



Breaking the Glass Ceiling: The Effects on Perceived Equality of Women Joining the Management Board

Jan Patrick Tollkühn

Bocconi University

Abstract

Recent years have seen women being appointed to board positions at the highest rate ever, supported by awareness of gender inequality and increased regulatory pressure. While external effects of diversity have been explored, changes in internal perceptions remain unexplored. Using a sample of 76,240 ratings on the employer review site Kununu, this study explores the impact of women joining the management board of DAX40 firms for the first time in Germany. To test the effect, a staggered event study with time and firm fixed effects is utilised. The results show that there is an increase in gender equality perception in the quarters following the appointment, with the increase being most significant in the second and third quarters. The identification of non-significant results in the fourth quarter suggests a normalisation effect. The findings outline how changes in leadership shape internal perceptions of equality.

Keywords: board gender diversity; employee reviews; employee perceptions; corporate governance; event study

1 Introduction

Within the Environmental, Social, and Governance (ESG) framework, the “Social” dimension is an often-underexplored component. The undefined nature of the dimension makes it difficult for firms to move from the do no significant harm principle towards substantial contributions across the value chain (Becchetti et al., 2022).

Diversity, as one of the core elements of the “Social” dimension of ESG, has gathered increased interest from stakeholders, regulators, and shareholders (Directive 2022/2381, 2022). Momentum regarding ESG principles varies considerably across regions; nonetheless, they remain relevant to corporate governance discussions globally¹.

Within the “Social” pillar of ESG, gender diversity within firms and especially corporate leadership has emerged as a significant area of research as academics and policymakers increasingly examine how leadership composition affects firm outcomes (Chytis et al., 2024; Yahya, 2023). While a significant amount of literature has been devoted to exploring the effects of board diversity on financial performance

and other firm-level outcomes, little is known about the effects of changes in board-level diversity on employee perceptions within organisations. Yet internal perceptions of the management board and Chief Executive Officer (CEO) are significant in shaping organisational culture, employee engagement, and ultimately affecting firm outcomes (Lin et al., 2024; Mölders et al., 2019; Wang et al., 2017).

This research takes place during a rise of digital transparency. Digital platforms reduce information asymmetry by allowing individuals to share their experiences and giving light to previously unobserved areas of institutions. This digitalisation has enabled crowdsourced insights into firms and their practices.

One such digital platform is Robinhood, which has set out to “democratise finance” (Robinhood Markets, Inc., 2025a). Robinhood, as a retail investor trading platform, offers “commission-free trading” on various financial products (Robinhood Markets, Inc., 2025b). Through cost-free access they achieve “democratisation,” as investing is accessible to the public.

While this transition is happening within financial markets, similar trends of digitalisation and information accessibility are seen in other areas. One such area is the emergence of employer review sites, which allow current and former employees to inform future applicants about the employer. While this information is relevant to possible future applicants, it has also presented a novel, unfiltered source of information regarding the corporate culture of firms and the effects these have on employees.

Examples of employer review sites include Glassdoor and

I also want to express my sincere gratitude to my thesis supervisor, Professor Roberto Vincenzi, for granting me the freedom to explore my topic and for his guidance throughout my research. Further, I want to thank Saskia Spang for her valuable feedback during my studies.

¹ Despite the momentum of ESG-principles, it is noteworthy that Diversity, Equity and Inclusion initiatives have experienced pushback in some jurisdictions, notably in the United States. This pushback follows political developments in the United States challenging ESG agendas (Iacurci, 2025; Kishan & Brogger, 2025; Sorkin et al., 2025; Yu, 2025).

Kununu. Glassdoor operates globally, having accumulated over 212 million reviews for 2.5 million employers (Glassdoor LLC., 2025). Kununu is a similar platform to Glassdoor; however, focusing on firms in Germany, Austria, and Switzerland. It hosts 13 million reviews for just 10,000 employers (Kununu, 2025).

Using data from the employer review site Kununu, this thesis investigates the effect on perceived gender equality of the first woman joining the management board within DAX40 firms in Germany. The DAX40 is the leading stock index in Germany, tracking the performance of the largest listed 40 German companies (Stoxx Ltd., 2025).

Germany presents a particularly good setting for this investigation due to their dual board structure consisting of a management board (Vorstand) and supervisory board (Aufsichtsrat). The management board is responsible for managing day-to-day activities, while the supervisory board consists of shareholder and employee representatives and is obligated to monitor the management board on an ongoing basis (Strenger et al., 2023). The dual structure allows an examination of the effects of management board members who are directly involved in operational decision-making.

This study opens with reviewing existing literature focusing on the information potential of employee reviews and the effects of board diversity on firms. From this, it will describe the constructed sample, leading over into the empirical investigation of the research question. A discussion of the empirical results and a conclusion, outlining the implications of the results and future avenues of research, will finish the paper.

2 Literature Review and Hypothesis Development

2.1 Wisdom of Crowds and Employee Reviews

Wisdom of crowds refers to the notion that group judgements “can be valuable guides in reaching business and investment decisions” (Mennis, 2006, p. 63). The notion was first presented by Surowiecki (2004), who identified the phenomenon that averaging independent judgements on a topic can yield better results than the decision of an individual expert.

In recent years, the concept of “wisdom of crowds” has been extended to new areas of organisational research, such as finance and accounting. This was furthered by an increased information base about individual companies by insiders, such as employees, through electronic word of mouth (Gimpl, 2025). Online employer review platforms such as Kununu and Glassdoor played pivotal roles in allowing analyses of insider information.

Symitsi et al. (2018) use Glassdoor reviews to explore the relationship between US public firm stock returns and employee satisfaction. The paper finds a positive relationship between employee satisfaction and firm performance. Notably, the research also finds abnormal equity returns. These are returns exceeding asset pricing models. The abnormal returns suggest that information about employee satisfaction has not been fully priced in by market participants.

Taking a European perspective, Becker et al. (2022) examine how employee satisfaction measured via Glassdoor reviews relates to stock returns during COVID-19. Becker et al. (2022) focus on firms within the Russell 3000 index. Findings by them suggest that firms that receive higher employee review scores during COVID-19 experience higher stock returns.

Analysing 1.5 million Glassdoor reviews, Brown et al. (2025) use the reviews as proxies of corporate culture within firms and relate them to the accuracy of management forecasts. To measure the information environment within firms, a textual analysis is conducted. Brown et al. (2025) conclude that management forecasts are more accurate in corporate culture settings when employees perceive a stronger organisational culture and better communication channels.

2.2 Board Diversity and Effects on the Firm

2.2.1 Financial Performance

The financial performance of firms is amongst the most extensively studied effects of board diversity, albeit yielding mixed results.

Carter et al. (2003) are amongst the earliest to examine the relationship between board diversity and firm value for Fortune 1000 firms. In their research, they find that diversity, measured by the presence of women or minorities, has a positive association with Tobin's Q, which serves as a proxy for firm value.

Subsequent research by Carter et al. (2010) finds a result contrary to the previous study in 2003 while investigating firms in the S&P 500. They find that there is no statistically significant positive relationship between the financial performance of the firms as measured by Tobin's Q or Return on Assets (ROA) and board membership of women or minorities. While this paper highlights the absence of a positive relationship, it also notes that there is no negative relationship to firm performance.

Research by Campbell and Mínguez-Vera (2008) explores the same relationship in the context of Spain. Their findings report positive effects on firm performance, measured by an approximation for Tobin's Q, for increased board diversity measured by the Blau and Shannon indices. Campbell and Mínguez-Vera (2008) argue that their results suggest that “increased gender diversity can be achieved without destroying shareholder value” (Campbell & Mínguez-Vera, 2008, p. 447). They also predict that positive discrimination to boost female presence in boardrooms would likely continue.

Adams and Ferreira (2009) explore the impact of women within boardrooms while laying a focus on the role of corporate governance mechanisms within firms. They find that gender-diverse boards are associated with stronger monitoring efforts. Adams and Ferreira (2009) reach two conclusions in their paper. Firstly, gender diversity can enhance firm performance when increased monitoring is needed and corporate governance is weak. On the other hand, it may destroy firm value in the setting of good corporate governance through excessive oversight.

Post and Byron (2015) conduct a meta-analysis of 140 studies, finding mixed results. On the one hand, they find no statistically significant relationship between market-based metrics, such as Tobin's Q and female board membership, while also finding that countries with higher gender parity have a positive relationship and in countries with less gender parity the relationship may turn negative. Post and Byron (2015) conclude this to be attributed to differences in reactions by investors.

Taken together, existing literature suggests that increased gender diversity within boardrooms does not necessarily increase firm financial performance. However, given certain conditions such as weak governance frameworks, gender diversity on boards may contribute positively to firm value.

2.2.2 Innovation

Research related to board diversity has extended beyond financial performance and encapsulates other areas such as innovation. Innovation is critical to ensure the long-term viability and competitiveness of firms within markets (Porter, 1992).

J. Chen et al. (2018) find that the presence of female board members is associated with greater innovation, measured using patent count and patent citations. Their empirical research also finds that these positive effects are associated with improved firm performance in innovation-intensive industries.

Expanding upon this, I.-J. Chen et al. (2023) separate board diversity into inherent, acquired, and aggregated board diversity. I.-J. Chen et al. (2023) define inherent diversity as characteristics based on demographic features, while acquired diversity relates to education, age, and expertise. Exploring this, I.-J. Chen et al. (2023) find that there were significant associations of all three types of diversity with innovation output measured by citations and patents.

The findings by I.-J. Chen et al. (2023) also point out that higher acquired board diversity is attributed to higher research and development expenses, which was not found to be the case for inherent board diversity.

This distinction suggests that inherent diversity may facilitate the development of existing innovation capabilities, while acquired diversity may directly enhance innovation investment and resource allocation.

2.2.3 Risk-Taking

Empirical studies strongly suggest that board diversity can significantly influence risk levels within firms. Psychological studies have also illustrated that women, on average, exhibit lower levels of risk appetite (Byrnes et al., 1999; Dawson, 2023). Taking this into account, diversity on corporate boards can therefore level risk-taking by corporates.

Karavitis et al. (2021) showed this concept implicitly through exploring changes in loan spreads attributed to female directors on the board of directors. Analysing bank loan data, a reduction in loan spread by 20.8 basis points

was identified for every one percent increase in the proportion of female board directors. Since loan spreads reflect a lender's risk assessment of the firm, this implies that markets perceive firms with greater gender diversity as less risky.

From the reduction in loan spread, it can be concluded that the presence of female directors reduces risk-taking activities by firms. Bernile et al. (2018) explore the effects of board diversity on firm risk, as measured by volatility of stock returns, using a sample of 21,572 firm-year observations. Bernile et al. (2018) explore the concepts of diversity further, focusing not exclusively on gender diversity, but constructing a multidimensional index to capture diversity. In the empirical results, it is found that higher degrees of board diversity cause less risky financial policy adoptions by boards. Evidence of this behaviour is further reflected through higher dividend payout ratios and lower leverage ratios, which are typically interpreted as indicators of reduced financial risk exposure (Bernile et al., 2018).

Faccio et al. (2016) empirically examine the role of gender at the CEO position in relation to firm leverage. Their research finds a highly significant negative association, suggesting that firms led by a female CEO adopt less aggressive financial structures. Looking at board composition, Adams and Ferreira (2009) find that women have higher board meeting attendance rates than their male counterparts. Within their research, they also find that more gender-diverse boards have a higher likelihood of CEO turnover when stock performance is bad, pointing to them being more risk averse and displaying a more disciplined approach to CEO oversight.

Disclosure literature also indicates positive effects of board diversity, including gender diversity. Seebeck and Vetter (2022) explore the impact of board gender diversity on risk disclosure related to Brexit in the United Kingdom. Their research finds that gender board diversity has a positive effect on corporate risk disclosures. Albeit a critical mass of 20 to 40% female directors must be reached before positive results take effect.

Relating to financial disclosures, Abbott et al. (2012) finds a significant relationship between having at least one woman as a board member and the likelihood of financial restatements. Abbott et al. (2012) conclude that the presence of female board members likely reduces the pace of decision-making and allows for more viewpoints to be communicated and considered. From this, it can be concluded that this will reduce risk to the firm and shareholders.

On the other hand, Adams and Funk (2012) outline findings contrary to the narrative that female board directors are more risk averse. Studying gender differences in Swedish boardrooms, Adams and Funk (2012) find that female board members are less concerned with power but exhibit greater risk tolerance. Therefore, they conclude that having female board members may even lead to increased risk-taking.

Overall, conflicting results are identified by various researchers in different settings. Therefore, it remains unclear whether there is an association between firm risk-taking and diversity at the board level.

2.3 Hypothesis Development

While prior research has focused on the relationship between gender board diversity and various aspects such as firm financial performance, innovation, and risk-taking, the impact on employee perceptions has not been fully explored, especially how such board-level diversity affects employee perception of gender equality. In this study, perceived gender equality refers to an employee's subjective belief that men and women have equal opportunities, are fairly treated, and are included in decision-making processes (Ely & Thomas, 2001; Nishii, 2013).

Perceptions of gender equality positively affect employee commitment to an organisation by increasing retention and their engagement. In addition, firms that are perceived as more inclusive are able to attract better talent (Dauth et al., 2023; Dixon-Fyle et al., 2020).

According to signalling theory, changes to the management board communicate not only internal priorities but also changes in values. For example, a woman being appointed for the first time could illustrate that an emphasis is being placed on better inclusion and gender equality (Connelly et al., 2011).

Symbolic management theory further suggests that organisational actions serve a symbolic function with the aim of sending messages to internal and external stakeholders. Even if the signals are not immediately connected to operational modifications, they may result in changes to how an organisation is perceived (Westphal & Park, 2020). As employees are internal stakeholders closely connected to the business, they are likely to be influenced by a change in leadership, particularly if such a significant change like a woman joining the management board for the first time is taking place. Considering this, employee review platforms such as Kununu allow researchers to derive meaningful insights into changes in employee perceptions of leadership transitions. Based on this rationale, the following hypothesis is developed.

H1. The first appointment of a woman to a firm's management board is associated with a significant increase in employee-perceived gender equality.

3 Data and Sample

3.1 Sample Construction

The sample for this study consists of exchange-listed German firms that were members of the leading German stock index. For the time period between the first quarter of 2012 and the first quarter of 2024, 53 firms were identified that were members of the DAX30 and later the DAX40.

Changes in the composition of the index are not relevant due to the inclusion of all companies that were members of the stock index during the sample period.

3.2 Employee Review Data

To capture perceived equality, data from Kununu.com was used. Kununu is an employee review site where employees are encouraged to publish reviews about their current and former employers. The employee reviews focus on companies in Germany, Austria, and Switzerland.

Users of Kununu can provide numerical ratings and publish text reviews on a variety of topics regarding their working environment, including work-life balance, the image of the employer, and many other topics. Among these different categories of rating, this study will focus on the rating regarding "Gleichberechtigung" (gender equality).

To collect all the relevant data from Kununu, a web-scraping Python program was developed that extracted all the reviews for the relevant companies. Accessing these companies, the program captured a total of 76,240 individual employee reviews between the first quarter of 2012 and the first quarter of 2024.

The variable that is investigated within this thesis reflects employee perceptions on gender equality within their respective company. Kununu allows the employee to use a five-point Likert scale, where 5 illustrates a high degree of equality and 1 corresponds to a complete lack of equality. The study will use the same five-point Likert scale to investigate the effects of the first woman joining the management board.

The Kununu data is aggregated to reflect quarterly average ratings. If there are no reviews for a quarter, the missing datapoint is filled using a backwards-looking moving average from the past four quarters. If this is not possible using four quarters, the same is repeated with three, with two, and finally the previous quarter. The data point is left blank if this method cannot be applied.

The backwards-filling methodology is used especially in earlier time periods where employee reviews are limited due to a lack of awareness about employer review sites.

Furthermore, the scores about communication and total employee satisfaction are also extracted from Kununu. The communication score reflects employee perceptions of clarity, openness and effectiveness of internal communication within the company. The total score is an aggregate measure calculated by Kununu summarising overall employee satisfaction across multiple areas of workplace culture, including evaluations of how interesting tasks are and career development opportunities.

3.3 Firm Board Data

Previous research uses data on board diversity and composition from BoardEx, ExecuComp, or other databases (Bernile et al., 2018; Doan & Iskandar-Datta, 2020; Ye et al., 2019). Historical coverage of German firms in these databases proved to be limited and inaccurate, especially with regard to executive board size and composition.

To ensure data reliability, this analysis reviewed all annual reports of the selected companies within the sample and retrieved data on management board size and composition according to gender. Information regarding the gender of

the CEO was also retrieved. Gender was tracked using photos and the name of the management board member available in the annual report.

Management board composition was tracked on a monthly basis but later aggregated to a quarterly frequency to match the structure of the employee review data.

Clear definitions of the variables explored in this analysis are given in Table 1.

4 Methodology and Empirical Results

4.1 Methodology

From my hypotheses in 2.3, this study employs a staggered event study framework to quantify the effects on employee-perceived equality when the first woman joined the management board in a DAX40 company. A staggered framework is needed due to differences regarding the time when the first appointment of a female board member took place.

Event studies are widely used in economics and finance contexts (MacKinlay, 1997). Currie et al. (2020) show a large increase of event study frameworks in National Bureau of Economic Research Working Papers and in the top five research journals after 2010².

A balanced panel dataset is constructed for each firm meeting the requirements listed in 3.1 for the sample time period of the first quarter of 2012 to the first quarter of 2024. Firms that have female management board members throughout the entire period are excluded to allow for clearer identification of changes in employee-perceived equality (Gormley & Matsa, 2014).

For each firm-treatment, the quarter in which the first woman joins the management board is designated as event time $k = 0$. Post-treatment effects may not materialise immediately or may vary in their significance. The analysis focuses on the four quarters before and after the treatment period ($k \in [-4, +4]$). Conducting the analysis with this methodology enables the estimation of anticipatory effects and delayed responses in employee-perceived equality. Using these estimators allows for a clear examination of the parallel trend assumption, which is central to event studies and difference-in-differences designs (Borusyak et al., 2024; Schmidheiny & Sieglöcher, 2023).

The dependent variable in this analysis is the equality score attributed to a firm in a particular quarter. The regression model to capture the effects on employee-perceived equality of a woman joining the management board for the first time is the following:

$$\text{Equality_score}_{it} = \beta_0 + \sum_{\substack{k \in [-4, +4] \\ k \neq -1}} \beta_k \times \text{EventTime}_{kit} + \gamma_i + \delta_t + \mathbf{X}_{it} + \varepsilon_{it}$$

where EventTime_{kit} denotes dummy variables for the quarters prior to and after the treatment. The variable k defines the relative distance to the treatment quarter, with $k = 0$ being the quarter where the treatment takes place. The period $k = -1$ is excluded as it serves as the reference period (Huntington-Klein, 2021). Firm fixed effects are controlled with the γ_i , and refer to firm-specific time-invariant effects such as industry. Quarterly time fixed effects are accounted for using the δ_t . Time fixed effects absorb time-varying shocks such as governmental regulation or macroeconomic shocks. The vector $\mathbf{X}_{it}$ controls for other firm-specific metrics, such as board size or other employee-specific metrics, such as overall employee satisfaction and employee perceptions of internal communication. The coefficient β_k is the estimator of the regression tracking the average treatment effects on the $\text{Equality_score}_{it}$.

The model is estimated using Ordinary Least Squares with time and firm fixed effects. Standard errors are clustered at the firm level to address autocorrelation and heteroskedasticity within firms over time.

4.2 Summary Statistics

4.2.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the main variables used in the analysis. There are 364 firm-quarter observations considered in the analysis.

The dependent variable Equality_score has a mean of 3.76, indicating a generally positive opinion about gender equality within firms over time. The standard deviation of 0.70 indicates that there is moderate variability between firms over time.

With regard to board structure, during the observations, management boards of DAX40 companies had on average 5.64 board members (Total_board_count), with a standard deviation of 2.17 indicating variability between firms. For this same period, only 0.6 women were on average management board members ($\text{Female_board_count}$). The mean of the variable Female_ceo indicates that for the observation period only 1% of the time a CEO of the firm was also female. Overall, both variables suggest that female corporate leadership in German DAX40 firms remains rare.

Total_score is an overall indication of employee satisfaction with their employer. For the time observations selected, it had a mean of 3.61 with a standard deviation of 0.59. Reviews concerning internal company communication (Comm_score) are slightly lower at 3.26. The variable Log_review_count is the natural logarithm of the number of reviews per quarter per firm. It exhibits a mean of 2.56 with a standard deviation of 1.06. This indicates that the number of reviews varies significantly between firms and quarters.

4.2.2 Correlation Analysis

Table 3 displays Pearson pairwise correlation between the variables included in the analysis. Equality_score displays a strong and positive correlation with Total_score (0.78) and Comm_score (0.68). This indicates that perceptions of gender equality are closely linked to employee perceptions about

² With regard to the “top-five journals”, Currie et al. (2020) consider the following: *American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Quarterly Journal of Economics*, and *Review of Economic Studies*.

company communication and overall satisfaction with the employer.

There is neither a positive nor negative relationship between Equality_score and board characteristics (Total_board_count: -0.02, Female_board_count: -0.01, Female_ceo: -0.03). This shows that there is no linear relationship between board characteristics and Equality_score.

It must also be noted that Total_score and Comm_score are themselves highly correlated to each other (0.88). This strong correlation raises concerns regarding multicollinearity problems in regressions, if both are used as control variables. However, this is not applicable here, as both are used separately.

4.3 Regression Results

This section of the thesis presents the results of the regressions calculated. The regression estimates the effects of the first woman joining the management board on employee perception of gender equality. Table 4 reports the coefficient estimates and standard errors for the quarters surrounding the appointment ($k \in [-4, +4]$, $k \neq -1$). All models include firm and time fixed effects.

4.3.1 Baseline Specifications

Model 1 begins with a regression that has no controls other than firm and time fixed effects. The coefficient estimate following the event is positive and statistically significant following $k = +2$ ($\beta_2 = 0.2317$, $p_2 < 0.1$). At $k = +3$ the effect remains positive and significant ($\beta_3 = 0.2275$, $p_3 < 0.1$), however, at $k = +4$ the effect stops being significant but stays positive ($\beta_4 = 0.2044$).

Model 2 continues with adding Total_board_count as a control variable, thereby controlling for board size. Prior studies, such as those by Bernile et al. (2018), Carter et al. (2003), and Post and Byron (2015), have used board size as a control variable for analyses regarding board composition and firm outcomes. The addition of this control variable strengthens the significance of $k = +2$ ($\beta_2 = 0.2952$, $p_2 < 0.05$) and $k = +3$ ($\beta_3 = 0.2828$, $p_3 < 0.05$). At $k = +4$ the effect is considerably higher than in Model 1 ($\beta_4 = 0.2634$). Although the effect is higher it remains not statistically significant.

Model 3 adds another board characteristic, Female_ceo. The coefficient estimators remain similar to the estimators in Model 2 ($\beta_2 = 0.3042$, $p_2 < 0.05$; $\beta_3 = 0.2908$, $p_3 < 0.05$). Notably, the coefficient from Female_ceo is negative; however, it is not statistically significant.

4.3.2 Including Other Employee Perceptions

Other employee perceptions are added into Models 4 and 5 to account for the possibility that the effect on employee perceptions of equality is driven by a change in other employee perceptions.

Model 4 drops the control variable, Female_ceo, and replaces it with Comm_score. The removal is due to the low variation of this variable within the sample period, which

would limit its interpretability within the model. The effects at $k = +2$ and $k = +3$ lose their significance but remain positive ($\beta_2 = 0.1114$; $\beta_3 = 0.1684$). The effect during the other post quarters is also positive. Comm_score is highly significant, illustrating a positive effect on the Equality_score ($\beta_{\text{Comm_score}} = 0.5556$, $p_{\text{Comm_score}} < 0.01$).

Model 5 removes the Comm_score and replaces it with Total_score to capture possible relations with overall employee satisfaction. Time effects are still positive but remain not statistically significant. At time $k = +2$ and $k = +3$, the effects are smaller than in the previous models ($\beta_2 = 0.0760$; $\beta_3 = 0.0571$). The effect of Total_score is larger than the effect of Comm_score, suggesting that employee perceptions of equality are closely linked to their total satisfaction ($\beta_{\text{Total_score}} = 0.8864$, $p_{\text{Total_score}} < 0.01$).

Caution must be exercised when interpreting the results of Models 4 and 5. High correlations are observed between the variables Comm_score and Total_score, as seen in Table 3. There are also high correlations with Equality_score. Together this raises multicollinearity concerns. While Comm_score and Total_score are modelled separately to avoid multicollinearity, their thematic similarity limits the ability to isolate their individual effects.

Model 6 removes employee perceptions but instead controls for the number of reviews for each firm-quarter. The variable Log_review_count is not statistically significant, yet is positive, indicating a positive effect on gender equality perceptions ($\beta_{\text{Log_review_count}} = 0.0705$). The event time coefficients are positive and statistically significant for some of the quarters following the first woman joining the management board. The coefficients are $\beta_2 = 0.2850$ ($p_2 < 0.05$) and $\beta_3 = 0.2675$ ($p_3 < 0.05$).

4.3.3 Constant Term

The constant represents the baseline of the Equality_score that is achieved when all independent variables are equal to zero and only fixed effects are controlled for.

Across Models 1 to 3 the constant is highly statistically significant ($p < 0.001$). The coefficients are 2.7951, 3.5655 and 3.6372 for the Models 1 to 3, respectively.

Models 4 and 5 see a reduction in the size of the constant. Model 4 has a baseline equality of 2.1535 and Model 5 has only 0.6792. The statistical significance of the constant also changes; whilst in Model 4 the constant is still highly significant ($p < 0.001$), the constant in Model 5 loses all statistical significance. Model 6 regains this statistical significance ($p < 0.001$) and a constant value of 3.4467.

4.3.4 Model Fit and Model Error

The bottom of Table 4 includes information about the model fit and the statistical significance of the model.

Adjusted R^2 indicates the proportion of variance explained by the regression while accounting for the number of variables used in the regression. The lowest Adjusted R^2 is achieved by Model 3 with 0.344. Model 5 which includes the control variables Total_board_count and Total_score

achieved the highest Adjusted R^2 with 0.650. When replacing Total_score with Comm_score Adjusted R^2 falls to 0.546. In conclusion, Model 5 shows the best fit due to having the highest Adjusted R^2 .

All models are highly statistically significant as presented by the probability of their F-Statistics. Each of the models presents these through p-values below 0.001. From this, the null hypothesis is rejected. The null hypothesis in this case is that all of the coefficients, excluding the intercepts/constant, are equal to zero.

All models are robust through the inclusion of time and firm fixed effects. This helps account for shocks, as well as heterogeneity across firms. The use of these fixed effects strengthens the robustness of the models by mitigating omitted variable bias.

Table 4 also presents Durbin-Watson statistics to ensure no autocorrelation. Durbin-Watson statistics are bound to the range $[0, 4]$, with 2 indicating no autocorrelation of the residuals. Although the models have a slightly negative autocorrelation, the size of these are in the range of 2.148 and 2.359, indicating that there is little to no autocorrelation.

5 Discussion

5.1 Interpretation of Empirical Findings

This thesis investigated whether the appointment of a woman for the first time to the management board of a German DAX40 company results in an increase in perceived equality of employees. To investigate this, the study draws upon a staggered event study methodology with time and firm fixed effects. The results of the regression reveal a modest, statistically significant increase in perceived gender equality.

The positive effect is observed at $k = +2$ and $k = +3$. The results are significant at levels between $p_2 < 0.1$ and $p_3 < 0.05$. Whilst the coefficients at $k = +4$ are still positive, they are not statistically significant.

Throughout most models, the time effects post-treatment ($k = +1$, $k = +2$, $k = +3$ and $k = +4$) are positive. This provides evidence that the effect of appointing a woman to the management board for the first time may result in a positive increase in equality perceptions.

The effect at $k = +1$ is not statistically significant in any of the models. This may reflect a lag in how employees respond to changes in leadership composition. According to symbolic management theory, employees notice the change to the management board. However, they are hesitant to react to these changes before other substantive measures supporting gender equality are taken, initiated by the appointment of a woman (Westphal & Park, 2020).

The reduction in size of the positive coefficient in period $k = +4$ suggests that employees may experience a normalisation effect. Normalisation effects have been observed in the field of psychology. Adaptation-level theory suggests that a person will become insensitive to the effect of constant stimuli (Bowling, 2014; Helson, 1964). It can be argued that this

is taking place here, with the effects of the woman being on the management board being the stimuli and employees no longer perceiving this effect.

Board characteristics such as board size and the CEO being female show no significant relationship with equality perceptions. However, post-treatment effects in Model 3 are stronger and more significant than in Model 1. This suggests that the symbolic impact of appointing a woman to the management board may influence employee perceptions of gender equality more than changes in structural board characteristics.

When employee sentiment variables regarding overall employee satisfaction and communication perception are added, the time effects lose their significance. This observation suggests that these characteristics may be driving forces behind the increase in perceived gender equality. However, this is not fully clear and should be interpreted with caution due to the high correlations between Total_score, Comm_score and Equality_score. When the employee sentiment controls are removed but Log_review_count is inserted the statistical significance at $k = +2$ and $k = +3$ persists.

To date, no prior study has explored the relationship between the first appointment of a woman to the management board and employee perceptions of gender equality.

This thesis adds to existing literature on organisational culture and employee perceptions. The results of this analysis show that employee review data facilitates observations of inner firm dynamics. This supports the existence of the “wisdom of crowds” phenomenon, which allows the capture of meaningful firm-level insights with regard to perceived gender equality (Gimpl, 2025; Surowiecki, 2004).

The findings also add to the understanding of the effects of changes in leadership composition on employee perceptions. Previous research has focused almost exclusively on external effects, such as firm value, innovation, or risk-taking (Adams & Ferreira, 2009; Adams & Funk, 2012; I.-J. Chen et al., 2023).

5.2 Limitations of the Study

Despite this thesis offering novel insights, limitations to its methodology must be acknowledged.

Firstly, although the event study uses firm and time fixed effects in an effort to isolate the effect of a woman joining a management board for the first time, the findings remain correlational. Unobserved factors may have influenced the regression, increasing employee perceptions of equality. Reverse causality is also a concern (Godfrey et al., 2024). Reverse causality would see that firms with higher perceived equality perceptions are more likely to appoint women to their management board. However, this appears less likely, as no anticipatory increase in gender equality perceptions is observed within the models.

Another limitation is caused by the study relying on employee reviews. Employee reviews on Kununu are subjective

and therefore can easily introduce bias (Gimpl, 2025). Employees may also find it difficult to quantify equality perceptions, therefore having difficulties making accurate inputs. Especially if employees perceive their employer as not satisfactory, they may be inclined to select a low rating for all categories, not analysing each on their merits.

The sample selected for this thesis is also limited in its scope (Eisenhardt, 1989). With regard to geography, it is restricted to German firms included within the DAX40 index, thereby excluding smaller and non-listed firms. With regard to timeline, this thesis is quite expansive, as it focuses on a time when most firms first appointed a female board member. Using earlier data from Kununu may have resulted in a not sufficiently large information base.

Finally, the use of quarters within the sample also introduces limitations. These lack granularity, potentially missing anticipatory effects or post-treatment effects.

5.3 Future Research Avenues

The methodology of this paper could be adapted to utilise the most modern approaches of panel datasets. A difference-in-differences model could be used to explore this research question again, potentially yielding results with higher statistical significance, as the effects of no woman joining could be modelled with higher precision.

Utilising the Kununu dataset, the research question can be expanded to explore the effect of a woman joining the management board, regardless of her being the first. A follow-up study of this could lead to an evaluation of differences in size effects of a second woman joining compared to the first.

While the use of Kununu data is insightful, the dataset underlying the study could be expanded by using review data from Glassdoor instead of Kununu. This would allow for additional analysis of the effect of women joining the management board with a broader geographic scope.

Furthermore, one future research avenue is to use the text reviews on Kununu to derive a measurement of perceived equality. Brown et al. (2025) conducted a ChatGPT-based textual analysis. As their research focused on forecast precision, their ChatGPT model developed “a measure of a firm’s internal information environment” (Brown et al., 2025, p. 13). For the context of perceived equality, a measure of the firm’s gender equality environment could be developed.

Another possibility is to explore the impact of perceived equality on firm outcomes. For example, literature regarding the positive effect of diversity on firm value by Carter et al. (2003) can be reevaluated using perceived equality instead of measurable diversity.

6 Conclusion

This thesis examined the impact of the first appointment of a woman to the management board on employee perception on equality within DAX40 companies. Utilising a staggered event study framework with time and firm fixed effects

and drawing on electronic word-of-mouth information from Kununu, this study identifies an increase in perceived equality, with the effect being strongest in the second and third quarters following the appointment.

While the effect is no longer significant in the fourth quarter, the results are robust across the models, allowing for the conclusion that women joining the management board do create measurable impacts on employee perceptions of gender equality. The effect is not explained by traditional board characteristics such as size and whether the CEO is female. This suggests that while appointments may be of a symbolic nature, they also have meaningful effects on employees.

These findings contribute to literature regarding the effects of board-level diversity. However, it explores internal effects, not external firm effects such as firm value or others. It also contributes to literature by illustrating how symbolic leadership changes affect internal perceptions.

For companies, these results yield practical implications. The results underscore the importance of gender-diverse boards and their effect on internal perceptions of fairness and equality. Firms should accompany the appointment of the first woman to the management board with continuous policy and procedural changes that are needed to have a lasting positive impact on gender equality perceptions within firms.

Future research should use textual analysis and text reviews to examine external effects of employee-perceived equality on firm performance, innovation, and risk-taking.

References

- Abbott, L. J., Parker, S., & Presley, T. J. (2012). Female Board Presence and the Likelihood of Financial Restatement. *Accounting Horizons*, 26(4), 607–629. <https://doi.org/10.2308/acch-50249>
- Adams, R. B., & Ferreira, D. (2009). Women in the Boardroom and Their Impact on Governance and Performance. *Journal of Financial Economics*, 94(2), 291–309. <https://doi.org/10.1016/j.jfineco.2008.10.007>
- Adams, R. B., & Funk, P. (2012). Beyond the Glass Ceiling: Does Gender Matter? *Management Science*, 58(2), 219–235. Retrieved May 6, 2026, from <https://www.jstor.org/stable/41406385>
- Becchetti, L., Bobbio, E., Prizia, F., & Semplici, L. (2022). Going Deeper into the S of ESG: A Relational Approach to the Definition of Social Responsibility. *Sustainability*, 14(15), 9668. <https://doi.org/10.3390/su14159668>
- Becker, M., Cardazzi, A., & McGurk, Z. (2022). Employee Satisfaction and Stock Returns During the COVID-19 Pandemic. *Journal of Behavioral and Experimental Finance*, 33, 100603. <https://doi.org/10.1016/j.jbef.2021.100603>
- Bernile, G., Bhagwat, V., & Yonker, S. (2018). Board Diversity, Firm Risk, and Corporate Policies. *Journal of Financial Economics*, 127(3), 588–612. <https://doi.org/10.1016/j.jfineco.2017.12.009>
- Borusyak, K., Jaravel, X., & Spiess, J. (2024). Revisiting Event-Study Designs: Robust and Efficient Estimation. *Review of Economic Studies*, 91(6), 3253–3285. <https://doi.org/10.1093/restud/rdae007>
- Bowling, N. (2014). Adaptation-Level Theory. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 28–29). Springer Netherlands. https://doi.org/10.1007/978-94-007-0753-5_25
- Brown, A. B., Wang, V. X., & Zhou, A. (2025). Employee Perceptions of Corporate Culture and Management Forecast Accuracy: Evidence from Glassdoor and ChatGPT. *Accounting Horizons*, 1–20. <https://doi.org/10.2308/HORIZONS-2023-142>
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender Differences in Risk Taking: A Meta-Analysis. *Psychological Bulletin*, 125(3), 367–383. <https://doi.org/10.1037/0033-2909.125.3.367>
- Campbell, K., & Mínguez-Vera, A. (2008). Gender Diversity in the Boardroom and Firm Financial Performance. *Journal of Business Ethics*, 83(3), 435–451. <https://doi.org/10.1007/s10551-007-9630-y>
- Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance. *Corporate Governance: An International Review*, 18(5), 396–414. <https://doi.org/10.1111/j.1467-8683.2010.00809.x>
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance, Board Diversity, and Firm Value. *Financial Review*, 38(1), 33–53. <https://doi.org/10.1111/1540-6288.00034>
- Chen, I.-J., Lin, W. C., Lo, H.-C., & Chen, S.-S. (2023). Board Diversity and Corporate Innovation. *Review of Quantitative Finance and Accounting*, 61(1), 63–123. <https://doi.org/10.1007/s11156-023-01145-4>
- Chen, J., Leung, W. S., & Evans, K. P. (2018). Female Board Representation, Corporate Innovation and Firm Performance. *Journal of Empirical Finance*, 48, 236–254. <https://doi.org/10.1016/j.jempfin.2018.07.003>
- Chytis, E., Eriotis, N., & Mitroulia, M. (2024). ESG in Business Research: A Bibliometric Analysis. *Journal of Risk and Financial Management*, 17(10), 460. <https://doi.org/10.3390/jrfm17100460>
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling Theory: A Review and Assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- Currie, J., Kleven, H., & Zwiers, E. (2020). Technology and Big Data Are Changing Economics: Mining Text to Track Methods. *AEA Papers and Proceedings*, 110, 42–48. <https://doi.org/10.1257/pandp.20201058>
- Dauth, T., Schmid, S., Baldermann, S., & Orban, F. (2023). Attracting Talent Through Diversity at the Top: The Impact of TMT Diversity and Firms' Efforts to Promote Diversity on Employer Attractiveness. *European Management Journal*, 41(1), 9–20. <https://doi.org/10.1016/j.emj.2021.10.007>
- Dawson, C. (2023). Gender Differences in Optimism, Loss Aversion and Attitudes Towards Risk. *British Journal of Psychology*, 114(4), 928–944. <https://doi.org/10.1111/bjop.12668>
- Directive 2022/2381. (2022). Directive (EU) 2022/2381 of the European Parliament and of the Council of 23 November 2022 on Improving the Gender Balance Among Directors of Listed Companies and Related Measures (Text with EEA Relevance). Retrieved May 6, 2026, from <http://data.europa.eu/eli/dir/2022/2381/oj>
- Dixon-Fyle, S., Dolan, K., Hunt, D. V., & Prince, S. (2020). *Diversity Wins: How Inclusion Matters* (tech. rep.). McKinsey & Company. Retrieved July 24, 2025, from <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters%5C#/>
- Doan, T., & Iskandar-Datta, M. (2020). Are Female Top Executives More Risk-Averse or More Ethical? Evidence from Corporate Cash Holdings Policy. *Journal of Empirical Finance*, 55, 161–176. <https://doi.org/10.1016/j.jempfin.2019.11.005>
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), 532. <https://doi.org/10.2307/258557>
- Ely, R. J., & Thomas, D. A. (2001). Cultural Diversity at Work: The Effects of Diversity Perspectives on Work Group Processes and Outcomes. *Administrative Science Quarterly*, 46(2), 229–273. <https://doi.org/10.2307/2667087>
- Faccio, M., Marchica, M.-T., & Mura, R. (2016). CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation. *Journal of Corporate Finance*, 39, 193–209. <https://doi.org/10.1016/j.jcorpfin.2016.02.008>
- Gimpl, N. (2025). The Wisdom of Electronic Employee Crowds—Employee Reviews as a Data Source in Finance, Accounting, Economics, and Management Research: A Systematic Literature Review. *Intelligent Systems in Accounting, Finance and Management*, 32(2), e70007. <https://doi.org/10.1002/isaf.70007>
- Glassdoor LLC. (2025). About Us | Glassdoor. Retrieved July 15, 2025, from <https://about-us.glassdoor.com/site-us/>
- Godfrey, C., Hoepner, A. G. F., Lin, M.-T., & Poon, S.-H. (2024). Women on Boards and Corporate Social Irresponsibility: Evidence from a Granger Style Reverse Causality Minimisation Procedure. *The European Journal of Finance*, 30(1), 1–27. <https://doi.org/10.1080/1351847X.2020.1841664>
- Gormley, T. A., & Matsa, D. A. (2014). Common Errors: How to (and Not to) Control for Unobserved Heterogeneity. *Review of Financial Studies*, 27(2), 617–661. <https://doi.org/10.1093/rfs/hht047>
- Helson, H. (1964). *Adaptation-Level Theory*.
- Huntington-Klein, N. (2021). Chapter 17—Event Studies. In *The Effect: An Introduction to Research Design and Causality* (First, pp. 407–434). Chapman and Hall/CRC. Retrieved July 15, 2025, from <https://theeffectbook.net/ch-EventStudies.html>
- Iacurci, G. (2025). 'game over' for esg investing due to trump backlash? analysts say no [Section: Personal Finance]. Retrieved July 14, 2025, from <https://www.cnbc.com/2025/03/31/trumps-backlash-isnt-game-over-for-esg-investing.html>
- Karavitis, P., Kokas, S., & Tsoukas, S. (2021). Gender Board Diversity and the Cost of Bank Loans. *Journal of Corporate Finance*, 71, 101804. <https://doi.org/10.1016/j.jcorpfin.2020.101804>
- Kishan, S., & Brogger, T. H. (2025). Why ESG Faces Backlash and Its Future Under Trump 2.0. *Bloomberg.com*. Retrieved July 14, 2025, from <https://www.bloomberg.com/news/articles/2025-03-03/why-esg-faces-backlash-under-trump-2-0>
- Kununu. (2025). Arbeitgeber bewerten Finde deinen besten Arbeitgeber. Retrieved July 15, 2025, from <https://www.kununu.com/>
- Lin, S., Zhang, Y., Wang, Y., & Geng, H. (2024). The Impact of CEO Reputation on ESG Performance in Varying Managerial Discretion Contexts. *Finance Research Letters*, 70, 106368. <https://doi.org/10.1016/j.frl.2024.106368>
- MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 35(1), 13–39. Retrieved July 15, 2025, from <https://www.jstor.org/stable/2729691>
- Mennis, E. A. (2006). Review of The Wisdom of Crowds: Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations. *Business Economics*,

- 41(4), 63–64. Retrieved July 12, 2025, from <https://www.jstor.org/stable/23490286>
- Mölders, S., Brosi, P., Spörrle, M., & Welp, I. M. (2019). The Effect of Top Management Trustworthiness on Turnover Intentions via Negative Emotions: The Moderating Role of Gender. *Journal of Business Ethics*, 156(4), 957–969. <https://doi.org/10.1007/s10551-017-3600-9>
- Nishii, L. H. (2013). The Benefits of Climate for Inclusion for Gender-Diverse Groups. *Academy of Management Journal*, 56(6), 1754–1774. <https://doi.org/10.5465/amj.2009.0823>
- Porter, M. E. (1992). Capital Disadvantage: America's Failing Capital Investment System. *Harvard Business Review*, 70(5), 65–82.
- Post, C., & Byron, K. (2015). Women on Boards and Firm Financial Performance: A Meta-Analysis. *The Academy of Management Journal*, 58(5), 1546–1571. Retrieved July 11, 2025, from <https://www.jstor.org/stable/24758233>
- Robinhood Markets, Inc. (2025a). About Us. Retrieved July 14, 2025, from <https://robinhood.com/us/en/about/legal/>
- Robinhood Markets, Inc. (2025b). Explore US Stock and ETF Tokens & Crypto | Robinhood EU. Retrieved July 15, 2025, from <https://robinhood.com/eu/de/>
- Schmidheiny, K., & Sieglöcher, S. (2023). On Event Studies and Distributed-Lags in Two-Way Fixed Effects Models: Identification, Equivalence, and Generalization. *Journal of Applied Econometrics*, 38(5), 695–713. <https://doi.org/10.1002/jae.2971>
- Seebeck, A., & Vetter, J. (2022). Not Just a Gender Numbers Game: How Board Gender Diversity Affects Corporate Risk Disclosure. *Journal of Business Ethics*, 177(2), 395–420. <https://doi.org/10.1007/s10551-020-04690-3>
- Sorkin, A. R., Mattu, R., Warner, B., Kessler, S., Merced, M. J. d. l., & Hirsch, L. (2025). D.E.I. on the Ropes Ahead of the Next Trump Era. *The New York Times*. Retrieved July 14, 2025, from <https://www.nytimes.com/2025/01/17/business/dei-trump-meta-zuckerberg.html>
- Stoxx Ltd. (2025). DAX. Retrieved July 15, 2025, from <https://stoxx.com/index/dax/>
- Strenger, C., Redenius-Hövermann, J., & Demirtaş, G. (2023). The Governance System of Germany: Background and Discussion of Its Code. *Frankfurt School: Corporate Governance Institute Working Paper*. Retrieved July 14, 2025, from https://www.frankfurt-school.de/en/dam/jcr:dfc1ae1d-57ca-40f5-9c6f-397a2ff5d909/CGI_WP_GovernanceSystemOfGermany_20230727.pdf
- Surowiecki, J. (2004). *The Wisdom of Crowds: Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations*. Doubleday.
- Symitsi, E., Stamolampros, P., & Daskalakis, G. (2018). Employees' Online Reviews and Equity Prices. *Economics Letters*, 162, 53–55. <https://doi.org/10.1016/j.econlet.2017.10.027>
- Wang, D., Feng, T., & Lawton, A. (2017). Linking Ethical Leadership with Firm Performance: A Multi-Dimensional Perspective. *Journal of Business Ethics*, 145(1), 95–109. <https://doi.org/10.1007/s10551-015-2905-9>
- Westphal, J., & Park, S. H. (2020). Introduction to the Symbolic Management Perspective. In *Symbolic Management* (1st, pp. 1–18). Oxford University Press/Oxford. <https://doi.org/10.1093/oso/9780198792055.003.0001>
- Yahya, H. (2023). Female Leadership and ESG Performance of Firms: Nordic Evidence. *Corporate Governance*, 25(1), 109–127. <https://doi.org/10.1108/CG-03-2023-0129>
- Ye, D., Deng, J., Liu, Y., Szewczyk, S. H., & Chen, X. (2019). Does Board Gender Diversity Increase Dividend Payouts? Analysis of Global Evidence. *Journal of Corporate Finance*, 58, 1–26. <https://doi.org/10.1016/j.jcorpfin.2019.04.002>
- Yu, S. (2025). Trump Administration Pushback Hits US Gender Diversity Efforts. *Financial Times*. Retrieved July 14, 2025, from <https://www.ft.com/content/c234079a-f5cb-455e-a3dd-bc44de7235ee>