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The moderation effect of a gender quota on the relationship between gender diversity and M&A outcome

Abstract: Men in leadership positions still outnumber women. Therefore, the European Commission wants to increase gender diversity in corporate boards. In order to do so, some European countries implemented a binding gender quota to increase gender diversity. What would happen when gender diversity is enforced by a gender quota? Men and women seem to behave differently in a corporate board about decision making. Men are more overconfident and risk-seeking, compared to women. This difference in decision making is investigated for mergers and acquisitions. M&A deals are often value-destroying due to overconfidence and risk-seeking behavior. Could increasing gender diversity influence the M&A outcome? This research examines the effect of gender diversity on the bid premium and how a gender quota moderates this relation. The sample consists of 277 M&A deals done by publicly listed firms in European countries from 2003 till 2017. The main finding of this research is that there is a negative effect of gender diversity on the bid premium, but this effect is not statistically significant. Moreover, the gender quota also show no statistically significant moderation effect, but the expected negative coefficient is found.

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1. Introduction

A lack of gender diversity in the board of directors is a social problem: more women than men graduate but women are still outnumbered by men in leadership positions (European Commission, 2015; Senden, 2018). The percentage of working women increased, and women have increasingly expressed their desire to develop their careers (Radu, Deaconu, & Frăsineanu, 2017). Availability of qualified women can, therefore, not be the bottleneck. That firms do not utilize this pool of available highly qualified women is surprising as research shows that gender diversity contributes to the quality of decision making. Therefore a heterogeneous board of directors is essential in order to make informed decisions (Boonstra, 2019). A heterogeneous board can help increase potential information due to different networks and perspectives (Campbell & Mínguez-Vera, 2008). Through better decision making can a higher gender diversity in the board of directors positively influence firm performance (Campbell & Mínguez-Vera, 2008; Shrader, Blackburn, & Iles, 1997).

Given the positive effect of higher gender diversity on firm performance, the European Commission aims to stimulate gender diversity (European Commission, 2015). In order to increase gender diversity, a gender quota could help. Therefore in 2012, the European Commission debated about a possible gender quota law/legislation, that would require 40% women on corporate boards for all European Union companies listed on stock exchanges by 2020 (European Commission, 2015).

However, the gender quota is also highly contested because of the potential negative effects of increasing gender diversity. When gender diversity increases, the group will become more heterogeneous. With more different opinions on the board of directors, more conflicts are generated (Campbell & Mínguez-Vera, 2008; Smith, 2014). Moreover, because of the need to reconcile different opinions, decision time will increase, which can negatively impact firm performance (Campbell & Mínguez-Vera, 2008). Homogeneous groups may communicate more smoothly, which may have a more positive influence on firm performance, *ceteris paribus*, compared to heterogeneous groups (Campbell & Mínguez-Vera, 2008).

In general, gender diversity shows the effect of voluntary diversity between men and women. What would happen when gender diversity is enforced by a gender quota? "Will a gender quota leads to boards listening to women or isolating them as tokens?" (Hillman, 2015, p.105). A gender quota leads to a limitation in choosing the right board of directors (Ahern & Dittmar, 2012; Marinova, Plantenga, & Remery, 2016). Joecks, Pull and Vetter (2013, p.71), studied the effect of an enforced diversity, by a gender quota, compared to a voluntary diversity and questioned if "women were appointed only because of the quota and not because of their knowledge and expertise they bring into the board. For example, the study by Ahern and Dittmar (2012) suggest that women who are appointed to a board due to a quota are, on average, younger and have less CEO experience than their male

counterparts – which might hint at restrictions on the supply side of eligible women that are ready qualified to serve on supervisory boards”.

Due to the continuing debate between the positive and negative effects of a gender quota, it is essential to study the effect of the gender quota for the board of directors. An empirical setting is needed where important corporate decisions are made by the board of directors to investigate the impact of gender diversity. An excellent example of such a setting is mergers and acquisitions. The effect of gender differences could be more present in the M&A domain because of the complexity of decision making. Prior research has shown that M&A deals are mostly value destroying instead of value enhancing. This is due to the overconfidence and risk-seeking behavior of managers, by paying a higher bid premium for the target (Goel & Thakor, 2009; Graham, Lemmon, & Wolf, 2002; Levi, Li, & Zhang, 2011; Malmendier & Tate, 2005, 2008). Women tend to be more risk-averse and less overconfident. Further, females in the board of directors have better active oversight and are comprehensive in their decision-making, compared to men (Chen, Crossland, & Huang, 2016).

Concerning mergers and acquisitions, it is still a man's world, but the European Commission wants to move to a more gender diversified board to decrease the overconfidence and risk-seeking behavior of corporate boards (Radu et al., 2017). A previous study found that women, who are expected to be less overconfident and risk-averse, in the board of directors may positively influence the M&A process (Levi, Li, & Zhang, 2014). This leads to the following research question:

What is the effect of gender diversity on the bid premium, and how is this relationship moderated by a gender quota?

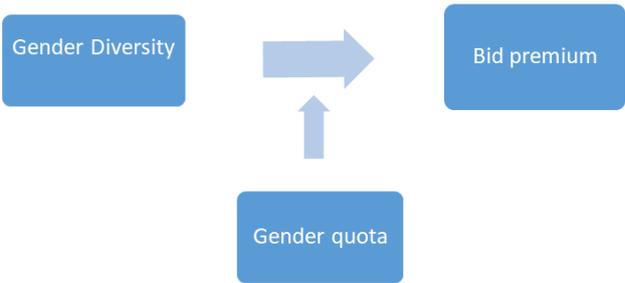


Figure 1 conceptual model

This research investigated the effect of a gender quota on the relationship between gender diversity and M&A outcome. The M&A outcome is measured by the bid premium the acquirer company pays for the target company. To answer the research question, it is examined how the percentage of women on the board of directors may influence the decision-making process. This is measured by the bid premium. This research is done in the M&A domain, by making a distinction between five European countries with a binding gender quota and fourteen European countries

without a binding gender quota. The countries with a binding gender quota have introduced the gender quota during the period from 2003 till 2017. The sample consists of 277 M&A deals for European countries who are publicly listed, from 2003 till 2017. The data is retrieved from BoardEx, Eikon, FactSet, and WorldDataBank. An Ordinary Least Squares regression model is used to investigate the effect of the pooled-cross sectional data. As a result, it is found that there is a negative effect of gender diversity on the board of directors on the bid premium. However, this result was not significant.

This research contributes to scientific literature for several reasons. First, this study gives more insight into the relationship between gender diversity in the board of directors on the M&A outcome. Most studies investigated the impact of gender diversity on firm performance, but only a few researchers investigated the impact of gender diversity on mergers and acquisitions. Second, most studies that investigated the relationship between gender diversity and M&A outcome focused on US and UK countries, which leads to a research gap (Dowling & Aribi, 2013; Levi et al., 2014). Therefore, this research will contribute to the existing literature by investigating European countries. Third, this study contributes to the existing literature by providing new insights into the effect of gender quotas on corporate decision making.

Further, some practical contributions are linked to this study. The European Commission introduced a gender quota for several European countries, but it is still a huge discussion point. By investigating the impact of a gender quota, this research can add new evidence to the political discussions about the advantages and disadvantages of introducing a gender quota.

The remainder of this research is structured as follows. Chapter two consist of a theoretical framework and hypothesis are developed. Chapter three describes the data and the research method. Chapter four will present and discuss the results. Chapter five consist of the conclusion and discussion of this research, were also the limitations and future research suggestions are presented.

2. Theoretical framework

This chapter gives an overview of the relevant literature, and the hypothesis will be developed. First diversity, in general, will be explained, which will be linked to gender diversity and later on to M&A. Second, the literature on gender diversity and decision making is provided. In the end, gender quotas in Europe will be provided and discussed by explaining the pros and cons in line with M&A.

2.1 Diversity

The term diversity and the definition of diversity are reflected by multiple meanings in literature. It is hard to come up with one definition of diversity. Because there are many alternative definitions, diversity can be seen as all types of individual differences (Herring, 2009). "Generally, " diversity" refers to policies and practices that seek to include people who are considered, in some way, different from traditional members. More centrally, diversity aims to create an inclusive culture that values and uses the talents of all would-be members" (Herring, 2009, p.209).

In the literature, a distinction is made between job-relevant and background diversity. Job-relevant diversity is described as the heterogeneity of team members concerning work-related attributes. When having individual team members with different backgrounds, the job-relevant diversity will increase and also the variety of divergent perspectives. A diverse team with a variety of divergent perspectives can help by solving complex tasks (Hülshager, Anderson, & Salgado, 2009).

In contrast, background diversity can be seen as non-work related diversity. "Background diversity describes non-task-related differences such as age, gender, or ethnicity"(Hülshager et al., 2009, p.1129). In contrast to job-relevant diversity, background diversity may lead to communication problems, making complex tasks more challenging to solve. According to the distinction in diversity, the differences between male and female (gender) are not work-related diversity (Hülshager et al., 2009).

However, previous studies found differences between the work-related characteristics for gender, so for men and women (Adams & Ferreira, 2004; Levi et al., 2014; Radu et al., 2017). Concerning the difference between work-related characteristics, the main differences between men and women are the difference between the level of risk-taking and overconfidence (Malmendier & Tate, 2008). Therefore, females in the board of directors tend to be more careful in their decision making compared to their male colleagues. The differences in corporate decision making between men and women will lead to different performance effects (Chen et al., 2016). The different characteristics of male and female will influence their decision-making process for work-related issues. Therefore gender can also be seen as a work-related diversity. The explanation that gender is related to non-work-related diversity does not hold.

On the other side, some studies show that no difference is found between men and women and how they make corporate decisions (Matsa & Miller, 2013; Sila, Gonzalez, & Hagendorff, 2016). Berger, Kick, and Schaeck, (2014) find an increase in risk-taking behavior for female board members. This can explain the fact that gender differences may vanish beyond the glass ceiling, and women in a leadership position may be similar to men. Therefore women in leadership positions cannot be compared to the 'typical' women in the population (Adams & Funk, 2012; Sila et al., 2016).

To study the effect of diversity in corporations, gender diversity is used as a measure. To dig deeper into the effects of gender diversity, first, the differences between the level of risk-taking and overconfidence are explained. After this, gender diversity in the board of directors is further elaborated.

2.1.1 Risk Aversion

The first difference between male and female directors is the level of risk-taking. In general, women tend to be risk-averse, and men risk-seeking. A study of Eckel and Grossman (2008), found that women are more risk-averse in multiple fields of studies. Further, with regard to risk-taking behavior when dealing with investment decisions, women are more conservative (Sila et al., 2016). Also, women invest in less risky assets, and therefore, firms who need more certainty have more female directors on the board of directors (Adams & Ferreira, 2009).

The gender differences in the board can be applied to the agency theory. The agency theory is a theoretical framework used to understand the link between board characteristics and firm value (Carter, Simkins, & Simpson, 2003). According to the agency theory, it is important to monitor the board of directors, due to the principal-agent problem (Nguyen, Locke, & Reddy, 2015). Higher gender diversity in the board of directors will strengthen the monitoring function because female directors tend to have better monitoring ability and act as independent directors. Further, greater gender diversity of the board, will lead to more perspectives and therefore, more different opinions and experiences (Sila et al., 2016). This can be seen as work-related diversity (Hülshager et al., 2009). Concerning risk aversion, "the agency theory suggests that managers are risk averse due to concerns about their own undiversified human capital" (Fama, 1980; Holmström, 1999; Sila et al., 2016).

In contrast to previous studies, it can be questioned if women in a corporate culture show different results in risk-taking behavior? The degree of risk aversion disappears when women break through a glass ceiling and come in a more male-dominated culture (Adams & Funk, 2012; Matsa & Miller, 2013; Sila et al., 2016).

2.1.2 Overconfidence

Overconfidence is the second characteristic that differs between male and female on the board of directors. To define overconfidence, it can be seen as an excessive belief in one's abilities (Dowling & Aribi, 2013; Kruger, 1999). Previous studies suggest that men are more overconfident compared to women, which can partly be due to the self-attribution bias of men. The self-attribution bias is the tendency that your success is because of personal effort and your failures are caused by external factors (Deaves, Lüders, & Luo, 2008; Dowling & Aribi, 2013; Malmendier & Tate, 2005).

The self-attribution bias is found in M&A decisions making; managers tend to follow their interest at the expense of other shareholders. In M&A, the problem of overconfidence has led to many failed mergers (Chan & Cheung, 2016). An optimistic and overconfidence manager tends to overpay firms in mergers and acquisitions. CEOs express overconfidence by overestimating the returns of their own company and a potential target. (Malmendier & Tate, 2008). The CEOs overestimate their ability to create value (Malmendier & Tate, 2008).

Concerning men and women, females are less confident than males. A homogenous board of directors with only men tends to pay a higher bid premium, caused by overconfidence. Women have lower opinions of their abilities and underestimate themselves, which leads to less M&A deals and a lower bid premium, compared to male executives (Levi et al., 2011; Levi et al., 2014).

2.2 Gender diversity

As explained in section 2.1, gender is not only a non-work related diversity. To investigate the impact of gender, gender diversity is used as a measure. As already explained the board of directors would be investigated, this is the most prestigious department of a company. To gain a better understanding of the effect of gender diversity, the board of directors can best be investigated. The board of directors functions as an internal governance mechanism for the corporate governance, where corporate governance refers to "the system by which companies are directed and controlled" (Campbell & Mínguez-Vera, 2008, p.436). Characteristics of the board of directors influence the board effectiveness concerning decision-making (García-Meca, García-Sánchez, & Martínez-Ferrero, 2015). The governance issue that firms face nowadays is gender diversity in the board of directors (Adams & Ferreira, 2009; García-Meca et al., 2015). Gender diversity could influence the board effectiveness. Second, gender diversity in the board of directors has a significant effect on board inputs (Adams & Ferreira, 2009). This is due to behavioral differences between men and women. The importance of gender diversity is stressed by previous studies (Adams & Ferreira, 2009; Catalyst, 2014; Joecks et al., 2013). The importance to increase gender diversity comes from the fact that a heterogenous board of directors adds value to the firm by bringing different perspectives, experiences, and opinions on the table. Further, it may positively influence corporate risk-taking behaviour, which can be explained by

the difference in the level of risk-taking between men and women, as explained in 2.1.1 (Sila et al., 2016; Smith, 2014). Furthermore, gender diversity in the board increases the creativity and quality of decision making, having a broader perspective can bring more knowledge, all this together leads to a more effective problem-solving (Carter et al., 2003).

On the other side, gender diversity also entails costs, because a heterogenous board of directors leads to cooperation, which needs more mechanisms to induce cooperation. A homogenous board of directors leads to better cooperation because social similarity breeds trust (Adams & Ferreira, 2004). There are more homogenous boards of directors due to the uncertainty of firms. When uncertainty is high, trust needs to be high, and therefore, a homogenous board of directors is easier and less valuable than a heterogenous board of directors (Kanter, 2008). A heterogenous board of directors can also result in more decision-making conflicts because of the heterogeneity of the group (Adams & Ferreira, 2004; Blau, 1977; Smith, 2014). In total, the cost of having a heterogenous board of directors can rise due to the decision-making conflicts, which is more time-consuming and less effective (Marinova et al., 2016; Smith, 2014).

2.3 Bid premium

The bid premium is the value that is paid above the pre-acquisition market value four weeks before the announcement date (Depamphilis, 2015). The bid premium is used as a measure for the CEO and board member performance in the M&A process (Levi, Li, & Zhang, 2008). A high (low) bid premium can negatively (positively) influence the shareholder return of the acquire, the characteristics of the board influence the value of the bid premium (Levi et al., 2008).

2.4 Gender diversity and M&A

The characteristics as mentioned earlier of women are, in general, not in line with the risky M&A industry. As explained in 2.2, when having more men on the board of directors, there will be a homogenous board of directors which have an impact on the effectiveness of decision making. The two characteristics of overconfidence and risk-averse behavior have a high impact on the effectiveness of decision-making in the field of mergers and acquisitions. The complexity of mergers and acquisitions makes it risky, were overconfidence of CEOs results in too many deals or deals fail (Levi et al., 2011). As explained above, the board characteristics will influence the M&A outcome.

The outcome of a merger or acquisitions can be investigated by measuring the bid premium. It is assumed that women influence the M&A outcome by their bidding strategy and degree of representation on boards of bidding. Having an agency problem due to risk-aversion, this can lead to paying a lower bid premium for M&A deals (Levi et al., 2014). Women in the board of directors will avoid excessive risk-taking by paying a lower bid premium, compared to men in the board of directors.

Women tend to be more careful in the decision-making process, which can be explained by their risk-taking behaviour, but this lead to better evaluations and better-conceived actions (Adams & Ferreira, 2009; Levi et al., 2014; Sila et al., 2016).

Further Levi et al.,(2008) show that the bid premium for the pre-announced target share price is lower when the CEO of the bidding company is a woman, ceteris paribus, compared to a man. CEOs who are overconfident result in an overestimation of the firm's synergies (Malmendier & Tate, 2008). In a more male-dominated culture, it is likely that the board participate in more M&A activities and pay higher acquisition premiums (bid premium). Having a board with more women can, therefore, lead to a lower bid premium.

However, the critical mass theory suggests that "until a certain threshold, or 'critical mass' of women in a group is reached, the focus of the group members is not on the different abilities and skills that women bring into the group" (Joecks et al., 2013, p.64). As a critical percentage of 30%, women on the board is needed to find advantages of a more diverse board of directors. Also, with 30% of women on the board, gender diversity will influence the board of directors (Joecks et al., 2013; Schwartz-Ziv, 2013).

In conclusion, it is expected that there is a negative relationship between higher gender diversity and the bid premium. A critical point to mention is that women in the boardroom cannot be compared to the average women, concerning characteristics. This can be explained by the glass-ceiling women break through (Adams & Funk, 2012; Matsa & Miller, 2013; Sila et al., 2016). Though, in line with previous findings, the first hypothesis is as follows:

H1: The higher the gender diversity in the board of directors, the lower the bid premium paid for the target by the acquirer.

2.5 Gender Quota

Given the relationship and positive effects of gender diversity, the European Commission aims that gender diversity is the driving force of performance (European Commission, 2015). Therefore increasing the gender diversity has become an important focus, especially in Europe. In 2012, the European Commission set a gender quota law of 40% women on corporate boards for all European Union companies listed on stock exchanges by 2020; the concerned countries can be found in Appendix 1 and Appendix 2 (European Commission, 2015). "A 'binding' quota regulation is defined as a regulation where non-compliance implies more or less severe sanctions on the company" (Smith, 2014, p.43)

Concerning the gender quota for corporate boards, there has been an ongoing debate about the pros and cons. The example of Norway can explain the cons of gender quota. By introducing the quota law in Norway, many female directors were appointed, which differently considered from than the

existing male directors. The new female directors had less CEO experience and were younger, and this resulted in a negative influence on firm performance. These losses can be explained by the short time frame of implementing the quota. In Norway, the quota has been applied quickly, and therefore, new women directors were younger and less experienced. This all led to, concerning mergers and acquisitions to more acquisitions (Ahern & Dittmar, 2012).

However, having a gender quota law means that gender diversity is enforced by a gender quota. New board members may have been chosen because of their gender. A company cannot choose the person that fits his company, because a constraint on the choice of a new board member is implemented (Joecks et al., 2013; Smith, 2014). Women may have been appointed to the board of directors, by the reason to increase gender diversity, but not for their qualities (Nielsen & Huse, 2010). Women are more risk-averse, and by using a gender quota, the European Commission tries to reduce the risk level in corporate boards. However, the European Commission is trying to diversify the risk-level by using gender as main point. However, considering gender diversity is mostly a business ethical question because gender is, in general, a non-work related diversity (Hülshager et al., 2009; Wang & Kelan, 2013). Though, due to the different work characteristics of men and women, it is also related to work-related diversity.

Smith (2014) and Joecks et al. (2013) explained that when a company is optimizing his behavior, and his boardroom is optimal, a quota can distort this behavior and have a negative influence on the performance and efficiency of the board. In conclusion, introducing a quota lead to more diverse board with more women. However, due to the restrictions in choosing a board member, it can be questioned if it changes the positions of women in top positions? (Smith, 2014; Terjesen & Sealy, 2016).

These findings of the gender quota raise the question if the effect of women in the board of directors on the bid premium in mergers and acquisitions change when those women are chosen because of the binding gender quota. Can a quota moderate the relationship between gender diversity and M&A outcome? This leads to the following hypothesis:

H2: the effect of gender diversity in the board of directors on the size of the bid premium is amplified when a binding gender quota is introduced.

3. Research Method

This chapter describes the research method that is used to test the hypotheses. First, the data and variables will be described. Second, the regression models used in this research are developed and provided.

3.1 Data description

Multiple databases are used in order to collect all the data for this research. The following databases are used:

Database	Information	variables
Factset	M&A information	Dependent variable
Eikon	Financial information	Control variables
BoardEx	Board characteristics	Independent /control variables
WorldDataBank	Country information	Control variable

Table 1 Databases

Factset is the first database that is used in order to collect all information about mergers and acquisition. The information is collected for European listed firms. The board characteristics from listed European firms are retrieved from the BoardEx database. When data of the board characteristics are missing, the database Eikon is used to retrieve information about the board characteristics. These three databases can examine the relationship between gender diversity and bid premium. Information and data for the control variables are retrieved from the Eikon database and the WorldDataBank. The financial control variables are retrieved from the Eikon database, and the country control variable is retrieved from the WorldDataBank.

The total number of mergers and acquisitions obtained from FactSet is 1,410. When the acquirer did not make a bid, it is excluded from the sample. Therefore, the total number of mergers and acquisitions with a bid premium and the right information is 435. After merging the data with Eikon, BoardEx, and excluding the missing values, the sample was reduced to 277 deals done by 221 listed European firms. This sample is based on listed European firms that announced a merger or acquisition in the period from 1/1/2003 up to 31/12/2017. The period 2003-2017 and data to use only firms located in Europe is chosen because the gender quota laws are introduced during these years in Europe.

Further investigating European listed firms is of scientific relevance, because previous research only investigated firms located in the UK and US. The sample includes European M&A deals. However, the UK is excluded from this research. This is due to the differences in the legal system and institutional environment between Western European countries and the UK. Where Europe is more stakeholder-oriented is the UK more shareholder-oriented (Rose & Mejer, 2003).

Further, financial firms are excluded in this research, because “engaging in M&A activities for financial firms is likely to be motivated mostly by the nature of their business rather than by behavioral biases of the senior management”(Dowling & Aribi, 2013, p.81). As well, the UK and financial firms are excluded because these differences can cause biased results. For all the other companies, the following requirement applies:

- a. Acquirer and target are both located in Europe
- b. Acquirer and target are both a publicly listed firm

As explained the final sample consist of 277 deals done by 221 European listed firms. This research will investigate the moderation effect of a gender quota on the relationship between gender diversity and the Bid premium. In order to investigate the impact of gender quota, two groups are investigated. A binding gender quota has been implemented for the first group of countries. The introduction year of implementing the binding gender quota differs between these countries. Some countries already introduced the binding gender quota in 2003, but some countries started in 2011 introducing the binding gender quota. To investigate the moderation effect, the gender quota is therefore adjusted to the introduction year per country. For some countries, the binding gender quota was introduced in 2011. This holds for the following countries: Belgium, France, and Italy.

In the second group, no gender quota or a soft gender quota has been established. All information per country can be found in Appendix 1 and 2. Having a soft quota will not immediately lead to higher gender diversity because no legal claims are introduced (Smith, 2014). The first group consists of countries with a binding quota, which consist of 5 countries (Norway, France, Belgium, Italy, and Iceland). The second group consists of countries with a soft gender quota or no gender quota (all other countries). The countries can be found in table 2.

Group 1	Quota binding	Group 2
Belgium	33%	Austria
France	40%	Denmark
Italy	33%	Finland
Norway	40%	Germany
Iceland	40%	Greece
		Hungary
		Luxembourg
		Netherlands
		Poland
		Portugal
		Russian Federation
		Spain
		Sweden
		Switzerland

Table 2 Countries

3.1.1 Dependent variable

The dependent variable that is used for this research is the bid premium. The bid premium reflects the M&A outcome. The bid premium is the price paid above the pre-acquisition market value of the target. The dependent variable is in line with previous research by (Levi et al., 2008, 2011; Levi et al., 2014). The bid premium is defined as follows: "the bid premium is defined as the ratio of the final offer price to the target stock price four weeks prior to the bid minus one" (Levi et al., 2014, p.196). Formula bid premium:

$$\text{Bid premium} = \frac{\text{Final offer price}}{\text{target stock price four weeks before offer price}} - 1$$

3.1.2 Independent variables

The independent variable used in this study is gender diversity in the board of directors. The relation between gender diversity and bid premium is investigated. Gender diversity is measured by the percentage of female board members, the female ratio (Bazel-Shoham, Lee, Rivera, & Shoham, 2017). Formula gender diversity:

$$\text{Gender diversity} = \frac{\text{Female on board of directors}}{\text{Total board members}}$$

Second, to investigate the moderation effect. A dummy variable for the gender quota is made, the moderator. For this research, there two groups investigated, the first group has a binding quota with the sanction; the second group has a soft gender quota of not quota at all. The first dummy variable will check for a quota; the dummy variable will be '1' for having a binding quota and '0' when there is a soft- or no gender quota. The introduction of another dummy variable can investigate the

interaction effect of the gender quota. This dummy variable is established by multiplying the independent variable 'gender diversity' and dummy variable 'gender quota.'

3.1.3 Control variables

3.1.3.1 Board control variables

This research control for board characteristics, the following variables are used:

Board Size: is measured by the total number of directors. Board size is taken into account because board size can have a negative impact on corporate performance, because of the possible agency problems that can arise when a board is too big. Having a too large board can result in worse decision making (García-Meca et al., 2015; Marinova et al., 2016).

Board independence: Is measured by the "number of independent directors divided by a number of directors" (Sila et al., 2016, p.46). According to Smith (2014) are boards with women expected to act more independently than male-dominated boards. Further having more women in the board of directors can increase the independence of the board (Campbell & Mínguez-Vera, 2008; Carter et al., 2003).

3.1.3.2 Financial control variables

The financial control variables are based on previous research from Chen et al., (2016), Levi et al. (2011) and Levi et al. (2014). The variables that are used are as follows:

The firm performance: is measured with market-based measure Tobin's Q and Accounting measure ROA (Fahlenbrach & Stulz, 2011; García-Meca et al., 2015). It is expected that having a better performance will positively impact the M&A outcome. ROA is measured by:

$$ROA = \frac{\text{Income before extraordinary items}}{\text{Book value total assets at the beginnings of the fiscal year}}$$

Tobin's Q is calculated as follows (García-Meca et al., 2015; Levi et al., 2014):

$$\text{Tobin's Q} = \frac{\text{Book value total assets} - \text{book value common equity} + (\text{common shares outstanding} * \text{stock price})}{\text{Book value total assets}}$$

Leverage: is measured by "the sum of debt in current liabilities plus long term liabilities divided by the book value of total assets" (Levi et al., 2014, p.199). This variable explains the performance of the company and indicates how much capital of the company is financed with debt (García-Meca et al., 2015).

Cash holding: is measured by "the cash and short term investments divided by the book value of total assets" (Levi et al., 2014, p.199).

Firm size: is measured by the natural logarithm of the net sales of the firm; this is used to control for the firm size effect (Marinova et al., 2016).

Market capitalization: is measured by the number of common shares outstanding * stock price (Levi et al., 2014). Having a higher market capitalization, it is expected that these boards have higher gender diversity and higher performance (Joecks et al., 2013)

Operating cash flow: is measured by the ratio of net cash flow to total assets (net operating activities/Total assets) (Dowling & Aribi, 2013).

3.1.3.3 Industry control variables

Industry fixed effect: dummy variable for industries is included.

Year fixed effect: because M&A activity can be related to the business cycle and other macroeconomic changes, like the crisis (Nguyen et al., 2015). Multiple years are investigated; therefore, a dummy is created for all years.

3.1.3.4 Country control variable

GDP per country: this control variable is added to control for the difference in individual countries.

3.2 Methodology

The data sample for this research consists of pooled cross-sectional data. Because of the pooled cross-sectional data, an Ordinary Least Squares Regression is used to examine the relationship between gender diversity and the bid premium and also the moderation effect. The use of an OLS regression is in line with previous studies (Chen et al., 2016; Levi et al., 2014). To investigate the moderation effect of a gender quota, multiple years will be investigated. Some acquirers have made multiple bids in the same fiscal year, the bid premium of these acquirers are taken together as one deal, by making an average of the bid premiums (Chen et al., 2016; Levi et al., 2011; Levi et al., 2014).

3.2.1 Method

To investigate the relationship between gender diversity in the board of directors and bid premium paid in M&A deals, the following regression analysis is performed for hypothesis 1:

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{Bsize} + \beta_3 \% \text{Bindep} + \beta_4 \text{ROA} + \beta_5 \text{TOBQ} + \beta_6 \text{LEV} + \beta_7 \text{Cash} + \beta_8 \text{Markcap} + \beta_9 \text{OPCF} + \beta_{10} \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

For hypothesis 2, first, a regression model has performed only the dummy variable 'gender quota' is added. This is followed by a regression model with an interaction variable between the dummy variable 'gender quota' and gender diversity variable. The regression models are as follows:

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{QDum} + \beta_3 \text{Bsize} + \beta_4 \% \text{Bindep} + \beta_5 \text{ROA} + \beta_6 \text{TOBQ} + \beta_7 \text{LEV} + \beta_8 \text{Cash} + \beta_9 \text{Markcap} + \beta_{10} \text{OPCF} + \beta_{11} \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{QDum} + \beta_3 \text{Women} * \text{Qdum} + \beta_4 \text{Bsize} + \beta_5 \% \text{Bindep} + \beta_6 \text{ROA} + \beta_7 \text{TOBQ} + \beta_8 \text{LEV} + \beta_9 \text{Cash} + \beta_{10} \text{Markcap} + \beta_{11} \text{OPCF} + \beta_{12} \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

The detailed information about the variables can be found in table 3.

Variables	Symbol	Definition
Dependent variable:		
• Bid premium	BID	(final offer price/ target stock price 4 weeks before offer price) – 1
Independent Variables:		
• Gender diversity	Women	Female on board of directors/ total board members
• Gender quota dummy	Qdum	1=country with binding gender quota, 0= countries with soft or no gender quota
• Gender dummy ¹	DWomen	1= board with >1 women in board, 0= 0 women on board of directors
• 30% gender diversity dummy ¹	Women30	1= board with at least 30% women in the board, 0= less than 30% women in the board
Control Variables:		
Board control variables		
• Board Size	BSize	Total number of directors on the board
• Board independence	%Bindep	Percentage of independent directors in the board
Financial control variable		
• Return on Assets	ROA	Income before extraordinary items/ total assets
• Tobin's Q	TOBQ	Market value/ total assets
• Leverage	LEV	Total debt/ total equity
• Cash Holding	CASH	Cash and short term investments / total assets
• Market Capitalization	MARKCAP	the number of common shares outstanding * stock price
• Operating Cash Flow	OPCF	net operating activities/Total assets
• Firm Size	FSize	Log of total assets of the firm
Country control variable		
• GDP per capita	GDP	GDP per capital per country, per year

Table 3 Definitions Variables

¹ This variable is added in the robustness check

4. Results

This chapter gives an overview of the regression analyses done by Stata. Given the results, the hypotheses are accepted or rejected. First, descriptive statistics will be presented and explained. Secondly, the correlation matrix of the variables is shown. Thirdly, the results of the regression analyses are presented and discussed. Lastly, a summary is given.

4.1 Descriptive statistics

Table 4 shows the descriptive statistics of all variables. Table 4 shows that bidders pay on average a bid premium of 28.788 above the market price of the target. The interesting point in this table is that from all board members, on average, 15.3% is women, and at least 70% of all the companies have at least one women on the board of directors. However, the critical percentage of 30% women in the board of directors is only reached by 18.8% of all companies. The critical percentage is used as a robustness check-in 4.3. Concerning gender quota, 28.2% of the companies are doing a merger or acquisition in a country where the gender quota is implemented.

Second, This research makes use of an Ordinary Least Squares Regression in order to meet all assumptions. The data is tested for normality. Testing for normality can be done by plotting a graph of each variable compared with the normal distribution. Multiple variables were not normally distributed and by reconstructing these variables using a natural logarithm, the problem is solved. The variables board size, board independence, market capitalization, Tobin's Q, and cash holding are transformed to their natural logarithm (Studenmund, 2014).

Further, the Variance Inflation Factor Test (VIF) is done to test for multicollinearity. The outcome of the VIF test is provided in table 4. When the VIF is above 10, multicollinearity is a problem. Table 4 shows that there is a multicollinearity problem between the control variables 'market capitalization' and 'firm size.' As a solution to this problem, the variable market capitalization has been dropped. The variable market capitalization and firm size are measuring almost the same, and therefore, market capitalization has been dropped (Studenmund, 2014).

Variable	Mean	Std. Dev.	Min	Max	VIF	VIF minus mark cap
Dependent variable:						
BID	28.788	40.367	-87.827	334.783		
independent variables:						
%Women	0.153	0.146	0.000	0.533	1.270	1.270
Qdum	0.282	0.451	0.000	1.000		
Dwomen	0.700	0.459	0.000	1.000		
Wom30	0.188	0.391	0.000	1.000		
Wom*Qdum	0.081	0.147	0.000	0.533		
Dwom*Qdum	0.267	0.443	0.000	1.000		
Wom30 *						
Qdum	0.141	0.348	0.000	1.000		
Control variables:						
board control variables						
Bsize²	2.364	0.435	1.099	3.434	1.850	1.800
%Bindep²	0.348	0.217	0.000	1.910	1.190	1.170
financial control variables						
ROA	5.195	13.520	-195.900	31.020	1.440	1.420
TOBQ²	0.302	0.402	-0.891	2.272	3.940	1.270
LEV	98.351	380.024	-2920.000	4596.420	1.040	1.020
CASH²	-2.426	0.779	-4.856	-0.276	1.110	1.110
MARKCAP²	15.025	1.867	10.270	18.616	20.990	-
OPCF	0.079	0.068	-0.290	0.345	1.640	1.610
Firm Size	15.472	1.904	10.364	19.660	20.080	1.890
Country control variable						
GDP	45176.520	19132.990	8562.810	103059.300	1.330	1.330

Table 4 Descriptive statistic of the data

The data is checked for multicollinearity by running a VIF test, as shown in table 4. To further explain the data before running the regressions, a correlation matrix is performed to test for correlation. It is expected that there is no correlation anymore because the variable 'market capitalization' is already dropped. When perfect correlation exists between two variables, the value of -1 or 1 will occur the table 5. In order to have no correlation, the best value is zero, so the closer the values are to zero in table 5, the less correlation exists between the variables (Studenmund, 2014). The variables in table 5 show values varying from -0.204 to 0.606. This suggests that there is no or only some small correlation between the variables. The dummy variables that are used for the regression analysis are excluded from the correlation matrix because dummy variables are correlated with their original variable, which leads to higher values.

² These variables are transformed to their natural logarithm.

	BID	Women	lBsize	lbdindep	ROA	LEV	Fsize	LTOBQ	LCASH	OPCF	GDP
BID	1.000										
Women	-0.027	1.000									
lBsize ²	-0.062	-0.149	1.000								
lbdindep ²	0.134	0.247	-0.115	1.000							
ROA	-0.038	0.015	0.066	-0.048	1.000						
LEV	-0.002	-0.009	0.040	-0.017	-0.057	1.000					
Fsize	-0.096	-0.017	0.606	0.124	0.161	0.032	1.000				
LTOBQ ²	0.082	0.064	-0.049	-0.046	-0.078	-0.023	-0.204	1.000			
LCASH ²	-0.012	0.171	-0.128	-0.064	-0.024	0.092	-0.163	0.136	1.000		
OPCF	-0.121	-0.023	0.072	-0.026	0.496	-0.069	0.174	0.256	-0.030	1.000	
GDP	-0.003	0.371	-0.302	0.199	-0.093	-0.023	-0.196	0.101	-0.016	-0.142	1.000

Table 5 Correlation Matrix

To dig deeper into the independent variable gender diversity, multiple tables are presented to illustrate gender diversity concerning the bid premium. In table 6, the distribution of the number of deals and gender diversity is presented per year. The average gender diversity in total is 15.32%. The average gender diversity increased from 6.06% in 2003 to 25.74% in 2017, which is in total an increase of 19.68%. Secondly, table 6 shows that in total, 277 deals are investigated for this research, which consists of 78 deals done by countries where the gender quota is implemented.

Year	average gender diversity	Number of deals in total	Number of deals with gender quota
2003	6.06%	3	0
2004	13.48%	10	1
2005	11.28%	22	2
2006	10.27%	25	4
2007	6.90%	22	2
2008	9.78%	21	1
2009	10.59%	15	1
2010	10.93%	17	1
2011	18.10%	22	10
2012	11.56%	20	7
2013	20.08%	23	14
2014	24.45%	18	11
2015	18.34%	21	8
2016	25.16%	19	8
2017	25.74%	19	8
total	15.32%	277	78

Table 6 independent variable distribution per year

In table 7, the average gender diversity and bid premium are distributed per year for countries where no gender quota law is implemented. Table 8 shows the average gender diversity and bid premium are also distributed per year but now for countries where a gender quota law is implemented. In total, 199 deals are done by countries without a gender quota law, and 78 deals are done by countries with a gender quota law. The average gender diversity in total is lower for countries without a gender quota law compared to countries with a gender quota law, 10.11% versus 28.61%. Secondly, the average bid premium is higher for countries without a gender quota law compared to countries with a gender quota law, 30.395 versus 24.688.

The results of table 7 and 8 show that having a gender quota law leads to higher gender diversity. For countries where no gender quota law is implemented the gender diversity only rose to 18.67% from 2003 till 2017, where countries with a gender quota law rose up to 35.46% from 2003 till 2017. The mean of bid premium shows many fluctuations over time so that no definite conclusions can be drawn from this information for now.

Year	Average van gender diversity	Number of deals	Average Bid premium
2003	6.06%	3	23.012
2004	10.35%	9	24.601
2005	8.59%	20	27.950
2006	6.14%	21	29.949
2007	3.45%	20	34.529
2008	8.60%	20	18.559
2009	9.20%	14	40.662
2010	9.12%	16	33.030
2011	16.56%	12	53.305
2012	7.45%	13	22.165
2013	9.08%	9	14.189
2014	17.94%	7	34.362
2015	13.19%	13	23.814
2016	18.59%	11	53.226
2017	18.67%	11	19.968
total	10.11%	199	30.395

Table 7 statistics for no gender quota countries

Year	Average gender diversity	Number of deals	Average Bid premium
2004	41.67%	1	23.479
2005	38.11%	2	-6.871
2006	31.99%	4	5.938
2007	41.43%	2	43.987
2008	33.33%	1	-11.548
2009	30.00%	1	-13.127
2010	40.00%	1	37.037
2011	19.95%	10	27.386
2012	19.21%	7	41.209
2013	27.16%	14	16.420
2014	28.59%	11	36.478
2015	26.69%	8	19.991
2016	34.20%	8	39.621
2017	35.46%	8	15.182
total	28.61%	78	24.688

Table 8 statistics for gender quota countries

Figure 2, shows the distribution of the gender diversity variable per country, where the countries are classified by '0' when there is no gender quota law and '1' when there is a gender quota law. There are 18 countries investigated in this research, and four of these countries implemented a gender quota law. Figure 2 shows that the average gender diversity is higher for companies who are located in countries that implemented a gender quota law. These companies show a higher percentage of women on their board of directors.

Figure 2 shows that the M&A deals in Hungary, and Luxembourg are done by companies where no women are placed on the board of directors. Companies in Norway met, on average, the required gender quota of 40%. Further, almost all countries who do not have a quota law score lower for their percentage of women on the board of directors, except Finland and Sweden. The countries France and Italy implemented gender quota in 2011. Comparing the average gender diversity before and after the introduction of the gender quota, an increase is shown in figure 2 of the average gender diversity. Implementing a gender quota law can help to increase the number of women on the board of directors, according to this figure and the tables above.

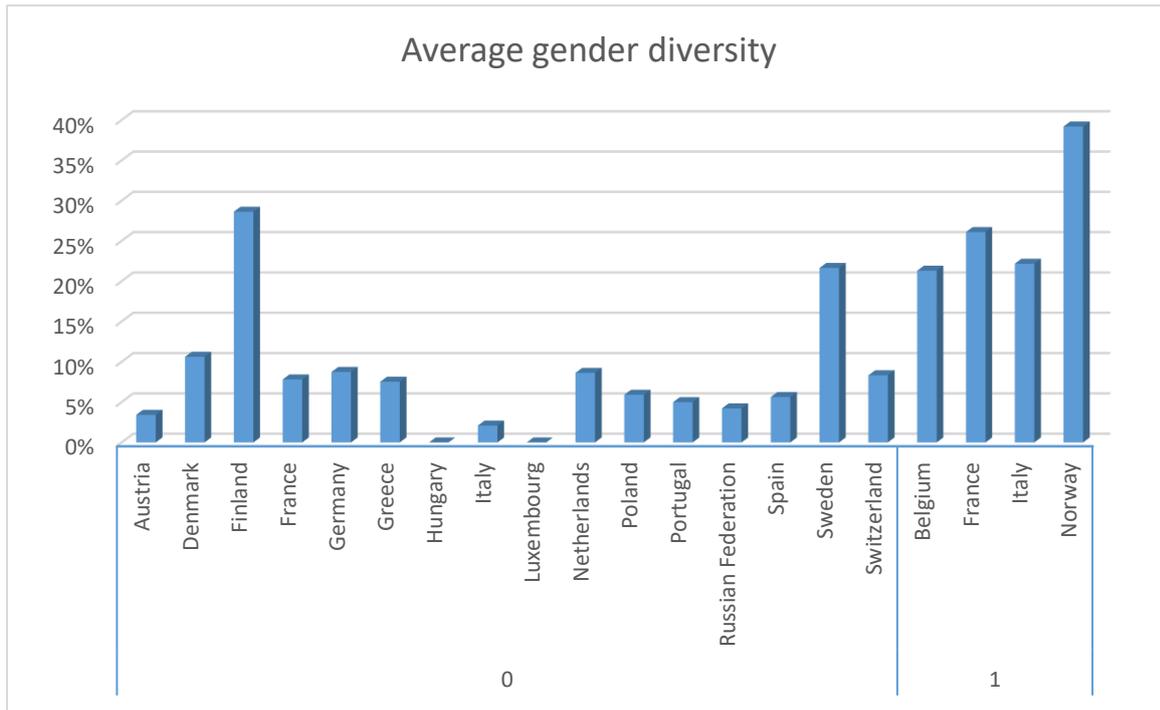


Figure 2 Gender diversity variable per country

4.2 Test of hypothesis

In order to test the hypothesis, three OLS regressions are performed. First, the relationship between women in the board of directors and the influence on the bid premium is analyzed hypothesis 1. Secondly, the gender quota dummy variable is added to the regression for the second OLS regression. Third, an interaction effect between women in the board of directors and the gender quota dummy is added to investigate the second hypothesis. The following regression equations are used:

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{Bsize} + \beta_3 \% \text{Bindep} + \beta_4 \text{ROA} + \beta_5 \text{TOBQ} + \beta_6 \text{LEV} + \beta_7 \text{Cash} + \beta_8 \text{OPCF} + \beta_9 \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{QDum} + \beta_3 \text{Bsize} + \beta_4 \% \text{Bindep} + \beta_5 \text{ROA} + \beta_6 \text{TOBQ} + \beta_7 \text{LEV} + \beta_8 \text{Cash} + \beta_9 \text{OPCF} + \beta_{10} \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

$$\text{Bid premium} = \beta_0 + \beta_1 \text{Women} + \beta_2 \text{QDum} + \beta_3 \text{Qdum} * \text{Women} + \beta_4 \text{Bsize} + \beta_5 \% \text{Bindep} + \beta_6 \text{ROA} + \beta_7 \text{TOBQ} + \beta_8 \text{LEV} + \beta_9 \text{Cash} + \beta_{10} \text{OPCF} + \beta_{11} \text{FSize} + \text{Year fix} + \text{Industry fix} + \varepsilon$$

Results of the regressions equations are presented in table 9. Because some companies occur more than once in our sample, the problem of heteroscedasticity arises. This problem can be solved by using the cluster option. The sample is clustered on their 'lsin code.' In table 9, the outcome of all three regression is presented, using the cluster option. The number of observations is equal for all OLS regressions, which is 277 observations. Table 9 shows that the percentage of women in the board of director (Women) has a negative effect of -16.230 on the bid premium (BID), but this relationship is

not significant ($P > 0.05$). The first regression show significant results for the control variables Board independence and Operating cash flow. Board independence has a significant positive effect on the bid premium, and the operating cash flow has a significant negative effect on the bid premium. Overall the explanatory power of the first regression is 1.2%. The Adjusted R-squared gives information about how much of the variance in the bid premium can be explained by the variances in the independent variables (Studenmund, 2014). Based on the results in table 9, the first hypothesis can be rejected.

The second regression takes into account gender quota. The gender quota (Qdum) shows a negative effect of -9.117 on the Bid premium (BID), but no significant effect is found either. However, the negative effect of Women on BID is less negative than in the first regression. This can be explained by the dummy variable gender quota (Qdum) that is added to the regression. The gender quota variable shows a negative relationship with the bid premium but is not significant. The variables Board independence and Operating Cash flow show for the second time a significant effect. The relationship of these variables is the same as in regression one. The explanatory power of the second regression is 1.4%. To test the second hypothesis, an interaction term should be added to the regression which is tested in regression three.

R3 reflects hypothesis two in table 9; the interaction term is added. The coefficient of gender diversity (Women) has become positive when adding the interaction term (0.829). Though, the gender quota dummy and the interaction variable show a negative coefficient. The results in Table 9 show no significant impact on the percentage of women in the board of directors (Women) on the bid premium (BID) ($P = 0.971$; $P > 0.05$) In line with our expectations a negative coefficient is found between the gender quota and bid premium and this also holds for the interaction variable, however no significant effect is found. However, as explained, no significant effect is found. This means that the variable 'Women*Qdum' is not a moderator on the relationship between gender diversity and bid premium. The results from regression three imply that the moderation effect of the gender quota does not influence the relationship between gender diversity and bid premium. Therefore hypothesis two is not accepted.

The coefficients of the independent variable (Women) indicates a negative relationship between the percentage of women and the bid premium, except for the third regression. The direction of the relationship in regression three is not in line with our expectations. This means that when the percentage of women on the board of directors increase, the bid premium will be higher. This is not in line with the expectation of the first hypothesis since it is expected that having higher gender diversity on the board of directors will lower the bid premium. However, as an explanation of these results is the critical mass theory. The critical percentage of 30% of women on the board is needed to find a negative relationship between gender diversity and the bid premium (Joecks et al., 2013; Schwartz-Ziv, 2013). The direction of the dummy variable gender quota and the interaction variable between

the percentage of women and the gender quota are in line with the expectations. Unfortunately, the results in table 9 for all variables and regressions show no significant result. Therefore, hypothesis one and two cannot be accepted.

Overall all regressions in table 9 show that the operating cash flow has a significant negative effect on the bid premium, which gives us the information that company with higher operating cash flow will pay a lower bid premium. Secondly, the percentage of independent board members show a significant positive effect on the bid premium, so the more independent board members in the board of directors, the higher the bid premium will be. The return on assets is significant when the gender quota is added to the regression, the higher the return on assets, the higher the bid premium will be.

However, about the negative outcome of the independent variables; Women, Qdum, and Women*Qdum, even if all regressions show no significant effect, it can be questioned if this is due to uncertainty? There is a large negative effect (-16.230) in the first regression. This negative effect is also found for the gender quota and interaction term in the second and third regression. The effect is not zero, but a negative non-significant effect is found, which can be due to high uncertainty. This can be explained by the confidence interval of the independent variables. The confidence interval results can be found in table 10. Concerning the confidence interval, the wider the confidence interval, the greater the uncertainty level of the variable. The results show that this data is 95% confident that the mean of the variable 'Women' of all people in the board of directors (population) is between -49.712 and 17.257. This confidence interval is wide, and therefore really uncertain. Also, regression two and three show wide confidence intervals, but the coefficient has become slightly positive in regression three. According to these results, some robustness checks are performed in the next section.

	BID(r1)	BID(r2)	BID(r3)
	Coefficient/p value	b/p	b/p
Women	-16.230	-1.592	0.829
	(0.341)	(0.939)	(0.971)
Qdum		-9.117	-7.405
		(0.221)	(0.606)
Womqdum			-7.321
			(0.866)
Bsize²	-2.602	-1.710	-1.692
	(0.784)	(0.857)	(0.859)
Bdindep²	25.240**	24.130*	24.080*
	(0.048)	(0.061)	(0.064)
ROA	0.261	0.276*	0.275*
	(0.111)	(0.094)	(0.099)
TOBQ²	12.520	10.970	10.900
	(0.080)	(0.120)	(0.123)
LEV	0.002	0.001	0.001
	(0.650)	(0.675)	(0.676)
CASH²	-3.441	-3.255	-3.222
	(0.312)	(0.334)	(0.345)
OPCF	-101.200**	-106.9**	-106.3**
	(0.031)	(0.026)	(0.032)
Fsize	-1.225	-1.548	-1.516
	(0.503)	(0.415)	(0.431)
GDP	-0.000	0.000	0.000
	(0.170)	(0.171)	(0.214)
Constant	42.450	46.110	45.420
	(0.345)	(0.312)	(0.331)
Observations	277	277	277
Adjusted R-squared	0.012	0.014	0.010
R Squared	0.123	0.129	0.129
F value	1.300	1.230	1.240
Fixed effects Year	Yes	Yes	Yes
Fixed effects Industry	Yes	Yes	Yes
* p<0.05, ** p<0.01, *** p<0.001 (P value in parentheses)			

Table 9 regression analysis

	95% confidence interval	
R1: Women	-49.712	17.257
R2: Women	-42.412	39.227
R2: Qdum	-23.752	5.519
R3: Women	-43.971	45.629
R3: Qdum	-35.673	20.864
R3: Women * Qdum	-92.468	77.827

Table 10 Confidence interval

4.3 Robustness checks

In order to increase the reliability and validity of this research, robustness checks are performed. Robustness checks are done to test the results of the regressions before. The first robustness test is already performed during the first regression by using a cluster option because of the heteroscedasticity problem. As second robustness check to the results, a dummy variable for gender is used instead of the percentage of women in the board of directors. This dummy variable will measure gender diversity. When a woman is on the board of directors, the dummy is coded by 1, and when no women are on board of directors, the dummy is coded by 0. In table 11, the results are presented.

The results in table 11, show that the direction of the relationship between the dummy variable gender and bid premium is positive. This direction of the relationship changed when using a dummy variable for gender instead of using the variable 'Women.' This means that when at least 1 women are on the board of directors, the bid premium will be higher. This is not in line with the expectation of the first hypothesis since it is expected that having women on the board of directors will lower the bid premium. However, as an explanation to this results, it could be possible that when having only '1' woman in the board of directors, the woman does not have any impact on the board of directors. Therefore no negative influence is found (Adams & Funk, 2012). However, the relationship between the dummy variable gender and bid premium is not significant. The control variables board independence and operating cash flow are still significant, and for these variables, the relationship has not changed compared to the first regressions. The only difference that occurs is that the control variable GDP show a significant result, but the coefficient is zero, which means that there is no effect.

Regression 5 in table 11, added the interaction term with the gender quota. According to the results in table 11 (R5), the coefficient of the dummy variable gender is even more positive than in R4, but the gender quota shows a negative coefficient. The interaction variable between gender quota and gender dummy show a positive coefficient, which is not in line with our expectations. It is expected that having the relationship between gender diversity and the bid premium, that a gender quota will amplify this relationship. However, it is expected that there is a negative relationship between gender diversity and the bid premium. Unfortunately, this regression shows no significant effect, and therefore, still, no significant effect is found.

With regard to the confidence intervals for regression 4 and 5, the confidence intervals of the variable 'Women' are smaller than before and therefore, more certain. However, the confidence interval of the interaction term is still wide and very uncertain. So still it can be questioned if the results are non-significant because of high uncertainty, but that a possible effect is present.

To further analyze the data and dig deeper into the gender quota effect on the bid premium, another regression analysis is performed with a dummy variable for a board with having at least a gender diversity of 30%.

According to table 11, the coefficients of the dummy variable of 30% of women show a negative relationship with the bid premium. This relationship is in line with our expectations, but not significant. However, comparing the p values from the first regression R1 and R6, the dummy variable is much closer to a significant effect; the value is 0.143 compared to 0.341. It can, therefore, be questioned if this relationship is big but insecure. Table 12 show that the confidence interval for 'Women30' in regression 6 is almost completely below zero (-20.173;2.926). This confidence interval outlines the expectations that there may be a negative effect, but the effect is still uncertain. This result can be an interesting subject for further research, which is explained later in the discussion part. When adding the interaction term in R7, the coefficient is still negative but less. However, still, no significant effect is found. The confidence interval is also much wider in for regression 7, which can be found in table 11. This indicates that the results are more uncertain than in regression 6.

	BID(R4)	BID(R5)	BID(R6)	BID(R7)
	b/p	b/p		
Dwomen	0.519	1.446		
	(0.923)	(0.799)		
Women30			-8.624	-5.685
			(0.143)	(0.583)
Qdum		-27.220		-8.155
		(0.154)		(0.378)
Dwomen*Qdum		18.600		
		(0.329)		
Women30*Qdum				2.162
				(0.880)
Bsize²	-2.501	-2.478	-2.818	-2.024
	(0.794)	(0.798)	(0.764)	(0.829)
bdingep²	23.830*	23.260*	25.570**	24.990*
	(0.059)	(0.065)	(0.042)	(0.054)
ROA	0.234	0.283*	0.267*	0.284*
	(0.140)	(0.088)	(0.096)	(0.084)
TOBQ²	11.980	10.830	12.01*	11.110
	(0.102)	(0.132)	(0.091)	(0.113)
LEV	0.001	0.002	0.002	0.002
	(0.681)	(0.656)	(0.639)	(0.650)
CASH²	-3.996	-3.853	-3.370	-3.173
	(0.241)	(0.260)	(0.327)	(0.362)
OPCF	-99.050**	-108.9**	-100.000**	-106.0**
	(0.034)	(0.025)	(0.031)	(0.030)
Fsize	-1.335	-1.681	-1.194	-1.468
	(0.471)	(0.381)	(0.512)	(0.436)
GDP	-0.000*	0.000	-0.000	0.000
	(0.087)	(0.112)	(0.210)	(0.245)
Constant	43.720	49.430	41.460	44.960
	(0.335)	(0.285)	(0.359)	(0.329)
Observations	277	277	277	277
Adjusted R-squared	0.010	0.014	0.015	0.011
R Squared	0.121	0.132	0.126	0.130
F value	1.280	1.220	1.400	1.330
Fixed effects Year	Yes	Yes	Yes	Yes
Fixed effects Industry	Yes	Yes	Yes	Yes
* p<0.05, ** p<0.01, *** p<0.001				

Table 11 OLS regression robustness check 1 & 2

95% confidence interval		
R4:Dwomen	-10.006	11.044
R5: Dwomen	-9.718	12.611
R5: Qdum	-29.197	17.673
R5: Dwomen*Qdum	-18.866	56.071
R6: Women30	-20.173	2.926
R7: Women30	-26.041	14.670
R7: Qdum	-26.359	10.048
R7: Women30*Qdum	-25.930	30.254

Table 12 confidence interval robustness check 1 & 2

4.4 Summary of the results

In summary, this research investigated a sample of 277 M&A deals between 2003-2017. Concerning the regression models, the results are as follows. First, the relation between the percentage of women on the board of directors and the bid premium of the acquirer is tested. The results of this relation are insignificant, and therefore, hypothesis one can be rejected. Second, the moderation effect of a gender quota on the relationship between the percentage of women and the bid premium is also insignificant.

Further, the robustness check measured gender diversity by using a gender dummy variable. The results by using a gender dummy instead of the percentage of women in the board of directors are still not significant. The second robustness check used a dummy variable for a board having at least a gender diversity of 30%. Still, no significant effect is found. However, according to the confidence intervals, it can be discussed whether the uncertainty of the data leads to non-significant results. Overall the findings of this research are not in line with prior research, so all hypothesis is rejected, and there is no finding that gender diversity has an impact on the bid premium (Chen et al., 2016; Levi et al., 2011; Levi et al., 2014).

5 Conclusion and Discussion

The European Commission is continuing debating the social problem that more women than men graduate, but still, women are outnumbered by men in leadership positions (European Commission, 2015; Senden, 2018). Therefore, the European Commission introduced a gender quota/legislation, for all European Union companies listed on the stock exchanges by 2020 (European Commission, 2015). However, the introduction of a gender quota will come with some effects for firms (Chen et al., 2016). This research contributed by given more insights into the relationship between gender diversity of the board of directors and mergers and acquisitions outcome, measured by the bid premium. Further, this research examines the moderation effect of a gender quota on the relationship between gender diversity and bid premium, by M&A deals from publicly listed companies in European countries. The research question is as follows: *“What is the effect of gender diversity on the bid premium, and how is this relationship moderated by a gender quota?”*. Previous studies suggest that women in corporate boards will pay a lower bid premium for the target paid by the acquirer. A lower bid premium is paid because, women in corporate boards tend to less overconfident and more risk-averse, compared to men in corporate boards (Levi et al., 2011; Levi et al., 2014).

It is found that gender diversity does not have an impact on the bid premium paid by the acquirer. Second, no moderation effect is found by gender quota. This implies that a binding gender quota, do not influence the relationship between gender diversity and the bid premium. These findings are based on a sample of 277 deals done by 221 European listed firms for the period 2003-2017. Having more women in the board of directors results in a lower bid premium, which is shown by a negative coefficient, but this effect is not significant. The p-value shows that there is no significant effect is, but due to the wide confidence intervals, it cannot be stated that the effect of gender diversity on the bid premium is zero. This research found a heterogeneous effect, which explains the non-significant effect. It is possible that there are multiple effects of gender diversity on the bid premium. Second, it could be that also, multiple moderators can influence the relationship. Third, the sample size is rather small, bigger sample size can result in a significant effect, but due to the small size, there is high uncertainty.

The robustness checks, of the dummy variable of gender and the dummy for 30% gender diversity, are also not significant. Second, no evidence is found for the moderation effect of a gender quota, using the dummy variables. In conclusion, the results show no significant effect, and therefore, all hypothesis is not accepted. The results are not in line with previous studies, where a negative relationship is found between gender diversity and the bid premium (Levi et al., 2008, 2011; Malmendier & Tate, 2008).

This research has led to several contributions. First, this study contributes to a better understanding of the relationship between gender diversity and the outcome of mergers and

acquisitions, measured by the bid premium. This research finds no significant effect but a high uncertainty level, which tells us that there is a possible relationship. However, there are possibly multiple effects of gender diversity on the bid premium or multiple other moderators that influence this relationship. These results give a better understanding of the relationship and allow other researchers to investigate another possible effect. Second, this research fills the research gap by investigating the relationship between gender diversity and the bid premium for publicly listed firms in European countries. By investigating this firms, it is shown that comparing this with research from US firms, that the effects are not the same (Levi et al., 2008, 2011; Levi et al., 2014). Thirdly, this research takes into account a possible moderation effect of the gender quota, which gives new insights for corporate decision making and expand the already existing literature about gender quotas. The practical contribution is useful for the political discussion about the gender quota. The results of this research can be useful for regulators and policymakers by recognizing the effects of the gender quota. No significant effect is found for the introduction of a gender quota. Policymakers can, therefore, question themselves if a binding gender quota should be introduced or should be dropped because firms are hiring people based on their gender. This non-findings can be the start of a new political discussion about the introduction of a gender quota.

This research has several limitations. The first limitation is the data and sample size of this research. Even if the period has been extended, a small sample size of 277 deals remains, which makes it hard to generalize results. This is because only a limited number of companies publish the needed information about their board of directors and gender diversity. It may be wondered if some companies deliberately do not publish this information.

Further, also concerning the sample size, this research only investigates mergers and acquisitions from publicly listed companies. The acquirer and target are both publicly listed companies, which are large acquisitions that rarely occur, compared to when a public company acquirer a privately held company. The results can, therefore, differ when they also take into account privately held companies, which also increases the sample size. Increasing the sample size can lead to less uncertain results and smaller confidence intervals. Second, concerning the wide confidence intervals, it is possible that multiple moderators can affect the relationship between gender diversity and the bid premium. Other moderators that can have an impact are, for example, education and experience of board members. Ahern and Dittmar (2012) explained that the board of directors is influenced by the personal characteristics of all board members, such as gender, age, education, and experience. The overconfidence level of board members may change based on their experience and knowledge during the years. Overconfidence is one of the different main characteristics between men and women, and

if this characteristic changes because of experience and knowledge, this can influence the decision-making process (Deaves et al., 2008).

The third limitation is about the implementation of the binding gender quota. Some countries already introduced the binding gender quota in 2003, but some countries just started in 2003 by introducing the binding gender quota. When the quotas are fully implemented during the whole period, the research will improve. This research takes into account the fact that some countries introduced gender quota in 2011. However, to further investigate the moderation effect, it would be better to investigate the before gender quota and after gender quota effect for each country separately. Unfortunately, this was not possible in this research because not enough data was available for these countries to run a separate analyze. However, this can be done when more data is available, maybe when taking into account privately held companies.

A suggestion for future research is examining the effect of the relationship between gender diversity and bid premium for a greater sample by adding privately held companies. However, this is hard because of the lack of data availability. Further, another dependent variable can be examined because of the results, and it can be interesting to investigate other dependent variables in line with mergers and acquisitions. Further, with respect to the wide confidence intervals, more moderating effect can be investigated such as the impact of education and experience. Lastly, it would be interesting to make a comparison of the effect of gender diversity on the bid premium between European countries and the United States. California is the first American state that has passed a law that required listed companies to have at least one woman on the board in 2020. Otherwise, the company has to pay a fine of \$100.000 (Senden, 2018). To make a distinction between Europe, where the in most countries the gender quota is already introduced, and the US where they are skeptical about the gender quota, it can be interesting and add new contributions to the existing literature.

References

- Adams, Renée B, & Ferreira, D. (2004). Gender diversity in the boardroom. *European Corporate Governance Institute, Finance Working Paper, 57*, 30. <https://doi.org/10.1007/978-3-319-57273-4>
- 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, Renee B, & Funk, P. (2012). Beyond the Glass Ceiling: Does Gender Matter? *Management Science, 58*(2), 219–235. <https://doi.org/10.2139/ssrn.1475152>
- Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics, 127*(1), 137–197. <https://doi.org/10.1093/qje/qjr049>
- Bazel-Shoham, O., Lee, S. M., Rivera, M. J., & Shoham, A. (2017). Impact of the female board members and gaps in linguistic gender marking on cross-border M&A. *Journal of World Business, (October)*. <https://doi.org/10.1016/j.jwb.2017.10.005>
- Berger, A. N., Kick, T., & Schaeck, K. (2014). Executive board composition and bank risk taking. *Journal of Corporate Finance, 28*, 48–65. <https://doi.org/10.1016/j.jcorpfin.2013.11.006>
- Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure* (7th ed.). New York: Free Press.
- Boonstra, W. (2019). Vrouwenquotum is onontkoombaar. Retrieved March 12, 2019, from <https://www.binnenlandsbestuur.nl/ambtenaar-en-carriere/nieuws/vrouwenquotum-is-onontkoombaar.9610096.lynkx>
- Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 435–451. <https://doi.org/10.1007/s10551-007-9630-y>
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance , Board Diversity , and Firm Value. *The Financial Review, 38*, 33–53.
- Catalyst. (2014). Increasing Gender Diversity On Boards: Current Index Of Formal Approaches. Retrieved March 18, 2019, from <https://www.catalyst.org/research/increasing-gender-diversity-on-boards-current-index-of-formal-approaches/>
- Chan, A. W. H., & Cheung, H. Y. (2016). Extraversion, individualism and M&A activities. *International Business Review, 25*(1), 356–369. <https://doi.org/10.1016/j.ibusrev.2015.05.011>
- Chen, G., Crossland, C., & Huang, S. (2016). Female board representation and corporate acquisition intensity. *Strategic Management Journal, 37*(2), 303–313. <https://doi.org/10.1002/smj>
- Deaves, R., Lüders, E., & Luo, G. Y. (2008). 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>
- Depamphilis, D. M. (2015). *Mergers, Acquisitions, and other Restructuring Activities*. Los Angeles: Elsevier.
- Dowling, M., & Aribi, Z. A. (2013). Female directors and UK company acquisitiveness. *International Review of Financial Analysis, 29*, 79–86. <https://doi.org/10.1016/j.irfa.2013.04.004>
- Eckel, C. C., & Grossman, P. J. (2008). Men, women and risk aversion: Experimental evidence. *Handbook of Experimental Economics Results, 1*, 1061–1073. [https://doi.org/10.1016/S1574-0722\(07\)00113-8](https://doi.org/10.1016/S1574-0722(07)00113-8)

- European Commission. (2015). Gender balance on corporate boards. Europe is cracking the glass ceiling. *Women on Boards Factsheet*, (July), 15–18. Retrieved from http://ec.europa.eu/justice/gender-equality/files/womenonboards/wob-factsheet_2015-01_en.pdf
- Fahlenbrach, R., & Stulz, R. M. (2011). Bank CEO incentives and the credit crisis. *Journal of Financial Economics*, 99(1), 11–26. <https://doi.org/10.1016/j.jfineco.2010.08.010>
- Fama, E. F. (University of C. (1980). Agency Problems and the Theory of the Firm Agency Problems and the Theory of the Firm. *The Journal of Political Economy*, 88(2), 288–307. <https://doi.org/10.1086/260866>
- García-Meca, E., García-Sánchez, I. M., & Martínez-Ferrero, J. (2015). Board diversity and its effects on bank performance: An international analysis. *Journal of Banking and Finance*, 53, 202–214. <https://doi.org/10.1016/j.jbankfin.2014.12.002>
- Goel, A. M., & Thakor, A. V. (2010). Do Envious CEOs Cause Merger Waves ? *Review of Financial Studies*, 23(2), 487–517. <https://doi.org/10.1093/rfs/hhp088>
- Graham, J. R., Lemmon, M. L., & Wolf, J. G. (2002). Does Corporate Diversification Destroy Value ? *The Journal of Finance*, 57(2), 695–720.
- Herring, C. (2009). Does diversity pay?: Race, gender, and the business case for diversity. *American Sociological Review*, 74(2), 208–224.
- Hillman, A. J. (2015). Board diversity: Beginning to unpeel the onion. *Corporate Governance: An International Review*, 23(2), 104–107. <https://doi.org/10.1111/corg.12090>
- Holmstrom, B. (1999). Managerial incentive problems : A dynamic perspective. *The Review of Economic Studies*, 66, 169–182.
- Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-Level Predictors of Innovation at work: a comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, 94(5), 1128–1145. <https://doi.org/10.1037/a0015978>
- 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. <https://doi.org/10.1007/s10551-012-1553-6>
- Kanter, R. M. (2008). *Men and women of the corporation: New edition*. Basic Books.
- 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. Retrieved from <http://psycnet.apa.org/journals/psp/77/2/221.html>
- Levi, M. D., Li, K., & Zhang, F. (2008). Mergers and Acquisitions: The Role of Gender. *Ssrn*. <https://doi.org/10.2139/ssrn.1123735>
- Levi, M. D., Li, K., & Zhang, F. (2011). Men are from Mars, Women are from Venus: Gender and Mergers and Acquisitions. *Ssrn*. <https://doi.org/10.2139/ssrn.1785812>
- Levi, M., Li, K., & Zhang, F. (2014). Director gender and mergers and acquisitions. *Journal of Corporate Finance*, 28, 185–200. <https://doi.org/10.1016/j.jcorpfin.2013.11.005>
- 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. <https://doi.org/10.1016/j.jfineco.2007.07.002>

- Marinova, J., Plantenga, J., & Remery, C. (2016). Gender diversity and firm performance: evidence from Dutch and Danish boardrooms. *International Journal of Human Resource Management*, 27(15), 1777–1790. <https://doi.org/10.1080/09585192.2015.1079229>
- Matsa, D. A., & Miller, A. R. (2013). A Female Style in Corporate Leadership? *American Economic Journal: Applied Economics*, 5(3), 136–169. <https://doi.org/10.1257/app.5.3.136>
- Nguyen, T., Locke, S., & Reddy, K. (2015). Does boardroom gender diversity matter? Evidence from a transitional economy. *International Review of Economics and Finance*, 37, 184–202. <https://doi.org/10.1016/j.iref.2014.11.022>
- Nielsen, S., & Huse, M. (2010). Women directors' contribution to board decision-making and strategic involvement: The role of equality perception. *European Management Review*, 7(1), 16–29.
- Radu, C., Deaconu, A., & Frăsineanu, C. (2017). Leadership and Gender Differences- Are Men and Women Leading in the Same Way? *Contemporary Leadership Challenges*. Intech. <https://doi.org/10.5772/32009>
- Rose, C., & Mejer, C. (2003). The Danish corporate governance system: from stakeholder orientation towards shareholder value. *Corporate Governance: An International Review*, 11(4), 335–344.
- Schwartz-Ziv, M. (2013). Does the Gender of Directors Matter? *Edmond J. Safra Working Papers*, (8). <https://doi.org/10.2139/ssrn.2257867>
- Senden, L. (2018). Een vrouwenquotum gaat om het rechtzetten van discriminatie. Retrieved March 6, 2019, from <https://www.uu.nl/nieuws/een-vrouwenquotum-gaat-om-het-rechtzetten-van-discriminatie>
- Shrader, C. B., Blackburn, V., & Iles, P. (1997). Women In Management And Firm Financial Performance: An Exploratory Study. *Journal of Managerial Issues*, 9(3), 355–372. <https://doi.org/10.2307/40604152>
- Sila, V., Gonzalez, A., & Hagendorff, J. (2016). Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance*, 36(December 2013), 26–53. <https://doi.org/10.1016/j.jcorpfin.2015.10.003>
- Smith, N. (2014). Quota regulations of gender composition on boards of directors. *CESifo DICE Report*, 12(2), 42–48.
- Studenmund, A. H. (2014). *Using Econometrics A Practical Guide* (6th ed.). Pearson Education Limited.
- Terjesen, S., & Sealy, R. (2016). Board Gender Quotas: Exploring Ethical Tensions From A Multi-Theoretical Perspective. *Business Ethics Quarterly*, 26(01), 23–65. <https://doi.org/10.1017/beq.2016.7>
- Wang, M., & Kelan, E. (2013). The Gender Quota and Female Leadership: Effects of the Norwegian Gender Quota on Board Chairs and CEOs. *Journal of Business Ethics*, 117(3), 449–466. <https://doi.org/10.1007/s10551-012-1546-5>

Appendix

Member State	Share of women on boards(*), EU-28 average: 23.3%	Quotas in place	Other national measures in place
Austria	20.1%	Yes: only state-owned companies (35 % for supervisory boards by 2018).	Self-regulation: The Corporate Governance Code of 2009 recommends representation of both genders in appointments to supervisory boards.
Belgium	26.6%	Yes: 33% for executives and non-executives in state-owned and listed companies-by 2017 and in listed SMEs-by 2019.	Self-regulation: The Corporate Governance Code of 2009 recommends that the composition of a board is determined on the basis of gender diversity.
Bulgaria	17.9%	No	No
Croatia	22.2%	No	No
Cyprus	10.9%	No	No
Czech Republic	8.8%	No	No
Denmark	27.0%	No	Boards in state-owned companies should 'as far as possible' have an equal gender balance; a man and a woman nominated for every vacancy (executives and non-executives). From 2013 - obligation to all companies (listed and non-listed) to self-regulate and set their own targets. A company can be fined if it hasn't set any target figures or hasn't submitted any reporting.
Estonia	8.2%	No	No
Finland	29.9%	No	State-owned companies are required to have an 'equitable proportion of women and men'. The Corporate Governance Code for listed companies contains recommendation that 'boards shall consist of both sexes'.
France	37.1%	Yes: from 2011 - 40 % by 2017. Applicable to non-executive directors in large listed and non-listed companies.	The AFEF-MEDEF Corporate Code: recommendation containing same quotas as in the Law of 2011, applicable to all board members.
Germany	27.2%	Yes: from 2016 - 30 % for supervisory boards of the listed companies that are submitted to parity co-determination (the roughly 110 biggest listed companies).	Other companies that are either listed or fall under parity co-determination have to set individual quantitative objectives of women on boards with regard to non-executive and executive board members and senior managers below board level and deadlines to achieve them.
Greece	9.4%	Yes, 33 % - only companies fully or partially owned by the State. Applicable to all board positions (executives and non-executives).	Soft positive action measures in public sector.
Hungary	11.2%	No	Soft positive action measures in public sector.
Ireland	16.0%	No	A policy target of 40 % female participation on all state boards and committees. Soft positive action measures in public sector employment.
Italy	30.0%	Yes: 33 % by 2015 for listed companies and state-owned companies. Applicable to management boards and supervisory boards (i.e. executives and non-executives).	Yes
Latvia	27.7%	No	Soft positive action measures in the public sector.

Member State	Share of women on boards(*) EU-28 average: 23.3%	Quotas in place	Other national measures in place
Lithuania	13.0%	No	No
Luxembourg	12.9%	No	Soft positive action measures. The Corporate Code of 2009 recommends the board to have an appropriate representation of both genders. The rule is applicable to all board members.
Malta	5.0%	No	No
Netherlands	28.1%	Target of 30 % in the executive boards and supervisory boards of large companies - "comply or explain" mechanism, no sanctions. Measure to expire in 2016.	Self-regulation: diversity clauses in the Dutch Corporate Governance Code of 2009, applicable to both executives and non-executives. Voluntary Charter with targets for more women in management.
Poland	19.9%	No	The executive ordinance of Minister of State Treasury obliges state-owned companies to "choose adequately prepared members of supervisory boards, taking into account the balanced participation of women and men". The Code of good practices attached to that ordinance establishes a target of 30% for 2015 and a priority rule for equally qualified women. No sanctions are envisaged.
Portugal	14.2%	No	A government resolution of 2015 encourages listed companies to attain 30 % of the under-represented sex at their administrative bodies by 2018.
Romania	10.1%	No	Soft positive action measures in public sector employment.
Slovakia	14.3%	No	No
Slovenia	23.9%	No	Regulation on state-owned companies: A principle of 40% representation of each sex applies to the nomination or appointment of government representatives to management and supervisory boards of state-owned enterprises (executives and non-executives). No sanctions apply if the principle is not respected.
Spain	20.2%	Yes: 40 % (both executives and non-executives) by 2015 (but no sanctions, thus rather a recommendation by nature) in state-owned companies with 250 or more employees. New possible models under discussion	Soft positive action measures in public sector employment.
Sweden	36.1%	No	Self-regulation: The Corporate Governance Code of 2004 has a voluntary goal of parity for listed companies - "comply or explain" mechanism.
United Kingdom	27.1%	No	Self-regulation - from 2012 on the basis of principles of UK Corporate Governance Code (following the Lord Davies' recommendation). The recommended target for listed companies in FTSE 100: 25%, by 2015 is applicable to all board members. FTSE 350 companies recommended setting their own aspirational targets to be achieved by 2013 and 2015.

Performances above the EU average are in bold

Appendix 1 statistics European countries reference: (European Commission, 2015, p.6)

Country	Sort of Quota	% Women required	Year introduced
Austria	No	-	-
Belgium	Binding	33.3%	January 2011
Denmark	No	-	2012
Finland	No	-	2010
France	Binding	40%	January 2011
Germany	Soft	30%	2015
Greece	Soft	33.3%	2012
Hungary	No	-	-
Italy	Binding	33.3%	June 2011
Iceland	Binding	40%	March 2010
Luxembourg	No	-	-
Netherlands	Soft	30%	2013
Norway	Binding	40%	December 2003
Poland	No	-	-
Portugal	No	-	-
Russian Federation	No	-	-
Spain	Soft	40%	2007
Sweden	No	-	-
Switzerland	No	-	-

Appendix 2 Data sample quota's