ERASMUS UNIVERSITEIT ROTTERDAM

The gender diversity of the boardroom: What is the effect of female board presence on earnings management?

Author: Silvia de Bruijn (428412)

Master thesis Accounting, Auditing & Control

Thesis supervisor: W. Cao

Second assessor: Ted Welten

Final version handed in on 30-07-2020

Abstract

Some countries legislate the gender quotas for the board of directors, however the U.S. did not. Prior studies found that female directors are better in monitoring leading to a higher quality of earnings (Renée B. Adams & Ferreira, 2009; Carter et al., 2003; Srinidhi et al., 2011). This study aims to provide an answer on how female directors effect earnings management in the U.S. I apply the GMM model to a sample of U.S. firms during the period of 2007-2018. The discretionary accruals of the modified Jones Model are used as a proxy for the level of earnings management. I find that a higher proportion of female directors and independent female directors are negatively related to the level of earnings management. An additional other interesting finding in this paper is that a higher proportion of independent director is only negatively related to the level of earnings management when the director is also female. Furthermore when a distinction was made between high- and low-debt firms, the negative effect of female board presence on the level of earnings management only hold for low-debt firms. This research contributes to the debate around gender diversity on boards in the U.S.

Table of Content

1. Introduction

The integrity and credibility of financial reports has come under more attention after large accounting scandals like Enron and WorldCom. One of the concerns is earnings management. As earnings are one of the most widely used measure of the financial performance of the firm, it creates pressure to perform for management. This pressure creates incentives for management for opportunistic behavior by manipulating the earnings (Healy & Wahlen, 1999). Successful monitoring will try to prevent earnings management, wherein the board of directors plays an important role by monitoring the management on opportunistic behavior (Hermalin & Weisbach, 1991). Therefore, the monitoring role of the board plays an important role in assuring the credibility and integrity of the financial statement (Peasnell, Pope, & Young, 2005).

The diversity of the board of directors received increasing attention the past two decades, due to social trends, events and difficulties. The diversity of the board refers to the different human capital the boardroom consists of (Van der Walt & Ingley, 2003). Especially the gender diversity of the board is a recent debated topic. Some countries like Spain, Norway, Finland and Belgium legislate the gender board quota to diminish the glass ceiling effect, which implies the effect that gender disadvantages are stronger at the top than at lower levels (Cotter, Hermsen, Ovadia, & Vanneman, 2001; Terjesen, Aguilera, & Lorenz, 2015). Meantime, the U.S. did not legislate the gender board quota. However, the gender diversity is rising slowly in the U.S.; from 18 percent in 2013 to 24 percent in 2018 for the largest companies in the S&P 500 Index (KPMG, 2019). Since July 2019 all the 500 S&P companies have for the first time at least one female on their board (Bloomberg, 2019).

This study examines whether more female directors on the board lowers earnings management. The empirical analysis is based on the assumption that men and women act different in for instance decision-making and risk taking, which could affect the financial reporting.

This research will examine the following question:

What is the effect of female board presence on earnings management?

The level of earnings management is measured by the discretionary accruals (DA) calculated by the Modified Jones model, which is the approved version of the Jones model (1991) by Dechow et al. (1995). First, a regression is run with the percentage of female directors to determine the effect of the female board presence as a whole on earnings management. Secondly, a regression is run with the interaction effect of the percentage of female directors and the percentage of independent directors. The second regression is interesting in determining whether independent female directors are associated with lower earnings management than dependent female directors. Since, in prior studies is found that female directors more often tend to be independent and stated that the enhanced influence of female directors are not only due to their gender but due to their higher level of independency (Carter, Simkins, & Simpson, 2003; Fondas & Sassalos, 2000; Terjesen, Couto, & Francisco, 2016).

The result in the empirical analysis on data of U.S. firms from 2007 till 2018 found a significant negative relationship between female directors and earnings management, thus the effect of female board presence has a negative effect on earnings management. In addition, the result shows that independency and being a female together lowers earnings management even more. Altogether, the independent female directors are associated with less earnings management than dependent female directors, independent male directors and dependent male directors. However, in an additional test wherein the sample is segregated in high- and low-debt firms the results only hold for low-debt firms. These results suggest that only in low-debt firms higher proportion female directors and higher proportion independent female directors lowers earnings management.

An additional interesting finding is that there is no significant effect found of the proportion of independent directors on earnings management solely, indicating that independent directors only lowers the level on earnings management if they are also female. These results imply that the role of gender diversity of the board is an important component in reducing the level of earnings management and that the role of the independency of the board is subordinate to the role of the gender diversity.

The findings of this study contribute to previous literature firstly because most of previous studies focused on the influence of the female executives. Secondly, this study does not solely looking at the effect of the female director but also at the difference between the

effect of dependent female directors and independent female directors on earnings management. Thirdly, prior studies on earnings management and the gender diversity of the firms in the U.S. had low differentiation in the gender diversity of the boards, which rises the power of the test since the gender diversity of the firms in the U.S. increased over the past years. The results on the association between the gender diversity of the board and earnings management are of interest for legislators and people involved in these legislations. The research provides insights, which could help the U.S. in deciding whether they should or should follow other countries in setting a female board quota.

The paper is organized as follows. First, the relevant literature is reviewed in section 2. Secondly, based on the literature review the hypotheses are developed in section 3. Thirdly, the research design is described in section 4. Fourthly, the results of the empirical analyses and additional tests are presented in section 5. Lastly, the discussion and conclusion are presented in section 6.

2. Literature review

This paper builds upon three lines of research. First, the literature on the differences between men and woman is discussed, since the underlying assumption of this study is that men and women differ. Secondly the literature on the board of directors is discussed, to understand the role of the board of directors and the possible differences in where the board of directors could consist of. Last, the existing literature on the relation between earnings management and board of directors is discussed, focused on the effect of the independency and gender diversity of the board on earnings management.

2.1 Gender diversity

2.1.1 Stereotype

There is a large history of literature on the differences between male and female. Women and men are assigned different social roles in the social role theory, explained by Eagly and colleges (Cejka & Eagly, 1999; Eagly & Steffen, 1984; Eagly & Wood, 1999). The differences in the characteristics of the stereotype male and stereotype female in the society cause difficulties for women to become a leader and cause prejudice during the evaluation of female leaders (Brescoll, Heilman, & Eagly, 2016; Eagly, Karau, & Makhijani, 1995; Johnson & Powell, 1994; Ridgeway, 2001). Leadership is strongly quantified as masculine in the society,

which causes that women are seen as less qualified for the leadership role then men (Eagly & Mladinic, 1994; Koenig, Eagly, Mitchell, & Ristikari, 2011). Women are seen to be more sensitive to ethical issues than men and therefore more likely to make their choices more ethical then men (Glover, Bumpus, Sharp, & Munchus, 2002; T. M. Jones & Gautschi, 2013)

2.1.2 Behavior

One of the causes of the glass ceiling effect is the view that women are more risk averse than men (Johnson & Powell, 1994). The glass ceiling effects creates a barrier for women to be promoted to higher positions, because this effect implies that woman at the top have stronger disadvantages than women lower in the hierarchy (Cotter et al., 2001). Different reviews have been done on the literature of gender differences in risk-taking behavior, overall they conclude that in most studies women were found to be more risk averse than men (Byrnes, Miller, & Schafer, 1999; Croson & Gneezy, 2009; Eckel & Grossman, 2008).

The difference in risk propensity between male and female suggest that they have different incentives and thereby different decision-making behavior. Huang & Kisgen (2013) show that men tend to be overconfidence in corporate decision-making; corporations with female executives make less acquisitions and issue less debt than the corporations with male executives. This difference in behavior is in line with the findings that women are more risk averse than men. However, other studies found that the difference in risk-aversion is reversed in the finance sector, when they compared financial industries with other industries, due to the assumption that women in financial sectors have different risk-aversion levels than women in other professions (Renée B Adams & Funk, 2012; Renee B Adams & Ragunathan, 2017; Deaves, Lüders, & Luo, 2009; Schubert, Brown, Gysler, & Brachinger, 1999).

2.2 Board of directors

2.2.1 Role of board of directors

Two important roles of the board of directors is providing resources and monitoring the management (Hillman & Dalziel, 2003). Already in the early 80's it was recognized that the board of directors act as a crucial role in the corporate governance structure (Baysinger & Butler, 1985; Fama, 1980). The role of the board of directors is to monitor and control managers, to resolve the agency problem between managers and shareholder (Fama &

Jensen, 1983). The board of directors has the power to hire, fire and compensate the management of the firm.

2.2.2 Outsiders

Difference corporate governance codes, for example the Sarbanes-Oxley act, suggest that outside directors should be a significant part of the board. The outside directors are independent and therefore might have greater encouragements to maximize the wealth and thereby acting as a "professional referee"; they provoke the competition among insiders to maximize the shareholders' value (Fama, 1980). A higher proportion of outside directors leads to better monitoring, because of their independency. Next to better monitoring, the outside board member could contribute to the human capital of the board, by having other work experience in another firm and excess to other knowledge and resources (Hillman & Dalziel, 2003). There has been done much research on the relation between the independency of the board and firm performance. Despite the arguments of better monitoring and better human capital by a higher independency of the board, the results on the effect of independent board members on firm performance are mixed. Different studies found a positive relation between the percentage of independent outside directors on firm performance (Andres & Vallelado, 2008; Liu, Miletkov, Wei, & Yang, 2015; Luan & Tang, 2007; Pombo & Gutiérrez, 2011). In the contrary Abdullah (2004), Bhagat and Black (2001), Klein (1998) and Hermalin and Weisbach (1991) found that firms with more independent boards do not perform better than other firms. Next to that, Terjesen et al. (2016) found that only independent outside directors contribute to firm performance unless the board is gender diverse.

2.2.3 Female board presence

As mentioned before women differ from men, which increases the boardroom diversity as found in previous literature (Bilimoria & Wheeler, 2012; Eagly, 2005). The study of Solberg and Huse (2008) found that woman tend to be better prepared than man for board meetings. The study on U.S. firms by Adams and Ferreira (2009) likewise found that female board members have a positive influence on the inputs of the board. They found that female directors monitor more and have better attendance performance than their male counterparts. However, in addition they found that female directors reduce the firm value

for well-governed firms. Like Adams and Ferreira (2009), Catalyst (1995), Erhardt et al. (2003), Burke (2000) and McKindsey (2017) found that more female directors led to better performing firms. In contrast, Carter et al. (2003), Kanh et al. (2013), Shrader et al. (1997), found that adding women to the board does not increase the financial performance of firms. In addition, Bennouri et al. (2018) found that female directors increases the accounting-based performance measures, but decreases the market-based performance measures. Lastly, Haslam and Ryan (2008) and Adams et al. (2009) found no relationship between female board directors and accounting-based performance measures.

2.3 Earnings management

2.3.1 General

Earnings management arises when management uses judgment in financial reporting, which results in the adjustment of the reported economic performance of the firm by insiders to influence contractual outcomes or mislead stakeholders (Healy & Wahlen, 1999). In previous literature there are different incentives found for earnings management: capital market expectations and valuations, contracts depending on accounting estimates and regulations (Healy & Wahlen, 1999). For example, managers have incentive to manage their earnings up when their compensation depends on the financial performance of the firm or to manage the earnings down in a management buyout.

2.3.2 Earnings management and the board of directors

The accounting earnings become more reliable, when monitoring systems control the opportunistic behavior of management (Dechow, Sloan, & Sweeney, 1996). As mentioned before one role of the board of directors is monitoring the management to protect the shareholders interest. The execution of this role is influenced by the composition of the board. Thereby, the board of directors could influence the level of earnings management within in a firm. The board's activities and financial knowledge of the board are important factors in limiting the propensity of the earnings management (Xie, Davidson, & Dadalt, 2003).

2.3.2.1 Board independency and earnings management

As mentioned before, the outside directors have incentives to monitor the management of a firm (Carter et al., 2003; Fama, 1980). However, the findings on the association between the board independency and earnings management are mixed. Rahman and Ali (2006) found no significant relationship between the independency of the board and earnings management in Malaysia. They explained these findings by the lack of understanding of the board of directors of the company's businesses and the dominance of the management over the board. Bradbury et al. (2011) likewise found an insignificant relation, while looking at firms in Malaysia and Singapore. In addition Sarkar et al. (2008) looked at firms in India and found an insignificant relation in India.

In the contrary Davidson et al. (2005) found that independent board directors are significantly associated with a lower likelihood of earnings management in Australia (2005). Which is in line with the studies of Klein (2002) and Xie et al. (2003) on U.S. firms, Peasnell et al. (2005) and Cornett et al. (2008) on UK firms and Jaggi et al. (2009) on Hong Kong firms. In addition the study of Park and Shin (2004) on Canadian firms suggest that not outside directors as a whole reduces the abnormal accruals, but only active institutional shareholders reduce earnings management.

2.3.2.2 Board gender diversity and earnings management

Adams and Ferreira (2009) and Carter et al. (2003) concluded that female directors are better in monitoring the behavior of managers. Srinidhi et al. (2011) conclude that the better monitoring of female directors leads to a higher quality of earnings for firms with a higher female presentation on the board. Krishnan and Parson (2008) similarly found a positive effect of female on earnings quality; they found that more females on the senior management positions leads to a higher quality of earnings. If there is a high level of earnings management the earnings quality is more likely to be low and vice versa (Dechow, Ge, & Schrand, 2010).

As Krishnan and Parson (2008) some studies on the association of female representatives and earnings management are focused on only the gender of the executives, instead of looking at the gender of the board of directors as a whole. Peni and Vähämaa (2010) looked at the effect of the gender executives on earnings management in the U.S. and found that

firms with female CFOs are associated with income-decreasing discretionary accruals. Meanwhile, they did not find a relation between the gender of the firms' CEO and the level of earnings management. However, they mentioned as a limitation of their study the low level of female executives in the US, which lead to a lower power of their tests. The findings of Peni and Vähämaa are in line with the study of Liu, Wei and Xie (2014) on the effect of CFO gender on earnings management in China. In the contrary, the study by Ye, Zhang and Rezaee (2010) in China did not find a significant difference in the quality of earnings for firms managed by female and male executives. Their explanation for their findings is that in China male and female do not express different ethically. While for developed countries, like the U.S. and U.K., female have different social roles and expectations. Another study in China done by Gulzar not only looked at the gender of the executives, but at the percentage of female directors on the board as a whole (2011). Gulzar shows that for both the presence of female reduces the level of earnings management.

Two more recent studies in France likewise looked at the association between the percentage of female directors on the board as a whole and similarly found that the presence of female directors reduce the level of earnings management (Gull, Nekhili, Nagati, & Chtioui, 2018; Triki Damak, 2018). In addition, Gull et al. (2018) also looked at the relation of female executives and earnings management. Their findings provide evidence for a negative relation within a more pronounced effect for female CFOs than female CEOs. The two findings by Gull et al. (2018) are in line with the study in Israel by Gavious, Segev and Yosef (2012). However, they made a side note to their findings that they could be explained by the fact that firms with a larger number of women in their top management or governance positions are firms with higher ethical, environmental, social and legal standings. These higher standards could explain the higher quality of earnings, instead of the higher level of female board members.

Arun, Almahrog and Aribi (2015) looked at the UK and they did not only looked at the proportion of female directors but also at the proportion independent female directors. They found that both are associated with income-decreasing rather than income-increasing earnings management. They also made a distinction between low- and high-debt firms, and only found an effect on earnings management by female directors and independent female directors in the low-debt firms. Lara, Osma, Mora and Scapin (2017) likewise looked at UK

firms. As Arun et al. (2015), they looked at the effect of the percentage of all female directors over the board of directors and at the percentage of independent female directors over the board of directors. In the contrary of Arun et al. (2015), Lara et al. (2017) only found a positive significant effect of independent female directors and not for the percentage of the all female directors on accounting quality. They explain their finding by the incentives of independent directors to monitor; these incentives are absence for the female executive directors. Therefore, the female executive directors are not associated with lower earnings management. However, the relation found by Lara et al. (2017) disappears for firms that do not discriminate against women in the access to directorships. They explain this finding by the fact that males and females behave similar in high profile jobs, under no discrimination, and therefore it would not influence the monitoring of the board.

2.4 Contribution to the literature

Most of the studies that looked at gender diversity of the board and earnings management looked at the effect of the gender of the executives or at the percentage of all female on the board of directors. There are several ways this study contributes to the existing literature. First, the variation and amount of female executives in U.S. firms is mostly low in firms, which lowers the power of the tests, as mentioned in the study also done in the U.S. by Peni and Vähämaa (2010). The percentage of female is a highly debated topic and in the last years the percentage of female directors has changed in the U.S. The gender diversity is rising slowly; from 18 percent in 2013 to 24 percent in 2018 for the largest companies in the S&P 500 Index (Rodriguez & Keele, 2019). Since July 2019 all the 500 S&P companies have for the first time at least one female on their board of directors (Bloomberg, 2019). The rise in percentage of female directors over the years increases the variation in the data in this research.

Secondly, as mentioned before the independent board member has the incentive to monitor (Carter et al., 2003). Furthermore, several studies suggest that more female directors are associated with a more independent board (Carter et al., 2003; Fondas, 2000; Terjesen et al., 2016). Fondas stated that the influence of female directors is not due to their gender but due to their independency (2000). Overall this makes it interesting to look at the combined effect of independency and gender diversity of the board on earnings management as Arun et al. (2015) and Lara et al. (2017) did in the U.K. Thereby, a third reason this study

contributes to the literature is by looking at U.S., since the U.S. and the U.K. corporate governance system diverge due to differences in rules and practices (Aguilera, Williams, Conley, & Rupp, 2006; Keenan, 2004). For example, there is a higher amount of constraint on the CEO power in the U.K. than in the U.S. and thereby the stocked-based compensation is higher for CEOs in the U.S. than in the U.K (Aguilera et al., 2006). In addition, the U.K. has a higher level of transparency and disclosure in the corporate and financial sectors than the U.S. (Keenan, 2004). Furthermore, the U.S. and the U.K. culture and society differ. In the ranking of worldwide gender gaps created by The World Economic Forum, the United States came in 53rd place and the UK in 21st place (The World Economic Forum, 2019). This ranking is based on the magnitude of gender inequalities, looking at gender gaps on economic, educational, health and political level.

3. Hypothesis development

Men and women differ in decision-making, risk taking and confidence (Barber & Odean, 2001; Charness & Gneezy, 2012; Eckel & Grossman, 2008; Huang & Kisgen, 2013; Niederle & Vesterlund, 2007). This increases the board room diversity and could improve the inputs of the board (Renée B. Adams & Ferreira, 2009; Bilimoria & Wheeler, 2012; Eagly, 2005; Huse & Solberg, 2008). On the other hand, studies in the financial sector found that the differences in moral reasoning can be reversed due to the fact that in their workplace the socialization for men and women is the same (Renée B Adams & Funk, 2012; Renee B Adams & Ragunathan, 2017; Deaves et al., 2009; Ergeneli & Ankan, 2002; Schubert et al., 1999; Weber & Wasieleski, 1997) Furthermore, the literature on the effect of female directors on firm performance is mixed. The literature on earnings management and female directors in different countries overall concluded that female directors lowers earnings management. Therefore, the following null hypothesis is stated:

H1: Female directors are associated with lower earnings management.

The study of Carter et al. (2003), Fondas (2000) and Terjesen et al. (2016) showed that female directors are associated with a more independent board. Female directors are more often independent than dependent in comparison to male directors. Which is in line with the composition of the boards found in the firms of the sample of this study over the years; of all female directors 93% is independent and of all male directors 77% is independent. Fondas

(2000) suggest that the enhanced influence of female directors is not only due to their gender, but likewise due to the fact that they are more often independent than male directors. This is supported by the study of Terjesen et al. (2016). Therefore, it is expected that independent female directors are associated with less earnings management than dependent female directors. In addition, it is expected that independent female directors are associated with less earnings management than independent male directors and dependent male directors, which is in line with the expectations in hypothesis 1. The following null hypothesis will be stated for hypothesis 2:

H2: Ceteris paribus, independent female directors are associated with less earnings management then dependent female directors, dependent male directors and independent male directors.

4. Research design

4.1 Data sources and sample selection

For this research data available of U.S. listed firms is used. The data is retrieved from two different databases of the Wharthon Research Data Service (WRDS). The data regarding the board of the firms is retrieved from the Institutional Shareholder Service (ISS) database and the data regarding the firm's fundamentals is retrieved from the Compustat North America database. Firm-year observations for the years 2007 till 2018 is retrieved, since 2007 is the minimum year for which the data is available in the ISS database. Matching the two databases, results in 15,350 firm-year observations. Consequently, 5,351 observations are dropped with missing values in the financial data of the Compustat database. The financial sector is excluded, because of their regulatory environment. Thus, all 243 firm-year observations with a SIC code between 6000 and 6999 are dropped. Hereby, the final sample consists of 8,845 firm-year observations. Lastly, all variables are checked for outliers and if present winsorized, to prevent distortion in the regression analysis. Table 1 gives an overview of the sample selection process.

Table 1: Sample selection process

	Firm-year Observations
All firm-year observations from the Compustat database	145,724
Less: Firms without firm-year observations from the board data in ISS database	-130,374
Full sample	15,350
Less: missing values	-6,271
Less: financial sector	-234
Final sample	8,845

Table 2 represents the distribution of the firm-year observations over the years. Data availability in the matched sample of Compustat and the ISS database increased slightly after 2008. All years represent between 8% and 9% of the firm-year observations, except for 2008. Despite the overall equal distribution over the years, year fixed effects will be included in the regressions in this research to control for aggregate trends like inflation, population growth, economic growth etc.

Table 2: Year composition of sample

Year	Firm-year observations	Percent (%)
2008	589	6,66%
2009	771	8,72%
2010	780	8,82%
2011	786	8,89%
2012	834	9,43%
2013	839	9,49%
2014	854	9,66%

2015	837	9,46%
2016	861	9,73%
2017	857	9,69%
2018	837	9,46%
Total	8845	100%

The distribution of the firm-year observations over the industries of the total sample is presented in table 3. The industry groups are based on the SIC-Codes. To mitigate the impact on the results of the uneven distribution of the industries over the sample, industry fixed effects are added in the regressions further in this research.

Table 3: Industry composition of the sample

Year	Firm-year observations	Percent (%)
Agriculture	26	0,29%
Construction	92	1,04%
Manufacturing	4538	51,31%
Mining	422	4,77%
Public	7	0,08%
Retail	866	9,79%
Services	1497	16,92%
Transportation	996	11,26%
Wholesale	401	4,53%
Total	8845	100%

4.2 Variable definitions

4.2.1 Dependent variable

In this research the influence of the composition of the board on earnings management is examined, therefore the dependent concept of this research is earnings management. Earnings management is not directly observable; therefore, a proxy for earnings management is needed. According to Jones (1991) and Dechow et al. (1995) managers use accruals to manage their earnings, however this is hard to detect for outsiders. According Accruals can be driven by economic activity or managed by discretion (Jones, 1991). The Jones Model tries to capture the discretionary part of accruals. In this research the modified Jones model of Dechow et al. (1995) will be used. The modified Jones Model adjust the change in revenues with the change in accounts receivable, because this excludes the discretion over revenues by recognizing revenues for which no cash is received or will ever be received. Hereby, the modified Jones Model captures only the non-discretionary part of the revenues. In the modified Jones Model first the total accruals are calculated (1). Second, the non-discretionary accruals are calculated (2). Finally, the non-discretionary accruals are subtracted from the total accruals to calculate the discretionary accruals (3).

$$TACC_{it} = \Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta DCL_{it} - \Delta DEP_{it} \quad (1)$$

$$\frac{TACC_{it}}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_t \quad (2)$$

$$\frac{NDACCi_t}{A_{it-1}} = \hat{\alpha}_1 \frac{1}{A_{it-1}} + \hat{\alpha}_2 \frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \hat{\alpha}_3 \frac{PPEi_t}{A_{it-1}} \quad (3)$$

$$DACC_{it} = TACC_{it} - NDACC_{it} \quad (4)$$

$TACC_{it}$ is the total accruals of company i in year t, which is calculated by equation 1. ΔCA, denotes the change in current liabilities, ΔCash denotes the change in cash, ΔCL denotes the change in debt in current liabilities and ΔDEP denotes the change in depreciation and

amortization. For equation two and three; A denotes the asset, ΔREV denotes the change in revenues, ΔREC denotes the change in receivables and PPE denotes the gross property, plant and equipment.

TACC consist of non- discretionary accruals (NDACC) and discretionary accruals (DACC). The residuals of equation two represent the DACC. After estimating the coefficients of α0, α1, α2 and α3 in equation 2, the NDACC can be calculated by equation three, which makes is possible to calculate the DACC by equation 4.

The dependent variable is the absolute value of DACC (ADACC), since this research is interested in the level of earnings management and not in the direction of earnings management.

4.2.2 Independent variable

The independent variable for hypothesis one is the percentage of female directors (*Pfem*), since hypothesis one tests whether a greater number of female directors leads to lower earnings management. The percentage of female directors is calculated by dividing the number of female directors by the board size. For hypothesis two the percentage of female directors is likewise an independent variable, in addition a second independent variable is added; the percentage of independent directors (*Pind*). The percentage of independent directors is calculated by dividing the number of independent directors by the board size.

4.2.3 Control variables

By including variables that are found in prior studies to be associated with earnings management I control for possible cofounding factors. First, a control variable for the size of the board is added. In prior study is found that the size of the board influences the level of earnings management, since larger boards have a greater number of experienced directors which could lower earnings management (Xie et al., 2003). In the contrary, there is also found in prior literature that smaller boards leads to better monitoring, which could lead to lower earnings management (Eisenberg, Sundgren, & Wells, 1998).

Secondly, leverage (lev) is added to capture the incentive of earnings management for debt covenant violation (Beasley & Salterio, 2001; Klein, 2002). Leverage is the total liabilities divided by total assets.

Thirdly, the Market to book ratio (MTB) is added as proxy for growth. Meek et al. (2007) and Geiger and North (2006) found that high growth firms have more incentives for using earnings management to keep their growth rate and meet earnings forecasts. The MTB is calculated by dividing the market value of the equity by the book value.

Fourthly, the control variable for the size of the company (size) is included. Bigger firms are generally better monitored by auditors and analysts, which could imply lower earnings management (Meek et al., 2007). The size of the firm is measured as the natural logarithm of total assets. Prior studies have shown that there is a negative relation between the levels of accruals and the size of the firm, because of the stronger governance structure and therefore greater monitoring (Adams & Ferreira, 2009; Peni & Vähämaa, 2010).

Fifthly, the dummy variable loss is added, which equals one when the net income is negative and zero otherwise. According to Dechow et al. (1995) the accrual models tend to overestimate the accruals for troubled companies and in addition DeAngelo et al. (1994) stated that firms who perform poorly have stronger incentive to use income-decreasing accruals.

Lastly, I control for industry and year to control for the potential effects on earnings management due to differences in earnings management over time and across industries.

A summary of all variables used in this research shown in table 2.

Table 4: List of variables

Variable	Description	Definition and data codes	Database
Dependent			
ADACC	Absolute value of Discretionary accruals	The absolute value of the discretionary accruals, calculated as the error term of the Modified Jones Model	Compustat
Independent			
Pfem	Percentage of female directors on the board	Total female board directors/ board size	ISS
Pind	Percentage of independent board members on the board	Total independent board directors / board size	ISS

Boardfem	Dummy for female board presence	Dummy variable equals the value 1 when the board consists of at least one female and zero otherwise	ISS
Control			
Boardsize	Size of the board	Total number of directors in the board of the firm	ISS
Lev	Leverage	Total liabilities divided by equity	Compustat
Loss	Prior-year loss	Dummy variable equal 1 when there was a loss in prior-year, zero otherwise	Compustat
MTB	Market-to-book ratio	The market value divided by the book value of equity	Compustat
Size	Firm size	The natural log of total assets	Compustat
D_Year	Year dummy	Dummy variable based on fiscal year	Compustat
D_Indus	Industry fixed effect	Dummy variable industry based on two-digit SIC code	Compustat
Ceofem	Dummy CEO Female	Dummy variable equals 1 when firm has a female CEO and 0 otherwise	ISS
Cfofem	Dummy CFO Female	Dummy variable equals 1 when firm has a female CFO and 0 otherwise	ISS

4.3 Regression models

The Ordinary Least Squares (OLS) estimation leads to inconsistency when variables are endogenous. According to the study of Hsiao (2003) disturbance of the error term and co-variance between the firm specific variables and independent variables leads to biased coefficients in the OLS when firm specific effects are present. Following Terjesen et al. (2016) all board-related variables are assumed to be endogenously related to firms fundamentals and have to be instrumented. Therefore, the Generalized Method of Moments (GMM) regression is used to test the hypotheses. The standard errors calculated in this regression are robust to heteroskedasticity of unknown form (Wooldridge, 2001). The lagged levels of the endogenous variables are among others used as instruments in the GMM regressions, following the rational of the dynamic model of Arellano and Bond (1991).

Two tests are used to determine whether two requirements of the GMM model are met: the validity of the instruments and whether the board related variables are endogenous. The GMM C-statistic tests whether the board related variables are endogenous (Baum, Schaffer, & Stillman, 2007). The rejection of the results of the GMM C-statistic at any significance level for all models suggests that the board-related variables are endogenous in this research. Secondly, the validity of the instruments is determined in this research by the Hansen J statistic, wherein the null hypothesis is that the instruments are valid.

4.3.1 Hypothesis 1

The main regression that will be used to test hypothesis 1:

$$ADACC = \beta_0 + \beta_1 * Pfem + \beta_2 * Pind + \beta_3 Boardsize + \beta_4 MTB + \beta_5 lev + \beta_6 size + \beta_7 loss + \beta_8 * D_{year} + \beta_9 * D_{industry} \quad (5)$$

Hypothesis one tests whether female directors are associated with lower earnings management, therefore it is expected that β_1 will be negative.

4.3.2 Hypothesis 2

The main regression to test hypotheses two is the following regression:

$$ADACC = \beta_0 + \beta_1 * Pfem + \beta_2 * Pind + \beta_3 * Pfem * Pind + \beta_4 Boardsize + \beta_5 MTB + \beta_6 lev + \beta_8 size + \beta_9 loss + \beta_{10} * D_{year} + \beta_{11} * D_{industry} \quad (6)$$

In hypotheses 2 i expect that independent female directors lowers earnings management more than dependent female directors, independent male directors and dependent male directors. Therefore, it is expected that β_1 and β_3 will be negative. A negative β_3 indicates that adding a female board member that is also independent lowers earnings management even more than adding a dependent female, since adding an independent female increases the percentage of female directors and percentage of independent directors.

5. Results

5.1 Descriptive statistics

The descriptive statistics are reported in table 5 for the main variables. The average of the absolute value of the ADACC is 0.04, with a minimum of zero and a maximum of 1.733 skewed to the right. The study by Klein (2002) also looking at the relation between the board

and earnings management in the U.S. found remarkably the same average absolute value of the discretionary accruals while using the modified Jones Model. The mean of ADACC is quite high, since on average residual should be equal to zero. The average percentage of female on the boards is 15%. The percentage of female board members varies from zero to a maximum of 75% females on the board, which indicates that there are firms in the sample with only male board members. The average percentage of independent directors is 79,9%, which indicates that on average most of the firms in the sample consists of more independent than dependent directors. The minimum percentage of independent directors is 0 and the maximum of independent directors is one, which means that there are firms in the sample with only dependent board members and firms with only independent board members. The average board size is 9 board members, with a minimum of 4 and a maximum of 22 board members.

Regarding the additional control variables, the mean of the MTB is 1.928, which indicates that the market value on average over the years of the firms in this sample are almost two times as high as the book value. The average for loss, dummy variable of net income, is 0.137, which indicates that 13.7% of the firms had a negative net income over the years. The average leverage of the firms over the years is 0.230, which indicates that over the years on average the firms in the sample have less than 50% of their assets financed by debt.

Table 5: Descriptive statistics

Panel A: Descriptive statistics continuous variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
ADACC	8,845	0.004	0.074	0	1.733
Pfem	8,845	0.149	0.109	0	0.750
Pind	8,845	0.799	0.108	0	1
Boardsize	8,845	9.224	2.062	4	22
MTB	8,845	1.928	1.569	0.236	9.151
lev	8,845	0.230	0.195	0	3.892
size	8,845	7.987	1.547	5.011	11.896
Loss	8,845	0.137	0.344	0	1

Table 6 reports the correlation matrix between all variables. In all cases the correlation coefficients are above -0.350 and below 0.350 with one exception; the correlation between

board size and firm size is 0.612. Since this correlation is below 0.700 there is no problem with multicollinearity in the data since there is no strong correlation between the variables. As expected, a negative correlation is found between the percentage of female board members and the level of earnings management (ADACC). Furthermore, a significant positive correlation is found as expected between firm size and earnings management. Also interesting is the significant positive correlation between the size of the firm and the percentage of female directors and independent directors, indicating that bigger firms tend to have a more independent and gender diverse board.

Table 6: Correlation matrix

	ADACC	Pind	Pfem	Boardsize	MTB	lev	size	loss
ADACC	1							
Pind	-0.0731***	1						
Pfem	-0.119***	0.233***	1					
Boardsize	-0.168***	0.194***	0.301***	1				
MTB	0.0297**	-0.0165	0.0150	-0.00615	1			
lev	-0.0718***	0.131***	0.151***	0.227***	-0.0260*	1		
size	-0.175***	0.239***	0.306***	0.612***	-0.0122	0.334***	1	
loss	0.0939***	-0.0170	-0.0824***	-0.101***	-0.0241*	0.0567***	-0.133***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.2 Main results

The main findings of the GMM regressions are shown in table 5. For all four models the null hypotheses under the Hansen J statistic that the instruments are valid is accepted, meaning that the instruments used in the models are valid. The rejection of the results of the GMM C-statistic is significant, but not for all models at all significance levels. However, the GMM C-statistics is rejected at the significance level of 0.05 for our main models; suggesting that the

board-related variables are endogenous. Lastly, the Wald chi square tests whether the variables are significant, or in other words add something to the models. The null hypothesis of the Wald chi square test that all of the coefficients in the model are zero is rejected at all significance levels for all four models.

Model 1 includes the percentage of female and the percentage of independent board members. Model 2 only includes the percentage of female directors. Model 3 analyses the interaction term. Model 4 analyses the effect of a dummy variable with the value 1 when the board consists of at least one female and zero otherwise, since 78% of the firm-year observations consists of a board of at least 1 female.

Model 2 shows that the percentage of female directors has a significant effect on the absolute value of the discretionary accruals; a higher proportion of female directors lowers the absolute value of the discretionary accruals. As in model 2, the same relation for the proportion of women directors is found when the percentage of independent directors is also added in model 1. Specifically, model 1 and 2 show that a 1% increase in the proportion of women in the board reduces the ADACC 1,5%. These results indicate that the presence of female directors is more important than the presence of independent directors in lowering earnings management, since the coefficient of the percentage of independent directors is close to zero and insignificant. For both models 1 and 2 the coefficient for the percentage of women on the board is negative and statistically significant, providing support for Hypothesis 1 that a firm's greater share of female directors is associated with lower earnings management. The additional regression in model 4 also supports hypothesis 1. The coefficient of the dummy variable *boardfem* is negative and significant, indicating that boards that consist of at least one female are associated with lower earnings management than boards who have zero female directors.

In model 3 the coefficient of the interaction term of the percentages of independent directors and female directors is shown.[1] The coefficient of the interaction term is negative

[1] The percentage of female directors is excluded from this model, since the interaction term and the percentage of female directors are highly correlated (0.980) and therefore it is impossible to interpret the segregated effects. Dropping the individual effect of percentage of female from this model leads to an omitted variable problem. However, using the GMM regression solves this.

and significant, which means that the negative effect of female directors on earnings management found in model 1 and 2 is even stronger with being independent, indicating that a female director that is also independent lowers earnings management even more than dependent female directors. These results support hypotheses two. Specifically, a 1% increase of dependent female directors leads to a 1.5% decrease of ADACC versus a 1% increase of independent female directors leads to a 3.5% decrease of ADACC. This difference does not seem much. However, when a female board member replaces a male board member not 1% of the board composition is changed, since the board does never consist of 100 board members. For example, in my sample the mean of the board size is 9 board members; so on average replacing a board member changes 1/9 of the board. This means that when a dependent female director replaces a male board member in a board with 9 directors, ceteris paribus, the earnings management lowers with 16,65% (1,5*11.11%) versus, 38.89% (3.5*11.11%) for independent female board members. These findings all together leads to the acceptation of hypotheses two that independent female directors are associated with less earnings management then dependent female directors, dependent male directors and independent male directors.

Table 5: GMM estimation of a multiple linear regression of ADACC

Explanatory variables	Dependent variable: ADACC			
	(1)	(2)	(3)	(4)
Pfem[a]	-0.015**	-0.015**		
	(0.007)	(0.007)		
Pfem_Pind[a]			-0.020**	
			(0.009)	
Boardfem[a]				-0.007**
				(0.003)
Pind[a]	-0.000		0.002	0.000
	(0.007)		(0.007)	(0.007)
Boardsize[a]	-0.003***	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)

mtb	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	-0.011**	-0.011***	-0.011**	-0.011**
	(0.004)	(0.004)	(0.004)	(0.004)
size	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.016***	0.016***	0.016***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	0.080***	0.080***	0.078***	0.080***
	(0.010)	(0.009)	(0.010)	(0.010)
Observations	8,845	8,845	8,845	8,845
Hansen J χ^{2} [c]	68.628	68.657	72.629	68.417
GMM C statistic χ^{2} b	6.523**	4.603***	6.880**	7.367*
Wald χ^{2}	534.04***	533.97***	534.00***	535.05***
R-squared	0.066	0.066	0.066	0.068

Robust standard errors in parentheses

** p<0.01, ** p<0.05, * p<0.

[a] Instrumented with the following variables: lag % women on board, lag % independents on board, lag board size), debt-to-equity ratio, working women index and revenue (log), following Terjesen et al.(2016)

[b] H_0: instrumented variables are exogenous

[c] H_0: instruments are valid

All models show no significant relationship between the percentage of independent directors and the ADACC. This is in line with the findings of Rahman and Ali (2006), who also found an insignificant relationship between board independency and discretionary accruals. Rahman and Ali explained this finding by the lack of knowledge of independent directors on company affairs, which leads to unsuccessful execution of their monitoring role. These results also indicates that for independent directors there is only a significant negative effect on earnings management found in the interaction term with the percentage of female

directors, which suggests that adding an independent director only lowers the level of earnings management when this director is also a female director.

For each model the coefficient for the board size is negative and statistically significant. Larger boards are in prior studies associated with lower earnings management, explained by the reason that larger boards bring a higher portion of experienced board of directors (Xie et al, 2002).

Regarding the coefficient of further control variables, the dummy variable for negative income, *loss,* is negative and significant. Which is in line with the expectations based on prior studies mentioned before, that troubled companies have incentives to use discretionary accruals. The positive significant coefficient of the MTB is also in line with the findings of prior studies that high growth firms have more incentives to use earnings management. Furthermore, the coefficient of the variable size is in accordance with the expectations. The negative significant coefficient aligns with findings in prior studies that bigger firms have lower earnings management due to better monitoring by auditors, analysis and better governance structure (Renée B. Adams & Ferreira, 2009; Meek et al., 2007; Peni & Vähämaa, 2010).

5.3 Additional tests

5.3.1 Insider-dominant firms

The average of the percentage of independent directors in the sample is 80%, indicating that for most of the firm-year observations the board is outsider-dominant (>50% independent directors). Therefore, it is interesting to test whether the results are robust when conducting the regressions without outsider-dominant boards. As in the main results, the instruments are valid according the Hansen J-test and the instruments are endogenous according the C-test statistic.

These results are shown in Table 6 and show that for the observations in the sample with firms with an insider-dominant board in panel A (<50% independent directors) the results overall remain. However it is interesting to notice that the coefficient for *Pfem* is much higher for the results of the firms with an insider-dominant board (-0.097) in panel A than for the firms with an outsider-dominant board (-0.015) in panel B. For example, when replacing

a male director with a female director in a board with 9 directors, ceteris paribus, will lower the ADACC with 107.77% (9.7* 11.11%) for a firm with an insider-dominant board versus 16.67% (1.5*11.11%) for an outsider-dominant board. These results suggest that adding a female director to a firm with an insider-dominant board has more effect on the level earnings management than in a firm with outsider-dominant firm. More remarkably is the difference in size of the coefficient of the interaction term: -0.220 for firms with an insider-dominant board versus -0.019 for firms with an outsider-dominant board. This additional test overall concludes that adding a female director and independent female director to the board has a stronger negative effect on the level earnings management in a firm with a insider-dominant board than in a firm with an outsider-dominant board. However, a side note should be made to this test; the size of the sample of 128 firm-year observations for the insider-dominant board is quit low in our sample, which lowers the power of the test. In further research it would be interesting to investigate this further with a bigger sample size of firms with an insider-dominant board.

Table 6: Results insider-dominant boards

Panel A: Firms with Insider-dominant board

	(1)	(2)	(3)	(4)
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem[a]	-0.097*	-0.095*		
	(0.052)	(0.051)		
Pfem_Pind[a]			-0.220*	
			(0.120)	
Boardfem[a]				-0.028*
				(0.015)
Pind[a]	-0.015		0.029	0.012
	(0.078)		(0.078)	(0.079)
Boardsize[a]	-0.002	-0.002	-0.002	-0.001
	(0.002)	(0.002)	(0.002)	(0.003)
mtb	0.010***	0.011***	0.010***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)
lev	-0.007	-0.007	-0.004	0.003
	(0.031)	(0.031)	(0.031)	(0.029)
size	0.002	0.002	0.001	0.002
	(0.005)	(0.004)	(0.005)	(0.005)
loss	0.022*	0.023*	0.021	0.020
	(0.013)	(0.013)	(0.014)	(0.014)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes

Constant	0.100	0.087**	0.081	0.084
	(0.080)	(0.042)	(0.079)	(0.080)
Observations	128	128	128	128
Hansen J χ^{2} [c]	28.782	34.801	37.074	38.784
GMM C statistic χ^{2} [b]	6.523*	6.603*	7.880**	7.367**
Wald χ^{2}	68.51	68.37	67.64	65.86
R-squared	0.252	0.248	0.239	0.235

Panel B: Firms with outsider-dominant board

	(1)	(2)	(3)	(4)
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem[a]	-0.015**	-0.015**		
	(0.007)	(0.007)		
Pfem_Pind[a]			-0.019**	
			(0.009)	
Boardfem[a]				-0.006**
				(0.003)
Pind[a]	0.003		0.006	0.004
	(0.008)		(0.008)	(0.008)
Boardsize[a]	-0.003***	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
mtb	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	-0.011**	-0.011**	-0.011**	-0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
size	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.016***	0.015***	0.016***	0.015***
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	0.066***	0.068***	0.064***	0.065***
	(0.009)	(0.007)	(0.009)	(0.009)
Observations	8,717	8,717	8,717	8,717
Hansen J χ^{2} [c]	68.628	68.657	68.416	68.095
GMM C statistic χ^{2} [b]	8.523**	6.603*	9.880**	9.367**
Wald χ^{2}	534.04	533.97	534.00	535.05
R-squared	0.066	0.066	0.066	0.067

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[a] Instrumented with the following variables: lag % women on board, lag % independents on board, lag board size), debt-to-equity ratio, working women index and revenue (log), following Terjesen et al.(2016)

[b] H_0: instrumented variables are exogenous

[c] H_0: instruments are valid

5.3.2 Dummy variable female executives

In previous studies they did not look at the gender of the board as a whole but at the gender of the executives; the CEO and the CFO. Since they found in some studies a significant effect on earnings management by female executives, I investigate whether the results remain robust after adding the dummy variables *ceofem* and *cfofem.* These variables value 1 when the CEO or CFO is female and zero otherwise. In table 7 can be seen that the coefficients of the dummy variables is close to zero and insignificant and consequently the results in table 7 are not of any difference for the variables of interest in table 5.

Table 7: Results with the dummy variables for female executives

	(1)	(2)	(4)	(5)
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem[a]	-0.015**	-0.015**		
	(0.007)	(0.007)		
Pfem_Pind[a]			-0.020**	
			(0.009)	
Boardfem[a]				-0.007**
				(0.003)
Pind[a]	-0.000		0.002	0.000
	(0.007)		(0.007)	(0.007)
ceofem	-0.001	-0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)
cfofem	0.005	0.005	0.005	0.006
	(0.009)	(0.009)	(0.009)	(0.009)
Boardsize[a]	-0.003***	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
mtb	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	-0.011**	-0.011***	-0.011**	-0.011**
	(0.004)	(0.004)	(0.004)	(0.004)
size	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.016***	0.016***	0.016***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	0.080***	0.080***	0.078***	0.080***
	(0.010)	(0.009)	(0.010)	(0.010)
Observations	8,845	8,845	8,845	8,845
Hansen J χ^{2} [c]	68.628	68.657	72.629	68.417

GMM C statistic χ^2 b	6.523**	4.603***	6.880**	7.367*
Wald χ^2	534.04***	533.97***	534.00***	535.05***
R-squared	0.066	0.066	0.066	0.068

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[a] Instrumented with the following variables: lag % women on board, lag % independents on board, lag board size), debt-to-equity ratio, working women index and revenue (log), following Terjesen et al.(2016)

[b] H_0: instrumented variables are exogenous

[c] H_0: instruments are valid

5.3.1 High- and low-debt firms

Arun et al. (2015) found that there is only an impact of a higher number of female directors and independent female directors in low debt firms; therefore I test whether the results hold when the sample is separated into high- and low-debt firms. Following the study of Arun et al. (2015) the mean of the leverage is used for the distinction between high- and low-debt firms. The results in table 8 shows the results for low-debt firms in Panel A and high-debt firms in Panel B. As in the main results, the instruments are valid according the Hansen J-test and the instruments are endogenous according the C-test statistic.

Table 8 shows that our results only remain for the sample with low-debt firms in panel A; the coefficient for *Pfem* and *Pfem_Pind* are negative but insignificant for the sample with high-debt firms shown in B. Altogether table 8 shows that as in the study of Arun et al. (2015) only a significant effect of female directors and independent female directors is found on earnings management for low-debt firms. Arun et al. (2015) explained that female tend to have less influence in high-debt firms for the reason that high-debt firms tend to be more complex and have larger boards as found in the study of Coles et al. (2008). Women tend to have more influence in smaller boards and consequently have more influence in low-debt firms. These findings indicate that the composition of the firm matters whether female directors and independent female directors have an effect on the level of earnings management in firms.

Table 8: Results high- and low-debt firms

Panel A: Low debt firms

	(1)	(2)	(3)	(4)
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem	-0.015*	-0.015*		
	(0.008)	(0.008)		
Pfem_Pind			-0.018**	
			(0.009)	
boardfem				-0.007**
				(0.004)
Pind			0.007	0.005
	(0.009)		(0.009)	(0.009)
Boardsize	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
mtb	0.005***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	-0.054***	-0.054***	-0.054***	-0.052***
	(0.013)	(0.013)	(0.013)	(0.013)
salesgrowth	-0.000	-0.000	-0.001	0.000
	(0.004)	(0.004)	(0.004)	(0.004)
size	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.017***	0.017***	0.017***	0.017***
	(0.003)	(0.003)	(0.003)	(0.003)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	0.093***	0.096***	0.091***	0.094***
	(0.015)	(0.014)	(0.015)	(0.015)
Observations	4,626	4,626	4,626	4,626

Hansen J χ^{2} [c]	46.562	46.742	46.584	44.945
GMM C statistic χ^{2} [b]	9.218**	7.371**	10.508**	6.962*
Wald χ^{2}	377.71***	377.76***	377.63***	379.60***
R-squared	0.075	0.076	0.075	0.077

Panel B: High-debt firms

	(1)	(2)	(3)	(4)
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem[a]	-0.010	-0.010		
	(0.009)	(0.009)		
Pfem_Pind[a]			-0.013	
			(0.012)	
Boardfem[a]				-0.006
				(0.005)
Pind[a]			0.003	0.002
	(0.012)		(0.012)	(0.012)
Boardsize[a]	-0.003***	-0.003***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
mtb	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	0.011**	0.011**	0.011**	0.012**
	(0.005)	(0.005)	(0.005)	(0.005)
salesgrowth	0.004	0.004	0.004	0.004
	(0.003)	(0.003)	(0.003)	(0.003)
size	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.014***	0.014***	0.014***	0.014***
	(0.003)	(0.003)	(0.003)	(0.003)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes

Constant	0.035***	0.035***	0.033***	0.033***
	(0.010)	(0.008)	(0.010)	(0.011)
Observations	4,219	4,219	4,219	4,219
Hansen J χ^2 [c]	25.871	25.889	25.813	25.577
GMM C statistic χ^2 [b]	8.458**	6.350*	8.341**	6.487**
Wald χ^2	205.54***	206.35***	206.32***	204.28***
R-squared	0.054	0.054	0.054	0.056

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[a] Instrumented with the following variables: lag % women on board, lag % independents on board, lag board size), debt-to-equity ratio, working women index and revenue (log), following Terjesen et al.(2016)

[b] H_0: instrumented variables are exogenous

[c] H_0: instruments are valid

5.3.1 Alternative proxy of earnings management

For the level of earnings management is a proxy used. I test whether the results hold when an alternative measurement of the discretionary accruals is used; the Jones Model. As in the main results, the instruments are valid according the Hansen J-test and the instruments are endogenous according the C-test statistic. Table 9 shows that the significant negative effect of the female directors and independent female directors on the level of earnings management overall hold when the alternative proxy of earnings management is used.

Table 9: Discretionary accruals following the Jones model

	(1)	**(2)**	**(3)**	**(4)**
VARIABLES	**ADACC**	**ADACC**	**ADACC**	**ADACC**
Pfem[a]	-0.017**	-0.017**		
	(0.007)	(0.007)		
Pfem_Pind[a]			-0.022**	

			(0.009)	
Boardfem[a]				-0.007**
				(0.003)
Pind[a]			0.003	0.001
	(0.007)		(0.007)	(0.007)
Boardsize[a]	-0.003***	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
mtb	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
lev	-0.011**	-0.011***	-0.011**	-0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
salesgrowth	0.002	0.002	0.002	0.002
	(0.003)	(0.002)	(0.003)	(0.003)
size	-0.002***	-0.002***	-0.002***	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)
loss	0.015***	0.015***	0.015***	0.014***
	(0.002)	(0.002)	(0.002)	(0.002)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	0.077***	0.077***	0.074***	0.076***
	(0.009)	(0.008)	(0.009)	(0.009)
Observations	8,845	8,845	8,845	8,845
Hansen J χ^{2} [c]	65.502	65.523	65.279	65.067
GMM C statistic χ^{2} [b]	7.927**	6.254**	8.475**	8.966**
Wald χ^{2}	509.23***	509.19***	509.19***	510.00***
R-squared	0.065	0.065	0.065	0.067

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[a] Instrumented with the following variables: lag % women on board, lag % independents on board, lag board size), debt-to-equity ratio, working women index and revenue (log), following Terjesen et al.(2016)

[b] H_0: instrumented variables are exogenous

[c] H_0: instruments are valid

6. Discussion and Conclusion

6.1 Discussion

6.1.1 Implications

The findings in this paper are of interest for regulators and policy makers. Some countries already implemented a gender board quota, however the U.S. did not. The U.S. debate on the board structure focused more on the independency of the board. Which is against the findings in this study; that the gender diversity of the board has a mitigating effect on the level of earnings management, and independency solely found to mitigate the level of earnings management when the director is also female. Therefore, the corporate governance codes of U.S. should pay more attention to the gender diversity of the board.

6.1.2 Limitations

The findings in this research cannot be generalized for other countries, since only data from firms in the U.S. is used. The U.S. has no female board quota, which possibly makes the results invalid for countries with a female board quota. Furthermore, countries differ in culture; the level of gender differences and gender discrimination differs between countries.

Secondly, the DACC is used as a proxy for earnings management. This is a proxy, which means that this measure does not perfectly captures the level of earnings management. In the research field of earnings management there is discussion on whether discretionary accruals capture earnings management.

6.1.3 Further research

Since this research found that a higher proportion of female directors lower earning management it would be interesting to investigate which is the optimal percentage of female directors to lower earnings management. This research could go even further, regarding hypothesis 2, by also looking at which level of independent and female directors together is the most optimal.

This study focused on the level of earnings management and therefore looked at the unsigned value of the discretionary accruals. In further research it would be interesting to look at the signed value to investigate whether female directors are more likely to be associated with income-increasing or income-decreasing earnings management.

Furthermore, the additional tests indicate that for the small sample of firms with insider-dominant boards the lowering effect on the level of earnings management for female directors and independent female directors are stronger than for firms with outsider-dominant boards. In further research can be examined if these results are found when a larger sample is used.

Our results where only found to hold for low-debt firms and not for high-debt firms, indicating that the composition of the firm does matter for how the gender diversity of the board influences the level of earnings management. In further research a deeper look can be taken to investigate why female tend to have more influence in low debt-firms/smaller boards than in high-debt firms/bigger boards.

Regarding the limitations, first further research could include firms of different countries, on the condition to control for the level of gender discrimination in the countries. Secondly, future research could look at real earnings management instead of accrual-based earnings management.

6.2 Conclusion

The role of female directors in the level of earnings management is examined in this study including examining the difference between dependent and independent female directors. The empirical analysis on the data of U.S. firms from 2007 till 2018 provides considerable evidence that a higher proportion of female directors lower earnings management and even more when the female director is also independent. Regarding hypothesis one, firms with higher proportion female directors engage in less earnings management than firms with a higher proportion of male directors. Regarding hypotheses two, firms with higher proportion independent female directors engage in less earnings management than firms with higher proportion dependent female directors. In summary is found that independent female directors are associated with less earnings management than dependent female directors, independent male directors and dependent male directors. An additional interesting finding

in this study is that independency only was found to be significantly negatively related to earnings management in the interaction term and not solely, which means that independency only lowers earnings management when the director is also female. These results indicate that the role of gender diversity of the board is an important component in reducing the level of earnings management and that the role of the independency of the board is subordinate to the role of the gender diversity. However, when segregating the sample in high- and low-debt firms the results only remain for low-debt firms, indicating that the composition of a firm does matter for the effect of the gender diversity of the board on earnings management.

Bibliography

Adams, Renée 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, Renée B, & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science*, *58*(2), 219–235. https://doi.org/10.1287/mnsc.1110.1452

Adams, Renee B, & Ragunathan, V. (2017). Lehman Sisters. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3046451

Adams, S. M., Gupta, A., & Leeth, J. D. (2009). Are Female Executives Over-represented in Precarious Leadership Positions? *British Journal of Management*, *20*(1), 1–12. https://doi.org/10.1111/j.1467-8551.2007.00549.x

Aguilera, R. V., Williams, C. A., Conley, J. M., & Rupp, D. E. (2006). Corporate governance and social responsibility: A comparative analysis of the UK and the US. *Corporate Governance: An International Review*, *14*(3), 147–158. https://doi.org/10.1111/j.1467-8683.2006.00495.x

Andres, P. de, & Vallelado, E. (2008). Corporate governance in banking: The role of the board of directors. *Journal of Banking and Finance*, *32*(12), 2570–2580. https://doi.org/10.1016/j.jbankfin.2008.05.008

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, *58*(2), 277. https://doi.org/10.2307/2297968

Arun, T. G., Almahrog, Y. E., & Ali Aribi, Z. (2015). Female directors and earnings management: Evidence from UK companies. *International Review of Financial Analysis*, *39*, 137–146. https://doi.org/10.1016/j.irfa.2015.03.002

Awais Gulzar, M., & Wang, Z. (2011). Corporate Governance Characteristics and Earnings Management: Empirical Evidence from Chinese Listed Firms. *International Journal of Accounting and Financial Reporting*, *1*(1). https://doi.org/10.5296/ijafr.v1i1.854

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common

stock investment. *Quarterly Journal of Economics*, *116*(1), 261–292. https://doi.org/10.1162/003355301556400

Baum, C. F., Schaffer, M. E., & Stillman, S. (2007). Enhanced Routines for Instrumental Variables/Generalized Method of Moments Estimation and Testing. *The Stata Journal: Promoting Communications on Statistics and Stata*, *7*(4), 465–506. https://doi.org/10.1177/1536867x0800700402

Baysinger, B. D., & Butler, H. N. (1985). Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition. *Journal of Law, Economics, and Organization*, *1*(1), 101–124.

Beasley, M. S., & Salterio, S. E. (2001). The Relationship between Board Characteristics and Voluntary Improvements in Audit Committee Composition and Experience. *Contemporary Accounting Research*, *18*(4), 539–570. https://doi.org/10.1506/RM1J-A0YM-3VMV-TAMV

Bennouri, M., Chtioui, T., Nagati, H., & Nekhili, M. (2018). Female board directorship and firm performance: What really matters? *Journal of Banking and Finance*, *88*, 267–291. https://doi.org/10.1016/j.jbankfin.2017.12.010

Bhagat, S., & Black, B. (2001). The Non-Correlation between Board Independence and Long-Term Firm Performance. *Journal of Corporation Law*, *27*. Retrieved from https://heinonline.org/HOL/Page?handle=hein.journals/jcorl27&id=241&div=18&collection=journals

Bilimoria, D., & Wheeler, J. V. (2012). Women Corporate Directors: Current Research and Future Directions. In *Women in Management: Current Research Issues Volume II* (pp. 138–163). https://doi.org/10.4135/9781446219775.n10

Bloomberg. (2019). The Last All-Male Board in the S&P 500 Finally Added a Woman. Retrieved 5 April 2020, from https://www.bloomberg.com/news/articles/2019-07-24/the-last-all-male-board-in-the-s-p-500-finally-added-a-woman

Bradbury, M. E., Mak, Y. T., & Tan, S. M. (2011). Board Characteristics, Audit Committee Characteristics and Abnormal Accruals. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.535764

Brescoll, V. L., Heilman, M., & Eagly, A. (2016). Leading with their hearts? How gender stereotypes of emotion lead to biased evaluations of female leaders. *The Leadership Quarterly*, *27*, 415–428. https://doi.org/10.1016/j.leaqua.2016.02.005

Burke, R. J. (2000). *Company Size, Board Size and Numbers of Women Corporate Directors*. https://doi.org/10.1007/978-90-481-3401-4_11

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

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance, Board Diversity, and Firm Value. *The Financial Review*, *38*(1), 33–53. https://doi.org/10.1111/1540-6288.00034

Catalyst. (1995). *Female Board Directors of the Fortune 500*. Retrieved from http://www.catalyst.org/knowledge/1995-catalyst-census-women-board-directors-fortune-500

Cejka, M. A., & Eagly, A. H. (1999). Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Personality and Social Psychology Bulletin*, *25*(4), 413–423. https://doi.org/10.1177/0146167299025004002

Charness, G., & Gneezy, U. (2012). Strong Evidence for Gender Differences in Risk Taking. *Journal of Economic Behavior and Organization*, *83*(1), 50–58. https://doi.org/10.1016/j.jebo.2011.06.007

Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? *Journal of Financial Economics*, *87*(2), 329–356. https://doi.org/10.1016/j.jfineco.2006.08.008

Cornett, M. M., Marcus, A. J., & Tehranian, H. (2008). Corporate governance and pay-for-performance: The impact of earnings management. *Journal of Financial Economics*, *87*(2), 357–373. https://doi.org/10.1016/j.jfineco.2007.03.003

Cotter, D. A., Hermsen, J. M., Ovadia, S., & Vanneman, R. (2001). The Glass Ceiling Effect. *Social Forces*, *80*(2), 655–681. https://doi.org/10.1353/sof.2001.0091

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic*

Literature, *47*(2), 448–474. https://doi.org/10.1257/jel.47.2.448

Deangelo, H., Deangelo, L., & Skinner, D. J. (1994). Accounting choice in troubled companies*. In *Journal of Accounting and Economics* (Vol. 17).

Deaves, R., Lüders, E., & Luo, G. Y. (2009). An experimental test of the impact of overconfidence and gender on trading activity. *Review of Finance*, *13*(3), 555–575. https://doi.org/10.1093/rof/rfn023

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2–3), 344–401. https://doi.org/10.1016/j.jacceco.2010.09.001

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. In *Source: The Accounting Review* (Vol. 70).

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, *13*(1), 1–36. https://doi.org/10.1111/j.1911-3846.1996.tb00489.x

Eagly, A. H. (2005). Achieving relational authenticity in leadership: Does gender matter? *Leadership Quarterly*, *16*(3), 459–474. https://doi.org/10.1016/j.leaqua.2005.03.007

Eagly, A. H., Karau, S. J., & Makhijani, M. G. (1995). Gender and the Effectiveness of Leaders: A Meta-Analysis. *Psychological Bulletin*, *117*(1), 125–145. https://doi.org/10.1037/0033-2909.117.1.125

Eagly, A. H., & Mladinic, A. (1994). Are People Prejudiced Against Women? Some Answers From Research on Attitudes, Gender Stereotypes, and Judgments of Competence. *European Review of Social Psychology*, *5*(1), 1–35. https://doi.org/10.1080/14792779543000002

Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology*, *46*(4), 735–754. https://doi.org/10.1037/0022-3514.46.4.735

Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved

dispositions versus social roles. *American Psychologist*, *54*(6), 408–423. https://doi.org/10.1037/0003-066X.54.6.408

Eckel, C. C., & Grossman, P. J. (2008, January 1). Chapter 113 Men, Women and Risk Aversion: Experimental Evidence. *Handbook of Experimental Economics Results*, Vol. 1, pp. 1061–1073. https://doi.org/10.1016/S1574-0722(07)00113-8

Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, *48*(1), 35–54. https://doi.org/10.1016/s0304-405x(98)00003-8

Ergeneli, A., & Ankan, S. (2002). Gender differences in ethical perceptions of salespeople: An empirical examination in Turkey. *Journal of Business Ethics*, *40*(3), 247–260. https://doi.org/10.1023/A:1020550916408

Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of Director Diversity and Firm Financial Performance. *Corporate Governance*, *11*(2), 102–111. https://doi.org/10.1111/1467-8683.00011

Fama, E. F. (1980). Agency Problems and the Theory of the Firm. *Journal of Political Economy*, *88*(2), 288–307. https://doi.org/10.1086/260866

Fama, E. F., & Jensen, M. C. (1983). Separation of Ownership and Control. *Journal of Law & Economics*, *26*. Retrieved from https://heinonline.org/HOL/Page?handle=hein.journals/jlecono26&id=313&div=22&collection=journals

Fondas, N., & Sassalos, S. (2000). A different voice in the boardroom: How the presence of women directors affects board influence over management. *Global Focus*, *12*(2), 13–22. Retrieved from https://scholar-google-com.librarylink.uncc.edu/scholar?q=Fondas+and+Sassalos%2C+2000&btnG=&hl=en&as_sdt=0%2C34%5Cnhttp://www.emeraldinsight.com/bibliographic_databases.htm?id=1345065&show=abstract

García Lara, J. M., García Osma, B., Mora, A., & Scapin, M. (2017). The monitoring role of female directors over accounting quality. *Journal of Corporate Finance*, *45*, 651–668. https://doi.org/10.1016/j.jcorpfin.2017.05.016

Gavious, I., Segev, E., & Yosef, R. (2012). Female directors and earnings management in high-technology firms. *Pacific Accounting Review*, *24*(1), 4–32. https://doi.org/10.1108/01140581211221533

Geiger, M. A., & North, D. S. (2006). Does hiring a new cfo change things? An investigation of changes in discretionary accruals. *Accounting Review*, *81*(4), 781–809. https://doi.org/10.2308/accr.2006.81.4.781

Glover, S. H., Bumpus, M. A., Sharp, G. F., & Munchus, G. A. (2002). Gender differences in ethical decision making. *Women in Management Review*, *17*(5), 217–227. https://doi.org/10.1108/09649420210433175

Gull, A. A., Nekhili, M., Nagati, H., & Chtioui, T. (2018). Beyond gender diversity: How specific attributes of female directors affect earnings management. *British Accounting Review*, *50*(3), 255–274. https://doi.org/10.1016/j.bar.2017.09.001

Haslam, S. A., & Ryan, M. K. (2008). The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. *Leadership Quarterly*, *19*(5), 530–546. https://doi.org/10.1016/j.leaqua.2008.07.011

Healy, P. M., & Wahlen, J. M. (1999, December 9). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, Vol. 13, pp. 365–383. https://doi.org/10.2308/acch.1999.13.4.365

Hermalin, B. E., & Weisbach, M. S. (1991). The Effects of Board Composition and Direct Incentives on Firm Performance. *Financial Management*, *20*(4), 101. https://doi.org/10.2307/3665716

Hillman, A. J., & Dalziel, T. (2003). Boards of Directors and Firm Performance: Integrating Agency and Resource Dependence Perspectives. *The Academy of Management Review*, *28*(3), 383. https://doi.org/10.2307/30040728

Hsiao, C. (2003). Analysis of panel data, second edition. In *Analysis of Panel Data, Second Edition*. https://doi.org/10.1017/CBO9780511754203

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives

overconfident relative to female executives? *Journal of Financial Economics*, *108*(3), 822–839. https://doi.org/10.1016/j.jfineco.2012.12.005

Huse, M., & Solberg, A. G. (2008). Gender-related boardroom dynamics: How Scandinavian women make and can make contributions on corporate boards. In *The Value Creating Board: Corporate Governance and Organizational Behaviour* (pp. 344–364). https://doi.org/10.4324/9780203888711

Jaggi, B., Leung, S., & Gul, F. (2009). Family control, board independence and earnings management: Evidence based on Hong Kong firms. *Journal of Accounting and Public Policy*, *28*(4), 281–300. https://doi.org/10.1016/j.jaccpubpol.2009.06.002

Johnson, J. E. V., & Powell, P. L. (1994). Decision Making, Risk and Gender: Are Managers Different? *British Journal of Management*, *5*(2), 123–138. https://doi.org/10.1111/j.1467-8551.1994.tb00073.x

Jones, J. J. (1991). Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, *29*(2), 193. https://doi.org/10.2307/2491047

Jones, T. M., & Gautschi, F. H. (2013). Will the ethics of business change? A survey of future executives. In *Citation Classics from The Journal of Business Ethics: Celebrating the First Thirty Years of Publication* (pp. 481–504). https://doi.org/10.1007/978-94-007-4126-3_24

Keenan, J. (2004). Corporate Governance in UK/USA Boardrooms. *Corporate Governance: An International Review*, *12*(2), 172–176. https://doi.org/10.1111/j.1467-8683.2004.00356.x

Khan, W. A., & Vieito, J. P. (2013). Ceo gender and firm performance. *Journal of Economics and Business*, *67*, 55–66. https://doi.org/10.1016/j.jeconbus.2013.01.003

Klein, A. (1998). Firm performance and board committee structure. *Journal of Law and Economics*, *41*(1), 275–303. https://doi.org/10.1086/467391

Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, *33*(3), 375–400. https://doi.org/10.1016/S0165-4101(02)00059-9

Koenig, A. M., Eagly, A. H., Mitchell, A. A., & Ristikari, T. (2011). Are leader stereotypes masculine? A meta-analysis of three research paradigms. *Psychological Bulletin*, *137*(4), 616–642. https://doi.org/10.1037/a0023557

KPMG. (2019). The state of board gender diversity. Retrieved 26 July 2020, from https://boardleadership.kpmg.us/relevant-topics/articles/2019/the-state-of-board-gender-diversity.html

Krishnan, G. V., & Parsons, L. M. (2008). Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics*, *78*(1–2), 65–76. https://doi.org/10.1007/s10551-006-9314-z

Liu, Y., Miletkov, M. K., Wei, Z., & Yang, T. (2015). Board independence and firm performance in China. *Journal of Corporate Finance*, *30*, 223–244. https://doi.org/10.1016/j.jcorpfin.2014.12.004

Liu, Y., Wei, Z., & Xie, F. (2014). Do women directors improve firm performance in China? *Journal of Corporate Finance*, *28*, 169–184. https://doi.org/10.1016/j.jcorpfin.2013.11.016

Luan, C.-J., & Tang, M.-J. (2007). Where is Independent Director Efficacy? *Corporate Governance: An International Review*, *15*(4), 636–643. https://doi.org/10.1111/j.1467-8683.2007.00593.x

Mckinsey & Company. (2017). *Women Matter: Time to accelerate*. Retrieved from https://www.mckinsey.com/~/media/mckinsey/featured insights/women matter/women matter ten years of insights on the importance of gender diversity/women-matter-time-to-accelerate-ten-years-of-insights-into-gender-diversity.ashx

Meek, G. K., Rao, R. P., & Skousen, C. J. (2007). Evidence on factors affecting the relationship between CEO stock option compensation and earnings management. *Review of Accounting and Finance*, *6*(3), 304–323. https://doi.org/10.1108/14757700710778036

Nahar Abdullah, S. (2004). Board composition, CEO duality and performance among Malaysian listed companies. *Corporate Governance: The International Journal of Business in Society*, *4*(4), 47–61. https://doi.org/10.1108/14720700410558871

Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *Quarterly Journal of Economics*, Vol. 122, pp. 1067–1101. https://doi.org/10.1162/qjec.122.3.1067

Park, Y. W., & Shin, H. H. (2004). Board composition and earnings management in Canada. *Journal of Corporate Finance*, *10*(3), 431–457. https://doi.org/10.1016/S0929-1199(03)00025-7

Peasnell, K. V., Pope, P. F., & Young, S. (2005, September 1). Board monitoring and earnings management: Do outside directors influence abnormal accruals? *Journal of Business Finance and Accounting*, Vol. 32, pp. 1311–1346. https://doi.org/10.1111/j.0306-686X.2005.00630.x

Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*, *36*(7), 629–645. https://doi.org/10.1108/03074351011050343

Pombo, C., & Gutiérrez, L. H. (2011). Outside directors, board interlocks and firm performance: Empirical evidence from Colombian business groups. *Journal of Economics and Business*, *63*(4), 251–277. https://doi.org/10.1016/j.jeconbus.2011.01.002

Rahman, R. A., & Mohamed Ali, F. H. (2006). Board, audit committee, culture and earnings management: Malaysian evidence. *Managerial Auditing Journal*, *21*(7), 783–804. https://doi.org/10.1108/02686900610680549

Ridgeway, C. L. (2001). Gender, status, and leadership. *Journal of Social Issues*, *57*(4), 637–655. https://doi.org/10.1111/0022-4537.00233

Rodriguez, J. R., & Keele, T. (2019). *The state of board gender diversity globally and the evolving US landscape*. Retrieved from https://boardleadership.kpmg.us/relevant-topics/articles/2019/the-state-of-board-gender-diversity.html

Sarkar, J., Sarkar, S., & Sen, K. (2008). Board of directors and opportunistic earnings management: Evidence from India. *Journal of Accounting, Auditing and Finance*, *23*(4), 517–551. https://doi.org/10.1177/0148558X0802300405

Schubert, R., Brown, M., Gysler, M., & Brachinger, H. W. (1999). Financial decision-making:

Are women really more risk-averse? *American Economic Review*, *89*(2), 381–385. https://doi.org/10.1257/aer.89.2.381

Shrader, C. B., Blackburn, V., & Iles, P. (1997). *Management Publications Management Fall 1997 Women In Management And Firm Financial Performance: An Women In Management And Firm Financial Performance: An Exploratory Study Exploratory Study*. Retrieved from http://lib.dr.iastate.edu/howtocite.html.

Srinidhi, B., Gul, F. A., & Tsui, J. (2011). Female directors and earnings quality. *Contemporary Accounting Research*, *28*(5), 1610–1644. https://doi.org/10.1111/j.1911-3846.2011.01071.x

Terjesen, S., Aguilera, R. V., & Lorenz, R. (2015). Legislating a Woman's Seat on the Board: Institutional Factors Driving Gender Quotas for Boards of Directors. *Journal of Business Ethics*, *128*(2), 233–251. https://doi.org/10.1007/s10551-014-2083-1

Terjesen, S., Couto, E. B., & Francisco, P. M. (2016). Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *Journal of Management and Governance*, *20*(3), 447–483. https://doi.org/10.1007/s10997-014-9307-8

The World Economic Forum. (2019). *Insight Report Global Gender Gap Report 2020 Terms of Use and Disclaimer*. Retrieved from www.weforum.org

Triki Damak, S. (2018). Gender diverse board and earnings management: evidence from French listed companies. *Sustainability Accounting, Management and Policy Journal*, *9*(3), 289–312. https://doi.org/10.1108/SAMPJ-08-2017-0088

Van der Walt, N., & Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: An International Review*, *11*(3), 218–234. https://doi.org/10.1111/1467-8683.00320

Weber, J., & Wasieleski, D. (1997). Investigating Influences on Managers' Moral Reasoning The Impact of Context and Personal and Organizational Factors. In *BUSINESS & SOCIETY* (Vol. 40). Ruegger & King.

Wooldridge, J. M. (2001). Applications of generalized method of moments estimation.

Journal of Economic Perspectives, Vol. 15, pp. 87–100. https://doi.org/10.1257/jep.15.4.87

Xie, B., Davidson, W. N., & Dadalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, *9*(3), 295–316. https://doi.org/10.1016/S0929-1199(02)00006-8

Ye, K., Zhang, R., & Rezaee, Z. (2010). Does top executive gender diversity affect earnings quality? A large sample analysis of Chinese listed firms. *Advances in Accounting*, *26*(1), 47–54. https://doi.org/10.1016/j.adiac.2010.02.008