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**BOARD GENDER DIVERSITY AND ACCOUNTING CONSERVATISM
DURING COVID-19: A STUDY OF EUROPEAN COUNTRIES**

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Abstract

Gender diversity has become increasingly important in the academic and business world. In 2022 the European Union introduced the “Women on Boards” directive which makes it obligatory for firms to have a minimum number of females on corporate boards as of 2026. Another important topic is the behavior of firms and executives during uncertainty and its effect on company policies. Due to the increasing importance of both gender diversity and uncertainty it is interesting to examine their effect on financial reporting decisions. This paper examines the association between board gender diversity and accounting conservatism and whether COVID-19 influences this association. Using a sample size of 4,505 observations from 847 European firms from the period 2015-2022 this paper finds partial support that board gender diversity is positively associated with accounting conservatism. This thesis finds no evidence that COVID-19 is able to strengthen this association. This study contributes to prior research by being one of the few studies that focus on board gender diversity in relation with accounting conservatism. Furthermore, this paper focuses on a different geographical area and examines the effect of an uncertain time period on financial reporting decision-making.

Key words: board gender diversity, accounting conservatism, uncertainty, COVID-19, Europe

1. Introduction

Over the last decades, gender diversity has become an important topic in society and business. Especially gender representation in the boards of listed companies has become the focus of the media and academic literature (Brunzell and Liljebloom, 2014). Therefore, the aim of this paper is to examine the association between board gender diversity and accounting conservatism and whether an uncertain period, such as COVID-19, has an effect on this association. The research question is as follows: *Is there an association between board gender diversity and accounting conservatism and does COVID-19 strengthen this association ?*.

The perspective on the role of women in society and business changed over the last decades. Especially, gender diversity and representation in high executive positions has become increasingly important. In 2005, Norway was the first country to implement a mandatory gender quota on the board of listed companies (Fouche, 2022). As a result, various countries worldwide followed this example and implemented a mandatory quota as well. These developments led to the ‘Women on Boards’ directive by European Parliament. This directive obligates publicly listed companies to have at least 40% of the non-executive directors to be female from June 2026 onwards (European Parliament, 2022). The push for more women in executive positions could lead to changes in decision-making, since prior literature has established several benefits of increasing the number of women on boards. Women have different skills compared to men as well as the fact that women bring new perspectives to the table, which can be beneficial in corporate decision-making (Robinson and Dechant, 1997; Anderson, Reeb, Upadhyay and Zhao 2011; Bennouri, Chtioui, Nagati and Nekhili, 2018). The increasing societal importance of gender diversity led to researchers investigating its effect on the role of the board and its monitoring tasks. Especially the influence of gender diversity on the effectiveness of a board has been examined with each study focusing on different aspects such as risk-taking, firm performance and financial reporting decisions (e.g., Peni and Vähämaa, 2010; Aifuwa and Embele, 2019; Bruna, Dang, Scotto and Ammari, 2019). Research in the field of accounting decisions has not yet provided conclusive evidence. Where some authors find that gender does not affect accounting decisions such as tax avoidance and discretionary accruals (Dyreg, Hanlon and Maydew, 2010; Ge, Matsumoto and Zhang, 2011), others do find a positive effect of gender diversity on accounting practices and reporting quality (Srinidhi, Gul and Tsu, 2011; Liu, Wei and Xie, 2016, Dobija, Hryckiewicz, Zaman and Paluwska, 2022). These mixed results regarding gender diversity and financial reporting decisions make accounting conservatism an interesting topic to examine.

Furthermore, over the last years uncertainty in relation with gender has been examined. The focus has been especially on the differences in risk behavior between males and females where prior literature has found that female executives make more risk averse choices (Charness and Gneezy, 2012; Faccio, Marchica, and Mura, 2016). Shropshire, Peterson, Bartels, Amanatullah, and Lee (2021) even find that the female preference for a less risky strategy is stronger in times of high uncertainty. Despite this finding, little research has been conducted on specifically female behavior during uncertain periods. Therefore, this paper aims to decrease the gap in literature and add to existing research.

In order to answer the research question, this study examines a sample of European firms from the period 2015-2022. The financial data is gathered from Compustat Global and board data is gathered from BoardEx. Firms stationed in countries with a mandatory quota law are excluded from the sample. Accounting conservatism is measured using two frequently used proxies, namely non-operating accruals and market-to-book ratio (Francis, Hasan, Park and Wu, 2014) and board gender diversity is measured using the ratio of female directors on the board. Using Ordinary Least Squared (OLS) regression with year-, industry-, and country fixed effects, I find partial support for hypothesis 1, which states that board gender diversity is positively associated with accounting conservatism. Additionally, I find no evidence that COVID-19 strengthens this association. To answer the research question, there is partial support for the positive association between board gender diversity and accounting conservatism and COVID-19 does not strengthen this association.

This study contributes to existing literature by focusing on a different geographical area. Prior literature on gender diversity and financial reporting decisions has mainly focused on North America (Francis et al., 2014) and the Nordic countries (Schadewitz and Spoor, 2021). Differences in culture or policies might influence the association between gender diversity and accounting conservatism, therefore focusing on multiple European countries might provide helpful insights. Additionally, this paper adds to literature regarding uncertainty by examining the effect of COVID-19. Shropshire et al. (2021) focus on executive gender and accounting conservatism and use economic downturn as uncertainty period. It is interesting to examine whether a different and recent uncertain time period, such as COVID-19, has a similar effect. Besides addressing the gap in literature, the result of this paper adds to the existing evidence that female directors indeed are more risk-averse and that an increase in the number of females on the board is associated with an increase in conservative financial reporting.

Next to the academic relevance of this paper, there are also practical implications. To know the effects of gender diversity on accounting practices would be beneficial for executives. As the composition of the board influences how conservative a firm reports, executives could make more thoughtful decisions regarding, for example, risk management or decisions about long-term firm strategy. Additionally, risk-averse behavior could potentially lead to better reporting quality which would make a firm's annual financial report more trustworthy and reliable. A reliable financial report is valuable to shareholders and other stakeholders and could positively influence a firm's reputation.

The structure of this paper is as follows. Section 2 includes the hypotheses and its theoretical background. The sample selection process and the research design are explained in Section 3 while Section 4 presents the descriptive statistics and results from the multivariate analysis. The final section (5) provides a summary of the research conducted, potential limitations and recommendations for future research.

2. Theoretical background and hypotheses development

2.1 Board gender diversity

The role of the board and its strategic involvement has been a widely researched topic. The theory underlying this discussion on the role of the board is the agency theory which argues that managers' behavior is focused on the firm's shareholders (Jensen and Meckling, 1976). In this case, information asymmetry plays an important role as managers have an information advantage compared to shareholders (Barako, Hancock and Izan, 2006). To limit this asymmetry a certain level of control is needed which is provided by the board of directors (Vitolla, Raimo and Rubino, 2020). The board is often seen as a monitoring and control mechanism that ensures that managers also keep in mind shareholders' interests (Donnelly and Mulcahy, 2008). Additionally, the board is responsible for "defining strategies and policies as well as overseeing the company's activities" (Maztoul, 2014; Zouari and Dhifi, 2021). Gerwanski, Kordsachia and Velte (2019) even argue that specific board characteristics can influence management decisions regarding reporting.

One of these board characteristics frequently studied is board gender diversity. Various research conducted on the effect of board gender diversity on board monitoring, advising, and firm performance provide mixed findings on whether board gender diversity has an impact. Adams and Ferreira (2009) find that women positively influence board monitoring, as a higher level of board gender diversity leads to CEO turnover being more sensitive to stock return performances and more gender diverse boards more often tend to impose liability on CEOs for poor stock prices. Additionally, Triki Damak (2018) and Fan, Jiang, Zhang and Zhou (2019) show that women are more effective monitors, as the presence women on the board is associated with a lower level of earnings management. On the other hand, some other studies suggest that the monitoring behavior of male and female directors does not differ. Sila, Gonzalez and Hagedorff (2016) argue that gender does not affect the level of equity risk taken by a firm and Sheedy and Lubojanski (2018) find little evidence for the hypothesis that female directors show more risk desirable behavior. These authors thus argue that there is little difference between the risk behavior of men and women and in turn imply that also the monitoring behavior does not differ. The reason that the monitoring behavior between men and women does not differ could be due to women altering their behavior conform a male-dominated culture which often exists in the board room (Sila, Gonzalez and Hagedorff, 2016; Sheedy and Lubojanski, 2018). Finally, others (Lara, Osma, Mora and Scapin, 2017) conclude that there is an insignificant relation between female directors and earnings management. Literature on the effect of board gender diversity on firm performance is also inconclusive, as some studies report a positive relation between board gender diversity and firm performance (Carter, Simkins and Simpson, 2003; Campbell and Mínguez-Vera, 2008; Terjesen, Couto and Francisco, 2016) other studies find a non-significant effect (Miller and Triana, 2009) and even a negative association between board gender diversity and firm performance (Darmadi, 2011; Mínguez-Vera and Martin, 2011).

When focusing on board gender diversity, there are various theoretical perspectives that argue that greater gender diversity further enhances the performance and effectiveness of a board namely the agency theory (Jensen & Meckling, 1976), the resource dependency theory (Terjesen

et al., 2016) and the upper-echelon theory (Hambrick and Mason, 1984). Jensen & Meckling (1976) argue that, based on agency theory, boards have the task to monitor management and align its interest with those of shareholders. The effectiveness of board monitoring in constraining the self-serving behavior of managers is influenced by board independence and diligence (Fan et al., 2019). Prior research concludes that female directors exhibit more independent thinking since they are not part of the “old boys club” (Carter et al., 2003; Adams and Ferreira, 2009). Additionally, female directors generally show risk averse behavior and accept opportunistic behavior less easily which in turn leads to more active monitoring (Huang and Kisgen, 2013; Levi, Li and Zhang, 2014). This independent and active monitoring behavior of female directors is beneficial for board monitoring. Furthermore, existing literature has shown that increasing the number of women on a board has several benefits that could help with this monitoring task. Women are more likely to take on an active role in their board (Virtanen, 2012), ask questions (Bilimoria and Wheeler, 2000) and demonstrate participative leadership (Eagly and Johnson, 1990). Additionally, Torchia, Calabro and Huse (2011) show that women's ability to influence board decisions increases as the number of women on the board increases. An increasing number of women on the board also enhances management oversight (Srinidhi, et al., 2011). The gender structure of a board could therefore potentially influence the decisions it makes with regards to managers and shareholders.

Where the agency theory focuses on the monitoring task of the board, other theories, such as the resource dependence theory and the upper echelon theory, emphasize the importance of individual behavior of top-level executives. Resource dependency theory argues that a firm's need to obtain external resources determines how a firm's behavior is formed (Pfeffer and Salancik, 2003). Increasing the number of women on the board is beneficial due to the unique and valuable resources that female directors bring to the board (Terjesen et al., 2016). They have enhanced sensitivity and have a participative decision-making style (Williams, 2003; Islam, French and Ali, 2022). Moreover, evidence shows that women can understand certain markets better than males and that they bring experience from a non-business background (Arfken, Bellar and Helms, 2004; Singh, Terjesen and Vinnicombe, 2008). By having these various perspectives, creativity and innovation regarding problem-solving is improved (Terjesen et al., 2016). Similar to the resource dependency theory, the upper echelon theory suggests that individual characteristics are important in corporate-level decision making. The characteristics of managers influence a firm's strategy and in turn firm performance (Hambrick and Mason, 1984). The upper echelon's original focus is on top management teams, however prior research has used this theory to draw conclusions regarding boards as well (Finkelstein, Hambrick and Cannella, 2009). Hambrick (2007) argues that directors have different cognitive frames and thus different individual characteristics which can affect firm performance as well.

The different characteristics of men and women also affect a person's risk-taking approach. Previous research has shown that men tend to take more financial risks compared to women (Charness and Gneezy, 2012). Additionally, Charness and Gneezy (2012) argue that women are seen as more careful when making financial decisions. Literature also concludes that female board members reduce risk in R&D investments, reduce enthusiasm for acquisitions and firms with female board members face less lawsuits (Levi, Li and Zhang, 2014; Chen, Ni and Tong, 2016;

Adhikari, Agrawal and Malm, 2019). In line with these findings, prior research concludes that a change in CEO or CFO gender from male to female reduces the risk-taking strategy of a firm (Francis, et al., 2014; Faccio, et al., 2016). Additionally, Kravet (2014) finds a negative association between accounting conservatism and acquisition riskiness meaning that managers that report more conservatively make less risky investment decisions.

The role of gender and risk-taking in financial reporting has been previously researched. Francis et al. (2014) examine the effect of CFO gender on accounting conservatism and conclude that the level of accounting conservatism increases when a female CFO has been hired to replace a male CFO. Other studies similarly conclude that female executives apply more conservative techniques and utilize more risk-averse accounting behavior compared to male executives (Peni and Vähämaa, 2010; Plöckinger, Aschauer, Hiebl and Rohatschek, 2016). Additionally, in their study Davis and Garcia-Cestona (2023) measure financial reporting quality as the number of restatements and conclude that the chance of restatements is lower when the CFO is female and when the number of women on the board of directors is higher.

Females thus take on a more independent and active monitoring role compared to male directors thereby indicating that a more gender diverse board benefits board monitoring. Additionally, female directors bring different perspectives, skills and characteristics to the board. The different characteristics of male and females also lead to a different risk-taking approach between the two genders, where female executives prefer a risk averse strategy. Based on these arguments regarding female risk-behavior and the link with accounting conservatism the following hypothesis is proposed:

Hypothesis 1: There is a positive association between board gender diversity and accounting conservatism

2.2 Uncertainty and COVID-19

Uncertainty has become an important field of research over time resulting in the development of various types and dimensions of uncertainty (Sniazhko, 2019). One of the frameworks used in prior literature is Miller's framework (1992). Miller (1992) divides the concept of uncertainty into three distinct categories namely environmental uncertainty, firm uncertainty and organizational uncertainty. Environmental uncertainty entails the political, economic and cultural aspects of a country, industry uncertainty focuses on the demand and competition and firm uncertainty includes specific firm traits (Sniazhko, 2019). Each of these uncertainty types focus on either the macro-, or micro-environment of a firm. When applying these types of uncertainty into research, prior studies on crisis and uncertainty focus on different periods that could be marked as highly uncertain. Salvato, Sargiacomo, Amore and Minichilli (2020) and Oh and Oetzel (2022) focus on the effects of natural disasters on multinational enterprises and family businesses. Other studies focus on economic downturn (Shropshire et al., 2021) or the financial crisis and examine the effects of the financial crisis on, for example, firm performance and audit committee characteristics (Aldamen, Duncan, Kelly, McNamara and Nagel, 2011). Literature on crisis and uncertainty also include the

global health pandemic of COVID-19. The COVID-19 classifies as an a period with uncertainty, as Knight (1921) defines an uncertainty as “the lack of knowledge about the probabilities of the future state of events that may influence a firm” (Knight, 1921; Sharma, Leung, Kingshott, Davacik and Cardinali, 2020). Managers might estimate the firm risks involved with COVID-19, however they cannot estimate the full impact of the pandemic on society, making COVID-19 an uncertain period in time (Sharma et al., 2020). The pandemic differs from natural disasters and the financial crisis as an uncertainty, since it does not only affect environmental uncertainty but also industry and firm uncertainty (Sharma, et al., 2020).

There is an ongoing debate which of the three types of uncertainty of Miller’s framework (1992) is the most beneficial for firms to focus on (Sniashko, 2019). These different opinions could hinder or restrict managers in their decision-making, as they would have to take all types of uncertainty into account. The effectiveness of decision-making can be influenced by the inability to eliminate uncertainty and results in the need to adopt approaches that can help deal with this uncertainty (Sniashko, 2019). Literature has identified two categories of uncertainty management, namely uncertainty reducing strategies and uncertainty coping strategies (Simangunsong, Hendry, and Stevenson, 2012). Reducing strategies focus on approaches that help managers reduce the uncertainty at its origin. These strategies follow from the intrinsic motivation of managers and firms to reduce the uncertainty in the environment. On the other hand, coping strategies focus on minimizing the impact of the uncertainty instead of altering the uncertainty itself. These uncertainty management approaches help companies to change its firm strategy in order to manage the uncertainty (Simangunsong et al., 2012; Sniashko, 2019). When looking at uncertainty management in practice, Persakis and Iatridis (2014) find that managers increase accruals and decrease the predictability of earnings in order to cope with economic recession. Additionally, studies find that auditors make more conservative decisions and issue more going-concern opinions for the period after the global financial crisis (Geiger, Raghunandan, Riccardi, 2014; Carson, Fargher, Zhang, 2019)

While studies thus conclude that, in practice, managers and auditors display more conservative behavior in times of uncertainty, there is little evidence on the role of the board of directors in times of crisis. Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012) conclude that an overall good corporate governance system should reduce extravagant risk-taking by managers and protect shareholders’ interests in times of the financial crisis. When focusing on the tasks of the board of directors, Cambrea, La Rocca, and Paolone (2021) argue that during a crisis, the board of directors focus less on their monitoring activities and focus more on helping the firm to survive. Board members play a crucial role during a crisis, since they have the knowledge and experiences managers can utilize (Minichilli and Hansen, 2007). This leads to an active collaboration between managers and directors which improves the decision-making process and a higher degree of transparency (Cambrea et al., 2021). While this would benefit firm processes, other authors have found negative effects of uncertainty on firm performance. In periods of high regulatory uncertainty, the level of capital investments and number of mergers and acquisitions actually decrease (Gulen and Ion, 2016; Bonaime, Gulen and Ion, 2018). Additionally, R&D expenses decrease in times of uncertainty in order to manage costs (Fan et al., 2019) and managers

might be more inclined to reduce non-core investments by persevering part of the firm's earnings for uncertain times (Smulowitz and Smulowitz, 2023).

When focusing on the role of gender during uncertainty, female leaders are often preferred in crisis times (Ryan, Haslam, Hersby and Bongiorno, 2011). While the “glass-cliff” phenomenon might play a role in appointing female directors during crisis (Ryan and Haslam, 2005) other authors argue that the preference of female leaders originates from the fact that females might take more cautious measures during a crisis (Shropshire, et al., 2021). Ryan et al. (2011) find that women are seen to possess certain feminine traits such as being understanding, intuitive and tactful. These characteristics together with a female director's view on change and the ability to advocate for new initiatives improve firm resilience in coping with crises (Cosentino and Paoloni, 2021) and enable them to alter the company’s course in the right direction (Ryan et al., 2011). In business context, prior research finds differences in behavior between males and females during crisis times. Female entrepreneurship improves a firm's ability to adapt to changes in the business environment and decreases risky behavior during uncertain periods (Vasilić, Popović-Pantić and Semenčenko, 2020). Other authors conclude that female CEOs pursue less strategic risk-taking compared to male CEOs during economic downturn (Shropshire et al., 2021). Thus, in times of more uncertainty, female CEOs engage in less strategically risky behavior. Additionally, during crisis times, banks with female CEOs have higher levels of equity capital and act more conservatively (Palvia, Vähämaa, Vähämaa, 2015). These arguments provide initial evidence that females show more risk averse behavior during crisis compared to normal conditions (Nasih, Wardani, Harymawan, Putra and Sarea, 2022).

Building on the research of Shropshire et al. (2021) and taking into account the increase in female risk-averse behavior during uncertain periods, I assume that during a crisis period, such as COVID-19, female leaders exhibit less risky behavior leading to the following hypothesis:

Hypothesis 2: COVID-19 strengthens the association between board gender diversity and accounting conservatism

3. Methodology

3.1 Sample selection

The target population consists of publicly listed non-financial European-based firms from the period 2015-2022. Financial data and stock price data are gathered from Compustat Global. The BoardEx database is used to collect the corporate governance information. The initial sample consists of 26,084 unique firm-year observations. First, firms with missing financial and corporate governance information are excluded from the sample resulting in 14,373 firm-year observations. Additionally, similar to Francis et al. (2014) utility firms and financial companies are excluded (SIC code between 4900-4999 and 6000-6999) resulting in a sample of 13,634 firm-year observations. Moreover, countries that have a mandatory gender quota are excluded from the sample as this might bias the results. According to a study conducted by Kirsch (2021) the

following countries from the European Union have a mandatory gender quota: Austria, Belgium, France, Germany, Greece, Italy, Netherlands, Portugal and Spain. Additionally, Iceland and Norway, which are European countries but not part of the European Union, are excluded from the sample due to this mandatory quota. Finally, the Compustat Global database includes non-European firms as well, therefore these are also excluded from the sample. The final sample consists of an unbalanced panel of 4,505 unique firm-year observations from 847 companies and 18 different countries between 2015-2022. Table 1 displays the sample selection procedure and Table 2 includes an overview of the number of firms and observations per country.

3.2 Variables

Following the paper of Francis et al. (2014) the dependent variable, accounting conservatism, is measured using two different proxies, namely an earnings-based measure (*CONS_ACC*) and a market-based measure (*CONS_MTB*). The non-operating accruals¹ deflated by total assets (Givoly and Hayn, 2000). The reasoning behind this measure is that conservative accounting results in negative accruals. This is because a conservative reporting strategy stimulates the recognition of losses while delaying the recognition of gains (Francis et al., 2014). The second conservative measure is the market-to-book ratio (*CONS_MTB*) which captures the understatement of net assets in proportion of the firm's market value. Firms that apply a more conservative accounting strategy often have a higher market-to-book ratio (Beaver and Ryan, 2000; Francis et al., 2014). The market-to-book ratio is calculated as the market value of a firm divided by its book value. Both the market-to-book ratio and non-operating accruals are measures of unconditional conservatism. The independent variable, board gender diversity (*BGD*), is measured using the ratio of females on the board which is in line with the board gender diversity measurement used by Francis et al. (2014) and Schadewitz and Spoor (2021). In line with Francis et al. (2014), this paper includes the following firm-level control variables. Firm size (*SIZE*), calculated as natural log of total assets, is added, as the need for conservative accounting is lower for large firms due to lower levels of information asymmetry (LaFond and Watts, 2008). Additionally, profitability (*PROFITABILITY*), measured as earnings before interest, taxes and depreciation divided by total assets; and leverage (*LEVERAGE*), measured as long-term liabilities divided by total assets, are included since Ahmed, Billings, Morton and Stanford-Harris (2002) find a positive association with accounting conservatism for each of these variables. The reasoning behind this is that costs related to conservative accounting are greater for firms with low profitability and that firms with more debt have more bondholder-shareholder conflicts which requires more conservative accounting. Furthermore, the control variable sales growth (*SALES*), calculated as annual growth of total sales, is added as Ahmed et al. (2002) conclude that sales growth can affect the proxies for accounting conservatism, namely non-operating accruals and market-to-book ratio.

¹ The non-operating accruals are calculated as operating accruals – Δ in accounts receivables – Δ in inventories – Δ in prepaid expenses + Δ in accounts payable + Δ in tax payable. Operating accruals is equal to net income + depreciation – cash flow from operations.

Table 1*Sample Selection Procedure*

Stage	Number of observations
Initial sample	26,084
Less: missing values	11,711
<i>Subtotal</i>	<i>14,373</i>
Less: utility and finance firms (SIC 4900-4999; 6900-6999)	739
<i>Subtotal</i>	<i>13,634</i>
Less: non-EU countries and EU countries with mandatory quota	9,131
Final sample	4,505

Note. This table displays the sample selection process resulting in a final sample of 4,505 unique firm-year observations.

Table 2*Number of Firms and Observations per Country*

Country	Firms per country	Observations per country
Bulgaria	1	2
Croatia	3	18
Cyprus	7	38
Czech Republic	2	9
Denmark	82	433
Estonia	2	6
Finland	121	624
Great Britain	23	136
Hungary	10	18
Ireland	30	171
Luxembourg	28	136
Malta	5	27
Poland	37	164
Romania	2	14
Russia	43	240
Slovenia	2	10
Sweden	288	1420
Switzerland	161	1019

Note. This table demonstrates the division of firms and observations per country included in the sample for the time period 2015-2022.

Research & development (*R&D*), measured as research and development costs divided by total assets, is included to the model, because it is mandated by GAAP that this is recorded conservatively (Francis et al., 2014). The variable cash holding (*CASH*) is measured as cash and short-term investment divided by total assets and included in the model as conservatism can decrease the cash outflow and cash wastage of a firm (Watts, 2003). Litigation risk (*LITIGATION*) is a dummy variable that equals 1 if a firm belongs to a high-litigation industry (SIC code 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370-7374). Discretionary accruals (*DA*) are calculated using the modified cross-sectional Jones (1991) model as described in Dechow, Sloan and Sweeney (1995). Litigation risk and discretionary accruals are included in the model as it is argued that these variables affect accounting conservatism (Watts, 2003; Peni and Vahamaa, 2010). Additionally, as García Lara, García Osma and Penalva (2009) find that companies that have stronger corporate governance mechanisms tend to be more conservative this model includes the following corporate governance variables: board size (*BSIZE*) - number of directors on the board; board independence (*INDEPENDENCE*) - number of independent directors divided by total number of directors and CEO gender (*CEO_GENDER*) - dummy variable that equals 1 if the CEO is female. An overview of all variables is included in Appendix A.

Similar to prior research, this paper includes industry fixed effects, as there is evidence that there are industry differences in accounting conservatism (Ahmed and Duellman, 2007; Francis et al. 2014). Additionally, Givoly and Hayn (2000) find that accounting conservatism changes over time, therefore year fixed effects are included as well. Furthermore, to rule out any differences between countries country fixed effects are added. To test hypothesis 1 an OLS-regression is conducted to obtain the results using the following model (1):

$$\begin{aligned}
 CONS = & \beta_1 * BGD + \beta_2 * SIZE + \beta_3 * PROFITABILITY + \beta_4 * LEVERAGE + \beta_5 * SALES \\
 & + \beta_6 * R\&D + \beta_7 * CASH + \beta_8 * LITIGATION + \beta_9 * DA + \beta_{10} * BSIZE \\
 & + \beta_{11} * INDEPENDENCE + \beta_{12} * CEO_{GENDER} + \delta_t + \gamma_i + \gamma_{COUNTRY} \\
 & + \varepsilon_{i,t}
 \end{aligned} \tag{1}$$

Where *i* is the firm and *t* the time period in years, δ_t is industry fixed effects, γ_i is year fixed effects, $\gamma_{COUNTRY}$ is country fixed effects and $\varepsilon_{i,t}$ is the error term. In order to examine the effect of COVID-19 on the association between board gender diversity and accounting conservatism, model 1 is extended with a dummy variable (*COVID*) and the interaction term *COVID * BGD*. *COVID* equals 0 if a year is in the time period 2015-2019 and 1 if a year is in the time period 2020-2022. The following model (2) is used to test hypothesis 2:

$$\begin{aligned}
 CONS = & \beta_1 * BGD + \beta_2 * SIZE + \beta_3 * PROFITABILITY + \beta_4 * LEVERAGE + \beta_5 * SALES \\
 & + \beta_6 * R\&D + \beta_7 * CASH + \beta_8 * LITIGATION + \beta_9 * DA + \beta_{10} * BSIZE \\
 & + \beta_{11} * INDEPENDENCE + \beta_{12} * CEO_{GENDER} + \beta_{13} * COVID + \beta_{14} \\
 & * COVID * BGD + \delta_t + \gamma_i + \gamma_{COUNTRY} + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

Where i is the firm and t the time period in years, δ_t is industry fixed effects, γ_i is year fixed effects, γ_{COUNTRY} is country fixed effects and $\varepsilon_{i,t}$ is the error term.

4. Results

4.1 Descriptive statistics

Table 3 shows the summary statistics, after accounting for outliers, for the main variables including the mean, median, standard deviation, minimum, and maximum. In order to account for outliers, boxplots were made of all variables before statistics analysis. The variables *CON_MTB* and *SALES_GROWTH* showed relatively high outliers compared to the other variables. Therefore, these two variables were winsorized at 1% in order to counterbalance the effect of these outliers.

The dependent variables, *CON_ACC* and *CON_MTB*, have a mean (median) of -0.013 (-0.013) and 0.472 (0.497) respectively. The positive mean for *CON_MTB* is in line with Francis et al. (2014). However, for *CON_ACC* they report a negative mean, which is contradictory to the result presented in Table 3. The independent variable, *BGD*, has a mean (median) of 0.226 (0.222) which indicates that on average 22.6% of the board is female. This result is in line with prior research on board gender diversity in Europe. Schadewitz and Spoor (2021) find an average percentage of females on the board of 0.259 (0.296) for Nordic firms in the goodwill increasing (decreasing) sample. Dobija et al. (2022) also focus on the European context, specifically Polish firms, and report an average percentage of females on the board of 12.58%. The variable *COVID* has a mean of 0.392 which indicates that around 39% of the observations are in the COVID-19 period (2020-2022). When focusing on the control variables, all firm-level control variables, except *DA*, have a positive mean. These results are in line with prior literature on board gender diversity in Europe (Dobija et al., 2022; Schadewitz and Spoor, 2021).

Table 4 displays the correlation matrix. The correlations presented between the variables range between -0.381 and 0.617. The correlation between *BFSIZE* and *SIZE* (0.617) is the highest positive correlation, which could be explained by the fact that larger firms require larger boards due to their size. The variables *R&D* and *PROFITABILITY* have the highest negative correlation coefficient of -0.381 which could be explained by the fact that an increase in expenses, in this case R&D expenses, would lower the profit of a firm. The dependent variables, *CON_ACC* and *CON_MTB*, are negatively correlated with a coefficient of -0.044 which is opposite to the findings of Francis et al. (2014). The independent variable, *BGD*, has a positive correlation with the dependent variables, *CON_ACC* and *CON_MTB*, of 0.011 and 0.060 respectively. *COVID* is negatively correlated with *CON_ACC* with a coefficient of -0.002, however it is positively correlated with *CON_MTB* with a coefficient of 0.013. Moreover, *COVID* has a positive correlation with *BGD* having a correlation coefficient of 0.173.

Table 3*Sample statistics*

	Mean	Median	STD	Minimum	Maximum
<i>CON_ACCRUAL</i>	-0.013	-0.013	0.205	-2.241	7.342
<i>CON_MTB</i>	0.472	0.497	0.147	-0.581	0.821
<i>BGD</i>	0.226	0.222	0.154	0.000	0.750
<i>SIZE</i>	7.690	7.560	2.422	-2.060	16.970
<i>PROFITABILITY</i>	0.096	0.113	0.190	-4.236	1.211
<i>LEVERAGE</i>	0.233	0.215	0.199	0.000	3.154
<i>SALES</i>	0.131	0.061	0.436	-0.685	3.104
<i>R&D</i>	0.033	0.002	0.088	-0.020	1.881
<i>CASH</i>	0.154	0.099	0.166	0.000	0.987
<i>LITIGATION</i>	0.258	0.000	0.437	0.000	1.000
<i>DA</i>	-0.001	0.002	0.127	-4.200	2.083
<i>BSIZE</i>	7.830	7.000	2.894	1.000	23.000
<i>INDEPENDENCE</i>	0.892	1.000	0.161	0.000	2.200
<i>CEO_{GENDER}</i>	0.016	0.000	0.125	0.000	1.000
<i>COVID</i>	0.392	0.000	0.488	0.000	1.000

Note. This table show the descriptive statistics for the all variables in the model.

4.2 Multivariate analysis

An Ordinary Least Squares (OLS) regression including year-, industry-, and country-fixed effects is used to test the hypotheses. Both measures of accounting conservatism are tested and the results of hypothesis 1 and hypothesis 2 are presented in Table 5 and Table 6, respectively.

4.2.1 Board gender diversity and accounting conservatism

Table 5 displays the results of hypothesis 1. When focusing on *CON_ACC* (Table 5 column 2), the coefficient for board gender diversity is 0.100 and significant at the 1 percent level, indicating that board gender diversity has a positive and significant effect on non-operating accruals. The control variables *SALES*, *PROFITABILITY*, and *R&D*, are negative and significant while others have a positive significant effect. The value of *CASH* and *DA* is low, therefore the effect of these variables on *CON_ACC* is relatively small. The R^2 of the model is 0.101 indicating that 10.1% of the variance in *CON_ACC* can be explained by the model. Based on these results, I find support for hypothesis 1 which indicates that there is a positive association between board gender diversity and accounting conservatism. Having more female directors on the board is associated with an increase in conservative financial reporting. In this case, a one-unit increase in board gender diversity means a 10% increase in the percentage of females on the board which leads to an increase of 0.100 in non-operating accruals and thus more accounting conservatism. The overall results of this model are in line with Francis et al. (2014) who find that female CFOs are more conservative compared to male CFOs. Other research in European context also find that female directors are associated with more conservative accounting (Schadewitz and Spoor, 2021)

Table 4*Correlation matrix*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) CON_ACC	1.000														
(2) CON_MTB	-0.044	1.000													
(3) BGD	0.011	0.060	1.000												
(4) SIZE	-0.034	-0.255	0.175	1.000											
(5) PROFITABILITY	-0.199	-0.147	0.074	0.297	1.000										
(6) LEVERAGE	0.055	-0.098	0.025	0.156	-0.115	1.000									
(7) SALES	-0.119	-0.005	-0.009	-0.039	-0.015	-0.021	1.000								
(8) R&D	-0.061	0.026	-0.015	-0.224	-0.381	-0.115	0.032	1.000							
(9) CASH	0.042	0.047	-0.070	-0.332	-0.318	-0.267	0.113	0.375	1.000						
(10) LITIGATION	-0.038	0.025	0.056	-0.184	-0.108	-0.075	0.070	0.323	0.237	1.000					
(11) DA	0.038	0.064	0.027	-0.080	-0.003	-0.028	-0.016	0.008	0.014	0.011	1.000				
(12) BSIZE	-0.016	-0.179	0.099	0.617	0.191	0.070	-0.078	-0.095	-0.200	-0.055	-0.031	1.000			
(13) INDEPENDENCE	-0.028	0.093	0.295	-0.011	0.002	-0.026	-0.052	0.097	0.028	0.046	0.014	-0.205	1.000		
(14) CEO_GENDER	-0.001	0.004	0.053	0.041	0.037	-0.005	0.003	-0.005	0.003	0.026	-0.001	0.103	-0.070	1.000	
(15) COVID	-0.002	0.013	0.173	-0.022	-0.039	0.059	0.055	0.007	0.039	0.038	-0.005	-0.044	0.075	0.032	1.000

Note. This table show the correlation matrix for all variables in the model.

Table 5 (column 3) displays the results of using *CON_MTB* as the dependent variable. Board gender diversity has an insignificant effect on the market-to-book ratio. With regards to the control variables, *PROFITABILITY*, *LEVERAGE*, *R&D*, *CASH* and *BSIZE* all have a negative significant effect while *SIZE* and *INDEPENDENCE* have a positive significant effect. The R^2 of the model is 0.259 which is higher compared to using *CON_ACC* as the dependent variable. Based on these results, I do not find support for hypothesis 1 as the variable of interest, *BGD*, has an insignificant effect. This means that an increase in female board members would not lead to more conservative accounting. These results are not in line with Francis et al. (2014) as they find a positive association between CFO gender and the market-to-book ratio.

All in all, there is partial support for hypothesis 1 which state that there is a positive association between board gender diversity and accounting conservatism. When taking *CON_ACC* as a measure of accounting conservatism I find support for hypothesis 1. However, when *CON_MTB* is used as a proxy for accounting conservatism I find an insignificant result. The effect of board gender diversity on accounting conservatism thus depends on how accounting conservatism is operationalized. The insignificant result for *BGD* on *CON_MTB* is in line with Francis et al. (2014). They include board gender diversity as a control variable and expect a positive association between board gender diversity and accounting conservatism, however they find an insignificant effect for *CON_ACC* as well as *CON_MTB*.

4.2.2. Effect of COVID-19

Table 6 displays the results of hypothesis 2 which includes the effect of COVID-19 on the association between board gender diversity and accounting conservatism. When focusing first on *CON_ACC* (Table 6, column 2) as the dependent variable, the effect of board gender diversity on accounting conservatism is positive and significant at the 1 percent level with a coefficient of 0.086. The positive significant effect of *BGD* indicates that an increase in *BGD* leads to an increase in *CON_ACC* when *COVID* = 0 which are the years 2015 till 2019. Thus for the years prior to COVID-19 a higher percentage of females on the board is associated with an increase in accounting conservatism. Furthermore, the effect of COVID-19 on accounting conservatism is negative and significant at the 10 percent level with a coefficient of -0.029. This implies that for the years during the COVID-19 pandemic (*COVID* = 1) there is a decrease in non-operating accruals for firms with only males directors. So for the years 2020-2022 there is a negative association between COVID-19 and accounting conservatism for firms with no females on the board. Although the main effects are significant, the interaction effect, which indicates the effect of COVID-19 on the association between board gender diversity and accounting conservatism, is insignificant. The variables *PROFITABILITY*, *LEVERAGE*, *SALES*, *R&D* and *INDEPENDENCE* show a negative significant effect on accounting conservatism at the 1 percent level while *CASH* and *LITIGATION* show a positive effect. When *CON_MTB* (Table 6, column 3) is used as the dependent variable, both *BGD* and *COVID* have an insignificant effect. Additionally, the interaction effect of *BGD* and *COVID* is insignificant as well. Various firm-level control variables have a negative significant effect on *CON_MTB* which is similar to the results presented in section 4.2.1.

Table 5*Regression results H1- Board gender diversity and accounting conservatism*

	CON_ACC	CON_MTB
<i>BGD</i>	0.100*** (0.026)	-0.021 (0.017)
<i>SIZE</i>	-0.001 (0.002)	0.004** (0.002)
<i>PROFITABILITY</i>	-0.284*** (0.019)	-0.097*** (0.012)
<i>LEVERAGE</i>	0.011 (0.017)	-0.033*** (0.011)
<i>SALES</i>	-0.056*** (0.007)	0.003 (0.005)
<i>R&D</i>	-0.394*** (0.041)	-0.057** (0.027)
<i>CASH</i>	0.060** (0.022)	-0.028* (0.015)
<i>LITIGATION</i>	0.014 (0.013)	-0.014* (0.008)
<i>DA</i>	0.057** (0.024)	0.010 (0.015)
<i>BSIZE</i>	0.002 (0.002)	-0.007*** (0.001)
<i>INDEPENDENCE</i>	-0.060** (0.025)	0.074*** (0.016)
<i>CEO_GENDER</i>	0.007 (0.025)	0.022 (0.016)
Constant	0.048 (0.160)	0.532*** (0.104)
Observations	4,505	4,505
R2	0.101	0.259
Adjusted R2	0.082	0.243
Year-fixed effects	YES	YES
Industry-fixed effects	YES	YES
Country-fixed effects	YES	YES

Note. This table shows the OLS-regression results with year-, industry-, and country fixed effects which estimates the effect of board gender diversity on accounting conservatism in the period 2015-2022. Accounting conservatism is measured by the proxies non-operating accruals (*CON_ACC*) and the market-to-book ratio (*CON_MTB*). An overview of the variables can be found in Appendix A. The standard errors are clustered at firm level and displayed below the coefficients in parentheses. Statistical significance at the 10 percent, 5 percent, and 1 percent is indicated by “*”, “**”, and “***” respectively.

Table 6*Regression results H2- Effect of COVID-19 on board gender diversity and accounting conservatism*

	CON_ACC	CON_MTB
<i>BGD</i>	0.086*** (0.031)	-0.020 (0.020)
<i>COVID</i>	-0.029* (0.017)	-0.009 (0.011)
<i>BGD * COVID</i>	0.033 (0.041)	-0.001 (0.026)
<i>SIZE</i>	-0.001 (0.002)	0.004** (0.002)
<i>PROFITABILITY</i>	-0.284*** (0.019)	-0.097*** (0.012)
<i>LEVERAGE</i>	0.010 (0.017)	-0.033*** (0.011)
<i>SALES</i>	-0.056*** (0.007)	0.003 (0.005)
<i>R&D</i>	-0.393*** (0.041)	-0.57** (0.027)
<i>CASH</i>	0.059*** (0.022)	-0.027* (0.015)
<i>LITIGATION</i>	0.013 (0.013)	-0.014* (0.008)
<i>DA</i>	0.056** (0.024)	0.010 (0.015)
<i>BSIZE</i>	0.003 (0.002)	-0.007*** (0.001)
<i>INDEPENDENCE</i>	-0.060** (0.025)	0.074*** (0.016)
<i>CEO_GENDER</i>	0.007 (0.025)	0.022 (0.016)
<i>Constant</i>	0.052 (0.160)	0.533*** (0.104)
Observations	4,505	4,505
R2	0.101	0.259
Adjusted R2	0.082	0.243
Year-fixed effects	YES	YES
Industry-fixed effects	YES	YES
Country-fixed effects	YES	YES

Note. This table shows the OLS-regression results with year-, industry, and country-fixed effects which estimates the effect COVID-19 on the association between board gender diversity and accounting conservatism in the period 2015-2022. Accounting conservatism is measured by the proxies non-operating accruals (*CON_ACC*) and the market-to-book ratio (*CON_MTB*). An overview of the variables can be found in Appendix A. The standard errors are clustered at firm level and displayed below the coefficients in parentheses. Statistical significance at the 10 percent, 5 percent, and 1 percent is indicated by “*”, “**”, and “***” respectively

Both measurements of accounting conservatism, *CON_ACC* and *CON_MTB*, show insignificant results which indicates that there is no support for hypothesis 2. Hence, there is no evidence that COVID-19 strengthens the association between board gender diversity and accounting conservatism. Other studies focusing on board gender diversity and uncertainty do find a significant effect indicating that more females do lead to less risky behavior during uncertainty (Shropshire et al., 2021).

5. Conclusion

This paper studies the effect of COVID-19 on the association between board gender diversity using the following research question: *Is there an association between board gender diversity and accounting conservatism and does COVID-19 strengthen this association ?*.

This thesis finds partial support for hypothesis 1 which states that board gender diversity is positively associated with accounting conservatism. Partial support is due to differing results depending on the measurement used for accounting conservatism. Non-operating accruals as a measurement leads to positive significant results while the market-to-book ratio has an insignificant result. Support for hypothesis 1 implies that an increase in females on the board of directors is associated with an increase in conservative financial reporting, thus providing evidence that females do report more conservatively. This finding is not totally in line with expectations, since it is only partial support. Although there is partial support for hypothesis 1 it depends on the type of proxy used to measure accounting conservatism. A reason for the partial support could be because of the two different measures used for accounting conservatism. As *CON_ACC* is earnings-based and *CON_MTB* is market-based, it could be that market reactions or other factors influence the market value of the firm. *CON_ACC* is not influenced by the market and therefore perhaps less impacted by external factors. Furthermore, this paper finds no support for hypothesis 2 which states that COVID-19 strengthens the association between board gender diversity and accounting conservatism. Both measures of accounting conservatism show insignificant results and therefore there is no evidence that COVID-19 influences this association. A potential reason for the insignificant result could be that there are other societal factors that influence a firm accounting strategy or perhaps there are influences that counter the effect of COVID-19 on firm reporting decisions.

This study contributes to existing literature by focusing on board gender diversity in the context of accounting conservatism. Prior literature has examined the role of females in financial reporting (Francis et al., 2014) or the relation between board gender diversity and risk-taking by focusing on return on assets and goodwill (Bruna, et al., 2019; Schadewitz and Spoor, 2021). The effect of board gender diversity directly on accounting conservatism has not been examined extensively before. Additionally, this paper focuses on firms in European countries where prior research often examined firms in North-America or focused on a specific European country. By including multiple European countries, there might be interesting differences in culture and policies which could provide new insights into whether the effect of board gender diversity is also present in European context. Furthermore, this study adds to the existing literature by examining a different

aspect of uncertainty namely COVID-19. By focusing on this phenomenon and its impact on corporate behavior in times of high uncertainty a new aspect is highlighted. While the effect of COVID-19 on other business aspects has been examined before, the context of financial reporting decision-making is a relatively new topic. By taking the years of COVID-19 into account, the impact of uncertainty is examined and whether this impact influenced female risk behavior.

The results of this paper have practical implications for various parties. Firstly, the effect of gender diversity on accounting policy has an impact on executives and firm policy. If the firm has certain goals or preferences, then the composition of a board might help the firm to achieve these goals. Being aware of the effect of gender on individual risk behavior could influence a firm's hiring strategy and help the board in the decision-making process. Furthermore, it might be interesting for readers of financial reports. If a board has many females then could be possible that the firm reports more conservatively. In this case, the financial report would provide a more conservative image of a firm which could influence the decision-making of financial report readers. The more conservative report could make the financial report more reliable.

While I find partial support for the hypothesis that board gender diversity positively affects accounting conservatism there could be alternative explanations for this finding. First of all, it could be possible that the risk behavior of firms is also related to the geographical region in which they are based. European countries could have a different corporate culture and laws compared to countries from North-American which could attribute to differences in risk-averse behavior. Additionally, there are other personal characteristics of board members that might affect a board's decision-making process with regards to financial reporting choices. These factors could be, for example, nationality, prior experience, tenure and age. Finally, as R^2 is relatively low for both measures of accounting conservatism there might be underlying effects that are not captured by the control variables that could influence the association between board gender diversity and accounting conservatism.

Despite this study providing helpful insights there are limitations that need to be addressed. Firstly, this study only finds partial support for hypothesis 1 making it difficult to draw a definite conclusion on whether board gender diversity and accounting conservatism are associated. Another limitation of this study could be the measurements used for accounting conservatism. The proxies non-operating accruals and the market-to-book ratio for accounting conservatism both capture unconditional conservatism (Francis et al., 2014) and thus the perspective of conditional conservatism is not taken into account. Therefore, future research can further investigate the measures for unconditional accounting conservatism and include a measurement of conditional conservatism when examining the association of board gender diversity and accounting conservatism in the European context. Furthermore, the sample consists of all European countries which do not have a mandatory gender quota for corporate boards. However, as Table 2 shows, there is an uneven division between these countries. The Nordic countries included in the sample, Finland and Sweden, contribute to 2,042 observations which is approximately 45% of the total number of observations included in the sample. Nordic countries are often known for its egalitarian society with a different perspective on the role of females compared to, for example, Eastern European countries. Therefore, the great presence of Nordic countries in the sample could

potentially influence the sample. Additionally, these Nordic countries together with Switzerland contain approximately 68% of all observations. As these countries all have a Western culture, it is possible that the results in this study might be less applicable to Eastern European countries. Therefore, it might be interesting for future research to focus on Eastern European countries specifically to investigate whether the association between board gender diversity and accounting conservatism also holds in this context.

The insight that there is a positive association between board gender diversity and accounting conservatism could provide an interesting base for future research. This paper only focuses on a firm's general board, however, it would be insightful to examine whether this effect is also present in other organizational bodies such as the audit committee or compensation committee. Additionally, it would be interesting to extend the period of COVID-19 to research whether there might be an effect over a longer period of time. The COVID-19 period in this thesis is 3 years (2020-2022) which might be too short for an effect to have taken place.

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Appendix
Appendix A

Variable	Definition
Board gender diversity (BGD)	Board gender diversity measured using Blau's index
Board independence (INDEPENDENCE)	Board independence measured as number of independent directors divided by total number of directors
Board size (BSIZE)	Board size measured as number of directors on the board
Cash holding (CASH)	Cash holding measured as cash and short investments divided by total assets
CEO gender (CEO_GENDER)	Dummy variable, takes 1 if CEO is female, otherwise 0
COVID (COVID)	Dummy variable, takes 1 if the year is between 2020-2022, otherwise 0
Discretionary accruals (DA)	Discretionary accruals measured using the modified Jones model
Firm size (SIZE)	Firm size measured as log of total assets
Leverage (LEVERAGE)	Leverage measured as total debt divided by total assets
Litigation risk (LITIGATION)	Dummy variable that equals 1 when if a firm belongs to a high-litigation industry (SIC code 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370-7374), otherwise 0
Market-to-book ratio (CONS_MTB)	Market-to-book ratio measured as market value divided by book value
Non-operating accruals (CONS_ACC)	Non-operating accruals measured as non-operating accruals deflated by total assets
Profitability (PROFITABILITY)	Profitability measured as EBITDA divided by total assets
Research & development (R&D)	Research and development expenses measured as R&D expense divided by total assets
Sales growth (SALES)	Sales growth measured as annual growth in total sales

Note. This table provides definitions for the variables mentioned in this paper.