Radboud University Nijmegen
Nijmegen School of Management

Master Economics

Corporate Finance and Control

THE EFFECT OF GENDER DIVERSITY IN THE BOARD OF DIRECTORS ON THE MERGER AND ACQUISITION ACTIVITY OF EUROPEAN LISTED FIRMS

Abstract

Gender diversity in corporate boards has become an increasing topic in Europe. European policymakers are trying to diversify the board of directors of firms for a better representation of female directors in top functions. This study explores the role of gender diversity in the board on the merger and acquisition activity of the firm, by focusing on the bid initiations of the firm and the bid premium paid by the acquirer. Many M&A deals are value decreasing instead of value enhancing. One of the main reasons for this is the greedy, overconfident and risky behaviour of directors during the M&A process. These behavioural characteristics can be seen as masculine. The question that comes up to mind is if the representation of female directors in the board could influence the merger and acquisition activity of the firm? Using data of 276 M&A deals for European publicly listed firms during 2003-2017, we found a significant negative effect of gender diversity on the probability of doing a bid. Moreover, we found a negative effect of gender diversity on the size of the bid premium paid by the acquirer.

Keywords: mergers and acquisition, gender diversity, bid initiations, bid premium

Max van der Spoel

s4365585

Supervisor: prof. dr. J. (Joris) Knoben

July 05, 2019

Contents

1. Introduction

The last few years, a lot of attention has been paid for the number of women at the top of big enterprises. European policymakers are trying to diversify the board of directors of firms. In 2012, the European Commission started to debate about legislation that would require at least 30% women in 2016, and by 2020 40% women on corporate boards for all European Union public companies (European Commission, 2012). Because of this legislation, some European countries introduced a non-binding gender quota, other European countries have binding quotas to improve the representation of women in the board of directors (Terjesen et al., 2015).

An important question that comes to mind is why academics and the literature would be interested in the gender diversity issue? The literature provides evidence that the representation of women on the board of directors affects the performance of the firm. The theory about the impact of gender diversity on the board on the performance of the firm is undetermined a priori. On the one hand, there is an expected positive effect. First, it can be argued that gender diversity increases a firm's competitive advantage. Second, gender diversity increases creativity and innovations, as these characteristics are not randomly distributed in the population. Third, gender diversity in the board can due to the variety of perspectives that emerges from a diverse board be better in problem-solving, since more alternatives are evaluated while taking a decision. Fourth, diversity may improve the image of the firm, and this could have a positive effect on customers' behaviour and eventually on the firm's financial performance (Smith et al., 2006).

On the other hand, there is a theoretical negative effect of gender diversity on the performance of the firm. First, a homogenous group tend to communicate more often, since they are more likely to share the same ideas. Coordination of management teams may be more difficult and costly (Ancona & Caldwell 1992). Second, greater gender diversity generates more ideas, critical questions, and more conflicts, and making a decision will take more time and be less effective (Lau & Murnighan, 1998). Third, women are more risk-averse than men, which results in some cases in lower firm performance, since women tend to take less risky decisions. (Jianakoplos and Bernasek, 1998). Fourth, women increase the costs of the firm, due to higher turnover and absenteeism (Cox and Blake 1991).

One great argument for the different performance effects is the different effect of gender on corporate governance and the decision-making process. Gender of the director is associated with different behavioural patterns, which will lead to different corporate decisions. (Huan & Kisgen, 2013). The main discrepancies between male and female directors are different levels of risk-seeking and different levels of overconfidence. These different behaviours are described in psychology and decision-making theories and leads to different decisions made by men and women. These important corporate decisions are differently influenced by gender, and these different corporate decisions will have different performance effects. The literature shows that gender diversity has a positive, no and a negative performance effect and this could be the outcome of differences in decision-making among male and female directors. The literature should focus on the differences between men and women regarding their decision-making process.

One of the many responsibilities of the board of directors is that it makes important decisions on behalf of the firm. An important corporate decision that is made by the board of directors is mergers and acquisitions.

Prior research has shown that there are more value-destroying instead of value-enhancing acquisitions. One important reason for these value-destroying mergers and acquisitions is the overconfident, greedy and risk-seeking behaviour of managers during the acquisition process (Goel & Thakor, 2010; Graham et al. 2002; Malmendier & Tate, 2005; Malmendier & Tate, 2008). Overconfident and risk-seeking behaviour can be seen as masculine characteristics and is a stereotype for men. Mergers and acquisition are in the modern world still characterized as a man's world, and many masculine corporate cultures are still the norm for many firms (Radu et al., 2017). On the opposite of men, women tend to be less risk seeking and less overconfident. Building on social identity theory, Chen et al (2016) argues that female directors are associated with more exhaustive evaluations, have better active oversight of strategic actions and are more ready to dismiss proposals that seem to be too speculative or unconsidered. Therefore, the representation of women on the board during M&A deals could significantly influence the decision-making process of the board and have eventually different effects on the merger and acquisition activity of the firm.

This leads to the following research question: *"What is the effect of gender diversity on the board of directors on the merger and acquisition activity of European listed firms?*

The main goal of this study is to examine whether gender diversity in the board of directors in European listed firms is associated with the merger and acquisition activity of a firm. The activity of the firm is examined by using two dependent variables, the bid initiations and the bid premium paid by the acquirer. In order to answer this question, we examine how a more gender diverse board of directors may influence the decision-making process regarding M&A deals done by the acquirer. Two analyses will provide insight into this relationship, on the one hand, a bid initiation sample and on the other hand a bid premium sample.

Because of these many value-destroying M&A deals, in combination with the different behavioural patterns between men and women and their decision-making process, mergers and acquisition are an ideal setting for investigating the impact of gender diversity in the board of directors**.** First, mergers and acquisitions are in many cases not an improvement of shareholder value (Andrade et al., 2001). It is for the literature important to know why so many M&A deals fail. Could the gender of directors result in too many acquisitions or paying too much? Second, Lenney (1977) argue that gender differences in confidence depend "on the lack of clear and unambiguous feedback". When feedback is clear, women do not make lower ability estimates. However, when such feedback is unclear and ambiguous, women seem to have lower opinions and often underestimate. In the MA domain, the successes and failures of these deals are often ambiguous and not easily identifiable because of their complexity. The effect of gender could be in the domain of M&A more present because of this complexity. It's thus likely that men are more confident about the ability to make mergers and acquisitions (Levi et al., 2011). Third, M&A involves intense board discussion, before a final decision is made. Individual directors can make a difference in these final decisions, and the difference between men and women regarding their decision-making process could have a significant effect on the merger and acquisition activity.

This study has different contributions to the literature. First, it provides more insights on the effect of gender diversity on the board on the merger and acquisition activity of firms. Many studies have examined the effect of gender diversity on the performance of the firm. However, only a small amount examined the

impact on mergers and acquisition. Second, the focus on European listed companies provides more information about the relationship, since not much research is done in European countries. The studies that have been done, only focus on the US or UK. The study by Levi et al., (2014) examined the effect of gender diversity on the number of acquisitions and the amount of bid premium paid, where Dowling and Aribi (2013) investigated the effect of gender in the board on the acquisitiveness of a company in the UK. Not one study in Europe has investigated the effect of gender diversity on the bid initiations of the firm, and the bid premium paid for the target by the acquirer. Third, not one study has already examined the effect of gender diversity on the dependent variables bid initiations and the bid premium, based on European firms. It is interesting whether a firm makes a bid at all, and if so, what is the bid premium paid by the acquirer. Fourth, in conjunction with the increased attention of women in the top of European firms, a study investigating the effect of gender diversity in the board on merger and acquisition activity could be of scientific relevance. If the literature can provide more insight in the expected 'positive' effect of more women in the board on corporate governance and decision-making, and in this case specifically for value enhancing mergers and acquisition, a more gender diverse board will be more an economic argument instead of only an ethical issue.

The remainder of this thesis is as follows: the next section will provide existing literature and theories regarding the relationship between gender diversity and merger and acquisition activity. Based on this relevant literature, the hypotheses are formed. Chapter three presents the methodology of this research and the data that is used. In chapter four, the results of the analyses are presented. Chapter five consist of a discussion, the limitations of this research and recommendations for further research. Finally, this research ends with the conclusion.

2. Literature review

In this chapter, relevant literature is described and the hypotheses will be formed. The empirical link between gender diversity in the board of directors and the merger and acquisition activity is described, and scientific literature will come forward which may contribute to answering eventually the main question in this research.

2.1 The board of directors

The board of directors is an important corporate governance mechanism and is considered to be the highest control mechanism in an organization since it has the power to compensate the decisions that are made by the top management (Fama & Jensen, 1983). Corporate governance means "the system by which companies are directed and controlled" (Cadbury Report, 1992). Corporate governance is a series of mechanisms where the interest of management, the board of directors, controlling shareholders, minority shareholders and other stakeholders are aligned. The board of directors functions as an internal governance mechanism, via its supervision, appointment and remuneration of senior managers (Campbell & Mínguez-Vera, 2008). The board of directors have different types of roles. The first role of the board is its monitoring function. The board of directors monitors the senior executives, which includes the selecting and dismissing of top management, criticize their performance, creating compensation packages and finally supervising the internal and external auditing (Ruigrok et al., 2006). The second role of the board of directors is the involvement in creating, selecting and implementing the firm's strategy. The last role is that the board of directors links the firm to its external environment, and tries to enhance the firm's legitimacy. Literature suggests that the structural characteristics of the board of directors influence the effectiveness of the decision-making process of the firm and has eventually many different performance effects. The following structural characteristics of the board are the size of the board, independence of the board, board diversity and director's characteristics (Dowling & Aribi, 2013).

One of the most important governance issues that firms currently face, is board diversity and specifically the characteristics of the board members (Milliken & Martins, 1996). Board diversity can be explained as the differentiation in the composition of the board of directors. In general, there are two categories of board diversity, observable and less-observable diversity. Gender is an observable board diversity and is directly related to this research.

Gender diversity in the board of directors can be described as the proportion of female board members on the board of directors. Arguments for a more gender diverse board of directors can be split into two categories: ethical and economics. The ethical camp argues that it is immoral to exclude women from corporate boards on the ground of gender. Firms should increase gender diversity in the board to achieve a more equitable outcome. On the other hand, economics arguments for better female representation argue that gender diversity could influence corporate governance and corporate decision-making, and firms who fail to choose the most suited candidates will harm eventually their firm performance (Campbell & Mínguez-Vera, 2008).

The theory behind this 'business case' of greater female representation in the board of directors is that gender diversity results in a wider knowledge base, allows the board to be involved in in-depth

conversations and generate different alternatives (Smith et al., 2006). More women on the board cause a greater variety of perspectives that emerges from a more diverse board. Female directors improve the effectiveness of the board of directors by bringing different perspectives and opinions to the board, which will eventually improve the decision-making process of the firm (Dowling & Aribi, 2013). Erhardt, Werbel, and Shrader (2003) examined the relationship between gender diversity in the board and financial firm performance and found evidence that gender diversity is associated with greater financial performance. Furthermore, Adams & Ferreira (2009) argue that female directors are more active in comparison to male directors. They attend more board meeting and are more likely to be a member of monitoring committees, and this will eventually improve the effectiveness of the board.

In contrast, the effect of gender diversity could also work out negatively. A greater gender diverse board can cause more discussions and conflicts due to a variety of opinions. A heterogeneous board may slow down the decision-making process. Eventually, this results in a less efficient decision-making body, which will harm the firm's competitive behaviour (Hambrick, Cho and Chen 1996)

2.2 Board of directors and merger and acquisition activity

The following question that comes up to mind, is why gender diversity in the board of directors could have eventually an effect on the merger and acquisition activity of a firm? As argued above, corporate decisions made by the board of directors are affected by the characteristics of the board, for example, the size of the board or board independence, but also by characteristics of the members of the board such as age, education, experience and gender. An important corporate decision that is made by the board of directors is mergers and acquisitions. Many mergers and acquisitions are value destroying and one of the reason is the overconfident, greedy and risk-seeking behaviour of managers. Mergers and acquisitions are still characterized as a man thing and a masculine culture is still the norm (Radu et al., 2017). The behaviour of these managers could be seen as masculine characteristics, and this could suggest that the gender of a board member could be a reason for this value-destroying acquisitions. Since gender diversity is related to the effectiveness and decision-making process of the board, and the board of directors influence the merger and acquisition process of the firm, gender diversity could have an effect on the merger and acquisition activity. To dig deeper into this relationship, we should focus on the differences in behaviour and decision-making process between male and female directors. One of the main drivers of behaviour differences between male and female directors appears to be the level of overconfidence and risk attitudes (Levi et al., 2011; Levi et al., 2014; Dowling & Aribi, 2013). Different types of risk-aversion and overconfidence result in differences in the decision-making process, and eventually in a different corporate decision.

2.2.1 Overconfidence

The first researcher that explained failed mergers and acquisitions by being too overconfident was Roll (1986). He explained this by "Hubris" and argues that due to hubris directors overestimate the ability to extract value from a merger or acquisition. A definition of Hubris is ''exaggerated pride or self-confidence'' (Hayward & Hambrick, 1997).

Bidding firms that have a high hubris will pay too much for their targets. The Hubris hypothesis assumes that the value-destroying mergers and acquisitions occur due to the mistakes in evaluating target firms by

the board. This implies that the acquiring firm pays a bid premium too high for estimated synergies because of the optimism of the manager or overconfidence. A CEO has high responsibility and a significant influence in the strategic decisions of the firm and the CEO may believe that he/she also can control the outcome of a merger or acquisition (Malmendier & Tate, 2005).

Overconfidence is influenced by but differs in some aspects from risk-aversion. According to Kruger (1999), overconfidence can be seen as the overcome belief in their abilities. It differs from the type of confidence that represents the confidence level about their own skills or beliefs, but means the confidence level of the outcome of future events (Mcclelland, 1987). When comparing men and women, overconfidence between male and female directors can take two forms. On the one hand, women view their predictions of beliefs about uncertain events in the future as less precise than men do. They are more uncertain about the possibility of predicting the future, and women suspect a more dispersed distribution of possible results. Therefore, they also consider more negative outcomes of an event (Levi et al., 2011). Since they have other predictions about this uncertain future, female directors will make other corporate decisions in comparison to male directors. On the other hand, confidence is about the level of expectations about the future. Women tend to see future outcomes less positive than men do. Different expectations about the future will lead to different perspectives and eventually other corporate decisions. Women see the same merger or acquisition as less attractive or profitable and are less likely to undertake such an activity. Due to this, women will be less acquisitive (Levi et al., 2011).

Furthermore this overconfidence is in some extent related to risk attitudes, however, it's also related to self-attribution bias: your success is because of your capacities and talent, unsuccessful outcomes are the caused by external factors (Kruger, 1999). Men tend to have a higher self-attribution bias and are therefore in some situations more confident than women (Lundeberg et al., 1994).

Another behavioural difference that is closely linked to the overconfident theory is the empire-building theory. While there are several reasons for this empire building phenomenon, the main argument is that managers want more power by acquiring other firms and have the tendency of being too optimistic. According to Ragon (2011), women are less interested in building an empire while men are always searching for the opportunity to acquire another firm. Men are more competitive than women are and try to engage in more mergers or acquisition. This theory is in line with the expectation that male directors will engage in more mergers and acquisitions.

This general tendency about the idea that men are more confident than women are could be a reason why so many mergers and acquisition deals fail. There is strong support that decision-makers overestimate the outcome of their decisions and overestimate their own capabilities. Men are on average more overconfident than women are in their decision-making process, and many of the mergers and acquisition decisions are made by men. Male directors are not able to correctly judge the outcome of a merger or acquisition, while female directors also see the negative side of future outcomes.

2.2.2 Risk-aversion
The second main difference in behaviour between male and female directors is the level of risk aversion. Most of the literature provides evidence that women are in general more risk-averse than men are. Men

have more risk-seeking behaviour, and women make less risky decisions in multiple fields (Eckel & Grossman, 2002; Eckel & Grossman, 2008; Fehr-Duda et al., 2006; Byrnes et al., 1999). Risk preferences result in the willingness of people to undertake risky decisions. Women have in general less willingness to take risky decisions and do not like to take responsibility when making decisions on behalf of other people (Ertac and Gurdal, 2012). According to Ertac and Gurdal (2012), 86% of male directors are willing to take a decision on behalf of others, while only 55% of female directors are willing to do this. Furthermore, research provides evidence that women make smaller investments if an asset is risky and eventually appear to be more financially risk-averse (Charness & Gneezy, 2012). Women are in comparison to men less competitive in tournaments, show more risk-seeking behaviour and have less willingness to take decisions that are full of risk and on behalf of others (Beckmann & Menkhoff, 2008; Ertac & Gurdal, 2012).

This difference in risk-aversion can be a consequence of the difference in emotional reactions to risky situations. Psychologists suggest that women experience emotions stronger than men do, and this can eventually affect the willingness to take a risky decision (Charness & Gneezy, 2012). Due to this, female directors could avoid engaging in risky decisions, and this could result in less willingness to engage in mergers or acquisitions at all. Other explanations about the differences in risk aversion between men and women are the difference in the level of testosterone (Sapienza et al., 2009) and the sociobiological explanation that more risk-averse is positive for raising children (Witt, 1994).

2.3 Formulation of the hypothesis

The differences in risk aversion and overconfidence mentioned above, suggests that different risk-levels and confidence-levels have a different impact on the corporate decisions that a board makes. Women tend to be less risk seeking, are more careful in making a decision, are associated with more evaluations that are exhaustive and are less confident about future outcomes. Furthermore, they have better active oversight of strategic actions and are more ready to dismiss proposals that seem to be too speculative or unconsidered (Levi et al., 2014; Adams & Ferreira, 2009; Chen et al., 2016). Mergers and acquisitions are an important corporate decision that requires intense board-level discussions before final-approval, and individual directors can make a difference in the eventual decisions. Besides that, the M&A domain is a very complex world, where the successes and failures of these deals are not easily determined. This complexity brings a lot of risks.

We pointing out the general tendency that women are less overconfident and are more risk-averse than men. Due to this, we investigate if there is a negative relation between the proportion of female board members on the board of directors and the acquisitiveness of the firm. This relationship will hold if the same merger or acquisition is less attractive. Furthermore, we investigate if there is a negative relationship between the proportion of female board members on the board and the bid premium paid by the acquirer.

The mentioned characteristics of male and female directors, in combination with the differences in risk and confidence levels, suggest that there is a significant difference in behaviour between men and women. The proportion of female directors will influence the decision-making process of the firm, which will eventually affect the firm's merger and acquisition activity. Therefore, we expect that a more gender diverse board of directors results in fewer bid initiations done by the acquirer.

H1: The gender diversity in the board of directors is negatively associated with the bid initiations done by the acquirer.

Furthermore, we expect a negative relationship between the proportions of female directors and the size of the bid premium paid by the acquirer. Women see the same acquisition as less attractive and male executives will pay a higher premium for the targets. Eventually, female directors will pay a bid premium closer to the true value of the target (Levi et al., 2011). This brings us to the formulation of the second hypothesis:

H2: The higher the gender diversity in the board of directors, the lower the bid premium paid for the target by the acquirer.

3. Research Method

This chapter describes the research methodology used to test the hypotheses and eventually being able to answer the main question in this research. First, the data sample will be described. Second, the variables used in this research are presented. Third, the research strategy and regression models are provided.

3.1 Data sample and description

In this paper, three databases are combined to get all the information needed for this research. The first database is Factset. Factset will provide all information about the mergers and acquisitions for the European listed firms. The data of the board of directors, including gender, independence and board size, is primarily retrieved from the BoardEx database. When data of the board of directors is missing, Eikon is used to get the data about the board characteristics. The data of the control variables are retrieved from the Eikon database.

In order to answer the central research question and to test the hypotheses, this research uses cross-sectional data of European publicly listed firms in the time period 2003-2017. Examine the impact of gender diversity on the merger and acquisition activity in this period will be interesting, due to the increasing amount of female representation in top functions and due to the increased attention to the number of women in top functions. Europe is chosen because of the scientific relevance of examining the relationship between gender diversity and merger and acquisition activity of firms in Europe. The study by Levi et al (2014) and Dowling and Arabi (2013) only focus on the US and UK, and not one study is done in Europe.

Furthermore, the research contains two data samples, one bid initiations sample and one bid premium sample. The sample of the bid premium contains only acquirers that at least do one bid or more in a fiscal year. If the firm does not make a bid at all, it will not be included in the bid premium sample, however, it will be in the bid initiation sample. The total number of deals retrieved over the chosen time period for the analyses is 276 deals. The data samples includes only European M&A deals, with the following criteria, (i) Acquirer and target are European companies, (ii) the acquirer and target are European publicly listed companies, (iii) the acquirer owns less than 100% of the target's shares before the deal, and (iv) the acquirer owns a percentage of five of the target after the deal at least, because acquisitions less than 5% do not require significant board of directors influence. Furthermore, the UK is not included in this research, because of the differences in the cultural and institutional environment. The UK is a shareholder-oriented country, where other European countries are more stakeholder-orientated (Greenley & Foxall, 1998). These differences can lead to other effects of women on corporate boards. At last, financial firms will also be excluded in this research, because these firms engage in mergers and acquisition mainly because of their nature in their business (Dowling & Arabi, 2013).

Table 1 presents the final data for the two samples that are used. As described above, the full sample contains 1410 deals for the chosen time period. After excluding the missing values and only preserving European countries for both samples, the samples are reduced to 434 deals. After excluding the missing values for the independent variable and control variables, the final data of the bid initiations and bid premium sample is reduced to 276 deals done in the period 01/01/2003 until 12/31/2017.

Table 1 The number of deals for both samples

Bid Initations and Bid Premium Samples	Number of Deals
Total number of deals period 2003-2017	1410
Minus: Missing Bid premium	-524
Minus: Not European countries	-452
Subtotal	434
Minus: Missing Gender Diversity, Variables Board, Controle Variables	-158
Final Data Sample	**276**

Table 2 and 3 presents the number of deals with the average percentage of gender diversity during the chosen time period for the bid initiations and the bid premium sample.

Table 2 Distribution of the bid initiation sample by year

Year	Number of Deals	Average Percentage of Gender Diversity
2003	3	6%
2004	10	12%
2005	22	9%
2006	24	9%
2007	22	5%
2008	21	8%
2009	15	7%
2010	17	8%
2011	22	17%
2012	20	8%
2013	23	16%
2014	18	19%
2015	21	15%
2016	19	18%
2017	19	22%

Table 3 Distribution of the bid premium sample by year

Year	Number of Deals	Average Percentage of Gender Diversity
2003	3	6%
2004	10	13%
2005	22	11%
2006	24	11%
2007	22	7%
2008	21	10%
2009	15	11%
2010	17	11%
2011	22	18%
2012	20	12%
2013	23	20%
2014	18	24%
2015	21	18%
2016	19	25%
2017	19	26%

3.2 Variables of interest

3.2.1 Dependent variables

Two dependent variables are used in this research. The objective of this research is to identify if gender diversity in the board can influence the merger and acquisition activity of European publicly listed firms. The first dependent variable in this research is the yearly averages of the bid initiations done by acquirer. This variable range from 0 to 1. 1 if a firm makes at least one bid in one year, and 0 if a firm does not make a bid at all. Prior research done by Levi et al (2011, 2014), Dowling & Aribi (2013) and Chen et al., (2016) suggest that women in the board affect the bid initiations done by firms. Therefore, bid initiations is the dependent variable in this research. Prior studies also assume that these deals do not have to be completed. The intention to engage in a merger or acquisition is sufficient; therefore, this sample contains completed and incompleted deals.

The second dependent variable used in this research is the bid premium. The bid premium is the excess of the price paid above its market value one month before the announcement of the acquisition. The bid premium as a dependent variable is in line with the research done by Levi et al (2011; 2014) because they do not only determine the premium paid in excess of the stock price, it also affects the performance of the acquisition (Hayward & Hambrick, 1997). The bid premium could negatively influence the acquirer's shareholder returns. A lower bid premium paid by the acquirer leads to better returns for the shareholders of the acquirer (Sirower, 1994). The bid premium is calculated as follows: (the price per share/target offer price 4 weeks before the announcement date) – 1.

3.2.2 Independent variable

This study contains one independent variable, and this is the gender diversity in the board of directors of European publicly listed firms during the period 2003-2017. Information about gender diversity is retrieved initially from the BoardEx database. If there is no data available in BoardEx, Eikon will provide

the data. The level of gender diversity in the board is measured for each firm by taking the number of female directors on the board, divided by the board size.

3.2.3 Control variables

This paper contains several control variables, in order to control for other influences on the dependent variables. The control variables can be divided into three categories, (i) board control, (ii) financial and, (iii) country control variables.

The first board control variable used in this research is the size of the board. A prior study by Hermalin & Weisbach (2001) argues that the size of the board has a negative impact on the corporate performance because of the increased agency problems within the board and less effective performance if the board becomes too big. These larger boards may eventually not enhance the decision-making process. The second board control variable is the percentage of independent directors on the board of the firm.

The financial control variables are in line with the study of Chen et al., (2016) and Levi et al., (2011). These control variables are firm performance (the logarithm of ROA and the logarithm of Tobin's Q),the logarithm of leverage of the firm, operating cash flow, logarithm of cash holding, the logarithm of market capitalization and a proxy for firm size (logged total assets).

GDP per capita is the country control variable included in this research in order to control for economic differences between countries.

All variables are summarized in table 5.

Table 5 Definition of Variables

Variable	Definition	Operationalization	Data Source
Dependent variables			
Bid initiations	The number of bids initiated by a firm within a fiscal year.	Number of bids are clustered in two groups. If a firm makes one or more bid, it gets a value of 1. Otherwise, it gets a value of 0.	Factset
Bid premium	The excess of the price paid above its market value one month before the announcement of the acquisition.	Calculated as the price per share/target offer price 4 weeks before announcement date)-1	Factset
Independent variables			
Gender diversity	The distribution of female and male board directors.	Calculated as the number of women in the board of directors, divided by the size of the board	BoardEx, Eikon

Control variables			
Board control variables			
Board size	Indicates the total number of directors in the board.	Total number of the board of directors	BoardEx, Eikon
Independence board	Indicates whether the directors in the board are independent of the firm.	The total number of independent directors in the board of directors, divided by the size of the board.	BoardEx, Eikon
Financial control variables			
ROA (Return on Assets)	Return on assets to determine how efficient the firm using its assets.	Calculated by the income of the firm divided by its total assets.	Eikon
Tobin's Q	The market value of total assets divided by the book value of total assets.	Calculated as (the book value of total assets minus book value of common equity plus the number of common shares outstanding times the stock price) divided by book value of total assets.	Eikon
Leverage of the firm	Indicates how much of the firm's capital is financed with debt, and indicates the ability to meet its financial obligation.	The sum of debt in current and long-term liabilities divided by the book value of the total assets.	Eikon
Operating cash flow	Indicates whether a firm can generate sufficient cash flow to maintain and grow.	The sum of net operating activities divided by the book value of the total assets.	Eikon
Cash holding	Indicates the assets that you hold in cash and cash equivalents.	The sum of cash and cash-equivalents divided by the book value of total assets.	Eikon
Market capitalization	Indicates the market value of a publicly listed firm's outstanding shares.	Number of common shares outstanding times the stock price.	Eikon

Firm size	Indicates the size of the firm.	Calculated using the natural logarithm of the book value of the total assets.	Eikon
Country control variable			
GDP per capita	Indicates the country's economic output per capita.	GDP per capita per country	WorldDataBank

3.3 Research strategy

The data used in this research consist of two samples, the bid initiations and bid premium sample. The bid initiations sample consists of one dependent variable, and this variable contains the bid initiations of the firm in a fiscal year. The bid initiations of the firm get a value of 1 if the firm makes one or more bids in a fiscal year. The bid initiations get a value of 0 if the firm does not make a bid at all. By transforming this dependent variable into a binary dependent variable, we will make use of logistic regression to test the relationship between gender diversity in the board of directors and the bid initiations of the firm. The second sample used in this research is the bid premium sample. The bid premium sample consists of one dependent variable, and this variable contains the size of the bid premium paid by the acquirer. The data used in this analysis is pooled cross-sectional, and using the Ordinary Least Squares Regression is the best option to examine the relationship between the gender diversity and the bid premium. Several independent variables used in this research are transformed into their natural logarithm. The strategy in this research is in line with prior research (Chen et al., 2016; Levi et al., 2014).

3.4 Regression models

In order to examine the relationship between gender diversity in the board of directors on the merger and acquisition activity of European publicly listed firms, the following pooled cross-sectional and logistic regressions are performed for hypothesis 1 and 2.

Bid Initiations (BID) = $\alpha + \beta_0 + \beta_1 WOM + \beta_2 LOGBSIZE + \beta_3 LOGBINDE + \beta_4 LOGROA + \beta_5 LOGLEV + \beta_6 LOGCAP + \beta_7 LOGTOBQ + \beta_8 OPCF + \beta_9 LOGCASH + \beta_{10} FSIZE^2 + \beta_{11} GDP + \varepsilon$

Bid Premium (BID) = $\alpha + \beta_0 + \beta_2 LOGBSIZE + \beta_3 LOGBINDE + \beta_4 LOGROA + \beta_5 LOGLEV + \beta_6 LOGCAP + \beta_7 LOGTOBQ + \beta_8 OPCF + \beta_9 LOGCASH + \beta_{10} FSIZE^2 + \beta_{11} GDP + \varepsilon$

4. Results

In this chapter, the hypotheses formulated in this research are tested. The hypotheses will be accepted or rejected by the use of regression models. First, the summary statistics of all the variables in this research are presented. Second, the results of the regression models and the robustness checks are presented and discussed.

4.1 Summary statistics

Table 6 and 7 presents the summary statistics of the two data samples used in this research. From table 6, the bid initiations analysis, it can be observed that there are one dependent variable, one independent variable and ten control variables. All variables used in this analysis have 17893 observations. On average, the representation of women on the board of directors is only 1%. This means that about 1% of the directors of the firms are female. Furthermore, the size of the board has an average of 2.2. Board independence has an average of 0,48.

From table 7, the bid premium analysis, it can be observed that there are one dependent variable, one independent variable and ten control variables. All board, firm and country characteristics have 276 observations. On average, the bidder pays a bid premium of 30,16% above the market price of the target, which is measured four weeks before the bid. Furthermore, the percentage of women on the board of directors is 15,4%. This means that for all the firms used in this analysis, 15,4% of the directors in the board is female. The average size of the board is in this analysis 2,4 and the board independence has an average of 1,60.

Table 6 Statistical description Bid Initiations Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variable					
Bid Initiations	17.893	0,015	0,123	-	1,000
Independent variable					
Gender Diversity	17.893	0,010	0,474	-	0,571
Control variable					
Size of the Board	17.893	2,213	0,426	-	4,127
Board Independence	17.893	0,487	0,781	-	4,569
ROA	17.893	2,405	1,352	-	6,098
Leverage	17.893	4,034	1,659	-	12,318
Market Capitalization	17.893	13,623	1,933	5,476	19,292
Tobin's Q	17.893	0,331	0,467	-1,624	3,471
Operating Cash Flow	17.893	0,068	0,108	-1,376	2,241
Cashholding	17.893	0,119	0,106	-0,207	0,693
Firmsize	17.893	37,973	10,363	5,775	84,406
GDP	17.893	45.059	18.309	2.975	185.153

Table 7 Statistical description Bid Premium Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variable					
Bid Premium	276	30,166	46,797	-87,827	420,194
Independent variable					
Gender Diversity	276	0,154	0,146	-	0,533
Control variable					
Size of the Board	276	2,368	0,432	1,099	3,434
Board Independence	276	1,602	0,786	-	4,327
ROA	276	2,077	0,981	-	5,278
Leverage	276	4,122	1,271	-	8,433
Market Capitalization	276	15,027	1,863	10,270	18,616
Tobin's Q	276	0,329	0,407	-0,962	2,294
Operating Cash Flow	276	0,079	0,062	-0,093	0,273
Cashholding	276	-2,387	0,741	-4,733	-0,276
Firmsize	276	6,718	0,827	4,501	8,538
GDP	276	45.132	19.153	8.563	103.059

4.2 Correlation

Table 8 and 9 on the following page presents the correlation matrix for all the variables which are used in the two analyses of this study.

A variable is perfectly correlated with another variable if the correlation has a value of 1 or -1 (Studenmund, 2011). Multicollinearity may occur, and it will affect the standard errors, which in turn causes the variables to be wrongly statistically significant. A problem of multicollinearity occurs if the coefficient is above 0,7. To be even surer, a Variance Inflation Factor (VIF) test is performed after each regression. The rule of thumb of 10 will be held. Values of the test above 10 mean that there is multicollinearity (O'Brien, 2007). The results of the VIF test are presented after each regression analysis.

For the bid initiations matrix, board independence and gender diversity are positively correlated and the size of the firm is positively correlated with the market capitalization. For the bid premium matrix, also the firm size and market capitalization are positively correlated. We will make use of the VIF tests, that are presented after each regression. If the results of the test are far above 10, we will exclude one of the correlated variables. After running the regressions, not one variable has a VIF value above 10 and all variables are used.

Table 8 Collinearity diagnostics Bid Initiations

	1	2	3	4	5	6	7	8	9	10	11	12
1 Bid Initiations	-											
2 Gender Diversity	0,03	-										
3 Size of the Board	0,05	0,03	-									
4 Board Independence	0,18	0,69	0,03	-								
5 ROA	-0,03	0,01	-0,16	-0,00	-							
6 Leverage	0,01	-0,01	0,08	0,04	0,00	-						
7 Market Capitalization	0,09	0,14	0,55	0,22	-0,23	-0,02	-					
8 Tobin's Q	-0,01	0,01	-0,06	0,02	0,14	-0,13	0,22	-				
9 Operating Cash Flow	0,01	0,03	0,11	0,04	-0,21	-0,16	0,30	0,17	-			
10 Cashholding	-0,01	-0,05	-0,12	-0,05	0,18	-0,30	-0,11	0,31	-0,11	-		
11 Firmsize	0,09	0,13	0,59	0,21	-0,26	0,19	0,88	-0,18	0,17	-0,23	-	
12 GDP	0,00	0,03	-0,24	0,02	0,05	-0,08	-0,04	0,06	-0,01	0,02	-0,07	-

Table 9 Collinearity diagnostics Bid Premium

	1	2	3	4	5	6	7	8	9	10	11	12
1 Bid Premium	-											
2 Gender Diversity	-0,05	-										
3 Size of the Board	-0,03	-0,16	-									
4 Board Independence	0,07	0,12	0,25	-								
5 ROA	-0,09	-0,00	-0,09	0,01	-							
6 Leverage	-0,04	-0,13	0,13	0,10	-0,21	-						
7 Market Capitalization	-0,04	0,01	0,60	0,35	-0,01	0,12	-					
8 Tobin's Q	0,11	0,09	-0,07	-0,07	-0,01	-0,18	0,12	-				
9 Operating Cash Flow	-0,09	-0,08	0,04	0,01	0,14	-0,19	0,24	0,13	-			
10 Cashholding	-0,01	0,19	-0,16	-0,07	0,06	-0,22	-0,10	0,12	-0,07	-		
11 Firmsize	-0,07	-0,02	0,61	0,36	-0,05	0,32	0,90	-0,25	0,11	-0,15	-	
12 GDP	-0,03	0,37	-0,30	-0,01	0,04	-0,03	-0,18	0,12	-0,16	0,02	-0,20	-

4.3 Regression analyses

In order to test the hypotheses, two different regressions are performed. To recall, for hypothesis 1 a logistic regression is used. We expect that there is a negative relation between the independent variable gender diversity in the board of directors and the dependent variable bid initiations. For hypothesis 2, we also expect a negative relation between the independent variable gender diversity in the board of directors and the dependent variable bid premium.

Results of the logistic regression testing the relationship between gender diversity and bid initiations are presented in table 10. The number of observation is 17893. Table 10 represents the effect of gender diversity on the dependent variable bid initiations. Gender diversity has a negative effect on the bid initiations of the firm. This negative effect is significant (t= -7,89; p<0,01), and therefore hypothesis 1 can be accepted. This significant negative effect is in line with our hypothesis, where we expected that gender diversity have a negative effect on the number of bids made by the acquirer. An increase in gender diversity results in a lower probability of doing a bid.

Regarding the control variables, some variables show a significant effect. The independence of the board has a positive significant effect on the bid initiations. Furthermore has the variable ROA a significant negative effect on the probability of doing a bid. The last control variable market capitalization has a significant positive effect. This is in line with the expectations since market capitalization can be seen as a proxy for firm size and larger firms make larger M&A deals.

Because of a better interpretation of the effect of gender diversity on the dependent variable, we run two marginal effect tests to get a better understanding. First, the average marginal effect test is presented in table 11. The average marginal effect gives the average change in probability when gender diversity increases by one unit. Since this effect differs from individual to individual, the average marginal effect computes it for each individual and then calculated the average. Table 11 present that the average probability of doing a bid decreases by 14,8 percentage points if gender diversity increases by one unit. This means that a greater female representation in the board results in a lower probability of doing a bid. This result is in line with our hypothesis since we expected that gender diversity is negatively related to the dependent variable bid initiations.

19

The second analysis is the marginal effect at representative values. With the marginal effect at representative values, you choose a range of values for one variable and see how the marginal effect differ across the chosen range. In our case, we chose different values for the independent variable gender diversity and show how the marginal effect differs across these chosen values. The values are as follows: the marginal effect for a value of gender diversity where there are no female members in the board of directors, so 0%. The value of gender diversity of 1%, and a value of gender diversity of 57,14%, which is the highest percentage in our bid initiations sample. The marginal test shows how the marginal effect differs between these different values of gender diversity. Table 12 presents the results of the marginal effect at representative values. At category 1, where gender diversity is 0%, the probability of doing a bid is 2,4%. This effect is significant (t=15,14; p<0,01). At category 2, where gender diversity has a value of 1%, the probability of doing a bid is 2,22%. The probability of doing a bid decreased from 2.4% to 2.22%, which is in line with the expectation. In category 3, the probability of doing a bid even decreases to almost zero. The probability of doing a bid decreases from 2.4% to almost 0%. This result is in line with hypothesis 1.

Table 10 Logistic Regression

Variables	Coefficient
Gender Diversity	-10,572***
	(-7,89)
Size of the Board	0,171
	(0,89)
Board Independence	0,964***
	(19,06)
ROA	-0,185**
	(-2,93)
Leverage	-0,085
	(-1,53)
Market Capitalization	0,077
	(0,54)
Tobin's Q	0,237
	-0,84
Operating Cash Flow	-1,130
	(-1,27)
Cashholding	0,173
	(0,24)
Firm size	0,041
	(1,69)
GDP	3.360e-06
	(0,98)
Constant	-7,430***
Pseudo R2	0,159
LR Chi2	453,620

Table 11 Average Marginal Effect

Variables	Coefficient
Gender Diversity	-0,148***
	(-7,55)
Size of the Board	0,002
	(0,89)
Board Independence	0,014***
	(14,77)
ROA	-0,003**
	(-2,90)
Leverage	-0,001
	(-1,53)
Market Capitalization	0,001
	(0,54)
Tobin's Q	-0,003
	-0,84
Operating Cash Flow	-0,024
	(-1,27)
Cashholding	0,002
	(0,24)
Firm size	0,001
	(1,69)
GDP	4.720e-08
	(0,98)

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values

Table 12 Marginal Effect at Representative Values

Representative Values	Marginal Effect at Representative Values
	dy/dx
1 Gender diversity 0%	0,024***
	(15,14)
2 Gender diversity 1%	0,022***
	(16,02)
3 Gender diversity 57,14%	7,580e-04
	(1,43)

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values

The second relationship we test is the effect of gender diversity on the bid premium paid by the acquirer. We examined this relationship by using an OLS regression. The results of the OLS regression is presented in table 13. Table 13 represents the dependent variable bid premium. The explanatory power of the OLS regression is 9,02%. This represents the percentage of variance in the bid premium that can be explained by the variance in the independent variables. Table 13 shows that gender diversity has a negative effect on the bid premium. A one-unit increase of the independent variable gender diversity results in a -24,575 lower bid premium paid by the acquirer. This negative effect is in line with the second hypothesis since we expected that gender diversity in the board is negatively related to the dependent variable bid premium. However, as presented in table 13, this relation is not significant. This means, that hypothesis 2 cannot be accepted.

In addition to the OLS regression, the Heckman two-stage model is performed, because there is a problem of selection bias. To be included in the bid premium analysis, the firm must have made a bid. Due to this, the sample in the second analysis of the bid premium is not randomly distributed. Because of this, the problem of selection bias arises. The bid premium analysis is based on non-randomly selected samples, which can lead to incorrect conclusions. A Heckman two-stage model can correct for this selection bias. Table 15 presents the Heckman two-stage model. In the Heckman two-stage model, there are two equations, the equation of interest in which we try to interpret the bid premium, and the selection-step in which we include a variable that has a significant effect on the probability of doing a bid but has no significant effect on the bid premium. Board independence has a significant effect on the probability of doing a bid, however, it does not have an effect on the bid premium. Board independence is included in the selection equation. Table 15 presents a value of the lambda of -24,957. If there is an existence of selection bias, the lambda has to be significant and the sign of the coefficient has to make sense. The lambda presented is significant (t=-2,05; p<0,05). Because of this significance, there is a problem of selection bias and we need to use the Heckman two-stage model. Gender diversity has a negative effect on the bid premium in the Heckman model, however, this effect is still not significant and we cannot accept the second hypothesis.

Table 14 Ordinary Least Squares Regression

Variables	Coefficient
Gender Diversity	-24,575
	(-1,35)
Size of the Board	-4,388
	(-0,42)
Board Independence	7,384
	1,67
ROA	-3,734
	(-1,70)
Leverage	-4,038
	(-1,37)
Market Capitalization	-6,313
	(-0,83)
Tobin's Q	18,651
	1,55
Operating Cash Flow	-82,176
	(-1,72)
Cashholding	-3,387
	(-0,90)
Firm size	0,825
	(0,61)
GDP	1.510e-04
	(-1,05)
Constant	104,085
R-squared	0,092
F Statistics	1,440

Table 15 Heckman two stage model

Variables	Coefficient
Bid premium	
Gender Diversity	-27,461
	(-1,29)
Size of the Board	-5,006
	(-0,58)
ROA	-3,947
	(-1,36)
Leverage	-3,723
	(-1,35)
Market Capitalization	-6,370
	(-0,85)
Tobin's Q	24,274
	(1,75)
Operating Cash Flow	-78,757
	(-1,57)
Cashholding	-2,238
	(-0,57)
Firm size	0,920
	(0,71)
GDP	1,334e-04
	(2,58)
Constant	179,288
Select	
Board Independence	0,357
	(19,67)
Constant	-2,469
	(-74,03)
Mills	
Lambda	-24,957*
	(-2,05)
Rho	-0,488
Sigma	51,053

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values

5. Discussion
5.1 Interpretation of the results
In summary, in the two samples of 276 M&A deals during the period 2003 until 2017, gender diversity in the board of directors significantly influence the merger and acquisition activity of the firm. This research is based on two samples, the bid initiations and the bid premium sample, which tries to examine the two hypotheses formulated in order to answer the main question in this research.

In the regression analyses of Table 10, there is a significant result found for the effect of gender diversity in the board on the bid initiations done by the firm. These results in Table 10 provide evidence for hypothesis 1 and indicate that gender diversity has a significant negative effect on the first dependent variable. Women appear to be less motivated by the desire to build their empire, and greater gender diversity in the board results in a lower probability of doing a bid. The conclusion of this result is in line with the results of previous research since they also found a significant negative effect on the bid initiations (Levi et al., 2014; Dowling & Aribi, 2013). The results of Table 11 an Table 12 present the same negative relationship as in Table 10, where the marginal effect test shows that an increase in the percentage of gender diversity results in a decrease in the probability of doing a bid. These results in Table 11 and Table 12 provide evidence for hypothesis 1, and therefore hypothesis 1 can be accepted.

The second regression in this research tried to examine the effect of gender diversity on the bid premium paid by the acquirer, by using an Ordinary Least Squares regression. There is a negative effect of gender diversity on the bid premium paid by the acquirer, which is in line with results of previous research (Levi et al., 2011; Levi et al., 2014; Dowling & Aribi, 2013). We show that the representation of women on the board of directors is negatively associated with the size of the bid premium. It appears that female directors are less likely to destroy shareholder value. We can conclude that these findings are consistent with women are less overconfident than men.

Besides the OLS regression, we examined the effect of gender diversity by using a Heckman two-stage model. The result in Table 15 provides evidence that there is a problem of selection bias since the lambda is significant. As a result, the Heckman model is used. In the Heckman model, the effect of gender diversity is negative, which indicates that the representation of women in the board is negatively associated with the size of the bid premium. However, this effect is still not significant and we cannot accept hypothesis 2.

5.2 Limitations and further research
Nevertheless, this research is subjected to multiple limitations. First, the data samples consist of 276 merger and acquisition deals. Even with including a large time frame, the sample is still relativity small. With a wider data sample and more M&A deals, the effect of gender diversity on the merger and acquisition activity might change. Further research could gather more data to improve confidence and generalizability. Second, this research only examined European listed companies. The effect of gender diversity on the board on the merger and acquisition activity could be different for the non-listed firm. In listed firms, there are also other interested parties that are involved in the decision-making process and eventually in the bidding process. Future research could examine non-listed firms and the effect of gender diversity on merger and acquisition activity. Third, this study does not consider different legal systems between European countries. It could be

possible that different legal systems influence the relationship between gender diversity and merger and acquisition activity. Studies indicate that the legal system of a country can influence the characteristics of the M&A deals since different systems lead to a higher/lower shareholder and investor protection (Ciobanu, 2015). Further research could implement the legal system in their research. Fourth, the selection of female board members is not considered in this research. Female directors with a lot experience and strong values have a strong impact on the decisions of the board. Eventually, these female board members can have a greater impact on the mergers and acquisition activity of the firm (Smith, 2018). When taking this variable into account, the effect of gender diversity on the merger and acquisition activity might change. Further research could include this variable.

6. Conclusion

The objective of this research is to examine the relationship between gender diversity in the board of directors and the merger and acquisition activity of European publicly listed firms in the period 2003 until 2017. The merger and acquisition activity is measured using bid initiations and bid premium as the dependent variables. The research question is as follows: *"What is the effect of gender diversity in the board of directors on the merger and acquisition activity of European listed firms?"* From the literature and previous research, this paper argues that a more gender diverse board has a negative effect on the merger and acquisition activity of the firm, in particular since female directors are on average less overconfident, are more risk-averse, avoid risky decisions like M&A deals and are less willing to build their empire which. Eventually this results in less mergers or acquisitions and a lower bid premium paid by the acquirer (Levi et al., 2011; Levi et al., 2013; Dowling & Aribi, 2013).

In order to determine these effects and answer the main question of this research, two hypotheses are developed. The first hypothesis examines the relationship between gender diversity and the bid initiations done by the acquirer and is as follows;

H1; The gender diversity in the board of directors is negatively associated with the bid initiations done by the acquirer.

For the bid initiations analysis, we find evidence that higher gender diversity decreases the probability of doing a bid when using a significance level of 0.01. The results suggest that a higher representation of females on the board will lead to a lower probability of doing a bid. In a practical sense, an increase in the representation of female directors in the board, results, ceterius paribus, in less willingness of a firm in engaging in a merger or acquisition. Female directors avoid risky decisions, are less driven by empire building and are on average less overconfident than men are which results in a lower probability of doing a bid (Levi et al., 2013).

The second hypothesis was developed in order to examine the relationship between gender diversity and the bid premium paid by the acquirer and is as follows;

H2: The higher the gender diversity in the board of directors, the lower the bid premium paid for the target by the acquirer.

For the bid premium analysis, we find no significant negative effect of gender diversity on the size of the bid premium paid by the acquirer. However, we did find a significant negative effect of gender diversity on the probability of doing a bid in the first analysis. The results of the first and second analyses indicate that higher gender diversity in the board results in a lower probability of doing a bid, however, if a firm does make a bid, the effect of gender diversity is no longer visible. An explanation for this could be if a firm has already made a bid, male directors in these firms already had the power over the decision to make a bid in the first stage. The male directors further define the merger and acquisition process and determine eventually the size of the bid premium. The female directors in the board had less influence in the first stage, and will also have less power in the second stage of the M&A process. Another explanation could be that if a firm makes a bid, the real process regarding M&A deals just started. It could be that these female directors in this intense

board-discussions and intensive process have less participation in comparison to the process of doing a bid, and that overconfident male directors have more decision-power in the second stage. The negative gender effect is still present, however less strong.

This research has different contributions to the existing literature. First, it provides a better understanding about the relationship between gender diversity in the board of directors and merger and acquisition activity, in addition to previous research (Levi et al., 2011; Levi et al., 2013; Dowling & Aribi, 2013). Second, many studies have focused on the UK or US. Not many studies focus at the relation in Europe, and specifically at the dependent variables bid initiations and bid premium. This research provides more evidence on the relationship between gender diversity and merger and acquisition activity in Europe. Third, in conjunction with the increased attention of women in the top of European firms, this research provides evidence and insights in the positive effect of more women on the decision-making process of the firms, and specifically for the significant influence on the merger and acquisition activity. A more gender diverse board is not only an ethical issue, but higher gender diversity is also an economic argument. This research can help to move towards a more gender-equal Europe.

References

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of financial economics*, *94*(2), 291-309.

Ancona, D. G., & Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. Organization science, 3(3), 321-341.

Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspectives on mergers. Journal of economic perspectives, 15(2), 103-120.

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics*, *116*(1), 261-292.

Beckmann, D., & Menkhoff, L. (2008). Will women be women? Analyzing the gender difference among financial experts. Kyklos, 61(3), 364-384.

Brammer, S., A. Millington and S. Pavelin: 2007,'Gender and Ethnic Diversity Among UK Corporate Boards', Corporate Governance: An International Review 15 (2), 393–403

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: a meta-analysis. Psychological bulletin, 125(3), 367.

Cadbury, A. (1992). *Report of the committee on the financial aspects of corporate governance* (Vol. 1). Gee.

Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of business ethics*, *83*(3), 435-451.

Carter D, Simkins B, Simpson G. 2003. Corporate governance, board diversity, and firm value. Financial Review 38: 33-53.

Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*, *83*(1), 50-58.

Chen, G., Crossland, C., & Huang, S. (2016). Female board representation and corporate acquisition intensity. *Strategic Management Journal*, *37*(2), 303-313.

Ciobanu, R. (2015). Mergers and acquisitions: does the legal origin matter?. Procedia Economics and Finance, 32, 1236-1247.

Cox, T. H., & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. Academy of Management Perspectives, 5(3), 45-56.

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, *47*(2), 448-74.

De Andres, P., Azofra, V., & Lopez, F. (2005). Corporate boards in OECD countries: Size, composition, functioning and effectiveness. Corporate Governance: An International Review, 13(2), 197-210.

Dowling, M., & Aribi, Z. A. (2013). Female directors and UK company acquisitiveness. *International Review of Financial Analysis*, *29*, 79-86.

Earley, C. P., & Mosakowski, E. (2000). Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management journal*, *43*(1), 26-49.

Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in attitudes toward financial risk. Evolution and human behavior, 23(4), 281-295.

Eckel, C. C., & Grossman, P. J. (2008). Men, women and risk aversion: Experimental evidence. *Handbook of experimental economics results*, *1*, 1

Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of director diversity and firm financial performance. Corporate governance: An international review, 11(2), 102-111.

Ertac, S., & Gurdal, M. Y. (2012). Personality, group decision-making and leadership. Koç University-TÜSİAD Economic Research Forum Working Paper Series.

European Commission. Directorate-General for Justice. (2012). Women in economic decision-making in the EU: Progress report. Publications Office of the European Union.'

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. The journal of law and Economics, 26(2), 301-325.

Fehr-Duda, H., De Gennaro, M., & Schubert, R. (2006). Gender, financial risk, and probability weights. Theory and decision, 60(2-3), 283-313.

Garcia-Izquierdo, A. L., Fernández-Méndez, C., & Arrondo-García, R. (2018). Gender diversity on boards of directors and remuneration committees: the influence on listed companies in Spain. *Frontiers in psychology*, *9*.

Goel, A. M., & Thakor, A. V. (2009). Do envious CEOs cause merger waves?. The Review of Financial Studies, 23(2), 487-517.

Graham, J. R., Lemmon, M. L., & Wolf, J. G. (2002). Does corporate diversification destroy value?. The Journal of Finance, 57(2), 695-720.

Greenley, G. E., & Foxall, G. R. (1998). External moderation of associations among stakeholder orientations and company performance. International Journal of Research in Marketing, 15(1), 51-69.

Hambrick, D. C., Cho, T. S., & Chen, M. J. (1996). The influence of top management team heterogeneity on firms' competitive moves. Administrative science quarterly, 659-684.

Hayward, M. L., & Hambrick, D. C. (1997). Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. Administrative science quarterly, 103-127.

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.

Jianakoplos, N. A., & Bernasek, A. (1998). Are women more risk averse?. Economic inquiry, 36(4), 620-630.

Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass?". Journal of business ethics, 118(1), 61-72.

Johnson, J., Wilke, A., & Weber, E. U. (2004). Beyond a trait view of risk taking: A domain-specific scale measuring risk perceptions, expected benefits, and perceived-risk attitudes in German-speaking populations. *Polish Psychological Bulletin*, *35*, 153-172.

Kang, H., Cheng, M., & Gray, S. J. (2007). Corporate governance and board composition: Diversity and independence of Australian boards. *Corporate Governance: An International Review*, *15*(2), 194-207.

Kruger, J. (1999). Lake Wobegon be gone! The" below-average effect" and the egocentric nature of comparative ability judgments. *Journal of personality and social psychology*, *77*(2), 221.

Lau, D. C., & Murnighan, J. K. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. Academy of Management Review, 23(2), 325-340.

Lenney, E. (1977). Women's self-confidence in achievement settings. Psychological bulletin, 84(1), 1.

Levi, M. D., Li, K., & Zhang, F. (2008). Mergers and acquisitions: The role of gender. Available at SSRN 1123735.

Levi, M. D., Li, K., & Zhang, F. (2011). Men are from Mars, women are from Venus: Gender and mergers and acquisitions. Women are from Venus: Gender and Mergers and Acquisitions (March 14, 2011).

Levi, M., Li, K., & Zhang, F. (2014). Director gender and mergers and acquisitions. Journal of Corporate Finance, 28, 185-200.

Lundeberg, M. A., Fox, P. W., & Punćcohaŕ, J. (1994). Highly confident but wrong: Gender differences and similarities in confidence judgments. *Journal of educational psychology*, *86*(1), 114.

Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. The journal of finance, 60(6), 2661-2700.

Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. Journal of financial Economics, 89(1), 20-43.

McClelland, D. C. (1987). Characteristics of successful entrepreneurs. The journal of creative behavior, 21(3), 219-233.

Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of management review*, *21*(2), 402-433.

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. Quality & quantity, 41(5), 673-690.

Radu, C., Deaconu, A., & Frăsineanu, C. (2017). Leadership and Gender Differences—Are Men and Women Leading in the Same Way?. Contemporary Leadership Challenges, 63.

Ragon, P. (2011). In leading M&A transactions, does gender matter?. Financial Executive, 27(8), 57-61.

Roll, R. (1986). The hubris hypothesis of corporate takeovers. Journal of business, 197-216.

Ruigrok, W., Peck, S. I., & Keller, H. (2006). Board characteristics and involvement in strategic decision making: Evidence from Swiss companies. Journal of management Studies, 43(5), 1201-1226.

Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Proceedings of the National Academy of Sciences*, *106*(36), 15268-15273.

Sirower, M. (1994). *Acquisition behavior, strategic resource commitments and the acquisition game* (Doctoral dissertation, Ph. D. dissertation, Columbia University).

Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of productivity and Performance management*, *55*(7), 569-593.

Smith, N. (2018). Gender quotas on boards of directors. IZA World of Labor.

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.

Van den Berghe, L. A., & Levrau, A. (2004). Evaluating boards of directors: what constitutes a good corporate board?. *Corporate Governance: an international review*, *12*(4), 461-478.

Witt, J. L. (1994). The gendered division of labor in parental caretaking: biology or socialization?. Journal of Women & Aging, 6(1-2), 65-89.