage of female directors remains relatively stable over the entire period, with a noticeable downward trend only in the last few years. In summary, although all industries have increased their female board representation, the large variation of women on board among industries indicates that controlling for the industry effect is meaningful when we examine the determinants of board gender diversity.

4. Firm Propensity to Increase Board Gender Diversity

In this section, we investigate firms' propensity to increase the proportion of female directors. We perform three sets of Fama-MacBeth-style annual regressions on the cross-section of firms to obtain the time-series of coefficients on attributes that influence a firm's decision to increase board gender diversity. Based on the summary statistics and previous literature findings, we predict that board size, directors' compensation, the percentage of independent directors, Equality Index, log of total assets, ROE, and Tobin's Q are positively related to female directors' representation, while stock return volatility, and momentum are negatively related to female directors' representation. We do not include the lagged board gender diversity similarly to the approach in Fama and French (2001) where their model of dividend decisions does not include lagged dividends; rather, they estimate the regression model over the equilibrium states of firms in which utilities are maximized with the firm characteristics contemporaneously available. This model differs from the one in Farrell and Hersch (2005) where they analyze how a typical firm transit from the previous equilibrium to a new one based on the firm characteristics available in the previous state.[15]

We use 1998-2002 as our base period and estimate the board gender diversity (women on board presence or share) as a function of the firm characteristics discussed. Next, for each year from 2003-2016 we predict board gender diversity by applying the averages of the coefficients estimated in the first stage over the base period to the firm characteristics in the respective year. The difference between the actual and the predicted board gender diversity captures the change in the propensity to embrace board gender diversity. Like the Fama and French (2001) model of changing

[15] In our board gender diversity change regressions in Section 5, we include lagged board gender diversity measures because the intuition behind modeling the change in gender diversity is the same as Farrell and Hersch (2005).

dividend policy, our approach allows us to separate the shift in board gender diversity due to changing firm characteristics from the change in propensity to appointing female directors.

4.1 Modeling the choice of having women on board

We estimate annual logistic regressions determining the probability of a firm having a female director and include as explanatory variables board size, director compensation, Equality In- dex, percent of independent directors, institutional ownership, natural logarithm of total as- sets, price momentum, return-on-equity (ROE), Tobin's Q, and stock return volatility.[16] Based on extant literature and univariate analyses, we expect all of the above independent variables except stock return volatility to have positive coefficients. We estimate the following model:

$$logit(FD_{i,t}) = a_t + b_t X_{i,t} + c_t Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $FD_{i,t}$ indicates whether the firm i has women on the board in year t. $X_{i,t}$ are the firm characteristics, and $Z_{i,t}$ are the industry dummies.

Table 3 reports the coefficients from the above annual logistic regressions. The dependent variable is FD, an indicator variable equal to one if the firm has at least one female director during the year. For each of the six periods, we report the average of the annual coefficients estimated from the model. We note that over the entire period (1998-2016), board size, equality index, percent of independent directors, firm size (log of total assets), ROE and stock return volatility have the predicted signs and are statistically significant at conventional levels. These results persist in the four sub-periods, with the exception of stock return volatility, which is insignificant during the latter two periods. In un-tabulated results, we find that Tobin's Q is positive and significant when

[16] We exclude percent female executives in the regression because a female director can also be an executive, which causes a mechanical correlation.

industry dummies are not included in the model, which suggests that the impact of Tobin's Q on gender diversity is an industry effect. Finally, we also control for industry effects by including indicator variables for different industry groups, with the comparison group being "other" industry. The coefficients on industry dummies suggest that in the cross-section, the probability to have women on board is significantly lower for firms in Consumer Durables, Manufacturing, Energy, Business Equipment and Telecommunication. In contrast, the probability of having female directors is significantly higher for firms in Consumer Non-Durables, Shops, and Healthcare.

4.2 Ordinary least square regressions determining the percentage of female directors

Given the share of women in the workforce and in executive positions, having only one female director on the Board of Directors may be a symbolic gesture rather than a genuine attempt to enhance board gender diversity. Torchia et al. (2011) find that having one female director as a token fails to enhance innovation. In contrast, a positive relationship between female directors and performance is observed in firms with three female directors. We model the determinants of the share of women on board using the following OLS model:

$$PFD_{i,t} = a_t + b_t X_{i,t} + c_t Z_{i,t} + \varepsilon_{i,t} \quad (2)$$

where the dependent variable $PFD_{i,t}$ is the proportion of female directors on board, and $X_{i,t}$ and $Z_{i,t}$ are firm characteristics and industry dummies. We use the same set of independent variables as in the model for the number of female directors.

Table 4 reports the Fama-MacBeth coefficients from the annual OLS regressions determining the percentage of female directors. The results regarding firm characteristics are similar to those reported in Table 3. Specifically, firms with larger boards and greater asset base, headquartered in states with high Equality Index scores, larger percentage of independent directors, and higher profitability are associated with a larger share of women on board. Further, comparing the industry coefficients with the logistic regressions, we note that the results remain consistent for all sectors.

4.3 Heckman two-stage regressions

Since a significant proportion of firms do not have any female directors on their board, OLS regression estimates based on the entire cross-section of firms would underestimate the proportion of female directors for the firms that have women on board. On the other hand, OLS estimates based only on firms with female directors may suffer from selection bias as the decision to add female directors may be endogenous. In this subsection, we use a Heckman selection model to test if the endogeneity is significant. The first-stage regression uses a pro- bit model to determine the probability for a firm to have at least one female director. The second-stage regression is formulated as follows:

$$PFD_{j,t} = a_t + b_t X_{j,t} + c_t Z_{j,t} + \lambda_t M_{i,t} + \epsilon_{j,t} \quad (3)$$

where PFD, X and Z are defined as before, but the firm index j only represents firms with women on board. $M_{j,t}$ is the inverse Mills ratio computed from the first-stage regression.

The average coefficients from the second-stage Heckman OLS regressions for different time periods are reported in Table 5. The inverse Mills ratio is significant, indicating the importance of addressing selection bias in our analyses. All previously significant firm characteristics (with the exception of board size) - state-level economic, political and legal gender equality (captured by the gender Equality Index), proportion of independent directors, size, profitability and risk remain important determinants of the proportion of female directors. The industry effects remain similar, as well.

4.4 The propensity for board gender diversity

To capture the propensity for board gender diversity we use the obtained average coefficients, estimated over our base period of 1998 to 2002 using logit, OLS and Heckman selection models and reported in column 2 of Tables 3 to 5, respectively, to predict the following annually from 2003-2016: (1) the percentage of firms with at least one female director; (2) the per- centage of female directors; and (3) the percentage of female directors when accounting for sample-selection bias.[17] [18] Following this method, the predicted percentage (of FD, PFD or PFD accounting for endogeneity) captures the effect of changing firm characteristics on board gender diversity, whereas the difference between the actual and predicted percentage represents firms' propensity to change board diversity. The actual versus predicted values, based on the logit, OLS and Heckman selection models are reported in Table 6, Panels A, B and C, respectively. We also report the p-values from the two-sample t-test of equality of actual and expected board diversity measures. Figure 4 displays graphically the expected and unexpected portion of the board gender diversity over time.

In Panel A of Table 6, we find that the proportion of firms with women on board increased from 55.3% in 2003 to 82.1% in 2016, which represents a 26.8% increase over the entire period. The change in the expected proportion based on changing firm characteristics over the same period increased from 47.5% to 63.2%, which represents a 15.7% increase. The unexpected change is the

[17] Using an alternative (shorter or longer) base period does not change our results. The models in Tables 3-5 are estimated based on the same set of variables to ensure the same set of firm characteristics are used but restricting only to the significant ones for each model does not change our results.
[18] The inverse Mills ratio used in the second-stage regression with the Heckman selection model is estimated from the first-stage probit regression. We re-compute the inverse Mills ratio with the base period coefficients and plug the expected inverse Mills ratio in the second-stage OLS regression. Using the actual inverse Mills ratio estimated from the original first-stage probit model does not change our results.

difference between actual change of less the expected change, which is 11.1%, making up 41.3% of the actual increase of board gender diversity.[19] [20]

In figure 4A, we plot the expected vs. unexpected share of firms with FD over time. The total in each year sums up to the actual percentage of firms with FD. The increasing unexpected percentage of firms with female directors over time indicates an upward trend in the propensity to have women on board.

In Panel B of Table 6, we present the estimates when we extend the Fama and French (2001) methodology to the proportion of female directors (PFD). As previously noted, the actual percentage of female directors has increased from 8.1% in 2003 to 15.6% in 2016. The expected percentage went from 6.4% to 8.8%, which leaves the majority of the increase to the unexpected component, representing the higher propensity to increase the proportion of female directors. The p-values of the two-sample t-test indicate these propensity estimates are significantly different from zero. Figure 4B depicts these results graphically. The increasing trend in the unexpected portion of the percentage of female directors is even more striking than the trend reported in Figure 4A.

Finally, in Panel C in Table 6, we find that conditioning on firms with women on board, the percentage of female directors increased from 14.6% of 2003 to 19% of 2016. This increase is at

[19] If we treat the actual and the expected percentage observations as two independent samples for each year, the p-values for the two-sample t-tests indicate that their means are significantly different. We also conducted Wilcoxon rank sum tests and the results are highly significant.

[20] In untabulated results, we compare the expected percentage (of FD, PFD, or PFD accounting for endogeneity) in year t, computed with the estimated coefficients in year t with the expected percentage, obtained by applying the average coefficients estimated over the base period. The expected percentage based on the current year's estimates incorporates both changing firm characteristics and propensity to increase board gender diversity. Therefore, this test can provide insight on the significance of the propensity component of the realized percent- age of firms with female directors. We can relax the independence assumption in this case and use paired t-tests. The p-values from the paired t-tests are also well below the conventional level.

a much slower pace.[21] This suggests that our results in Panel B are driven mostly by firms adding female directors for the first time. The expected percentage of female directors increased from 13.6% to 14.3%, which leaves most of the actual increase to the propensity of adding female directors. The reported two-sample t-test p-values show that the propensity estimates are significant. Figure 4C visually confirms the muted time trend of increasing proportion of female directors for firms with women on board.

In summary, in Table 6 by decomposing the increasing trend in board gender diversity over 1998-2016 we provide evidence that the larger share of this increase is driven by the growing propensity to increase board gender diversity, as opposed to changing firm characteristics. This finding implies that board gender diversity is beneficial to firms, which adds to the existing literature on board gender diversity.

5. Are Firms Catering to Investor Demands?

Based on the evidence of firm increasing propensity to hire female directors, we stipulate that the firm's decision to hire women to serve on their board is driven in part by the investors' de- mand for greater gender diversity, which in turn induces greater diversity premium for firms with more diverse boards. Our hypothesis is similar in spirit to that of Baker and Wurgler (2004) who invoke the catering theory to argue that managers tend to pay dividends when the market puts a relatively high premium on dividend-paying stocks and omit dividends when investors prefer non-dividend-paying stocks, such that dividend payments follow the time-varying pattern of the dividend premium. Li and Lie (2006) extend the catering theory to show that firms are more likely to increase dividends when the dividend premium is high and more likely to reduce dividends and

[21] Note that the annual actual percentages of female directors in Panel B and C are different, since the statistics in Panel C are based only on firms with at least one female director.

repurchase shares when the dividend premium is low. Baker et al. (2009) characterize catering as the managerial behavior of increasing (decreasing) the supply of an attribute that investors are (not) willing to pay a premium for, notwithstanding the fact that the attribute may not enhance fundamental value. Notable studies that invoke this concept to explain managerial decisions include earnings management (Rajgopal et al., 2010), stock market mispricing and investment decisions (Polk and Sapienza, 2009) and managing nominal stock price (Baker et al., 2009).

As previously noted, the society as well as investors are pressuring firms to increase board gender diversity. The regulatory climates in many countries are rapidly shifting towards more female directors, leading to firms facing increasing societal, investor, and regulatory demand for board gender diversity. Although there is yet no directly adverse regulatory consequences for U.S. firms with all-male boards, investors' preference for female directors could boost (put pressure on) the valuation of firms with diversified (non-diversified) boards. We hypothesize that if firms cater to the valuation premium rewarded to firms with women on board, firm decision to add more female directors would depend on the variation of board diversity premium both at the industry and market-wide levels.

5.1 Gender diversity premium

Our empirical design is motivated by Li and Lie (2006) who extend Baker and Wurgler (2004) study and provide significant evidence that dividend changes are driven by the dividend premium. Because the data on board characteristics do not go back far enough (our sample contains 19 years of data), we cannot use time-series regressions as in Baker and Wurgler (2004). Furthermore, the proportion of firms with women on board increases slowly but gradually over time, and this lack of variation can lead to spurious regressions. To improve the power of test, we investigate the relation between the change in board gender diversity and the gender diversity premium, analogous to Li and Lie (2006) for dividend payout decisions.

Since female directors' representation varies across industries, we first measure the gender diversity effect at the industry level by computing for each industry the difference in valuation between firms with and without female directors. We define the industry level gender diversity premium, GEN D_P R_IN D, as the difference in the natural logarithm of the value-weighted market-to-book equity ratio (M/B) of all firms with female directors and the natural logarithm of value-weighted M/B of all firms with no female directors in a given industry each year. To derive a market-wide gender diversity premium and reduce the impact of skewness caused by large differences in gender diversity across industries, we obtain the median of the gender diversity premiums across all industries each year. This constitutes our measure for market-wide gender diversity premium, GEND_PR.

$$\text{GEND\_PR\_IND}_{k,t} = \ln\left(\sum_{i=1}^{n} \omega_{i,t} M/B_{i,t}\right) - \ln\left(\sum_{j=1}^{m} \omega_{j,t} M/B_{j,t}\right) \quad (4)$$

$$\text{GEND\_PR}_{t} = \text{Median}\left(\text{GEND\_PR\_IND}_{k,t}\right) \quad (5)$$

where n is number of firms with female directors and m is number of firms without female directors in a given industry, and ω is the weight.

In addition to value-weighting, we also consider computing the gender diversity premium by equal-weighting market-to-book equity ratios of firms with and without women on board. The value-weighted gender diversity premium captures the average premium investors pay for each unit of capital with women on board, whereas the equally-weighted metric captures the premium per firm. We think both weighting schemes have their merit in representing the societal demand for gender diversity. Furthermore, some industries have very skewed market capitalization distribution. By using equal-weighting, we reduce the influence of a few large firms. Therefore, we exam both versions of gender diversity premium.

The time-series of the two versions of gender diversity premium measures are reported for the main industry groups in Table 7. We color code annual changes of the gender diversity premium; colors change from red to green (and vice versa) as the premium goes from low to high (and vice versa) each year. We note that the value-weighted market-wide gender diversity premium measure is positive throughout the sample period, and the equal-weighted measure is positive in all years except 2009. The positive valuation premium of firms with women on board is consistent with the increasing trend of board gender diversity. The average value-weighted (equal-weighted) market-wide premium is 21.5% (17.5%) in the logarithmic term, equivalent to 24.0% (19.1%) valuation premium in market-to-book equity terms. The consistently positive gender premium represents the perceived benefit that induces firms to embrace gender diversity in their boards.

Since we do not have a sufficiently long series of data to estimate the regression coefficients for propensity for gender diversity on lagged diversity premium, we compute the time-series correlation between the lagged gender diversity premium and the three propensity measures from Table 6. The correlation coefficients are 0.43, 0.46, and 0.49 for the lagged value-weighted premium and 0.46, 0.49, and 0.51 for the equally-weighted measure. These correlation coefficients suggest a positive association between diversity premium and firms' propensity to increase board gender diversity.

5.2 Board gender diversity changes

In Table 8 we present the lagged market-wide gender diversity premium and the proportion of firms that have changed their board gender diversity in seven different categories. More specifically, for each firm with a gender diversified board in year t, we compare its percentage of female directors versus the year before. If this percentage is lower than the previous year, we label it as “Diversity Decreasing". If it is higher, it is “Diversity Increasing", and if no change, it is "Diversity Unchanged". Then we divide the number of firms in each of these three categories by the total number of firms in our sample, which includes firms with no female directors in year t. On average, 15.5% of the firms in our sample decrease their board gender diversity, 25.9% maintain the level of their board gender diversity, and 21.6% of firms increase their board gender diversity each year.

Since the percentage of female directors can change due to gender irrelevant decision, we need to further distinguish among gender diversity increases and decreases. To see why this is important, consider a situation when a male director retires/leaves the board and his seat remains unfilled at the time of filing the proxy statement. The percentage of female directors increases because the board size is smaller, but this increase is not due to a deliberate decision to increase board gender diversity. In this case, we classify this board gender diversity change as “Passive Increase". Similarly, a decrease in gender diversity can be the result of a female director leaving the board without a replacement by proxy filing, hence a “Passive Decrease". When the gender diversity increase (decrease) is caused by adding a female (male) director instead of a male (female) director, we define this as “Active Increase (Decrease)". By further differentiating between “active" and “passive" board gender diversity change, we can be surgical in our analysis of the impact of board gender diversity premium on board gender diversity change.

The proportions of these four refined gender diversity change categories are reported in Table 8. On average, among all 15.5% of firms with decreasing board gender diversity, 2.7% of them can be considered as “active", and 12.9% are “passive". Among the 21.6% of firms increasing board gender diversity, 19.9% of them are “actively" doing so, and only 1.7% are “passively" increasing gender diversity. The asymmetric split between board gender diversity increases and decreases demonstrates that the overall improvement in board gender diversity mostly comes from firms adding female directors instead of male directors, which is consistent with firm’s increasing propensity of board gender diversity.

5.3 Catering and board gender diversity decisions

We examine if catering plays a significant role in firm board gender diversity decisions. Similar in spirit to Li and Lie (2006), we run multinomial logistic regressions on two sets of firm board gender diversity decisions. The first set considers the broad definition of gender diversity increase and decrease versus no change. The dependent variable is noted as BGD_CHANGE. The second set uses the more refined active versus passive increase and decrease, noted as BGD_CHANGE_TYPE. We regress the logit of these decisions on the set of explanatory variables along with our gender diversity premium measures. Our set of independent variables are similar to what we use in the cross-sectional regressions to deter- mine board gender diversity, but we lag all the independent variables. The specifications of our models are:

$$logit(C_{i,t+1}) = a_t + b_t X_{i,t} + c_t GI_{i,t} + \varepsilon_{i,t} \qquad (6)$$

$$logit(C_{i,t+1}) = a_t + b_t X_{i,t} + c_t Z_{i,t} + d_t G_t + \varepsilon_{i,t} \qquad (7)$$

where $C_{i,t+1}$ represents BGD_CHANGE or BGD_CHANGE_TYPE. $X_{i,t}$ and $Z_{i,t}$ are lagged firm characteristics and industry dummies, respectively, and $GEND\_PR\_IND_{i,t}$ and $GEND\_PR_t$

are the lagged industry-level and lagged market-wide gender diversity premium, respectively. In addition to the previously discussed firm characteristics, we also control for the lagged female directors share and lagged presence of female directors. We include the lagged proportion of female directors, because changes in board gender diversity are state-dependent (Farrell and Hersch, 2005) and firms with a high proportion of female directors are less likely to add more of them. Similarly, we include a lagged presence of female executives, to account for the possibility of firms with female executive being more likely to install women on their boards. However, if female executives substitute for female directors to satisfy the intended change in gender diversity, the existence of female executive may deter addition of female directors. Overall, the influence of female executives is an empirical issue.

The results are reported in Table 9. Panel A (C) reports the regression coefficients with the value-weighted (equally-weighted) industry-level gender diversity premium as an explanatory variable, and Panel B (D) uses the value-weighted (equally-weighted) market-wide gender diversity premium, along with industry dummies for the industry fixed effect. Columns (1) and (2) are based on the multinomial logistic regression of firm “increase" versus “decrease" board gender diversity decisions, whereas columns (3) to (6) capture more refined decisions by separating “active" versus “passive" for increasing and decreasing board gender diversity changes. Industry dummies are suppressed in the table for brevity.

The main variable of interest is the gender diversity premium, captured by the value- weighted and equally-weighted GEND_PR_IND and GEND_PR. Based on the catering theory, we expect that board gender diversity premium to negatively (positively) drive the decision to decrease (increase) in board gender diversity. Focusing on the coefficient for gender diversity premium, we find strong evidence that gender diversity premium is positively related to board gender diversity increases in all versions of the gender diversity premium measure, as shown in column (2). By separating passive versus active diversity increase, we find that the active increase decision is most significantly related to gender diversity premium, as in column (6). Only the industry-level gender diversity premium is significantly related to passive increase decision (column (5) in panel A and C). For the board gender diversity decrease decision in column (1), we find both positive and negative coefficient on various measures of board gender diversity premium, but none of them is significant. Further partition the decrease decisions to columns (3) and (4) for active and passive decreases, we find board gender diversity premium is negatively related to active decreases but insignificant for passive decreases. These results are broadly consistent with the predication of the catering theory, especially in firm's decision to replace a director with different gender.

The coefficients of the other control variables are intuitive and in conformity with extant evidence. For example, our results show that firms tend to increase board gender diversity with large board, if located in states with higher Equality Index, and with more female executives. The lagged percentage of female directors on board (FEMALE_PERCENT) shows significant negatively (positive) relation to firm's decision to increase (decrease) board gender diversity. This seems to suggest that tokenism still plays some role here.

5.4 Catering and the magnitude of board gender diversity change

Finally, we test if the magnitude of change in board gender diversity is influenced by the catering incentive. We define two measures for the magnitude of change: (1) the change in the share of female directors from the previous year; and, (2) the change in the number of female directors from the previous year divided by the board size in the previous year. We regress these variables on the set of firm characteristics previously identified, including the industry or market-wide gender premium as a control variable, with the following specifications:

$$CH_{i,t+1} = a_t + b_t X_{i,t} + c_t GI_{i,t} + \varepsilon_{i,t} \quad (8)$$

$$CH_{i,t+1} = a_t + b_t X_{i,t} + c_t Z_{i,t} + d_t G_t + \varepsilon_{i,t} \quad (9)$$

where $CH_{i,t+1}$ represents the magnitude of change in board gender diversity from year t to t + 1, X_t and Z_t are lagged firm characteristics and industry dummies, $GEND\_PR\_IND_t$ is the lagged industry-level gender diversity premium, and $GEND\_PR_t$ is the lagged market-wide gender diversity premium.

In Table 10, we report the regression coefficients for equation (8) in panel A (C) for value-weighted (equally-weighted) gender diversity premium measures. Coefficients for equation (9) are reported panel B and D. We test the significance of these coefficients by using heteroskedasticity and autocorrelation consistent standard errors. The catering theory implies that the change in board gender diversity is directly related to the diversity premium. All four versions of gender diversity premium have significant positive coefficients, indicating that board gender diversity premium strongly drives the magnitude of board gender diversity change.

5.5 Discussion

Our results show that both firm board gender diversity decisions and the magnitude of board gender diversity change are influenced by firm gender diversity premium, constructed as the firm equity valuation difference between firms with women on board and firm without women on board. We favor the interpretation of the catering theory, but an anonymous referee argues that it is possible that our results merely reflect the positive correlation between firm performance and diversity. Our empirical analysis specifically controls for firm performance by including ROE, price momentum, Tobin's Q and return volatility, which are more direct measure of firm performance than our gender diversity premium measure. Furthermore, our results also show significant negative correlation between active board gender diversity decrease decision and board gender diversity premium. This is more consistent with the catering theory than the explanation from the referee because firms do not have to reduce board gender diversity when performance is poor.

6. Conclusion

Board gender diversity has been at the front and center of corporate finance issues amid a global movement advocating for gender equality. We document a consistently growing representation of women on corporate boards over time and provide evidence that this increase in board gender diversity is driven by the increasing propensity of firms to install female directors on their boards, rather than changing firm characteristics. If we believe firms are rational economic agents, their willingness to appoint more women on board should be the result of maximizing shareholders' utility. We investigate if catering can be one of the incentives for firms to improve board gender diversity. The catering incentive is consistent with the external pressure put on firms by investors, which can drive up the difference in the valuation of firm equity between firms with and firms without women on board. Our results are supportive of the catering explanation, which offers a new angle to understand firm gender diversity decisions.

In all, our paper makes important contribution to the literature. It is the first one to document the increased propensity of firms to install female directors and to present evidence that this trend is driven by firms catering to the investors' demand for more women on corporate boards. Furthermore, our results demonstrate that firms are reacting to calls for more women on board even without quota-based policy initiatives. Investors' demand has a positive impact on the gender diversity decisions firms make.

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Table 1: Descriptive statistics

Table 1 provides descriptive statistics of the data used in the analysis. In Panel A we present data for all firms, while in Panels B and C we present the statistics for firms without and firms with female directors, respectively. *FEMALE_DIR* is an indicator variable equal to one, if the firm has at least one female director, and 0 otherwise. *FEMALE_DIR_PCTG* is the number of women on board divided by the board size. *BOARD_SIZE* is the number of members in the board of directors. *DIRCOMP* is the logarithm of the average of total cash, stock, and option compensation paid to the directors plus one. *EQUALITY_INDEX* is a state-level gender Equality Index following Sugarman and Straus (1988) and measuring economic, political and legal gender equality. *FEMALE_EXEC* is an indicator variable equal to one, if the firm has at least one non-CEO female executive, and zero otherwise. *INDEP_DIR_PCTG* is the number of independent directors divided by the size of the board. *INSTOWNER* is the percentage of shares owned by institutional investors. *LNTA* is the natural logarithm of firm's total assets. *MOMENTUM* is the cumulative firm stock returns over the previous 12 months. *ROE* is firm's EBITDA divided by book equity, where book equity is measured as shareholder's equity plus deferred tax and investment credit, less preferred stock. *TOBINSQ* is the market value of assets divided by book value of assets, where market value of assets is given by total assets minus book value of equity plus market value of equity. *VOL* is measured as monthly stock return volatility over the previous 60 months. *DIRCOMP*, *INSTOWNER*, and *VOL* are winsorized at 99%, and the rest of the financial variables are winsorized at 1% and 99%. *DIRCOMP* and total assets are inflation adjusted and are in 2003 dollars.

Variable	N	Mean	STD	Min	Median	Max
Panel A: All firms (ALL)						
FEMALE_NONCEO_DIR	19812	0.61	0.49	0.00	1.00	1.00
FEMALE_NONCEO_DIR_PCTG	19812	0.10	0.10	0.00	0.10	0.67
BOARD_SIZE	19812	8.97	2.28	3.00	9.00	25.00
DIRCOMP	18943	4.65	0.84	0.00	4.81	7.10
EQUALITY_INDEX	19691	43.65	8.20	19.20	44.30	59.90
FEMALE_NONCEO_EXEC	19812	0.29	0.46	0.00	0.00	1.00
INDEP_DIR_PCTG	19812	0.72	0.16	0.00	0.75	1.00
INSTOWNER	19812	0.75	0.20	0.00	0.78	1.31
LOGAT	19812	7.40	1.49	4.39	7.23	11.80
MOMENTUM	19812	0.13	0.47	-0.90	0.08	4.24
ROE	19787	0.33	0.35	-0.93	0.28	4.51
TQ	19812	1.99	1.36	0.57	1.59	14.78
VOL	19812	0.42	0.19	0.13	0.38	1.67
Panel B: Firms with no female directors on board (N)						
BOARD_SIZE	7681	7.75	1.87	3.00	7.00	20.00
DIRCOMP	7113	4.42	0.99	0.00	4.56	7.10
EQUALITY_INDEX	7636	43.47	8.65	19.20	44.30	59.90
FEMALE_NONCEO_EXEC	7681	0.22	0.42	0.00	0.00	1.00
INDEP_DIR_PCTG	7681	0.67	0.17	0.00	0.71	1.00
INSTOWNER	7681	0.72	0.22	0.00	0.76	1.31
LOGAT	7681	6.72	1.18	4.39	6.60	11.64
MOMENTUM	7681	0.13	0.55	-0.90	0.06	4.24
ROE	7669	0.26	0.28	-0.93	0.24	3.35
TQ	7681	2.05	1.54	0.57	1.58	14.78
VOL	7681	0.49	0.21	0.14	0.44	1.67
Panel C: Firms with female directors on board (Y)						
FEMALE_NONCEO_DIR_PCTG	12131	0.16	0.07	0.04	0.14	0.67
BOARD_SIZE	12131	9.75	2.17	4.00	10.00	25.00
DIRCOMP	11830	4.80	0.69	0.00	4.92	7.10
EQUALITY_INDEX	12055	43.76	7.90	19.20	44.30	59.90
FEMALE_NONCEO_EXEC	12131	0.34	0.47	0.00	0.00	1.00
INDEP_DIR_PCTG	12131	0.75	0.15	0.00	0.78	1.00
INSTOWNER	12131	0.77	0.19	0.00	0.79	1.31
LOGAT	12131	7.83	1.50	4.39	7.70	11.80
MOMENTUM	12131	0.13	0.41	-0.90	0.10	4.24
ROE	12118	0.38	0.38	-0.93	0.30	4.51
TQ	12131	1.96	1.24	0.57	1.59	14.78
VOL	12131	0.38	0.16	0.13	0.35	1.67

Table 2: Sample firm characteristics over time

Table 2 provides summary statistics of our sample firm characteristics over the five sub-periods identified for all firms (ALL), firms without (N) and with (Y) female directors on their boards. In Panel A we present mean values for each firm characteristic, while in Panel B we provide median statistics for the same characteristics. All variables are as previously defined in Table 1.

Variable	Women on Board	1998-2002	2003-2007	2008-2012	2013-2016
	Panel A: Mean characteristics				
FIRMS	ALL	5743	4820	5138	4111
	N	3122	1948	1712	899
	Y	2621	2872	3426	3212
FEMALE_NNCEO_DIR_PCTG	ALL	0.06	0.09	0.11	0.14
	N	0.00	0.00	0.00	0.00
	Y	0.13	0.15	0.16	0.18
BOARD_SIZE	ALL	8.92	8.91	9.00	9.10
	N	7.85	7.77	7.66	7.58
	Y	10.19	9.69	9.67	9.52
DIRCOMP	ALL	4.09	4.56	4.96	5.09
	N	3.97	4.40	4.85	4.96
	Y	4.21	4.67	5.02	5.12
EQUALITY_INDEX	ALL	43.56	43.76	43.76	43.51
	N	43.60	43.67	43.35	42.86
	Y	43.52	43.82	43.97	43.70
FEMALE_NONCEO_EXEC	ALL	0.24	0.29	0.34	0.32
	N	0.19	0.23	0.27	0.23
	Y	0.29	0.34	0.37	0.34
INDEP_DIR_PCTG	ALL	0.61	0.71	0.78	0.80
	N	0.58	0.69	0.75	0.76
	Y	0.64	0.73	0.80	0.81
INSTOWNER	ALL	0.62	0.79	0.81	0.81
	N	0.60	0.80	0.82	0.81
	Y	0.63	0.79	0.81	0.81
LOGAT	ALL	7.18	7.36	7.46	7.66
	N	6.72	6.72	6.71	6.75
	Y	7.74	7.80	7.84	7.92
MOMENTUM	ALL	0.08	0.18	0.10	0.16
	N	0.09	0.19	0.11	0.16
	Y	0.08	0.17	0.10	0.16
ROE	ALL	0.33	0.31	0.34	0.36
	N	0.27	0.26	0.26	0.24
	Y	0.39	0.35	0.37	0.40
TQ	ALL	2.11	2.04	1.75	2.08
	N	2.16	2.09	1.79	2.06
	Y	2.05	2.01	1.73	2.08
VOL	ALL	0.49	0.43	0.41	0.34
	N	0.55	0.49	0.45	0.38
	Y	0.42	0.39	0.39	0.32

Panel B: Median characteristics					
FEMALE_NNCEO_DIR_PCTG	ALL	0.00	0.09	0.11	0.13
	N	0.00	0.00	0.00	0.00
	Y	0.11	0.13	0.14	0.17
BOARD_SIZE	ALL	9.00	9.00	9.00	9.00
	N	7.00	8.00	7.00	7.00
	Y	10.00	10.00	9.00	9.00
DIRCOMP	ALL	4.11	4.65	5.01	5.12
	N	3.98	4.49	4.88	4.97
	Y	4.22	4.72	5.06	5.15
EQUALITY_INDEX	ALL	43.30	44.30	44.60	44.30
	N	45.80	44.60	44.30	42.80
	Y	42.80	42.80	45.80	44.60
FEMALE_NNCEO_EXEC	ALL	0.00	0.00	0.00	0.00
	N	0.00	0.00	0.00	0.00
	Y	0.00	0.00	0.00	0.00
INDEP_DIR_PCTG	ALL	0.63	0.73	0.80	0.83
	N	0.60	0.71	0.78	0.78
	Y	0.67	0.75	0.82	0.86
INSTOWNER	ALL	0.64	0.81	0.84	0.85
	N	0.62	0.82	0.85	0.85
	Y	0.65	0.80	0.83	0.85
LOGAT	ALL	6.99	7.20	7.31	7.51
	N	6.60	6.61	6.59	6.63
	Y	7.62	7.67	7.72	7.79
MOMENTUM	ALL	-0.01	0.14	0.07	0.14
	N	-0.04	0.15	0.06	0.12
	Y	0.01	0.13	0.07	0.14
ROE	ALL	0.30	0.27	0.27	0.27
	N	0.26	0.24	0.23	0.21
	Y	0.34	0.29	0.29	0.29
TQ	ALL	1.50	1.71	1.47	1.73
	N	1.51	1.75	1.47	1.70
	Y	1.49	1.68	1.47	1.73
VOL	ALL	0.43	0.38	0.39	0.31
	N	0.49	0.45	0.43	0.36
	Y	0.37	0.35	0.37	0.30

Table 3: Logistic regressions determining the probability to have a female director on board

In Table 3 we present the regression statistics from conducting a logistic regression, determining the probability for a firm to have a female director on its board. The dependent variable is *FEMALE_DIR*, an indicator variable equal to one, if the firm has at least one female director, and 0 otherwise. We control for industry effects by including indicator variables for the main identified industries, represented in our sample – consumer non-durables, consumer durables, manufacturing, energy, chemicals, business equipment, telecommunications, shops, and healthcare. The omitted (comparison) industry group is *OTHER* (other industry). We estimate logistic regressions annually during the 1998 to 2016 period. We compute the time-series averages of the coefficients and the t-statistics for each of the identified 5 time periods. We report the average coefficients by period and include p-values in parentheses underneath the coefficients. All variables are as previously defined in Table 1.

Variable	1998-2016	1998-2002	2003-2007	2008-2012	2013-2016
INTERCEPT	-7.189	-5.911	-7.370	-7.523	-8.142
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
BOARD_SIZE	0.423	0.328	0.426	0.497	0.447
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
DIRCOMP	-0.056	0.014	0.104	-0.141	-0.237
	(0.279)	(0.788)	(0.007)	(0.004)	(0.321)
EQUALITY_INDEX	0.013	0.005	0.017	0.017	0.015
	(0.000)	(0.069)	(0.003)	(0.002)	(0.021)
INDEP_DIR_PCTG	2.529	1.550	1.916	2.738	4.258
	(0.000)	(0.001)	(0.005)	(0.001)	(0.002)
INSTOWNER	0.023	0.320	0.079	-0.089	-0.279
	(0.782)	(0.013)	(0.733)	(0.320)	(0.084)
LOGAT	0.300	0.253	0.240	0.299	0.435
	(0.000)	(0.000)	(0.001)	(0.000)	(0.006)
MOMENTUM	-0.119	-0.058	-0.145	-0.219	-0.039
	(0.036)	(0.415)	(0.345)	(0.152)	(0.683)
ROE	0.620	0.404	0.670	0.634	0.812
	(0.000)	(0.018)	(0.008)	(0.005)	(0.042)
TQ	0.021	0.042	0.010	-0.009	0.048
	(0.065)	(0.043)	(0.593)	(0.726)	(0.182)
VOL	-0.997	-1.422	-1.207	-0.968	-0.238
	(0.000)	(0.002)	(0.016)	(0.090)	(0.742)
CONSUMER NON-DURABLES	0.506	0.409	0.793	0.367	0.443
	(0.000)	(0.016)	(0.008)	(0.008)	(0.058)
CONSUMER DURABLES	-0.106	0.271	-0.188	0.069	-0.695
	(0.291)	(0.177)	(0.174)	(0.112)	(0.009)
MANUFACTURING	-0.503	-0.237	-0.488	-0.615	-0.714
	(0.000)	(0.023)	(0.002)	(0.000)	(0.006)
ENRGY	-0.900	-0.781	-0.591	-0.962	-1.357
	(0.000)	(0.005)	(0.020)	(0.000)	(0.009)
CHEMICALS	-0.042	0.306	-0.004	0.174	-0.792
	(0.733)	(0.083)	(0.985)	(0.270)	(0.009)
BUSINESS EQUIPMENT	-0.244	-0.051	-0.161	-0.270	-0.555
	(0.001)	(0.664)	(0.101)	(0.035)	(0.017)
TELECOMMUNICATION	-0.781	-0.042	-0.445	-1.447	-1.294
	(0.000)	(0.859)	(0.285)	(0.001)	(0.007)
SHOPS	0.435	0.326	0.578	0.483	0.332
	(0.000)	(0.069)	(0.001)	(0.002)	(0.022)
HEALTHCARE	0.334	0.638	0.337	0.321	-0.034
	(0.000)	(0.002)	(0.000)	(0.003)	(0.851)
Average Firm Number	990	1008	941	1009	1006

Table 4: Ordinary least square regressions determining the proportion of female directors on board

In Table 4 we present the regression statistics from conducting an OLS regression, determining the proportion of female directors on board. The dependent variable is *FEMALE_DIR_PCTG* and presents the number of women on board divided by the board size. We control for industry effects by including indicator variables for the main identified industries, represented in our sample – consumer non-durables, consumer durables, manufacturing, energy, chemicals, business equipment, telecommunications, shops, and healthcare. The omitted (comparison) industry group is *OTHER* (other industry). We estimate regressions annually during the 1998 to 2016 period. We compute the time-series averages of the coefficients and the t-statistics for each of the identified 5 time periods. We report the average coefficients by period and include p-values in parentheses underneath the coefficients. All variables are as previously defined in Table 1.

Variable	1998-2016	1998-2002	2003-2007	2008-2012	2013-2016
INTERCEPT	-0.121	-0.063	-0.111	-0.162	-0.153
	(0.000)	(0.000)	(0.002)	(0.000)	(0.002)
BOARD_SIZE	0.006	0.004	0.006	0.008	0.007
	(0.000)	(0.000)	(0.002)	(0.000)	(0.001)
DIRCOMP	-0.002	0.002	0.004	-0.005	-0.009
	(0.263)	(0.269)	(0.010)	(0.037)	(0.141)
EQUALITY_INDEX	0.001	0.000	0.001	0.001	0.001
	(0.000)	(0.008)	(0.001)	(0.000)	(0.004)
INDEP_DIR_PCTG	0.096	0.052	0.061	0.110	0.175
	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)
INSTOWNER	-0.002	0.001	-0.001	-0.003	-0.004
	(0.472)	(0.792)	(0.845)	(0.046)	(0.496)
LOGAT	0.009	0.007	0.008	0.012	0.011
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
MOMENTUM	-0.004	-0.002	-0.004	-0.008	-0.002
	(0.036)	(0.250)	(0.456)	(0.150)	(0.560)
ROE	0.022	0.015	0.028	0.019	0.028
	(0.000)	(0.009)	(0.001)	(0.001)	(0.025)
TQ	0.000	0.001	-0.001	-0.001	0.002
	(0.651)	(0.149)	(0.129)	(0.597)	(0.249)
VOL	-0.029	-0.042	-0.036	-0.011	-0.026
	(0.000)	(0.003)	(0.011)	(0.483)	(0.182)
CONSUMER NON-DURABLES	0.034	0.031	0.039	0.033	0.030
	(0.000)	(0.003)	(0.000)	(0.000)	(0.004)
CONSUMER DURABLES	-0.007	0.005	-0.007	-0.001	-0.027
	(0.051)	(0.258)	(0.032)	(0.784)	(0.008)
MANUFACTURING	-0.018	-0.008	-0.019	-0.023	-0.025
	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)
ENRGY	-0.033	-0.019	-0.030	-0.043	-0.042
	(0.000)	(0.008)	(0.002)	(0.000)	(0.002)
CHEMICALS	0.013	0.014	0.016	0.028	-0.011
	(0.004)	(0.003)	(0.034)	(0.001)	(0.251)
BUSINESS EQUIPMENT	-0.011	-0.001	-0.006	-0.015	-0.022
	(0.000)	(0.728)	(0.026)	(0.004)	(0.009)
TELECOMMUNICATION	-0.015	0.003	-0.014	-0.030	-0.021
	(0.002)	(0.437)	(0.208)	(0.014)	(0.031)
SHOPS	0.025	0.017	0.028	0.028	0.024
	(0.000)	(0.025)	(0.001)	(0.000)	(0.001)
HEALTHCARE	0.008	0.022	0.013	0.007	-0.013
	(0.017)	(0.003)	(0.002)	(0.040)	(0.032)
Average Firm Number	990	1008	941	1009	1006

Table 5: Heckman two-stage regressions determining the proportion of female directors on board

In Table 5 we present the regression statistics from conducting Heckman two-stage regressions, determining the proportion of female directors on board. In the first stage, a probit regression is used to determine the probability of having a female on the board, while in the second stage, we estimate an OLS regression including the inverse Mills ratio, calculated based on the estimated parameters in the first stage. The dependent variable in the second stage is *FEMALE_DIR_PCTG* and presents the number of women on board divided by the board size. We control for industry effects by including indicator variables for the main identified industries, but suppress the coefficients of the industry dummy variables in the table for brevity. We estimate regressions annually during the 1998 to 2016 period and compute the time-series averages of the coefficients and the t-statistics for each of the identified 5 time periods. We report the average coefficients by period and include p-values in parentheses underneath the coefficients. All variables are as previously defined in Table 1.

Variable	1998-2016	1998-2002	2003-2007	2008-2012	2013-2016
STAGE TWO					
INTERCEPT	-0.055	-0.090	-0.021	-0.062	-0.047
	(0.001)	(0.099)	(0.518)	(0.027)	(0.030)
BOARD_SIZE	0.001	0.002	-0.001	0.001	0.001
	(0.222)	(0.295)	(0.518)	(0.250)	(0.184)
DIRCOMP	-0.002	0.002	0.003	-0.005	-0.011
	(0.198)	(0.317)	(0.118)	(0.119)	(0.011)
EQUALITY_INDEX	0.001	0.000	0.001	0.001	0.001
	(0.000)	(0.010)	(0.000)	(0.000)	(0.003)
INDEP_DIR_PCTG	0.089	0.075	0.052	0.091	0.150
	(0.000)	(0.002)	(0.008)	(0.002)	(0.001)
INSTOWNER	-0.006	0.003	-0.010	-0.011	-0.007
	(0.068)	(0.755)	(0.081)	(0.014)	(0.262)
MILLS	0.072	0.102	0.070	0.055	0.058
	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)
LOGAT	0.009	0.008	0.008	0.011	0.009
	(0.000)	(0.006)	(0.001)	(0.000)	(0.005)
MOMENTUM	-0.004	-0.002	-0.003	-0.007	-0.002
	(0.119)	(0.531)	(0.640)	(0.212)	(0.669)
ROE	0.021	0.019	0.028	0.014	0.022
	(0.000)	(0.006)	(0.001)	(0.002)	(0.013)
TQ	0.000	0.001	0.000	0.000	0.002
	(0.399)	(0.589)	(0.684)	(0.922)	(0.277)
VOL	-0.025	-0.065	-0.027	0.012	-0.019
	(0.005)	(0.004)	(0.016)	(0.204)	(0.147)
CONSUMER NON-DURABLES	0.043	0.047	0.045	0.044	0.034
	(0.000)	(0.002)	(0.001)	(0.000)	(0.003)
CONSUMER DURABLES	-0.006	0.006	-0.011	-0.001	-0.022
	(0.096)	(0.446)	(0.068)	(0.882)	(0.009)
MANUFACTURING	-0.016	-0.007	-0.020	-0.016	-0.020
	(0.000)	(0.044)	(0.000)	(0.001)	(0.001)
ENRGY	-0.033	-0.025	-0.031	-0.041	-0.035
	(0.000)	(0.003)	(0.003)	(0.000)	(0.004)
CHEMICALS	0.020	0.020	0.020	0.035	0.000
	(0.000)	(0.004)	(0.007)	(0.000)	(0.998)
BUSINESS EQUIPMENT	-0.007	0.001	-0.003	-0.012	-0.016
	(0.004)	(0.931)	(0.268)	(0.000)	(0.015)
TELECOMMUNICATION	0.004	0.013	-0.002	0.003	0.001
	(0.292)	(0.059)	(0.806)	(0.710)	(0.870)
SHOPS	0.028	0.025	0.030	0.031	0.024
	(0.000)	(0.024)	(0.000)	(0.000)	(0.000)
HEALTHCARE	0.012	0.034	0.015	0.007	-0.012
	(0.009)	(0.006)	(0.012)	(0.034)	(0.015)

Table 6: Female board representation: distinguishing the effect of changing firm characteristics from the increasing propensity to add women on corporate boards

In Table 6 we present statistics for observed, expected and unexpected female representation on corporate boards. We use 1998-2002 as our benchmark period to estimate *Expected Percentage* for women representation. The actual versus predicted (expected) values, based on the logit, OLS and Heckman selection models are reported in Panels A, B and C, respectively, annually over the period 2003-2016. In Panel A, the variable of interest is the percentage of firms with women on board (*FEMALE_DIR*), while in Panels B and C the variable of interest is *FEMALE_DIR_PCTG*, the percentage of women on corporate boards. *Unexpected Percentage* is obtained as the difference between *Actual Percentage* and *Expected Percentage* of the variable of interest.

Year	Actual Percentage	Expected Percentage	Unexpected Percentage
Panel A: Actual vs. expected percentage of firms with women on board. The expected percentage is estimated based on the logistic regression model reported in Table 3.			
2003	55.3%	47.5%	7.8%
2004	57.7%	50.1%	7.6%
2005	60.8%	53.0%	7.8%
2006	63.4%	56.6%	6.8%
2007	62.2%	57.6%	4.7%
2008	65.1%	58.5%	6.6%
2009	63.7%	55.3%	8.4%
2010	65.4%	55.8%	9.6%
2011	68.5%	56.4%	12.1%
2012	71.5%	56.9%	14.7%
2013	74.2%	57.8%	16.4%
2016	77.8%	61.4%	16.3%
2015	79.5%	62.4%	17.1%
2016	82.1%	63.2%	18.9%
Average	67.7%	56.6%	11.0%
Panel B: Actual vs. expected percentage of women on boards. The expected percentage is estimated based on the OLS regression model reported in Table 4.			
2003	8.1%	6.4%	1.6%
2004	8.5%	6.8%	1.7%
2005	9.0%	7.2%	1.8%
2006	9.7%	7.7%	2.0%
2007	10.0%	8.0%	2.0%
2008	10.3%	8.2%	2.1%
2009	10.3%	7.7%	2.6%
2010	10.6%	7.7%	2.8%
2011	11.5%	7.8%	3.6%
2012	12.1%	7.9%	4.2%
2013	13.0%	8.0%	5.0%
2016	13.9%	8.5%	5.3%
2015	14.8%	8.7%	6.1%
2016	15.6%	8.8%	6.8%
Average	11.2%	7.8%	3.4%

Panel C: Actual vs. expected percentage of women on boards, of boards with at least one female director. The expected percentage is estimated based on a two-stage Heckman selection regression model reported in Table 5.

2003	14.6%	13.6%	1.0%
2004	14.7%	13.6%	1.0%
2005	14.8%	13.7%	1.1%
2006	15.2%	13.8%	1.5%
2007	16.1%	14.1%	1.9%
2008	15.8%	14.1%	1.7%
2009	16.1%	13.9%	2.2%
2010	16.2%	14.0%	2.2%
2011	16.7%	14.0%	2.7%
2012	16.9%	14.0%	2.9%
2013	17.6%	14.1%	3.5%
2016	17.8%	14.3%	3.6%
2015	18.6%	14.3%	4.3%
2016	19.0%	14.3%	4.7%
Average	16.4%	14.0%	2.4%

Table 7: Industry-level and market-wide gender diversity premium

In Table 7 we present time-series of the value-weighted (panel A) and equally-weighted (panel B) gender diversity premium measures by the main industry groups. We define the industry level gender diversity premium (*GEND_PR_IND*) as the difference in the log of the value-weighted market-to-book equity ratio (M/B) of all firms with female directors and the log of M/B for all firms with no female directors in a given industry each year. The last column on the right presents statistics for the median of the industry gender diversity premiums across all industries each year, which represents our market-wide gender diversity premium measure (*GEND_PR*). We color code annual changes of *GEND_PR_IND*; colors change from red to green (and vice versa) as *GEND_PR_IND* goes from low to high (and vice versa) each year.

Panel A: Value-Weighted Gender Diversity Premium

YEAR	NONDUR	DURAB	MANU	ENRGY	CHEM	EQUIP	TELCOM	SHOPS	HEALTH	OTHER	MEDIAN
1998	0.179	0.524	0.506	0.482	0.853	0.165	-0.829	-0.280	0.642	-0.242	0.331
1999	0.774	0.887	-0.238	0.355	1.414	-0.204	-1.198	0.266	-0.170	-0.086	0.090
2000	0.977	0.021	0.159	-0.015	1.276	-0.339	0.109	0.605	0.287	-0.623	0.134
2001	0.291	-0.185	0.413	0.107	0.759	0.233	0.276	-0.059	0.370	-0.340	0.255
2002	0.284	-0.393	0.347	0.126	0.571	0.401	-0.120	0.456	0.357	0.144	0.316
2003	0.953	-0.152	0.322	0.188	0.624	0.052	0.063	-0.374	0.239	-0.161	0.125
2004	0.603	0.110	0.274	0.103	0.248	0.137	-0.249	-0.102	0.057	-0.077	0.106
2005	0.772	0.059	0.071	-0.358	0.527	0.393	-0.992	0.138	-0.052	-0.358	0.065
2006	0.478	0.561	0.427	0.087	0.698	0.278	-0.924	0.195	-0.167	-0.397	0.236
2007	0.500	0.643	-0.004	0.183	0.397	0.013	0.144	0.048	-0.246	-0.377	0.096
2008	-0.594	0.496	0.386	0.308	0.990	0.112	-0.004	0.168	0.246	0.034	0.207
2009	-1.015	0.226	0.454	0.119	0.722	0.007	-0.257	0.203	-0.277	0.105	0.112
2010	1.120	1.140	0.525	-0.047	0.723	-0.076	0.402	0.274	-0.389	-0.129	0.338
2011	1.205	0.451	0.508	-0.123	0.590	0.187	0.083	0.166	-0.222	0.173	0.180
2012	0.848	0.575	0.424	-0.307	0.693	0.282	-0.525	0.331	-0.021	0.302	0.316
2013	0.717	-0.009	0.414	-0.235	0.869	0.180	-0.476	0.209	-0.103	0.381	0.194
2016	-0.301	0.075	0.173	-0.162	1.223	-0.039	-0.238	0.069	-0.024	0.319	0.023
2015	0.756	0.232	0.806	-0.253	1.283	-0.023	-0.066	0.632	0.266	0.693	0.449
2016	0.657	0.052	1.357	-0.775	1.256	0.409	0.624	0.184	0.214	0.746	0.516
Average	0.484	0.280	0.386	-0.011	0.827	0.114	-0.220	0.165	0.053	0.006	0.215
Stdev	0.580	0.389	0.328	0.295	0.330	0.203	0.495	0.256	0.274	0.371	0.134

Panel B: Equally-Weighted Gender Diversity Premium											
YEAR	NONDUR	DURAB	MANU	ENRGY	CHEM	EQUIP	TELCOM	SHOPS	HEALTH	OTHER	MEDIAN
1998	0.269	0.404	0.424	0.303	0.657	0.391	0.113	-0.076	0.399	0.018	0.347
1999	0.933	0.136	0.249	-0.079	0.717	-0.061	-1.118	0.060	0.401	0.163	0.150
2000	0.889	-0.214	0.156	-0.416	0.720	-0.161	0.133	0.202	-0.103	-0.004	0.065
2001	0.421	0.141	0.267	-0.089	0.639	0.085	-0.524	0.073	0.232	0.031	0.113
2002	0.286	0.007	0.208	-0.113	0.143	0.197	0.133	0.273	0.423	-0.005	0.170
2003	0.561	0.215	0.076	0.012	0.357	0.095	0.346	-0.014	0.282	-0.055	0.155
2004	0.294	0.253	0.096	0.033	0.064	0.069	-0.394	0.062	0.033	0.012	0.063
2005	0.222	0.318	0.089	-0.130	0.350	0.222	-0.902	0.184	-0.158	0.111	0.148
2006	0.128	0.704	0.186	-0.031	0.433	0.240	-0.795	0.114	-0.166	0.015	0.121
2007	0.443	0.526	0.138	0.230	0.220	0.212	0.957	0.094	-0.186	-0.137	0.216
2008	-0.056	0.363	0.293	0.258	0.608	0.267	-0.098	0.253	0.091	-0.003	0.255
2009	-0.281	0.231	0.348	0.120	0.583	-0.019	-0.103	-0.001	-0.022	-0.027	-0.010
2010	0.398	0.364	0.450	-0.060	0.268	-0.058	0.419	0.237	-0.200	-0.068	0.252
2011	0.619	0.498	0.475	-0.237	0.351	0.112	0.465	0.142	-0.003	0.019	0.247
2012	0.766	0.601	0.382	-0.320	0.433	0.096	-0.120	0.315	-0.003	-0.054	0.205
2013	0.573	0.247	0.318	-0.180	0.743	0.106	-0.356	0.187	-0.179	0.008	0.147
2016	0.285	0.204	0.233	0.011	1.135	-0.007	0.302	0.340	-0.133	0.160	0.219
2015	-0.022	0.335	0.598	0.176	1.154	-0.153	-0.327	0.491	0.251	0.499	0.293
2016	0.084	0.291	0.721	-0.542	1.307	0.235	0.097	0.105	-0.099	0.507	0.170
Average	0.358	0.296	0.300	-0.055	0.573	0.098	-0.093	0.160	0.045	0.063	0.175
Stdev	0.320	0.210	0.176	0.224	0.343	0.148	0.517	0.138	0.219	0.171	0.086

Table 8: Gender diversity premium and the percentage of firms with gender diversity changes

In Table 8 we present the annual distribution of firms based on the gender diversity changes observed in their boards. We define an *increase* (*decrease*) in board gender diversity of a firm in a given year when a firm has a *higher* (*lower*) proportion of female directors on board than the previous year. We further classify an increase in board gender diversity of a firm in a given year as an *active increase*, when a firm increases its number of female directors *more* than it increases of number of its directors, and *passive* increase otherwise. Similarly, a decrease in board gender diversity can be the result of *adding* a male director, rather than *replacing* a female director with a male director. We classify the former changes in board diversity to be *passive decreases*, and the latter *active decreases*. Finally, when no changes in the board relative to the previous year are observed the firm is classified in the *Diversity Unchanged* category.

	Lagged Market-Wide Premium		Percentage of Firms Have Gender Diversity Change						
Year	Value Weight	Equal-Weight	Diversity Decreasing	Active Decreasing	Passive Decreasing	Diversity Unchanged	Diversity Increasing	Passive Increasing	Active Increasing
1999	33.1%	34.7%	12.4%	2.0%	10.4%	15.6%	21.5%	1.8%	19.7%
2000	9.0%	15.0%	10.1%	2.3%	7.8%	20.6%	17.8%	1.0%	16.8%
2001	13.4%	6.5%	12.6%	2.2%	10.4%	21.2%	18.5%	1.5%	17.0%
2002	25.5%	11.3%	13.0%	2.7%	10.3%	17.9%	20.0%	1.8%	18.2%
2003	31.6%	17.0%	15.4%	1.8%	13.6%	19.2%	21.4%	1.5%	19.9%
2004	12.5%	15.5%	15.9%	3.5%	12.4%	23.2%	20.5%	2.0%	18.5%
2005	10.6%	6.3%	16.4%	2.5%	13.9%	21.8%	22.3%	2.1%	20.1%
2006	6.5%	14.8%	17.0%	2.5%	14.5%	23.6%	22.0%	1.8%	20.3%
2007	23.6%	12.1%	14.1%	3.6%	10.4%	19.2%	18.8%	1.1%	17.7%
2008	9.6%	21.6%	16.5%	1.8%	14.7%	28.3%	17.0%	2.5%	14.5%
2009	20.7%	25.5%	16.8%	2.7%	14.1%	29.2%	19.5%	0.8%	18.7%
2010	11.2%	-1.0%	16.0%	3.7%	12.3%	30.8%	18.5%	0.9%	17.6%
2011	33.8%	25.2%	14.5%	2.6%	11.9%	30.0%	21.0%	1.3%	19.7%
2012	18.0%	24.7%	17.2%	3.0%	14.2%	31.4%	22.4%	1.3%	21.1%
2013	31.6%	20.5%	15.6%	2.6%	13.0%	34.2%	24.4%	1.8%	22.5%
2016	19.4%	14.7%	16.9%	3.5%	13.5%	34.4%	25.8%	1.8%	23.9%
2015	2.3%	21.9%	16.7%	3.1%	13.6%	34.0%	28.9%	2.6%	26.3%
2016	44.9%	29.3%	22.3%	3.1%	19.3%	30.8%	28.4%	2.3%	26.0%
Avg	19.9%	17.5%	15.5%	2.7%	12.8%	25.9%	21.6%	1.7%	19.9%

Table 9: Multinomial logistic regressions of firm decision to increase or decrease board gender diversity

In Table 9 we present the results from a multinomial logistic regression analysis, determining the drivers of firms' choice to increase or decrease female board representation. We present the results from two sets of regressions for both the value-weighted and equally-weighted gender diversity premium measures. In the first one, the dependent variable is board gender diversity change, *BGD_CHANGE*, (0- no change, 1-decreasing and 2-increasing). We present the results from this model in columns (1) – (2) of the table. In the second set of regressions, the dependent variable is board gender diversity change type, *BGD_CHANGE_TYPE*, (0- no change, 1-passive decreasing, 2-active decreasing, 3-passive increasing, 4-active increasing). We present the results from this model in columns (3) – (6). In Panel A (Panel C), we display the regression statistics when including the value-weighted (equally-weighted) industry-level gender diversity premium, *GEND_PR_IND*, while in Panel B (Panel D) we include as right hand side variables the value-weighted (equally-weighted) market-wide gender diversity premium, *GEND_PR*, along with industry dummies (coefficients not reported for brevity). All firm characteristics are lagged and measured at the end of the previous year.

	Gender Diversity Change		Gender Diversity Change Relative to Board Size Change			
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Controlling for value-weighted industry level gender diversity premium (GEND_PR_IND)						
	Decreasing	Increasing	Active Decreasing	Passive Decreasing	Passive Increasing	Active Increasing
INTERCEPT	-1.820	-1.915	-7.203	-1.291	-0.878	-2.373
	(0.000)	(0.000)	(0.000)	(0.000)	(0.294)	(0.000)
BOARD_SIZE	-0.055	0.096	0.327	-0.156	-0.453	0.140
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIRCOMP	-0.122	0.268	-0.139	-0.091	0.046	0.307
	(0.476)	(0.109)	(0.675)	(0.621)	(0.902)	(0.076)
EQUALITY_INDEX	0.000	0.008	0.007	-0.001	0.002	0.009
	(0.908)	(0.006)	(0.290)	(0.829)	(0.837)	(0.004)
FEMALE PERCENT	2.323	-10.264	3.860	1.899	-15.656	-9.800
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	-0.067	0.144	0.196	-0.118	0.247	0.139
	(0.195)	(0.003)	(0.054)	(0.034)	(0.062)	(0.005)
GENDER PREMIUM	-0.028	0.154	-0.290	0.044	0.434	0.131
	(0.670)	(0.015)	(0.022)	(0.540)	(0.013)	(0.041)
INDEP_DIR_PCTG	-0.033	0.165	0.175	0.003	-0.609	0.267
	(0.860)	(0.343)	(0.632)	(0.987)	(0.165)	(0.135)
INSTOWNER	-0.233	0.051	0.198	-0.293	-0.544	0.121
	(0.099)	(0.713)	(0.491)	(0.052)	(0.131)	(0.393)
LOGAT	0.207	0.111	0.024	0.254	0.576	0.072
	(0.000)	(0.000)	(0.573)	(0.000)	(0.000)	(0.001)
MOMENTUM	-0.160	-0.173	-0.034	-0.184	0.068	-0.197
	(0.009)	(0.003)	(0.777)	(0.005)	(0.633)	(0.001)
ROE	0.020	0.145	-0.112	0.048	0.296	0.132
	(0.779)	(0.038)	(0.451)	(0.537)	(0.105)	(0.066)
TQ	0.015	0.013	-0.054	0.025	0.025	0.007
	(0.488)	(0.527)	(0.245)	(0.266)	(0.591)	(0.748)
VOL	0.65	0.44	1.56	0.42	-0.12	0.47
	(0.000)	(0.008)	(0.000)	(0.022)	(0.784)	(0.006)
Pseudo R-square	0.139		0.188			
# of Obs.			11226			
Panel B: Controlling for value-weighted market-wide gender diversity premium (GEND_PR)						

	Decreasing	Increasing	Active Decreasing	Passive Decreasing	Passive Increasing	Active Increasing
INTERCEPT	-1.891	-2.004	-6.964	-1.447	-1.186	-2.444
	(0.000)	(0.000)	(0.000)	(0.000)	(0.175)	(0.000)
BOARD_SIZE	-0.059	0.097	0.344	-0.163	-0.454	0.141
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIRCOMP	-0.108	0.248	-0.184	-0.049	0.042	0.286
	(0.535)	(0.142)	(0.574)	(0.795)	(0.910)	(0.102)
EQUALITY_INDEX	0.000	0.007	0.005	-0.001	0.002	0.008
	(0.943)	(0.015)	(0.405)	(0.709)	(0.789)	(0.012)
FEMALE PERCENT	2.282	-10.473	3.895	1.876	-15.960	-9.992
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	-0.059	0.135	0.194	-0.106	0.184	0.133
	(0.261)	(0.006)	(0.059)	(0.059)	(0.173)	(0.009)
GENDER PREMIUM	0.253	0.564	-0.312	0.356	0.192	0.582
	(0.219)	(0.005)	(0.458)	(0.103)	(0.728)	(0.004)
INDEP_DIR_PCTG	-0.110	0.267	0.101	-0.077	-0.255	0.344
	(0.564)	(0.136)	(0.788)	(0.705)	(0.572)	(0.060)
INSTOWNER	-0.230	0.046	0.070	-0.272	-0.571	0.117
	(0.109)	(0.739)	(0.809)	(0.075)	(0.114)	(0.413)
LOGAT	0.222	0.120	0.032	0.270	0.593	0.080
	(0.000)	(0.000)	(0.453)	(0.000)	(0.000)	(0.000)
MOMENTUM	-0.157	-0.173	-0.018	-0.186	0.031	-0.194
	(0.011)	(0.003)	(0.884)	(0.005)	(0.829)	(0.001)
ROE	0.001	0.137	-0.080	0.015	0.273	0.125
	(0.985)	(0.054)	(0.592)	(0.849)	(0.145)	(0.085)
TQ	0.017	0.012	-0.085	0.034	0.028	0.006
	(0.427)	(0.569)	(0.083)	(0.144)	(0.570)	(0.767)
VOL	0.72	0.48	1.46	0.53	0.10	0.49
	(0.000)	(0.004)	(0.000)	(0.005)	(0.822)	(0.004)
Industry Fixed Effect	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Pseudo R-square	0.142			0.194		
# of Obs.			11226			

Panel C: Controlling for equally-weighted industry level gender diversity premium (GEND_PR_IND)

	Decreasing	Increasing	Active Decreasing	Passive Decreasing	Passive Increasing	Active Increasing
INTERCEPT	-1.836	-1.959	-7.174	-1.325	-0.963	-2.413
	(0.000)	(0.000)	(0.000)	(0.000)	(0.252)	(0.000)
BOARD_SIZE	-0.056	0.096	0.327	-0.158	-0.453	0.139
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIRCOMP	-0.121	0.277	-0.141	-0.085	0.066	0.315
	(0.479)	(0.098)	(0.668)	(0.642)	(0.860)	(0.070)
EQUALITY_INDEX	0.000	0.008	0.007	-0.001	0.002	0.009
	(0.926)	(0.006)	(0.279)	(0.814)	(0.828)	(0.004)
FEMALE PERCENT	2.298	-10.273	3.849	1.873	-15.616	-9.813

	Decreasing	Increasing	Active Decreasing	Passive Decreasing	Passive Increasing	Active Increasing
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	-0.066	0.145	0.196	-0.117	0.251	0.140
	(0.201)	(0.003)	(0.054)	(0.035)	(0.059)	(0.005)
GENDER PREMIUM	0.048	0.279	-0.386	0.163	0.598	0.248
	(0.636)	(0.004)	(0.050)	(0.138)	(0.024)	(0.012)
INDEP_DIR_PCTG	-0.041	0.176	0.149	0.001	-0.562	0.275
	(0.823)	(0.312)	(0.682)	(0.997)	(0.200)	(0.123)
INSTOWNER	-0.225	0.056	0.202	-0.284	-0.546	0.126
	(0.112)	(0.685)	(0.483)	(0.060)	(0.128)	(0.371)
LOGAT	0.209	0.113	0.023	0.257	0.575	0.073
	(0.000)	(0.000)	(0.584)	(0.000)	(0.000)	(0.001)
MOMENTUM	-0.158	-0.168	-0.038	-0.180	0.075	-0.192
	(0.010)	(0.004)	(0.751)	(0.006)	(0.599)	(0.001)
ROE	0.015	0.136	-0.105	0.039	0.289	0.123
	(0.839)	(0.052)	(0.480)	(0.611)	(0.114)	(0.086)
TQ	0.015	0.013	-0.055	0.025	0.023	0.007
	(0.481)	(0.523)	(0.242)	(0.264)	(0.620)	(0.741)
VOL	0.66	0.45	1.54	0.44	-0.11	0.48
	(0.000)	(0.006)	(0.000)	(0.018)	(0.804)	(0.004)
Pseudo R-square	0.139			0.188		
# of Obs.			11226			
Panel D: Controlling for equally-weighted market-wide gender diversity premium (GEND_PR)						
	Decreasing	Increasing	Active Decreasing	Passive Decreasing	Passive Increasing	Active Increasing
INTERCEPT	-1.851	-2.035	-6.868	-1.420	-1.418	-2.460
	(0.000)	(0.000)	(0.000)	(0.000)	(0.107)	(0.000)
BOARD_SIZE	-0.059	0.098	0.345	-0.163	-0.452	0.141
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIRCOMP	-0.096	0.231	-0.155	-0.044	-0.005	0.274
	(0.581)	(0.171)	(0.639)	(0.817)	(0.989)	(0.118)
EQUALITY_INDEX	0.000	0.007	0.005	-0.001	0.002	0.008
	(0.940)	(0.016)	(0.402)	(0.706)	(0.782)	(0.012)
FEMALE PERCENT	2.302	-10.477	3.974	1.889	-15.970	-9.994
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	-0.060	0.137	0.191	-0.107	0.188	0.134
	(0.254)	(0.006)	(0.062)	(0.058)	(0.164)	(0.008)
GENDER PREMIUM	-0.046	0.770	-1.176	0.169	1.223	0.705
	(0.876)	(0.005)	(0.042)	(0.596)	(0.108)	(0.012)
INDEP_DIR_PCTG	-0.101	0.260	0.135	-0.074	-0.252	0.339
	(0.595)	(0.145)	(0.720)	(0.719)	(0.576)	(0.064)
INSTOWNER	-0.230	0.033	0.096	-0.276	-0.565	0.103
	(0.109)	(0.812)	(0.741)	(0.071)	(0.117)	(0.470)
LOGAT	0.221	0.122	0.027	0.270	0.599	0.082
	(0.000)	(0.000)	(0.522)	(0.000)	(0.000)	(0.000)
MOMENTUM	-0.162	-0.162	-0.043	-0.188	0.054	-0.185

	(0.009)	(0.006)	(0.722)	(0.005)	(0.709)	(0.002)
ROE	0.003	0.134	-0.075	0.016	0.263	0.123
	(0.964)	(0.058)	(0.614)	(0.842)	(0.159)	(0.089)
TQ	0.017	0.010	-0.082	0.033	0.027	0.005
	(0.436)	(0.621)	(0.096)	(0.155)	(0.572)	(0.821)
VOL	0.72	0.55	1.37	0.54	0.23	0.56
	(0.000)	(0.001)	(0.000)	(0.004)	(0.609)	(0.001)
Industry Fixed Effect	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Pseudo R-square	0.142			0.194		
# of Obs.			11226			

Table 10: Ordinary least square regressions determining whether the magnitude of board gender diversity changes is influenced by the catering incentive

In Table 10 we present the results from OLS regressions determining whether the magnitude of board gender diversity changes is influenced by the catering incentive. Panel A (Panel B) uses the value-weighted (equally-weighted) industry level gender diversity premium, and Panel C (Panel D) uses the market wide value-weighted (equally-weighted) gender diversity premium. For each panel, the dependent variable in column (1) is the change in the share of female directors from the previous year, while the dependent variable in column (2) is the change in the number of female directors from the previous year divided by the board size in the previous year. We regress these variables on the set of firm characteristics previously identified. We control for industry fixed effects when the market-wide premium measure is used, but do not report the coefficients for brevity.

	Change of the percent of women on board	Change of the number of female directors	Change of the percent of women on board	Change of the number of female directors
	Panel A: Including value-weighted GEN_PR_IND as RHS variable		Panel B: Including value-weighted GEN_PR as RHS variable	
	(1)	(2)	(1)	(2)
INTERCEPT	-0.015	0.003	-0.017	-0.001
	(0.015)	(0.598)	(0.007)	(0.935)
BOARD_SIZE	0.001	-0.002	0.001	-0.003
	(0.006)	(0.000)	(0.013)	(0.000)
DIRCOMP	0.012	0.010	0.012	0.010
	(0.000)	(0.001)	(0.000)	(0.001)
EQUALITY_INDEX	0.000	0.000	0.000	0.000
	(0.015)	(0.009)	(0.015)	(0.009)
FEMALE PERCENT	-0.119	-0.109	-0.124	-0.116
	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	0.004	0.003	0.003	0.003
	(0.000)	(0.001)	(0.001)	(0.007)
GENDER PREMIUM	0.003	0.003	0.008	0.008
	(0.016)	(0.016)	(0.044)	(0.057)
INDEP_DIR_PCTG	0.002	0.001	0.005	0.005
	(0.613)	(0.816)	(0.120)	(0.147)
INSTOWNER	0.003	0.000	0.003	0.000
	(0.209)	(0.951)	(0.288)	(0.977)
LOGAT	0.000	0.002	0.000	0.002
	(0.892)	(0.000)	(0.819)	(0.000)
MOMENTUM	0.000	0.001	0.000	0.000
	(0.950)	(0.517)	(0.948)	(0.694)
ROE	0.004	0.005	0.004	0.005
	(0.010)	(0.001)	(0.016)	(0.003)
TQ	0.000	0.000	0.000	0.000
	(0.514)	(0.769)	(0.648)	(0.908)
VOL	-0.01	-0.02	-0.01	-0.02
	(0.000)	(0.000)	(0.000)	(0.000)
Industry Fixed Effect			Controlled	Controlled
PSEUDO R2	0.039	0.032	0.040	0.035
N	10372	10372	10372	10372
	Panel C: Including equally-weighted GEN_PR_IND as RHS variable		Panel D: Including equally-weighted GEN_PR as RHS variable	
	(1)	(2)	(1)	(2)

INTERCEPT	-0.016	0.003	-0.019	-0.003
	(0.012)	(0.662)	(0.003)	(0.676)
BOARD_SIZE	0.001	-0.002	0.001	-0.003
	(0.006)	(0.000)	(0.012)	(0.000)
DIRCOMP	0.012	0.011	0.011	0.010
	(0.000)	(0.000)	(0.000)	(0.002)
EQUALITY_INDEX	0.000	0.000	0.000	0.000
	(0.015)	(0.009)	(0.016)	(0.009)
FEMALE PERCENT	-0.119	-0.109	-0.125	-0.117
	(0.000)	(0.000)	(0.000)	(0.000)
FEMALE EXEC	0.004	0.003	0.003	0.003
	(0.000)	(0.001)	(0.001)	(0.006)
GENDER PREMIUM	0.004	0.004	0.022	0.026
	(0.032)	(0.028)	(0.000)	(0.000)
INDEP_DIR_PCTG	0.002	0.001	0.005	0.005
	(0.557)	(0.756)	(0.160)	(0.206)
INSTOWNER	0.003	0.000	0.003	-0.001
	(0.215)	(0.961)	(0.356)	(0.851)
LOGAT	0.000	0.002	0.000	0.002
	(0.894)	(0.000)	(0.655)	(0.000)
MOMENTUM	0.000	0.001	0.000	0.001
	(0.908)	(0.482)	(0.745)	(0.385)
ROE	0.004	0.005	0.004	0.005
	(0.012)	(0.001)	(0.019)	(0.003)
TQ	0.000	0.000	0.000	0.000
	(0.506)	(0.761)	(0.570)	(0.993)
VOL	-0.01	-0.02	-0.01	-0.01
	(0.000)	(0.000)	(0.000)	(0.000)
Industry Fixed Effect			Controlled	Controlled
PSEUDO R2	0.039	0.032	0.041	0.037
N	10372	10372	10372	10372

Figure 1: percentage of firms with women on board vs. average percentage of women on board
The percentage of firms with women on board is based on the number of all firms in a given year having at least one female director on board divided by the total number of firms in our sample. The average percentage of women on board is calculated as the average of the firms' ratio of the number of female directors divided by board size each year. The y-axis on the left (right) is for percentage of firms with women on board (average percent of women on board).

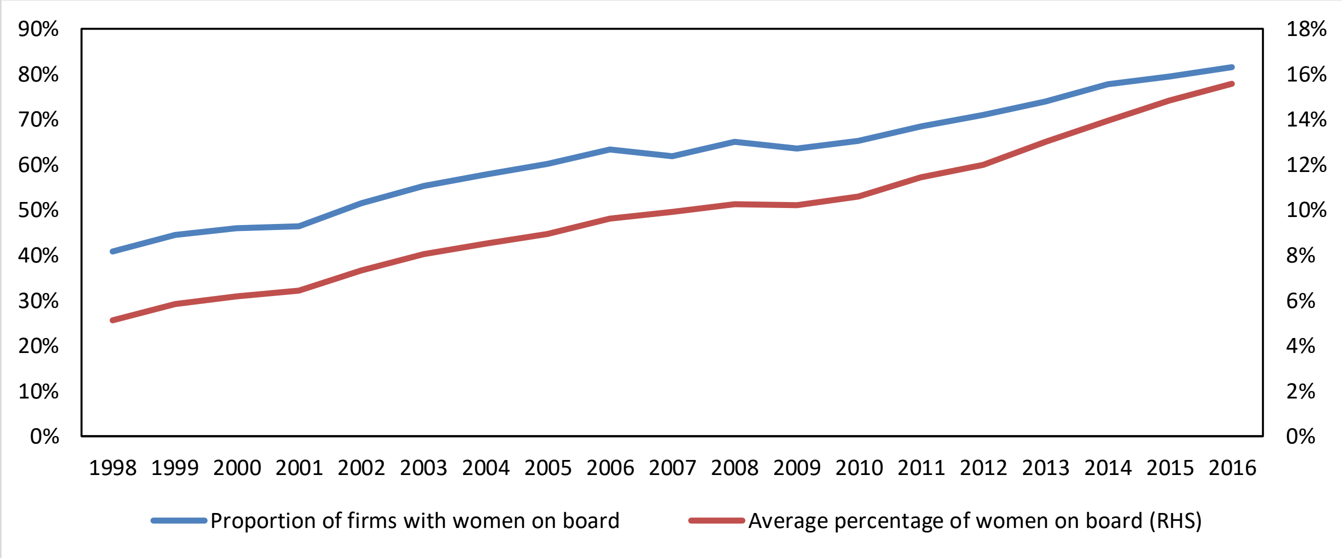


Figure 2: percentage of firms with women on board by industry

Figure 2 displays the percentage of firms with at least one female director within an industry for each of the Fama and French twelve industry sectors: NONDUR (consumer non-durables), DURAB (consumer durables), MANU (manufacturing), ENERGY (oil, gas, and coal extraction and products), CHEM (chemical and materials), EQUIP (business equipment), TELCOM (telephone and television transmission), SHOPS (wholesale, retail, and some services), HEALTH (healthcare, medical equipment, and drugs) and OTHER (contains industries, not included in any other groups). Our sample excludes regulated industries (finance and utilities). DISP is the cross-industry standard deviation of percent of firms with women on board, expressed in percentage terms.

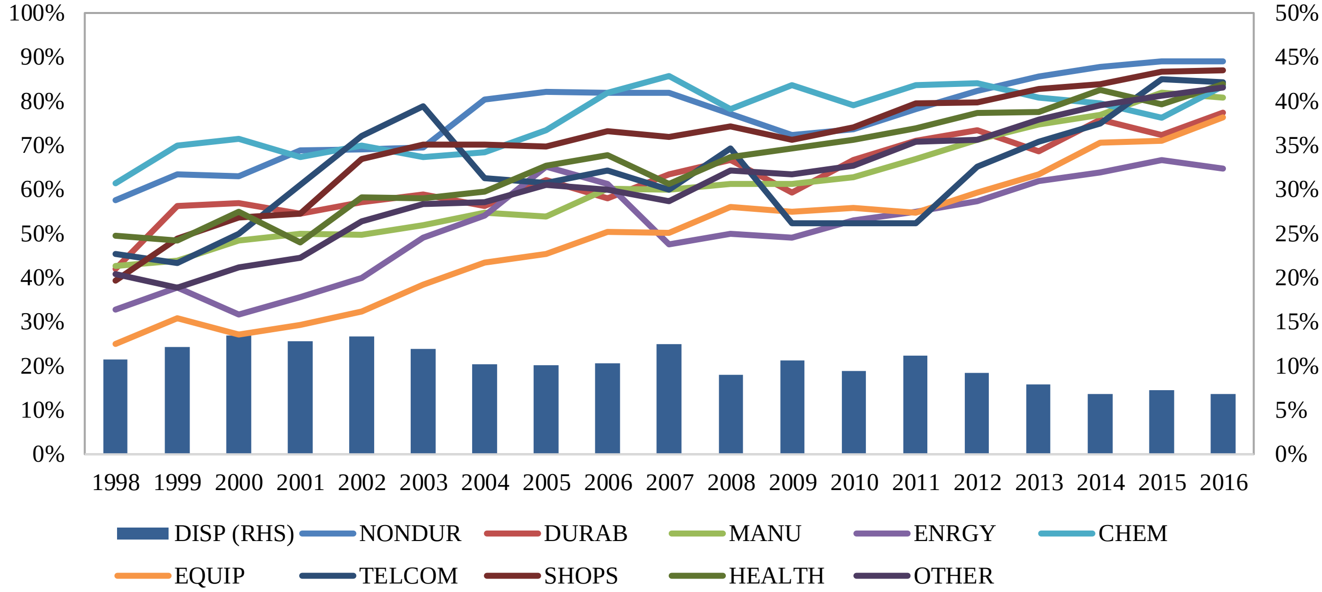


Figure 3: Average proportion of female directors on board and dispersion by industry

Figure 3 displays the average share of female directors on board for each of the Fama and French twelve industry sectors. All industry groups are as detailed in Figure 2. DISP is the cross-industry standard deviation of the average proportion of female directors on board, expressed in percentage terms.

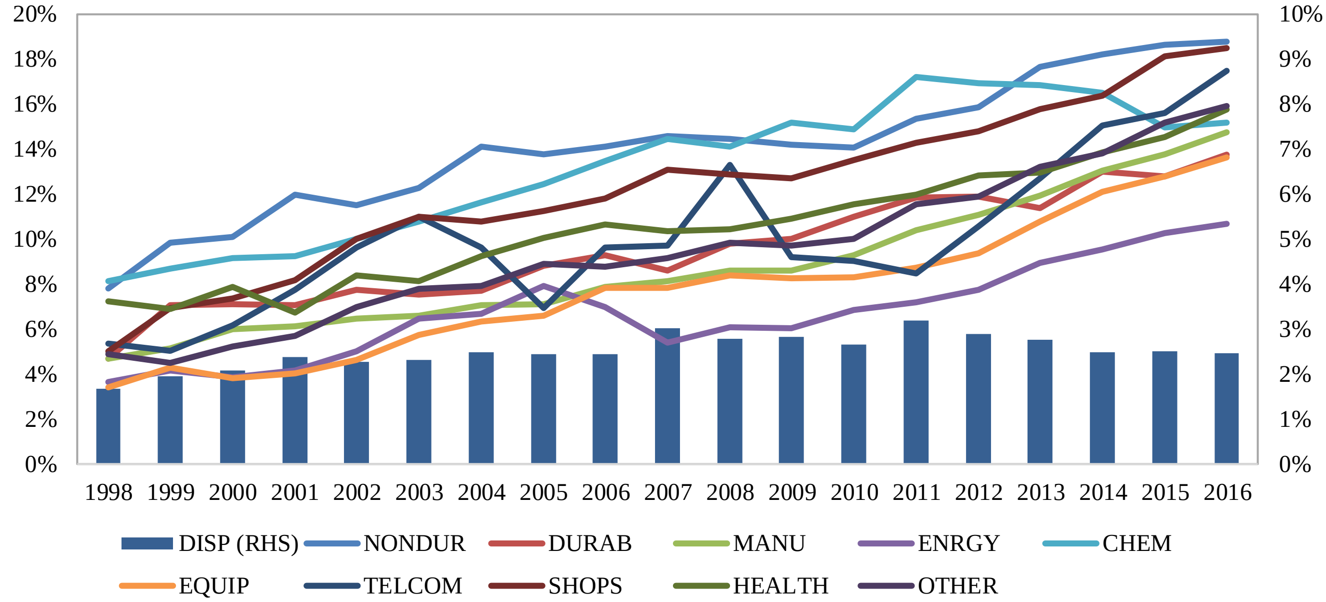


Figure 4A: Expected and unexpected percentage of firms with women on board based on the results reported in Table 6, Panel A

Figure 4A plots the estimated statistics presented in Table 6, Panel A graphically. It shows the expected vs. unexpected share of firms with women on board over time. We plot the logistic regression predicted percent of firms with women on board for years 2003 to 2016 with 1998 to 2003 as the base period for coefficient estimation. Then we stack on top the unexpected percent of firms, making the total to be the actual percent of firms with women on board.

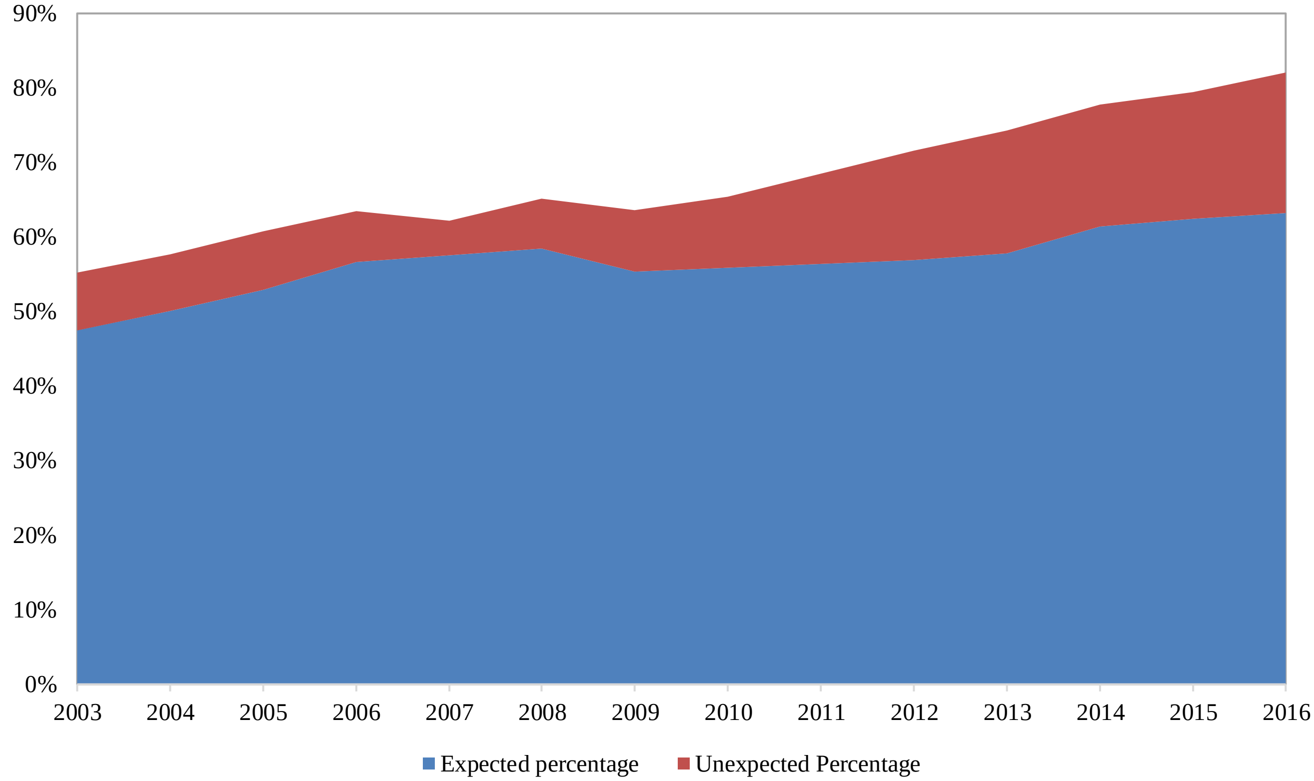


Figure 4B: Expected and unexpected percentage of firms with women on board based on the results reported in Table 6, Panel B

Figure 4B plots the estimated statistics presented in Table 6, Panel B graphically. It shows the expected vs. unexpected share of female directors over time. We plot the predicted share of female directors for years 2003 to 2016, based on a OLS model with 1998-2003 as the base period for coefficient estimation. Then we stack on top the unexpected percent of firms, making the total to be the actual percent of firms with women on board.

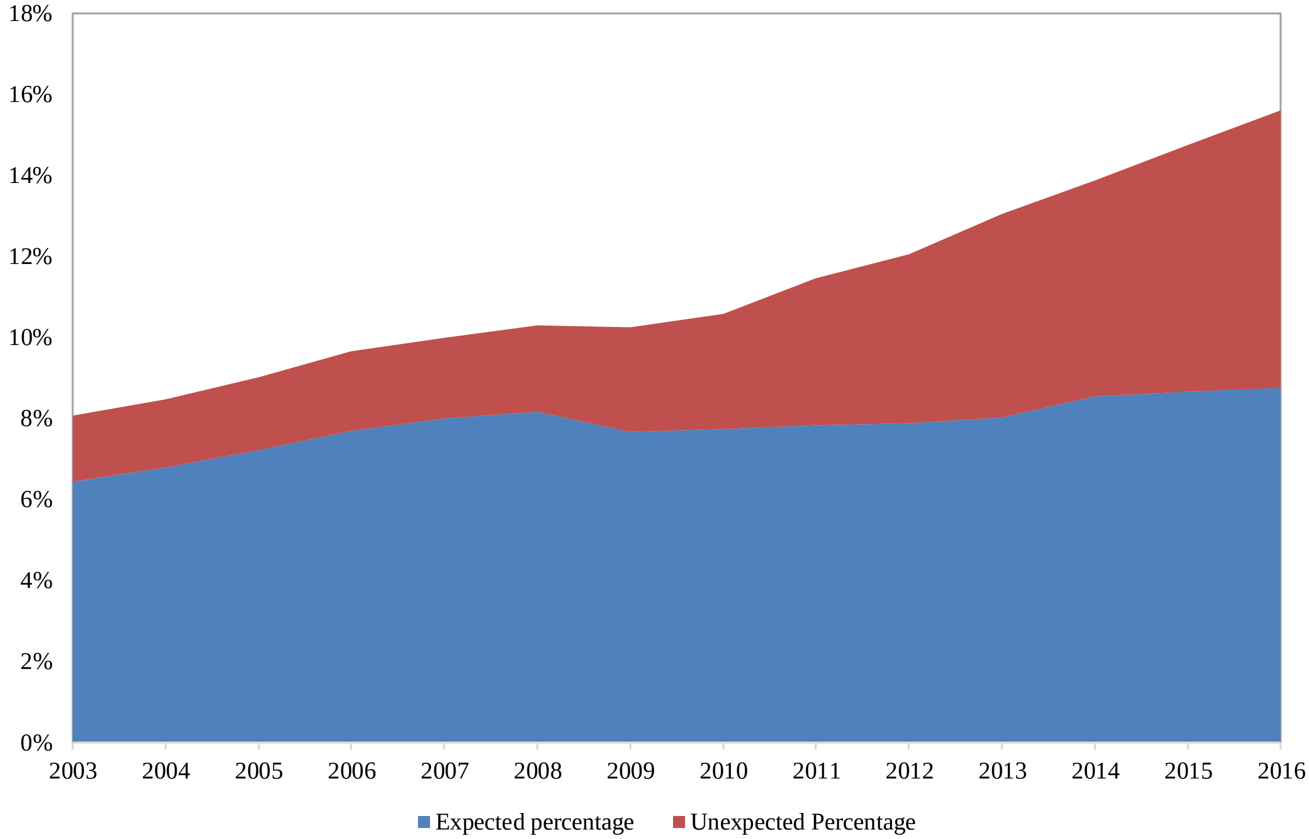
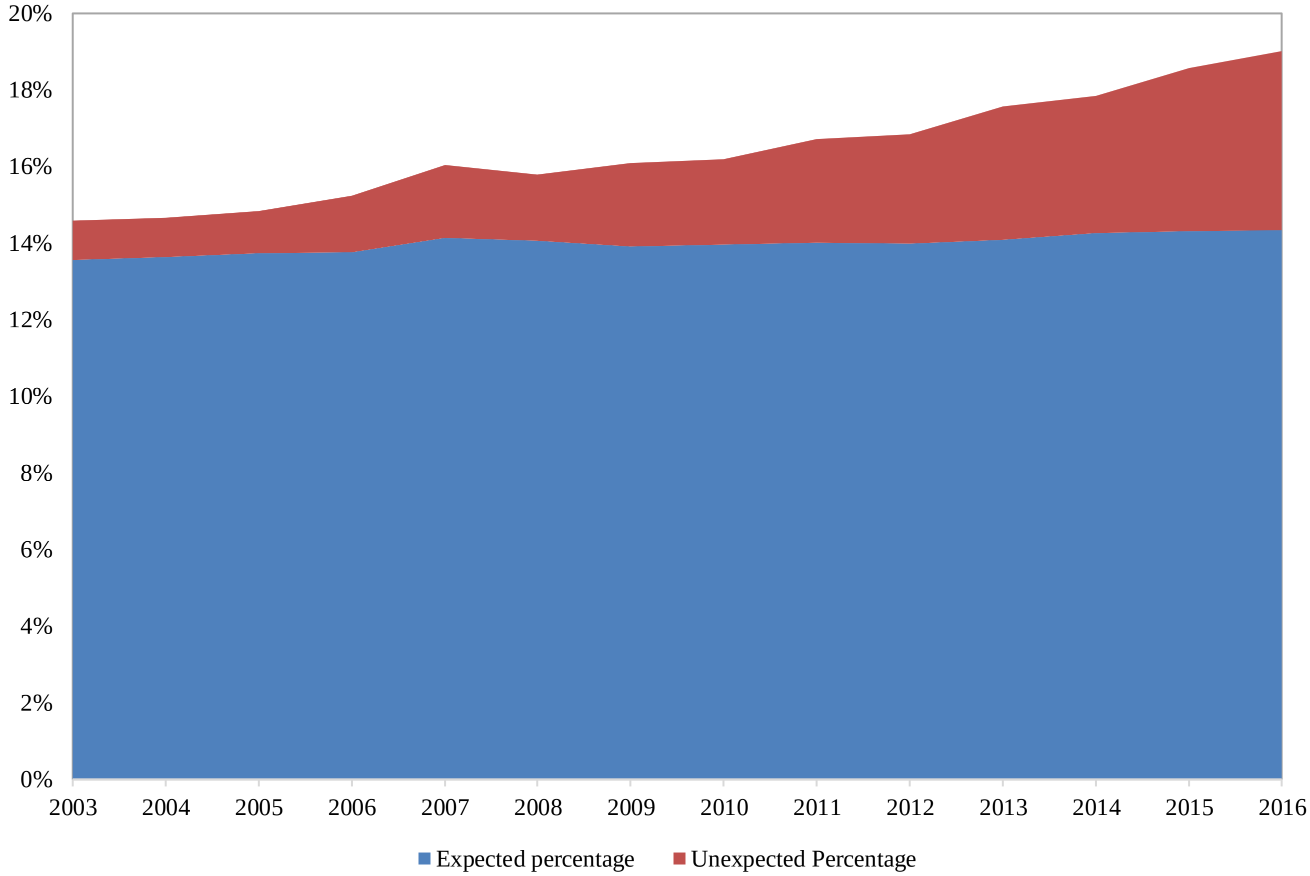


Figure 4C: Expected and unexpected percentage of firms with women on board based on the results reported in Table 6, Panel C

Figure 4C plots the estimated statistics presented in Table 6, Panel C graphically. It shows the expected vs. unexpected share of female directors over time. We plot the predicted share of female directors (in firms with at least one female director) for years 2003 to 2016, based on a two-step Heckman selection model with 1998-2003 as the base period for coefficient estimation. Then we stack on top the unexpected percent of firms, making the total to be the actual percent of firms with women on board.



Appendix A: Variables Definitions

Variable	Description
Firm Characteristics	
INSTOWNER	The percentage of shares owned by institutional investors.
LNTA	The natural logarithm of firm's total assets.
MOMENTUM	The cumulative firm stock returns over the previous 12 months.
ROE	Firm's EBITDA divided by book equity, where book equity is measured as shareholder's equity plus deferred tax and investment credit, less preferred stock.
TOBINSQ	The market value of assets divided by book value of assets, where market value of assets is given by total assets minus book value of equity plus market value of equity.
VOL	Monthly stock return volatility over the previous 60 month.
Board Characteristics	
BOARD_SIZE	The total number of directors sitting on the board.
DIRCOMP	The logarithm of the average of total cash, stock, and option compensation paid to the directors plus one.
FEMALE_DIR	An indicator variable equal to one, if the firm has at least on female director, and 0 otherwise.
FEMALE_DIR_PCTG	The number of women on board divided by the board size.
FEMALE_EXEC	An indicator variable equal to one, if the firm has at least one non-CEO female executive, and zero otherwise.
FEMALE_NONCEO_DIR_PCTG	The number of non-CEO female directors divided by the board size.
INDEP_DIR_PCTG	The number of independent directors divided by the size of the board.
Other Characteristics	
EQUALITY_INDEX	A state-level gender Equality Index following Sugarman and Straus (1988) and measuring economic, political and legal gender equality.
GEND_PD	The median of the industry gender diversity premiums (GEND_PD_IND) across all industries.
GEND_PD_IND	The difference in the log of the value-weighted market-to-book equity ratio (M/B) of all firms with female directors and the log of M/B for all firms with no female directors in a given industry.