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The Effect of Gender Quota Laws on Mergers & Acquisitions: A Comparison Within Europe

Master Thesis

Abstract: Prior research has proven that many mergers and acquisitions are not value enhancing or sometimes even value destroying. Unsuccessful deals are often done by overconfident and sometimes greedy directors who tend to overpay for their targets. These could be seen as masculine characteristics. Female directors tend to be less overconfident and are more risk averse. This raises the question if women in corporate boards have an influence on the mergers and acquisitions done by firms. Furthermore, many European countries have introduced gender quota laws in recent years in order to solve the under representation of women in corporate boards. However, there has been a lot of criticism on these gender quota laws. Could these gender quota laws affect the mergers and acquisitions done by firms? This paper examines the effects of female board representation and gender quota laws on the bid initiations done by firms and on the target sizes. It aims to expose the possible consequences of gender quota laws for mergers and acquisitions in order to contribute to the political debate about quotas. The main findings of this research are contradictory. A higher fraction of female directors leads to more bid initiations and higher target sizes. Moreover, gender quota laws have a beneficial influence on the sizes of target firms. However, detrimental consequences of gender quota laws are found for the bid initiations done by firms.

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Chapter 1 | Introduction

Prior research has proven that many mergers and acquisitions are not value enhancing or sometimes even value destroying. Unsuccessful deals are often done by overconfident and sometimes greedy directors who tend to overpay for their targets (Goel & Thakor, 2010; Graham *et al.* 2002; Malmendier & Tate, 2005; Malmendier & Tate, 2008). However overconfidence and greed could be seen as masculine characteristics, just as risk-seeking behavior. Women tend to be less overconfident and are more risk averse. Female directors are associated with more active oversight in evaluating the executives' recommendations and tend to be more careful in decision making compared to men. These characteristics result in a greater likelihood of (unsuccessful) deals being shelved (Chen *et al.*, 2014). Furthermore prior research suggests that smaller deals are more successful than larger ones and that larger deals can be a sign of executive self-dealing or managerial hubris (Hayward & Hambrick, 1997). Women would therefore be more likely to engage in less mergers and acquisitions, acquisitions from a smaller size, and pay lower bid premiums for targets than their male counterparts (Levi *et al.*, 2011). This suggests that a higher female board representation has a beneficial effect on the corporate decision making of mergers and acquisitions of a firm.

However, prior research within this topic mainly focuses on the US (Levi *et al.*, 2008, 2011, 2014; Chen *et al.*, 2014) and on the UK (Dowling & Aribi, 2013). The US does not have a quota law for the number of female directors in a board, but the UK does. The research of Dowling & Arabi however, uses data before the gender quota law was introduced in the UK in 2011 (Smith & IZA, 2014). Furthermore, this thesis looks into the issue of what would happen if women are possibly not only chosen for their personal properties but also because of a gender quota on corporate boards. The gender quota law for corporate boards has been introduced in several EU countries over the last few years (Terjesen *et al.*, 2015). Although this law is seen as a positive development for gender equality, there is also a lot of criticism on a gender quota for corporate boards. The research of Ahern & Dittmar (2012) for example examines Norwegian corporate boards and the effect of the gender quota set in Norway in 2003. They state that this quota would lead to younger and less experienced corporate boards and to an increase in acquisitions done by the board. This contradictory finding raises the question if female directors still have the same beneficial effects on mergers and acquisitions done by a firm when there is a possibility that they are chosen because of a gender quota instead of their personal experience and properties. This leads to the following research question: "*What is the*

effect of gender quota laws and female directors in corporate boards on mergers and acquisitions done by listed firms?"

The effect of gender quotas on bid initiations and the acquisition size of the targets is examined by a comparison between 11 European countries where gender quotas for corporate boards are set, and 5 European countries without these quota laws. Two data samples are used that contain director- and board characteristics and merger and acquisition information. The bid initiation sample consists of 98 listed firms and 255 deals. The target size sample consists of 138 listed firms and 237 deals. Both samples contain firms from 16 European countries from 2004 until 2014, and are retrieved from Boardex, ThomsonOne, Eikon and the WorldDataBank. Two Ordinary Least Squares Regression models are used to examine the effect. The results suggest a positive significant relation between the fraction of female directors in corporate boards and the bid initiations done by firms. Furthermore, a significant positive effect of gender quota laws on bid initiations is found in this research. Another finding suggests that the higher the fraction of women in the board of directors, the weaker the quota effect on the bid initiations done. The results suggest no significant relation between the fraction of women in board of directors and the size of the target firm. However, a negative significant relation is found between gender quota laws and the target size.

This research contributes to different strands of scientific literature. First, it contributes to whether board director characteristics and their behavioral traits influence corporate decisions made by the board. New evidence is added to the existing literature of Malmendier & Tate (2005, 2008), Malmendier, Tate & Yan (2011) and Graham *et al.* (2013) who have studied the effect of overconfidence on corporate investments, acquisitions and corporate financial policies, as well as the influence of managerial attitudes on corporate actions. Moreover this research offers new insights to mergers and acquisitions literature on how and why mergers take place as compared to previous research done by Andrade *et al.* (2001) and Betton *et al.* (2008). Furthermore, this research adds new and contradicting evidence to the literature that focuses specifically on director gender and corporate decisions of Huang & Kisgen (2013) and to Levi *et al.* (2008, 2011, 2014), Adams & Ferreira (2009), Dowling & Aribi (2013) and Chen *et al.* (2014) who have focused on the effect of female board representation on a firm's acquisition intensity. The main focus of the previous research was on the US or UK. This research is the first to transfer this focus to multiple countries in the European Union and to combine this topic with the effect of gender quota laws. Therefore it adds to literature on the effect of gender quotas on corporate decision making by Pande & Ford (2011), Ahern & Dittmar

(2012), Smith & IZA (2014) and Terjesen, Aguilera & Lorenz (2015). Finally, this research is the first to look at possible moderating factors that can explain the contradicting findings, namely the level of education and experience of the board of directors.

There are also some practical contributions linked to this research. It identifies the possible negative results of gender quota laws on mergers and acquisitions. Furthermore it establishes possible consequences of political actions forcing corporations to have more women in their board of directors on corporate decision making. Gender quotas have been introduced in several EU countries in recent years and have been a frequently discussed topic ever since. However practically no research has been done on the influence of this larger proportion of female directors imposed by laws and regulations on mergers and acquisitions. The results of this research could contribute to the political debate about the advantages, and the disadvantages, of quota setting by regulators.

The following chapters of this thesis are structured as follows: In chapter 2 a literature review will be done and hypotheses will be developed. Chapter 3 describes the data that is used and the research method. In chapter 4 the results will be discussed. Lastly, the conclusion and discussion with possible limitations of this research and suggestions for future research will be given in chapter 5.

Chapter 2 | Literature Review

In this chapter an overview of the relevant literature will be given and the hypotheses will be formed. First, a background on gender quotas in European countries will be provided. The different types of gender quotas in the European Union and their aim will be discussed. Second, existing literature on gender and corporate decision making is reviewed. The differences in behavioral traits between men and women are discussed. Finally, pros and cons of gender quotas and their effects on mergers and acquisitions are explained in this chapter.

2.1 | Gender quotas in the European Union

Gender quotas are introduced in order to promote the presence of women on corporate boards. The problem is that women are underrepresented in boards without gender quotas (IDEA & Stockholm University, 2015). In 2010, corporate boards in Europe contained on average less than 12% female directors, while the labor force in the European Union consisted of 45% women (Pande & Ford, 2011). A goal of the European Commission is to promote the presence of women in corporate boards by introducing a quota (European Commission, 2016).

The European Commission's Network (2011, p. 3) defines a quota-instrument as follows: 'A quota-instrument is a positive measure that establishes a fixed percentage or number for the representation of a specific category of persons. Quotas can be included in legislation (in electoral, equality, labor, and constitutional law) or applied on a voluntary basis (like voluntary political party quotas, soft targets)'. Norway was the first country to set a quota on the number of female directors in corporate boards. Many European countries followed and gender quotas are now a common phenomenon in Europe.

However, not all gender quotas in European countries are the same. There is a difference between soft- and binding gender quotas. A quota is called a 'binding quota' when it is included in the legislation by the government of a country. Firms have to comply with these quota laws, otherwise sanctions will be imposed (Catalyst, 2014). A 'soft quota' is not included in the legislation, but it can be seen as a guideline for good corporate governance. There are no sanctions for non-compliance with this type of quota (Catalyst, 2014). These two types of quotas are both commonly used in the European Union. See table 1 in Appendix A for an overview of the European countries with gender quota laws and the quota characteristics.

2.2 | Gender and corporate decision making

A frequently used argument supporting gender diversity in corporate boards is that it may create a wider knowledge base. Female board representation brings different opinions and perspectives into the decision making process which might lead to better decision making by boards (Fondas & Sassalos, 2000). This argument is supported by the studies of Erhardt *et al.* (2003) and Liu *et al.* (2014). They find that board gender diversity is positively related to firm performance.

Huang & Kisgen (2013) are providing evidence that director gender may be associated with different behavioral patterns. The main discrepancies between male and female directors are different risk attitudes and different levels of overconfidence. These different attitudes towards risky behavior and risk are described in decision-making theories and in psychology literature. The study of Eckel & Grossman (2008) gives an overview of different findings that suggests that men show more risk seeking behavior while women tend to be more risk averse in multiple fields of studies. Examples of this are studies that indicate that women invest in less risky assets in their investment portfolios and mutual fund investments (e.g., Bernasek & Shwiff, 2001; Dwyer *et al.*, 2002; Agnew et al, 2003). Furthermore, Adams & Ferreira (2009) state that firms who are facing less uncertainty have more female directors in their boards and, lastly, findings of Beckmann and Menkhoff (2008) show that female managers are more risk averse and shy away from competition in tournaments. There are different explanations for the more risk averse attitude of female directors. A sociobiological explanation for this phenomenon is that being more risk averse is beneficial for raising children (Witt, 1994). Furthermore, a neurobiological explanation for this risk attitude is that women have lower levels of testosterone. While high levels of testosterone reduce the fear level of a person and will thus lead to more risk seeking behavior (Sapienza *et al.*, 2009).

The second discrepancy in the behavioral patterns of males and females is the level of overconfidence. Overconfidence can be defined as an excessive belief in one's abilities (Kruger, 1999). This phenomenon is partially related to risk attitude, but it can also be associated with self-attribution bias (Dowling & Aribi, 2013). Self-attribution bias is the tendency of human beings to attribute bad outcomes to external factors but to attribute successful outcomes to one's own actions (Dowling & Lucey, 2010). This self-attribution bias tends to be higher for men relative to women. Men are for this reason more overconfident in some cases (Lundeberg *et al.*, 1994). Prior studies by Malmendier & Tate (2005, 2008) have proven that overconfidence can

influence the acquisitiveness of a firm. Overconfident executives are more likely to engage in lower-quality acquisitions. Furthermore male executives tend to overpay for their targets. Levi *et al.* (2010) state that female executives pay a lower premium than male executives and are thus placing bids closer to the true underlying value of their targets. This effect also holds for corporate boards with a bigger presence of female directors.

A theory that is closely linked to the overconfidence theory of mergers and acquisitions is the empire-building theory. This theory states that some mergers and acquisitions are done by managers who want to maximize their own utility instead of maximizing their shareholders' value (Trautwein, 1990). There are several possible reasons for this phenomenon. However, the main argument for this theory consists of a power increasing motive and the tendency of managers to be overly optimistic (Trautwein, 1990). These aspects can be seen as masculine characteristics. Men tend to have more optimistic beliefs about future investments while women are more pessimistic on this topic (Croson & Gneezy, 2009). Moreover, male directors have the tendency to maximize their power by means of mergers and acquisitions while this urge is significantly lower for female directors (McDowell, 2001).

However, there are more reasons, apart from risk attitude, overconfidence, and the empire-building theory that support the argument that female directors are bringing alternative perspectives to corporate boards in general and to the director role in particular. Female directors act more independently and fulfill their role as a director with greater responsibility and commitment (Adams *et al.*, 2010). Furthermore they are more constructive in discussions and communicate more directly (Erhardt *et al.*, 2003; Adams & Ferreira, 2009). Lastly, another characteristic of female directors is that they are more active compared to their male counterparts. Their attendance on board meetings is higher and they are more likely to participate in monitoring committees (Adams & Ferreira, 2009).

The above mentioned characteristics of women, combined with theories about risk attitude, overconfidence and the empire-building theory, suggest that women play an important role in the organization, design, and composition of corporate boards. It is assumed that corporate boards with a bigger presence of female directors would engage in less mergers and acquisitions and in acquisitions of a smaller size, because they are more careful in decision making, take less risk, and are less overconfident than male directors. (Levi *et al.*, 2008, 2011, 2014; Adams & Ferreira, 2009; Dowling & Aribi, 2013; Chen *et al.*, 2014). The first hypotheses about female board representation are therefore as follows:

H1a: The fraction of women in corporate boards is negatively associated with the bid initiations done.

H1b: The fraction of women in corporate boards is negatively associated with the size of the target firm.

2.3 | The pros and cons of gender quotas on corporate boards

There has been an ongoing debate on the pros and cons of gender quotas for corporate boards. Arguments in favor of gender quotas are mainly related to discrimination and under representation of women in corporate boards. Although many studies have highlighted the importance of female board representation (e.g., Carter *et al.,* 2003; Erhardt *et al.,* 2003; Terjesen *et al.,* 2009), female directors are still a minority in corporate boards. Prior research on gender quota laws in Norwegian boards has found some positive effects as a result of the quota law. The gender quota has led to more gender equality in these corporate boards (Nielsen & Huse, 2010). Furthermore Nielsen & Huse (2010) have found that a board's effectiveness and strategic control has improved due to the presence of female directors on Norwegian boards. This effect is mainly caused as a result of less conflict within boards and more board development.

Together with the suggested beneficial effects of female directors on mergers and acquisitions, it can be assumed that a gender quota law would have a positive influence on mergers and acquisitions, and will therefore be associated with less bid initiations and smaller target sizes. This leads to the following hypotheses:

H2a: Corporate boards in firms within gender quota countries are initiating less bids compared to corporate boards in firms within no gender quota countries.

H2b: Corporate boards in firms within gender quota countries are buying targets of a smaller size compared to corporate boards in firms within no gender quota countries.

Furthermore, the effect of a gender quota could be different on boards with a higher fraction of women is examined. Therefore the following hypotheses are formed:

H3a: Corporate boards in firms within gender quota countries with a higher fraction of women are initiating less bids compared to corporate boards in firms within gender quota countries with a lower fraction of women.

H3b: Corporate boards in firms within gender quota countries with a higher fraction of women buying targets of a smaller size compared to corporate boards in firms within gender quota countries with a lower fraction of women.

However, there has been a lot of criticism on legislative gender quotas, despite their potential beneficial effect of on corporate boards. Other socioeconomic or ethnic groups may be crowded out by a gender quota. There will be fewer positions for other underrepresented groups when certain positions are reserved for women (Pande & Ford, 2011). Furthermore, Ahern & Dittmar (2012) have examined the effect of the Norwegian gender quota law on firm valuation. Their findings state that this legislative gender quota would lead to younger and less experienced corporate boards. Many inexperienced women were appointed to boards and this led to a serious loss in the firm's stock performance. Another finding of Ahern & Dittmar (2012) is that this gender quota led to an increase in acquisitions done by Norwegian corporate boards. This is in line with the study of Kroll *et al.* (2008), McDonald *et al.* (2008) and Field & Mkrtchyan (2017). They examined the effect of a director's acquisition experience on the firm acquisition performance. They state that more experienced directors are better at managing large quantities of complex information and at the selection of their acquisition target. Therefore they are associated with higher acquisition returns (Kroll *et al.*, 2008). These findings suggest that less experienced boards would be worse at solely selecting the successful targets and would therefore engage in more mergers and acquisitions. Furthermore, prior research claims that, in general, smaller deals are more successful than larger ones (Hayward & Hambrick, 1997). This suggests that boards with less experienced directors tend to engage in larger deals in comparison to more experienced boards. These findings are raising the question if the effects of female board representation on mergers and acquisitions change when those women are possibly chosen by a gender quota law, and if this effect is moderated by the average experience and education level of the board of directors. Therefore the following hypotheses about gender quotas are formed:

H4a: Corporate boards in firms within gender quota countries are initiating more bids compared to corporate boards in firms within no gender quota countries.

H4b: Corporate boards in firms within gender quota countries are buying targets of a bigger size compared to corporate boards in firms within no gender quota countries.

Furthermore, this quota effect could be stronger for corporate boards with a higher fraction of women. Therefore the following hypotheses are formed:

H5a: Corporate boards in firms within gender quota countries with a higher fraction of women are initiating more bids compared to corporate boards in firms within gender quota countries with a lower fraction of women.

H5b: Corporate boards in firms within gender quota countries with a higher fraction of women are buying targets of a bigger size compared to corporate boards in firms within gender quota countries with a lower fraction of women

Chapter 3 | Research Method

In this chapter the research method will be explained. At first the data and the variables that are used will be described. Furthermore, the regression analyses are developed and, lastly, the robustness checks that are done will be discussed.

3.1 | Data description

Four databases are combined in order to obtain the full data needed for this research. The first database that is used is Boardex. The director characteristics linked to the listed firms they work for are taken from this database. Then the mergers and acquisitions information for the firm linked to the Boardex data is taken from ThomsonOne. In this way the relation between the gender of a director and the acquisitiveness of a company can be examined. The third and fourth databases that are used are Eikon and the WorldDataBank. Here the financial control variables and the country level control variable are taken from the year in which the deal is announced for the target size sample and the averages per year are calculated for the bid initiations sample. After excluding the missing values two datasets remain, one bid initiations sample and one target size sample. The bid initiations sample consists of the average bid initiations done per year for 345 acquiring listed firms that have done 984 deals in total. All the variables in this sample contain averages per year. The target size sample consists of 760 deals done by 246 listed firms. All the variables in this sample are taken for the specific year a deal is done. Prior M&A studies suggest that acquisitions worth less than 5% of the acquirer value before the acquisition are excluded from the sample, because these deals do not require significant board of director involvement (Dowling & Aribi, 2013). When this exclusion is applied to the bid initiations and the target size sample, 255 deals done by 98 listed firms remain for the bid initiations sample and 237 deals done by 138 firms remain for the target size sample. The exclusion consists of small acquisitions done and of missing values in acquirer value before the acquisition. See table 1 and 2 in Appendix A for an overview of both the data samples.

Data from 2004 until 2014 from listed firms in EU countries is used because most of the gender quota laws in European countries are introduced in these years. The data consists of 11 European countries that have implemented a gender quota law in the last years (Belgium, Denmark, Finland, France, Iceland, Ireland, Italy, Luxembourg, Norway, Spain. and the Netherlands) (Global Policy, 2016) and 5 European countries without a quota law (Germany,

Austria, Portugal, Switzerland and Sweden)[1]. Germany has introduced a gender quota for corporate boards in 2016 (Global Policy, 2016). However Germany will be examined as having no gender quota in this research because data from 2004 until 2014 is used. The UK is not included in this research, although they have introduced a gender quota law in 2011 (Smith & IZA, 2014). This is done because the cultural and institutional environment in the UK differs a lot from other Western European countries and has more in common with the US. The UK and the US are both shareholder orientated countries, while the other countries in the European Union are more stakeholder orientated (Greenley & Foxall, 1998). These different orientations can influence the effect of gender quotas and the role of women in corporate boards. According to the stakeholder theory, stakeholder orientated countries tend to pay more attention to corporate governance issues, for example to Corporate Social Responsibility topics, compared to shareholder orientated countries (Russo & Perrini, 2010). Financial firms will also be excluded from the dataset. This in line with the research of Doukas & Petmezas (2007) and Dowling & Arabi (2013). See table 1 for a description of both the samples per sector. Both these studies state that "financial firms are engaging in mergers and acquisitions mainly because of the nature of their business rather than by behavioral biases of the senior management" (Dowling & Arabi, 2013, p. 81). Data from listed firms in specific countries is used from the first of January in the year a specific country has fully implemented the quota law (see table 3 in Appendix C for an overview of the countries with gender quotas and the quota characteristics).

[1] These countries are chosen because their institutional and cultural environments have a lot in common with the countries in the gender quota law sample. The countries without a gender quota are situated in Western Europe, just as the gender quota countries sample. In order to examine the effect of gender quotas, different countries with similar gender roles are compared. The Global Gender Gap Index (GGGI) serves as a country level indicator of gender inequality in all life domains. It benchmarks gender gaps on education, economic, political and health criteria and gives country rankings/scores so that effective comparisons across different regions can be made (World Economic Forum, 2016). See the table in Appendix B for an overview of the GGGI scores for all Western European countries. The GGGI scores of all European countries with gender quota laws are compared to other European countries. European countries without quota laws with similar GGGI scores as the quota countries sample are used to examine the effect of gender quota laws. Therefore the comparability between the different samples is high, and this will enhance the validity of this research.

3.2 | Dependent variables

This research has two dependent variables. The bid initiations by the listed firms (BIDIN) and the size of the target in these acquisitions (TSIZE). Yearly averages of the bid initiations by listed firms are used for the first dependent variable. This is done in order to compare European countries with different implementation dates and years for the gender quotas. The bid initiations and the target sizes are chosen as dependent variables because prior research of Levi *et al.* (2011, 2014), Dowling & Aribi (2013), and Chen *et al.* (2014) suggests that female board representation affects the bid initiations and the target size of these acquisitions. These studies also state that the deals used in the samples do not have to be completed because the intention of the board to acquire another firm is sufficient for this research. Therefore the data samples contain complete and incomplete deals.

3.3 | Independent variables

The first independent variable that is used is the presence of female directors in corporate boards (WOM). This variable is measured as the percentage of women in corporate boards. The second variable is a gender quota dummy (GENQ). The countries with a gender quota receive the value 1 and the countries without a gender quota receive the value 0. The countries without a gender quota are taken as the reference category. An interaction variable between the gender quota dummy and the fraction of women in corporate boards is created in order to examine the effect of a higher percentage of female directors on the effect of the gender quota on mergers and acquisitions. The third independent variable is education (EDUC), measured as the average education qualification of a board of directors. At first four different levels of education are defined in order to calculate the average education qualification of the board of directors. These four levels are in line with prior research of Ruigrok, Peck & Tacheva (2007). Then a dummy is created in order to measure the effect of the average education level (EDUC1). See table 2 for a further explanation of the dummy variable. The last independent variable is experience (EXP), measured as the average experience in years of a board of directors on boards of other listed firms. A dummy of the level of experience in created in line with prior studies (EXP1) (e.g. Gray & Nowland, 2013). See table 2 for further description of the dummy variable. The level of experience and education are used because prior research of Ahern & Dittmar (2012) on the gender quota in Norway suggests that this quota leads to less experienced boards. So the education and experience of a director can possibly be linked to a gender quota set on the amount of female directors in boards. Therefore an interaction effect between the education,

experience and the gender quota dummy is added. Missing values in the highest education level or the level of experience of a director are solved by using the average level of the whole board of directors.

3.4 | Control variables

Some control variables are constructed to account for possible alternative influences on M&A behavior by directors. These control variables are in line with former similar studies so that the comparability of this research is high

Table 4 - Description of the independent variables	
Independent variables	**Measurement**
Gender	The percentage of woman in the board of directors
Gender Quota Dummy	*Dummy* 0. Countries without a gender quota (reference category) 1. Countries with a gender quota
Education Level	The average education level of all the directors in the board *Dummy* 0. Lower than a research university Bachelor's degree (reference category) 1. A research university Bachelor's degree or higher
Level of Experience	The average level of experience in years of the board of directors on boards of other listed firms *Dummy* The average level of experience of the board: 0. 0-3 years of experience (reference category) 1. > 4 years of experience

The financial control variables follow the study of Levi *et al.* (2011) and are taken from Eikon. These control variables are Tobin's Q [TOQ], the leverage of a firm [LEV], an operating cash flow measure [CASH], and assets of a firm [ASS] of the acquirer. These variables measure the flexibility of a firm to do mergers and acquisitions. Tobin's Q is determined as the market value divided by the total assets, leverage is the total debt divided by total assets, and the operating cash flow measure is determined as the Net Cash Flow from operating activities, in the cash flow statement, divided by total assets. Finally, the assets of a firm are determined as the log of the total assets.

The director control variables are calculated with data taken from Boardex and contain the board size of a firm [BSIZE], the percentage of independent directors on the board [INDIR] and the average age of the directors on a board [AVAGE]. This is also in line with the study of Levi *et al.* (2011). The financial and director control variables are taken for the year the deal was announced. A missing value in the age of a director is solved by using the average age of the whole board of directors.

One country level control variable is included in this research in order to control for potential economic differences between countries. The GDP per capita [GDP] for all the countries used in the sample is taken from the WorldDataBank.

Table 5 - Description of the control variables

Financial control variables	**Measurement**
Tobin's Q	The ratio of market value to total assets
Leverage	The ratio of total debt to total equity
Operating Cash flow	The ratio of net cash flow to total assets
Assets	The log of the total assets
Director control variables	
Board size	The total number of directors on the board
Director independency	The percentage of independent directors on the board
Age	The average age of the board of directors
Country level control variables	
GDP per capita	The GDP per capita for all the countries used in the sample

3.5 | Testing approach

The data used in this research is cross-sectional. The first dependent variable consists of the average mergers and acquisitions done in a year per company. The variable is transformed by the use of its natural logarithm in order to conduct a normal distribution of the variable (logBIDIN) (Field, 2009). By using its natural logarithm, the variable becomes continuous. Therefore an Ordinary Least Squares Regression model is used. The second dependent variable in this research is the target size. Just as for the bid initiations variable the natural logarithm of the target size variable is used in order to get a normal distribution (logTSIZE). Because this is a continuous variable an Ordinary Least Squares Regression model is used. This is in line with the research of Chen *et al.* (2014).

3.6 | Regression models

The relationships between the bid initiations and the acquisition size of deals and the presence of female directors in corporate boards is examined. This is done in order to see if female directors have an effect on the mergers and acquisitions done by a firm. Furthermore, the effect of gender quota laws in European countries on mergers and acquisitions is investigated. An interaction variable between the gender dummy variable and the fraction of women in the board is made in order to examine if the effect of a gender quota differs for boards with a high percentage of women. The fraction of women in a board of directors is thus an independent and a moderating variable. Moreover, the impact of the experience and education level of the board of directors on the relationship between gender quotas and mergers and acquisitions is investigated. The level of experience and education are thus moderating factors on the relationship between gender quotas and mergers and acquisitions. Because two dependent variables are examined in this research, two regression models are needed. The model specifications will be as followed:

The effect of gender quota laws on the relationship between women on corporate boards and the number of mergers and acquisitions done by firms:

$$\text{logBIDIN} = \beta0 + \beta1\ \text{WOM} + \beta2\ \text{GENQ*WOM} + \beta3\ \text{GENQ*EDUC1} + \beta4\ \text{logTOQ} + \beta5\ \text{LEV} + \beta6\ \text{CASH} + \beta7\ \text{ASS} + \beta8\ \text{logBSIZE} + \beta9\ \text{INDIR} + \beta10\ \text{AVAGE} + \beta11\ \text{logGDP} + \varepsilon$$

$$\text{logBIDIN} = \beta0 + \beta1\ \text{WOM} + \beta2\ \text{GENQ*WOM} + \beta3\ \text{GENQ*EXP1} + \beta4\ \text{logTOQ} + \beta5\ \text{LEV} + \beta6\ \text{CASH} + \beta7\ \text{ASS} + \beta8\ \text{logBSIZE} + \beta9\ \text{INDIR} + \beta10\ \text{AVAGE} + \beta11\ \text{logGDP} + \varepsilon$$

The effect of gender quota laws on the relationship between women on corporate boards and the acquisition size of the mergers and acquisitions done by firms:

$$\text{logTSIZE} = \beta0 + \beta1\ \text{WOM} + \beta2\ \text{GENQ*WOM} + \beta3\ \text{GENQ*EDUC1} + \beta4\ \text{logTOQ} + \beta5\ \text{LEV} + \beta6\ \text{CASH} + \beta7\ \text{ASS} + \beta8\ \text{logBSIZE} + \beta9\ \text{INDIR} + \beta10\ \text{AVAGE} + \beta11\ \text{logGDP} + \varepsilon$$

$$\text{logTSIZE} = \beta0 + \beta1\ \text{WOM} + \beta2\ \text{GENQ*WOM} + \beta3\ \text{GENQ*EXP1} + \beta4\ \text{logTOQ} + \beta5\ \text{LEV} + \beta6\ \text{CASH} + \beta7\ \text{ASS} + \beta8\ \text{logBSIZE} + \beta9\ \text{INDIR} + \beta10\ \text{AVAGE} + \beta11\ \text{logGDP} + \varepsilon$$

3.7 | Robustness checks

Some additional tests are done in order to see if the results are robust. At first an alternative model is used to examine the relationships. A Tobit model with the original variables (without the logarithm) is used because there is an excess of zeros and negative values for both dependent

variables. This means the data is left censored (Dowling & Aribi, 2013). Second, an additional OLS test is done with the continuous variables for education and experience instead of the dummy variables. This is done to see if the results with the continuous education and experience variables are in line with the results of the original regressions. In the last additional test the deals smaller than 5% of the acquirer market value prior to the acquisition are included in the sample. This robustness check is in line with prior research of Dowling & Aribi (2013). By including these smaller deals, the risk that some of these deals might not have required significant board of director involvement is created. This 5% cut-off measure has become a default setting in subsequent studies since it was first introduced in Morck *et al.* (1990). However, it was never empirically examined as an accurate cut-off point (Dowling & Arabi, 2013). Therefore these additional tests are done to see if the results are in line with the main tests. If this is the case and the results are in line with the main tests, the conclusions about the hypotheses will be drawn from the results of the bigger sample. This is done because the original sample is quite small, so it could be hard to find significant results.

Chapter 4 | Results

In this chapter the hypotheses are tested and accepted or rejected by the use of regression analyses in Stata. Firstly, the descriptive statistics of all the variables are presented. Secondly, the correlation between the variables is shown. Thirdly, the results of the regressions are discussed and the robustness checks are presented. Lastly, a short summary of the results and robustness checks is given.

4.1 | Descriptive statistics

The bid initiations data sample is used to test hypotheses 1a, 2a, and 3a, and the target sizes data sample is used to test hypotheses 1b, 2b, and 3b. The bid initiations sample contains the averages of all the variables over the years 2004 until 2014 when there is no gender quota in the country of the acquirer. However, when the country of the acquirer has implemented a gender quota, the average of all the variables is taken over the years in which they have introduced the quota. See table 6 in Appendix D for a statistical description of all the variables of the bid initiations sample. The variables in the target sizes sample does not contain averages, but uses the values for the variables taken for the year in which the deal is announced. This sample is slightly smaller than the bid initiations sample due to some extra missing values. See table 7 in Appendix E for a statistical description of all the variables in the target sizes sample.

In order to perform the best available Ordinary Least Squares Regression some classical assumptions need to be met (Wooldridge, 2012). Firstly, the variables need to be tested for normality. By plotting a graph for each variable, it appeared that the following variables were not normally distributed: bid initiations, target size, Tobin's Q, board size and GDP per capita. These variables are reconstructed by the use of their natural logarithm (Field, 2009). After this transformation, all variables of both samples are normally distributed.

Furthermore, another assumption of the Ordinary Least Squares Regression is a linear relationship between the dependent and independent variables (Wooldridge, 2012). For each independent variable a scatterplot is made that shows the relationship with the dependent variables. These scatterplots show a linear relationship between the dependent and independent variables. So this assumption holds for this research.

An additional assumption that needs to be met in order to have the best available Ordinary Least Squares Regression is the assumption of homoscedasticity. The variances of the error terms are constant when there is homoscedasticity (Studenmunt, 2014). By performing

the Breusche-Pagan test, the H0 hypothesis of homoscedasticity can be rejected (Koenker & Bassett, 1982). This means that there are error terms in both samples that do not have a constant variance, which is called heteroscedasticity. In this case the validity of the results can be questioned. Robust error terms are used in order to increase the validity of the results (Studenmunt, 2014).

4.2 | Correlation

The last two assumptions are about the correlation of the independent variables. First, a Variance Inflation Factor Test (VIF) is done in order to test for multicollinearity. The results of this VIF test are all below 10, this means that there is no perfect linear relationship between the independent variables (Fields, 2009). Furthermore a test for autocorrelation is performed. The results of this test can be seen in table 8 and 9.

Table 8 - BIDIN sample - Correlation all variables (Part 1)

	logBIDIN	WOM	GENQ	EDUC	EXP	EDUC1	EXP1	logTOQ
logBIDIN	1.0000							
WOM	0.1182	1.0000						
GENQ	0.0756	0.3262	1.0000					
EDUC	0.1059	-0.2383	-0.1994	1.0000				
EXP	-0.1188	-0.2955	-0.1456	0.0748	1.0000			
EDUC1	0.1750	-0.0711	-0.0739	0.6463	0.1123	1.0000		
EXP1	-0.0683	-0.3591	-0.1930	0.2218	0.8285	0.0682	1.0000	
logTOQ	-0.2925	0.1117	0.1074	0.0873	0.0014	0.0826	0.0003	1.0000
LEV	0.1152	0.0181	-0.0480	0.0470	0.0256	-0.0210	0.0702	0.0510
CASH	0.0731	0.1660	0.2403	-0.2108	0.2606	-0.0061	0.2217	0.1400
ASS	0.3550	0.1950	0.0874	-0.0534	0.0187	0.1439	-0.0178	-0.3014
logBSIZE	0.1364	-0.0803	-0.2082	0.0731	0.1100	0.1864	0.0547	-0.1681
INDIR	0.1955	0.0392	-0.0505	0.2361	-0.1025	0.2928	-0.0142	-0.0486
AVAge	-0.0883	-0.2665	0.1688	0.1638	0.1800	-0.0119	0.3038	0.1792
logGDP	0.0697	0.5156	0.2718	-0.0284	-0.0989	0.1764	-0.1623	0.2854

Table 8 - BIDIN sample - Correlation all variables (Part 2)

	LEV	CASH	ASS	logBSIZE	INDIR	AVAGE	logGDP
LEV	1.0000						
CASH	-0.1475	1.0000					
ASS	0.0655	0.3523	1.0000				
logBSIZE	-0.0159	-0.0291	0.2042	1.0000			
INDIR	0.0389	-0.0312	0.1203	0.0993	1.0000		
AVAge	0.0983	0.1221	-0.1439	-0.0157	-0.0377	1.0000	
logGDP	0.0460	0.2196	0.3581	-0.1229	0.1960	-0.2541	1.0000

Two variables have a perfect correlation when the value is -1 or 1 (Wooldridge, 2012). This means that the closer to zero the values in table 8, the less correlation between the variables. Most of the variables in table 8 vary from -0.36 to 0.52. This suggests no correlation or only a small correlation between the independent variables in the bid initiations sample. However, there are four variables highly correlated as shown in table 8, namely EDUC and EDUC1 and EXP and EXP1. This correlation is due to the dummies that are made from the original level of education and experience variables. These correlations are not important for this research because the original education and experience variables are only used in the robustness checks. The dummies and the original variables are never used together in the same regression.

Table 9 - TSIZE sample - Correlation all variables

	logTSIZE	WOM	GENQ	EDUC	EXP	EDUC1	EXP1	logTOQ
logTSIZE	1.0000							
WOM	0.0603	1.0000						
GENQ	-0.0831	0.1365	1.0000					
EDUC	0.0390	0.0097	0.1416	1.0000				
EXP	-0.0767	0.1068	0.0694	0.1086	1.0000			
EDUC1	0.0951	0.1510	0.0538	0.7041	0.1236	1.0000		
EXP1	-0.0712	0.1210	0.0812	0.0983	0.7342	0.1113	1.0000	
logTOQ	-0.0014	-0.0257	0.0405	0.1652	0.1309	0.1017	0.1661	1.0000
LEV	0.0106	0.0084	-0.0320	-0.1362	-0.0222	-0.0369	-0.0359	-0.1728
CASH	0.1694	-0.0240	0.1140	0.0318	-0.0493	0.0082	0.0090	-0.1209
ASS	0.6904	0.1762	-0.0229	-0.0661	-0.0780	-0.0006	-0.0343	-0.2396
logBSIZE	0.2451	0.0444	-0.0639	0.2059	0.1033	0.5410	0.0191	0.0018
INDIR	-0.0170	0.0985	0.0436	-0.0214	0.0698	-0.0431	0.0018	-0.0597
AVAge	-0.0708	-0.2482	0.2777	0.2790	-0.0500	0.0888	-0.0033	0.1840
logGDP	-0.0344	0.2275	0.1912	0.0755	0.0906	-0.0151	0.1131	0.1526

Table 9 - TSIZE sample - Correlation all variables

	LEV	CASH	ASS	logBSIZE	INDIR	AVAGE	logGDP
LEV	1.0000						
CASH	-0.0086	1.0000					
ASS	0.1255	0.2770	1.0000				
logBSIZE	0.0598	-0.0807	0.1855	1.0000			
INDIR	-0.0392	-0.0812	0.0098	-0.0203	1.0000		
AVAge	-0.0862	-0.0443	-0.1810	-0.0619	0.0992	1.0000	
logGDP	-0.0633	0.0757	0.2841	-0.1658	0.1568	-0.0375	1.0000

Most of the correlation values of the target sizes sample in table 9 vary from -0.25 to 0.54. As discussed above, the level of education and experience variables are again highly correlated to the education and experience dummy variables. Furthermore, there is a modest level of correlation (0.69) between the target size of the company and the assets of the acquiring firm. However, this value gives the correlation between the dependent variable and a control variable. Therefore it has no sufficient influence on the results this research. This means the assumptions for the best available Ordinary Least Squares Regression are met (Wooldridge, 2012).

4.3 | Test of hypotheses

In order to test the hypotheses of this research, two Ordinary Least Squares Regressions are performed. The relation between women in the board of directors and the bid initiations, the effect of gender quotas on the number of bid initiations and the moderating effect of the fraction of women in the board, and the education- and experience level on this relation, are investigated by testing hypotheses 1a, 2a, 3a, 4a and 5a. The following regression equations are used to test these hypotheses:

$$\text{logBIDIN} = \beta 0 + \beta 1\ \text{WOM} + \beta 2\ \text{GENQ*WOM} + \beta 3\ \text{GENQ*EDUC1} + \beta 4\ \text{logTOQ} + \beta 5\ \text{LEV} + \beta 6\ \text{CASH} + \beta 7\ \text{ASS} + \beta 8\ \text{logBSIZE} + \beta 9\ \text{INDIR} + \beta 10\ \text{AVAGE} + \beta 11\ \text{logGDP} + \varepsilon$$

$$\text{logBIDIN} = \beta 0 + \beta 1\ \text{WOM} + \beta 2\ \text{GENQ*WOM} + \beta 3\ \text{GENQ*EXP1} + \beta 4\ \text{logTOQ} + \beta 5\ \text{LEV} + \beta 6\ \text{CASH} + \beta 7\ \text{ASS} + \beta 8\ \text{logBSIZE} + \beta 9\ \text{INDIR} + \beta 10\ \text{AVAGE} + \beta 11\ \text{logGDP} + \varepsilon$$

Two separate regressions are done. One for the interaction effect of the level of education with the gender quota dummy, and one for the level of experience and the gender quota dummy. The results are shown on the next pages in table 10.

The results in table 10 from the OLS with the education dummy show no significant impact ($P > t = 1.01$) of the percentage of women in the board of directors (WOM) on the average bid initiations per year by a firm (logBIDIN). However, the regression does indicate a significant relation ($t = 3.71$; $p < 0.01$) between the gender quota dummy (GENQ) and the bid initiations variable. The coefficient of the gender quota dummy (1.03) indicates a strong positive relation. The impact of the interaction effect between the gender quota dummy and the fraction of women in corporate boards (GENQ*WOM) has no significant effect ($P > t = -0.56$). However, the education dummy (EDUC1) does have a significant impact ($t = 5.01$; $p < 0.01$) on the bid initiations. The coefficient of the education dummy (0.97) suggests a strong positive

relation between the average level of education of a board of directors and the average bid initiations per year. The interaction effect between the gender quota dummy and the average level of education of the board (GENQ*EDUC1) indicates a significant effect (t = -3.28; p < 0.01). However, the coefficient of this interaction variable (-0.94) shows a strong negative relationship between the interaction effect of the gender quota dummy and the average level of education of the board and the bid initiations done by a firm. The explanatory power of this regression is 0.2728. An R-squared with this value indicates that 27.28% of the variance in the bid initiations variable can be explained by the variances in the independent variables (Wooldridge, 2012).

The results in table 10 for the experience dummy also show no significant impact (P > t = 0.80) of the women in the board of directors (WOM) and the average bid initiations per year by a firm (logBIDIN). The gender quota dummy (GENQ), on the contrary, does show a significant relation (t = 2.20; p < 0.05). The coefficient of this variable (0.43) indicates a positive effect of a gender quota on the bid initiations variable. The impact of the interaction variable between the gender quota dummy and the fraction of women in corporate boards (GENQ*WOM) is not significant (P > t = -0.59). Furthermore, the dummy for the average level of experience of the board (EXP1) shows no significant impact (P > t = 1.29) on the bid initiations variable, while the interaction effect between the gender quota dummy and the level of experience of the board (GENQ*EXP1) does indicate a significant impact (t = -2.02; p < 0.05). The coefficient of the interaction variable (-0.39) suggests a negative relation between the interaction effect of the gender quota dummy and the level of experience of the board variable and the bid initiations done. The R-squared has a value of 0.2309. This means that 23.09% of the variance of the bid initiations variable can be explained by the variances in the independent variables (Wooldridge, 2012).

The results for both the regressions in table 10 show an insignificant relation between the fraction of women on corporate boards and the bid initiations done by firms. This is not in line with hypothesis 1a. Furthermore, the results suggest a significant positive relation between firms in countries with gender quotas and the bid initiations done. This means that firms in gender quota countries tend to initiate more bids than firms in countries without gender quotas. This is in line with hypothesis 4a and therefore not in line with hypothesis 2a.

Table 10 - Ordinary Least Square Regression with robust error terms

Dependent variable: *logBIDIN*		
	OLS with education dummy	OLS with experience dummy
GENQ	1.034385***	0.4267025**
	(3.71)	(2.20)
WOM	0.7099016	0.8103389
	(1.01)	(0.80)
GENQ*WOM	-0.4490107	-0.6401916
	(-0.56)	(-0.59)
EDUC1	0.9718878***	
	(5.01)	
GENQ*EDUC1	-0.9418292***	
	(-3.28)	
EXP1		0.2157373
		(1.29)
GENQ*EXP1		-0.3915761**
		(-2.02)
logTOQ	-0.166256***	-0.159157**
	(-2.57)	(-2.39)
LEV	0.0006759***	0.0006927***
	(7.08)	(6.03)
CASH	0.441816	0.2647278
	(0.91)	(0.49)
ASS	0.231125***	0.2108182***
	(3.59)	(3.15)
logBSIZE	0.0022135	0.068073
	(0.04)	(1.10)
INDIR	0.4145817***	0.4287896***
	(2.65)	(2.88)
AVAGE	-0.0083904	-0.0047942
	(-1.10)	(-0.63)
logGDP	-0.0694731	-0.0475527
	(-1.25)	(-0.90)
Constant	-3.574877***	-3.247786***
	(-4.13)	(-3.58)
R-squared	0.2728	0.2309
F statistic	52.68	48.28

t statistic in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Finally, the relationship between the interaction variable, of the gender quota dummy and the percentage of women in the board, and the bid initiations done is not significant. This means that the fraction of women in corporate board does not have a significant influence on the effect of gender quotas on bid initiations. This is not in line with both hypotheses 3a and 5a.

The moderating factors that could have an influence on this relationship are the level of education and experience. The regression in table 10 indicates that the higher educated the board of directors of a firm, the more bids they initiate. The coefficient of the interaction variable between the gender quota dummy and the level of education of the board however suggests that the positive association between the gender quota dummy and the bid initiations can be moderated by a high level of education of the board. The results in table 10 do not indicate a significant effect of the average level of experience of the board of directors on the average bid imitations per year by a firm. Nonetheless, the effect of the interaction variable between the gender quota dummy and the level of experience of the board does show significance. This relation suggests that the positive impact of the gender quota dummy on the bid initiations can be moderated by a board of directors with a high level of experience. These results mean that the suggested relation, between a gender quota and higher number of bid initiations done by firms, can be weakened by a high level of education or experience of a board of directors.

Furthermore, the relationships between the percentage of women in corporate boards and the size of the target firm, the effect of gender quotas on the target size and the moderating effect of the fraction of women in the board, and the education- and experience level on this relation are tested. These relations are investigated by testing hypotheses 1b, 2b, 3b, 4b and 5b. In order to test these hypotheses the following regression functions are used:

$$\text{logTSIZE} = \beta 0 + \beta 1\ \text{WOM} + \beta 2\ \text{GENQ*WOM} + \beta 3\ \text{GENQ*EDUC1} + \beta 4\ \text{logTOQ} + \beta 5\ \text{LEV} + \beta 6\ \text{CASH} + \beta 7\ \text{ASS} + \beta 8\ \text{logBSIZE} + \beta 9\ \text{INDIR} + \beta 10\ \text{AVAGE} + \beta 11\ \text{logGDP} + \varepsilon$$

$$\text{logTSIZE} = \beta 0 + \beta 1\ \text{WOM} + \beta 2\ \text{GENQ*WOM} + \beta 3\ \text{GENQ*EXP1} + \beta 4\ \text{logTOQ} + \beta 5\ \text{LEV} + \beta 6\ \text{CASH} + \beta 7\ \text{ASS} + \beta 8\ \text{logBSIZE} + \beta 9\ \text{INDIR} + \beta 10\ \text{AVAGE} + \beta 11\ \text{logGDP} + \varepsilon$$

To test the relations two separate regressions are performed. One for the interaction effect of the level of education with the gender quota dummy, and one for the level of experience and the gender quota dummy. The results are shown on the next pages in table 11.

The results in table 11 for the OLS with the education dummy show no significant effect ($P > t$ = -0.74) of the percentage of women in corporate boards (WOM) on the target size (logTSIZE). Furthermore, the gender quota dummy (GENQ) does not have a significant result ($P > t$ = -0.35), just as the interaction effect between the gender quota dummy and the fraction of women on the board (GENQ*WOM) ($P > t$ = 0.53). The impact of the education level dummy (EDUC1) is also not significant ($P > t$ = 0.67). The interaction variable between the gender quota dummy and the average level of education of the board (GENQ*EDUC1) has a *t*-value of 0.08, and is therefore not significant.

The results of table 11 for the OLS with the experience dummy also show no significant relation ($P > t$ = -0.46) between the percentage of women a board of directors (WOM) and the size of the target firm (logTSIZE). Moreover, the gender quota dummy (GENQ) has no significant impact ($P > t$ = -0.98), just as the interaction variable between the gender quota dummy and the fraction of women on the board (GENQ*WOM) ($P > t$ = 0.49). This also holds for the dummy for the level of experience of the board (EXP1), with a *t*-value of -1.27, and for the interaction effect of the gender quota dummy and the level of experience of the board (GENQ*EXP1) ($P > t$ = 0.77). The explanatory power of the target size models (0.6010 and 0.6018) is higher than in the regressions for the bid initiations sample (0.2728 and 0.2309). Thus 60.10% and 60.18% of the variance of the target size variable can be explained by the variance of the independent variables.

The coefficients of the variables in both the regressions in table 11 show an indication of the direction of the relations. They suggest a negative relation between the fraction of women in boards and the size of the target firm. This also holds for the gender quota dummy. However, the results from both the regressions in table 11 show no significant results for all the independent variables. This is not in line with hypotheses 1b, 2b, 3b, 4b and 5b. Furthermore, both the education- and experience level of the board of directors do not have a significant influence on the size of the target firm.

Table 11 - Ordinary Least Square Regression with robust error terms

Dependent variable: *logTSIZE*

	OLS with education dummy	OLS with experience dummy
GENQ	-0.1412953	-0.2266286
	(-0.35)	(-0.98)
WOM	-0.3308679	-0.2168187
	(-0.74)	(-0.46)
GENQ*WOM	0.2797923	0.2762525
	(0.53)	(0.49)
EDUC1	0.2898949	
	(0.67)	
GENQ*EDUC1	0.0334708	
	(0.08)	
EXP1		-0.3173313
		(-1.27)
GENQ*EXP1		0.2573754
		(0.77)
logTOQ	0.4436509***	0.4709491***
	(4.39)	(4.53)
LEV	-0.0434095***	-0.0459299***
	(-3.11)	(-3.40)
CASH	-0.0667662	-0.0283067
	(-0.23)	(-0.08)
ASS	1.834567***	1.82406***
	(15.69)	(16.92)
logBSIZE	0.0116123	0.0830732
	(0.11)	(1.09)
INDIR	0.2820279	0.2660964
	(1.03)	(0.98)
AVAGE	0.0025006	0.0082505
	(0.24)	(0.71)
logGDP	-0.5430216***	-0.5339484***
	(-6.04)	(-5.96)
Constant	2.263518	2.394552
	(1.39)	(1.53)
R-squared	0.6010	0.6018
F statistic	28.49	29.49

t statistic in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The theory behind hypothesis 3a, which is in line with the results in table 10, states that firms in gender quotas countries initiate more bids, because gender quota laws would lead to less experienced corporate boards. Lots of inexperienced women are appointed to corporate boards because of gender quota laws (Ahern & Dittmar, 2012). To see if this assumption holds for the experience level in the bid initiations sample, a statistical description of the experience level for male- and female directors is given in table 12. Besides the level of experience, the education level of the directors is also included in this table. A separation is made between corporate boards in firms in gender quota countries and firms in countries without a gender quota. All the values in table 12 are yearly averages.

Table 12 - Descriptive statistics - separation male- and female directors

Directors in boards in countries *with* gender quotas:					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
EDUCMALE	557	2.807604	0.551226	1	4
EDUCFEMALE	461	2.999808	2.142524	1	4
EXPMALE	548	2.6665	0.7224267	0.0181818	9.982576
EXPFEMALE	426	1.169636	1.475463	0.0181818	9.982576
Directors in boards in countries *without* gender quotas:					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
EDUCMALE	423	2.875422	0.4427608	1.663636	3.972222
EDUCFEMALE	295	2.812932	0.8860566	1	4
EXPMALE	423	2.628801	1.596166	0.211708	7.455236
EXPFEMALE	281	1.406778	1.810063	0.0545455	8.781818

The results in table 12 indicate that the average level of education of female directors (EDUCFEMALE) is slightly higher in countries with a gender quota (2.9998) than in countries without a gender quota (2.8129). This can be seen by looking at the mean for each variable. The average education level of female directors in gender quota countries (2.9998) is somewhat higher than the average education level of male directors (EDUCMALE) (2.8076) in gender quota countries.

On the contrary, the results in table 12 indicate considerable differences in the average level of experience. The average level of experience for female directors (EXPFEMALE) in gender quota countries (1.1696) is lower than in countries without gender quotas (1.407). Furthermore, the difference in the average experience level between male directors (EXPMALE) in gender quota countries (2.6665) and female directors in gender quota countries

(1.1696) is bigger than the difference between male and female directors in countries without a gender quota. This is in line with the theory of Ahern & Dittmar (2012) and possibly could be one of the explanations for the positive relation between the gender quota dummy and the average bid initiations per year (as seen in table 10).

4.4 | Robustness checks

Several robustness checks are performed in order to increase the reliability and validity of this research (LU & White, 2014). First, a Tobit regression is done. Second, the original continuous variables of education and experience are replaced for the education and experience dummies. Finally, the deals smaller than 5% of the acquirer market value prior the acquisition are included in the dataset.

4.4.1 | Tobit model

The original dependent variables (without their natural logarithm) are left censored. This means that the value of the variables cannot be zero or negative (Wooldridge, 2012). Therefore multiple Tobit regressions are performed with the original bid initiations and target size variables (see table 13 in Appendix D). The results of these models are very similar to the original OLS regressions which use the natural logarithms of the dependent variables. The coefficients in the Tobit models show relations in the same directions. Some relations are slightly stronger or weaker in the Tobit models compared to the original OLS regressions. In addition, the significance of the independent variables is similar for the target size sample. However, for the bid initiations sample the relation between the independent variables and the bid initiations variables are almost all significant, which is not the case in the original OLS regressions. Therefore it can be concluded that using a Tobit model does have a substantial influence on the results for the bid initiations sample.

4.4.2 | Continuous education and experience variables

Some additional OLS regressions with continuous values for the education and experience variables are performed (see table 14 in Appendix E). In this way the differences between the use of dummy and continuous variables can be examined. The results show a weaker impact of the continuous education and experience variables. Furthermore, the continuous variables are less significant compared to the dummy variables in the original OLS regressions. These findings correspond with prior literature on this topic (e.g. Suits, 1957), because it is easier to determine a relationship by using dummy variables than by using continuous variables.

4.4.3 | Proportion of M&A to market value

In the last additional test the deals smaller than 5% of the acquirer market value prior to the acquisition are included in the sample. By adding these smaller deals the samples increase to 984 deals done by 345 listed firms for the bid initiations sample and 760 deals done by 246 listed firms for the target sizes sample. The same OLS regression as in the original model is used to examine the relations.

The results of these additional tests are presented in table 15 in Appendix F. Almost all of the independent variables are strongly significant, in contrast to the original OLS regressions. This holds especially for the target sizes sample. It can thus be concluded that using the sample without the exclusion of the deals smaller than 5% has a substantial influence on the results for both the bid initiations and target sizes samples. The coefficients of the independent variables suggest similar relations as in the original regression. It can thus be stated that the results of the original tests are in line with the results of the bigger samples. Therefore the conclusions about the hypotheses will be drawn from the results of this robustness check.

4.5 | Summary of results

In summary, the results of the regression models are as follows. First, the relation between the percentage of women in a board of directors and the bid initiations done by the board is insignificant in the original regression models. This also holds for the effect of the fraction of women in a board on the size of a target firm. However, a significant effect is found in the robustness checks. In both the Tobit regression model and the OLS regression model without the exclusion of the deals smaller than 5% of the acquirer market value, the relation between the fraction of women in corporate boards and the bid initiations done by firms is strongly significant. The coefficients of the relation between the fraction of women in boards and bid initiations in the original regression are in line with the coefficients of the additional tests. Namely, they all suggest a positive relation between the fraction of women in the board and the number of bid initiations. Therefore it can be concluded that hypothesis 1a should be rejected, because there is a significant effect that states that a higher percentage of women in a board of directors leads to more bid initiations done by the firm. This result contradicts the findings in prior research of Levi et al. (2011, 2014), Huang & Kisgen (2013), Dowling & Aribi (2013) and Chen et al. (2014). The results for the effect of the percentage of women in corporate boards on the size of the targets is not significant in both the original OLS regression and in the robustness checks. Therefore hypothesis 1b should be rejected.

Second, the results of both the original regression as the results of the additional tests suggest a significant positive relation between firms in gender quota countries and the bid initiations done. Therefore, hypothesis 4a can be accepted and hypothesis 2a should be rejected. These results are in line with prior research of Ahern & Dittmar (2012). They have done a similar research in Norway that suggests a positive relation between gender quota laws and bid initiations. A possible rational behind this relation is the level of education and experience of female directors. Less experienced women could be appointed to corporate boards due to gender quota laws (Ahern & Dittmar, 2012). The descriptive statistics in table 12 support this statement. These statistics suggest that female directors in gender quota countries are less experienced than female directors in countries without gender quotas. Furthermore, the results in table 10 show a moderating effect of the level of experience of the board of directors on the relation between gender quota countries and the bid initiations. This means that the positive relation between the gender quota dummy and the bid initiations done is weakened by a higher level of experience of corporate boards. Therefore it can be concluded that a lower level of experience of corporate boards will lead to a strengthened positive relation between the gender quota law and bid initiations done. This supports the claim that more bid initiations are done because of less experienced female directors in corporate boards.

Third, the relation between the gender quota variable and the target size is not significant according to the results of the original OLS regression. However, the coefficients are in line with the results of the OLS regression without the exclusion of deals smaller than 5% of the acquirer market value, which does show a significant relation. These results suggest that gender quota laws lead to smaller sizes of the target firms. Because the coefficients in the original OLS regression show the same direction as the robustness check, hypothesis 2b can be accepted and hypothesis 4b rejected.

Finally, the relation between the bid initiations and the interaction variable of the gender quota dummy and the fraction of women in boards is not significant in the original regression. However, in both the Tobit model and the OLS regression model, without the exclusion of the smaller deals, the impact on the bid initiations done is highly significant. The coefficients in these robustness checks are in line with the coefficients of the original test. They all suggest a negative impact of the interaction variable. This means that the positive effect of the gender quota dummy on the bid initiations done is moderated by the fraction of women in corporate boards. The higher the percentage of women in corporate boards in gender quota countries, the fewer bids initiated by these boards. The positive effect of a gender quota on the bid initiations

is thus not strengthened when there are more female directors in the board of directors. Therefore hypothesis 3a can be accepted and hypothesis 5a rejected. However, no significant relation is found between the gender quota dummy and the fraction of women in boards interaction variable and the target sizes. Therefore hypotheses 3b and 5b can be rejected.

Chapter 5 | Conclusion and Discussion

The aim of this research is to examine the effects of female directors and gender quota laws on merger and acquisition activity by listed firms in European countries. The research question of this paper is as follows: "*What is the effect of gender quota laws and female directors in corporate boards on mergers and acquisitions done by listed firms?"*. Prior research suggests that women in corporate boards have a beneficial effect on mergers and acquisitions. Less bids would be initiated and targets of smaller sizes would be bought when the fraction of female directors in a board is higher (Levi *et al.*, 2008, 2011, 2014; Dowling & Aribi, 2013; Chen *et al.*, 2014). Fewer bids initiated by firms is beneficial because the likelihood of (unsuccessful) deals is being shelved (Chen *et al.*, 2014). Furthermore, smaller target sizes can also be seen as a possible beneficial influence of female directors, because smaller deals are more successful than larger ones. Larger deals can be a sign of executive self-dealing or managerial hubris (Hayward & Hambrick, 1997).

It is found that the fraction of women in corporate boards has a positive effect on the bid initiations done by firms. This this suggests that a higher fraction of women in corporate boards will lead to more bid initiations. This contradicts prior research suggesting female directors would cause less mergers and acquisitions done by firms. Furthermore, the results suggest that gender quota laws have a significant positive effect on the bid initiations done by firms. This means that gender quota laws do not have beneficial consequences for the bid initiations done by firms. This finding is in line with the research of Ahern & Dittmar (2012), which states that more bid initiations are done by firms in countries with gender quota laws because less experienced women are possibly appointed to corporate boards due to these quotas. To see if this statement holds in this research, two moderating factors are added, namely the level of education and the level of experience. A significant moderating effect of both the level of education and the level of experience is found in the relationship between gender quota laws and bid initiations. A lower level of experience of a board of directors will lead to a strengthened positive effect of gender quota laws on bid initiations. Therefore, a possible reason for the detrimental effect of gender quotas on bid initiations can be that less experienced women are appointed to corporate boards due to these gender quota laws.

However, the positive effect of a gender quota law on the bids initiated by corporate boards is weakened when there are more female directors in these boards. A possible reason for this could be that the beneficial impact of female directors in corporate boards on mergers and

acquisitions holds when the fraction of women in corporate boards is higher than the mandatory percentages provided by gender quota laws. Female directors would in that case, possibly, not be chosen in a corporate boards because of gender quota laws, but because of their personal qualities. Thus when the fraction of female directors in corporate boards in gender quota countries is higher, fewer bids are initiated.

No significant relation between the fraction of women in boards and the size of the target firm is found. However, the results of this research do suggest that gender quota laws have a significant negative impact on the target sizes. Thus gender quota laws do have a beneficial effect on the sizes of target firms.

With this research a contribution to a better understanding of the relationship between female directors and the merger and acquisition activity of firms is made. Furthermore, this research is the first to combine gender quota laws in European countries with mergers and acquisitions. Besides, it is the first research that looks at possible moderating factors that can explain the contradicting findings on gender quotas and mergers and acquisitions. The societal and practical contribution of this research is the usefulness for regulators and policy makers. It could be useful to know the implications of female directors in corporate boards on mergers and acquisitions in order to recognize the possible consequences of gender quota laws on corporate decision making. The findings in this research could help them with establishing regulations.

Some limitations remain in this research. Firstly, after the exclusion of the deals with a deal value smaller than 5% of the acquirer market value, two small samples remain. Because of these small samples it is hard to generalize the results. Therefore the samples before the exclusion of these deals are included in the robustness checks. If the results are significant for the samples before the exclusion and if they are in line with the results in the main model with the samples after exclusion, they are taken into account for the hypotheses testing. This means that not all results are robust according to these additional tests. Secondly, a horizontal comparison between European countries with gender quota laws and European countries without gender quota laws is done in this research. A vertical comparison within a country between the years before and the years after the gender quota was implemented would be a better method. Because of a substantial amount of missing values in the data for the years before the gender quotas, the vertical comparison is not possible in this research. Thirdly, women are not appointed randomly to corporate boards (Hillman *et al.*, 2007). However, the variables that are needed to take this into account are difficult to acquire. Therefore this phenomenon is left

out in this research. Fourthly, not many robustness checks are done in which new variables are used to see the implications and differences of these new variables. This is not done because there are no variables available that are comparable to the variables used in this research. Therefore it would not be possible to examine similar relations. Lastly, most of the gender quota laws are not fully implemented yet. See table 3 in Appendix C for the exact date of compliance for the gender quotas per country. Therefore it would be better to examine the effects of gender quota laws after the quota laws are fully implemented in most of the countries, which is a recommendation for future research. It would also be interesting to distinguish between soft and binding gender quota laws. A further suggestion for future research is examining the effect for other dependent variables, e.g. bid premiums and M&A returns, especially because the results of this research are suggesting different directions for the two dependent variables. Another recommendation is examining the effect when a distinction between independent and dependent female directors is made. Lastly, it would be interesting to examine why the effect of female directors on M&A is different in European countries compared to the US and UK. Possible cultural differences could have an influence on this relation.

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Appendix A

Table 1 - Sample description

BIDIN sample

Country level

Country	Deals with exclusion*	Deals without exclusion	Firms with exclusion*	Firms without exclusion
Austria	28	106	5	28
Belgium	9	35	6	21
Denmark	2	14	2	8
Finland	23	65	11	28
France	13	74	7	29
Germany	33	81	13	34
Iceland	1	2	1	2
Ireland	12	63	4	21
Italy	14	59	10	32
Luxembourg	4	13	2	8
The Netherlands	11	42	8	27
Norway	41	99	10	18
Portugal	5	54	2	17
Spain	26	95	10	35
Sweden	3	78	1	10
Switzerland	30	104	6	27
	255	984	98	345
Total countries with gender quota:	156	561	71	229
Total countries without gender quota:	99	423	27	116

*With exclusion of deals smaller than 5% of the acquirer market capitalization

BIDIN sample

Sector level

Sector	Deals with exclusion*	Deals without exclusion	Firms with exclusion*	Firms without exclusion
Aerospace & Defence	2	2	2	2
Automobiles & Parts	3	12	3	12
Beverages	3	10	3	10
Business Services	3	54	3	54
Chemicals	12	29	12	29
Clothing, Leisure and Personal Products	5	21	5	21
Construction & Building Materials	8	49	8	49
Containers & Packaging	0	2	0	2
Diversified Industrials	3	19	3	19
Electricity	3	4	3	4
Electronic & Electrical Equipment	1	16	1	16
Engineering & Machinery	2	58	2	58
Food & Drug Retailers	0	4	0	4
Food Producers & Processors	23	63	23	63
Forestry & Paper	2	7	2	7
General Retailers	11	22	11	22
Health	5	54	5	54
Information Technology Hardware	2	20	2	20
Leisure & Hotels	0	7	0	7
Media & Entertainment	5	37	5	37
Mining	3	22	3	22
Oil & Gas	29	49	29	49
Pharmaceuticals and Biotechnology	15	27	15	27
Publishing	0	2	0	2
Real Estate	63	114	63	114
Renewable Energy	8	27	8	27
Software & Computer Services	10	52	10	52
Steel & Other Metals	4	18	4	18

Telecommunication Services	8	27	8	27
Transport	6	23	6	23
Utilities - Other	3	7	3	7
Other	13	126	13	126
	255	984	255	984

Table 2 - Sample description

TSIZE sample

Country level

Country	**Deals with exclusion***	**Deals without exclusion**	**Firms with exclusion***	**Firms without exclusion**
Austria	28	70	8	14
Belgium	7	29	7	16
Denmark	2	10	2	6
Finland	22	51	16	23
France	13	70	9	26
Germany	25	50	14	22
Iceland	1	2	1	2
Ireland	19	62	13	21
Italy	10	49	9	24
Luxembourg	4	10	2	7
The Netherlands	15	38	12	23
Norway	24	75	12	13
Portugal	9	28	6	6
Spain	20	78	12	22
Sweden	14	64	6	6
Switzerland	24	74	9	15
	237	760	138	246
Total countries with gender quota:	137	474	95	183
Total countries without gender quota:	100	286	43	63

*With exclusion of deals smaller than 5% of the acquirer market capitalization

Tsize sample

Sector level

Sector	**Deals with exclusion***	**Deals without exclusion**	**Firms with exclusion***	**Firms without exclusion**
Aerospace & Defence	1	2	1	1

Automobiles & Parts	1	7	1	2
Beverages	1	7	1	2
Business Services	7	49	5	12
Chemicals	7	19	4	6
Clothing, Leisure and Personal Products	1	9	1	6
Construction & Building Materials	15	41	10	14
Containers & Packaging	1	2	1	1
Diversified Industrials	1	8	1	2
Electricity	2	4	2	3
Electronic & Electrical Equipment	2	10	2	6
Engineering & Machinery	13	44	11	16
Food & Drug Retailers	0	3	0	1
Food Producers & Processors	13	51	8	14
Forestry & Paper	1	2	1	1
General Retailers	9	21	3	5
Health	8	50	5	13
Information Technology Hardware	2	16	2	8
Leisure & Hotels	0	2	0	1
Media & Entertainment	10	23	5	10
Mining	4	18	2	4
Oil & Gas	18	35	9	10
Pharmaceuticals and Biotechnology	14	23	9	11
Publishing	1	2	1	1
Real Estate	42	86	15	24
Renewable Energy	5	12	4	7
Software & Computer Services	13	49	9	14
Steel & Other Metals	4	6	3	3
Telecommunication Services	8	26	4	11
Transport	4	16	4	10
Utilities - Other	2	4	1	2
Others	27	113	13	25
	237	760	138	246

Appendix B

Global Gender Gap Index 2016 for Western Europe

WESTERN EUROPE		
Country	Overall rank	Overall score
Iceland	1	0.874
Finland	2	0.845
Norway	3	0.842
Sweden	4	0.815
Ireland	6	0.797
Switzerland	11	0.776
Germany	13	0.766
Netherlands	16	0.756
France	17	0.755
Denmark	19	0.754
United Kingdom	20	0.752
Belgium	24	0.745
Spain	29	0.738
Portugal	31	0.737
Luxembourg	34	0.734
Italy	50	0.719
Austria	52	0.716
Cyprus	84	0.684
Greece	92	0.680
Malta	108	0.664

(World Economic Forum, 2016)

Appendix C

Table 3 - Gender quotas per European Publicly Listed Country (in 2014)

Country	Type of quota	% women required on the board	Type of regulation	Year introduced	Date of compliance
Belgium	Binding	33	-	Jan 2011	2017-2019
Denmark	Soft*	Determined by company	-	Dec 2012	Apr 2013
Finland	Soft	-	Corporate Governance Code	Jan 2010	-
France	Binding	20 & 40	-	Jan 2011	20% Jan 2014 40% Jan 2017
Iceland	Binding	40	-	Mar 2010	Sept 2013
Ireland	Soft	-	Corporate Governance Code	Jun 2010	-
Italy	Binding	20 & 33	-	Jun 2011	20% Aug 2012 33% Jan 2015
Luxembourg	Soft	-	Corporate Governance Code	May 2009	-
The Netherlands	Binding*	30	-	Jun 2011	Jan 2016
Norway	Binding	40	-	Dec 2003	Jan 2008
Spain	Binding*	40	-	Mar 2007	Mar 2015

*Only applies to publicly listed firms with more than 2015 employees

(Catalyst, 2014; Smith & IZA, 2014)

Appendix D

Table 6 - BIDIN sample - Descriptive statistics all variables

Variable	Obs	Mean	Std. Dev.	Min	Max
logBIDIN	255	-0.7227803	0.6613453	-2.397895	0.2411621
WOM	255	0.1627272	0.1839029	0	1
GENQ	255	0.6117647	0.488307	0	1
EDUC	255	2.65435	0.5978606	0.7222222	4
EXP	255	4.575463	2.31752	0	10.68889
EDUC1	255	0.8901961	0.31326	0	1
EXP1	255	0.5254902	0.5003318	0	1
LEV	255	-6.383632	124.1629	-1979.557	55.53953
ASS	255	6.217496	0.7196319	4.277788	7.87877
CASH	255	0.0523765	0.0869284	-5761479	0.2898944
logTOQ	255	-7.408686	0.7589494	-9.292497	-5.629134
logBSIZE	255	2.254514	0.8571477	-0.2876821	4.015095
INDIR	255	0.7930964	0.2493419	0	1
AVAGE	255	55.46382	5.778725	39.5	72.5
logGDP	255	10.90063	1.086611	9.721029	15.48445

Appendix E

Table 7 - TSIZE sample - Descriptive statistics all variables

Variable	Obs	Mean	Std. Dev.	Min	Max
logTSIZE	237	5.124089	1.614066	0.5158132	9.953452
WOM	237	0.1982207	0.2423793	0	1
GENQ	237	0.5780591	0.4949144	0	1
EDUC	237	2.765927	0.6307723	0	4
EXP	237	4.103369	2.390234	0	11.7
EDUC1	237	0.8523207	0.3555327	0	1
EXP1	237	0.4472574	0.4982627	0	1
LEV	237	0.8855604	2.694208	-29.11628	24.53769
ASS	237	6.273298	0.7461982	3.747489	7.897093
CASH	237	0.0454366	0.2501993	-3.441066	0.548419
logTOQ	237	-7.445371	0.8376144	-9.278571	-4.474101
logBSIZE	237	1.683328	0.9251496	0	9.953452
INDIR	237	0.8600539	0.2020326	0	1
AVAGE	237	51.82484	6.686686	30	70
logGDP	237	10.77037	0.9292112	9.682102	15.50079

Appendix F

Table 13 - Tobit regressions

Dependent variable:	*BIDIN*		*TSIZE*	
	Tobit with education dummy	Tobit with experience dummy	Tobit with education dummy	Tobit with experience dummy
GENQ	0.5509277***	0.1845261**	131.1972	311.7107
	(4.44)	(2.22)	(0.22)	(0.87)
WOM	1.026943***	1.015844***	466.6712	520.8701
	(4.05)	(3.49)	(0.53)	(0.60)
GENQ*WOM	-0.9180334***	-0.9378789***	-927.2464	-799.0876
	(-3.17)	(-2.89)	(-0.90)	(-0.77)
EDUC	0.4700253***		225.9354	
	(4.56)		(0.42)	
GENQ*EDUC	-0.4945372***		248.7557	
	(-4.00)		(0.38)	
EXP		0.0663231		-262.2452
		(0.91)		(-0.73)
GENQ*EXP		-0.1435669*		37.40837
		(-1.66)		(0.08)
logTOQ	-0.0750412***	-0.0772568***	24.76811	50.86036
	(-2.65)	(-2.64)	(0.17)	(0.35)
LEV	0.0002215	0.0002311	-31.31897	-32.2839
	(1.57)	(1.57)	(-0.76)	(-0.79)
CASH	0.0223281	-0.0487307	-394.5037	-325.0155
	(0.10)	(-0.20)	(-0.85)	(-0.70)
ASS	0.1098667***	0.0979305***	925.0962***	886.7072***
	(3.43)	(2.98)	(5.26)	(4.98)
logBSIZE	-0.0004613	0.0274949	12.30328	94.52654
	(-0.02)	(1.16)	(0.08)	(0.76)
INDIR	0.2240554***	0.2188129***	518.6283	525.6291
	(3.06)	(3.02)	(0.90)	(0.95)
AVAGE	-0.0062284*	-0.0039608	-8.797352	-5.726122
	(-1.76)	(-1.07)	(-0.47)	(-0.29)
logGDP	-0.0188738	-0.0078298	-369.9073***	-353.3405**
	(-0.79)	(-0.32)	(-2.68)	(-2.56)
Constant	-0.8194277*	-0.6751375	-1350.854	-1107.61
	(-1.92)	(-1.53)	(-0.59)	(0.48)
Pseudo R2	0.6657	0.5542	0.0085	0.0086
LR Chi2	100.51	83.68	36.08	36.14

t statistic in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix G

Table 14 - Ordinary Least Square Regerssions

Dependent variable:	*logBIDIN*		*logTSIZE*	
	OLS with continuous education variable	OLS with continuous experience variable	OLS with continuous education variable	OLS with continuous experience variable
GENQ	0.7288489*	0.7162525***	0.3657881	-0.0672835
	(1.66)	(2.62)	(0.49)	(-0.22)
WOM	0.1671397	0.6862089	-0.2349149	-0.2494662
	(0.20)	(0.72)	(-0.47)	(-0.54)
GENQ*WOM	0.1998916	-0.5507495	0.2107742	0.2902385
	(0.20)	(-0.53)	(0.36)	(0.53)
EDUC	0.3199463***		0.3087158	
	(2.82)		(1.31)	
GENQ*EDUC	-0.211194		-0.1757147	
	(-1.38)		(-0.70)	
EXP		0.053509		-0.0087027
		(1.38)		(-0.21)
GENQ*EXP		-0.1091503**		-0.0104787
		(-2.58)		(-0.17)
logTOQ	-0.188721***	-0.1610896**	0.4362903***	0.4516384***
	(-2.99)	(-2.47)	(4.33)	(4.49)
LEV	0.0007077***	0.0006722***	-0.0400229***	-0.0443333***
	(6.95)	(6.66)	(-2.78)	(-3.22)
CASH	0.6375122	0.2637917	-0.0499506	-0.0194119
	(1.30)	(0.51)	(-0.18)	(-0.06)
ASS	0.2075317***	0.2248077***	1.830137***	1.803574***
	(3.21)	(3.69)	(15.88)	(16.75)
logBSIZE	0.0326056	0.0861296	0.0368318	0.0852673
	(0.54)	(1.38)	(0.43)	(1.12)
INDIR	0.3635782**	0.4161616***	0.3465624	0.2592584
	(2.34)	(2.77)	(1.25)	(0.97)
AVAGE	-0.0113004	-0.0055702	-0.000218	0.0039231
	(-1.44)	(-0.76)	(-0.02)	(0.36)
logGDP	-0.0667996	-0.0446616	-0.5483028***	-0.5285282***
	(-1.23)	(-0.86)	(-6.19)	(-5.91)
Constant	-3.464465***	-3.488125***	1.728133	2.44689
	(-3.94)	(-3.77)	(0.97)	(1.57)
R-squared	0.2467	0.2453	0.6029	0.5985
F statistic	47.37	45.96	28.52	28.94

t statistic in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix H

Table 15 - Ordinary Least Square Regressions (Bigger Sample)

Dependent variable:	*logBIDIN*		*logTSIZE*	
	OLS with education dummy	OLS with experience dummy	OLS with education dummy	OLS with experience dummy
GENQ	0.7103778***	0.5065416***	-0.7636947**	-0.576796***
	(5.75)	(6.55)	(-2.23)	(-2.66)
WOM	1.971789***	1.653101***	-0.5642756	-0.4745752
	(5.91)	(4.41)	(-1.19)	(-1.10)
GENQ*WOM	-1.798665***	-1.490698***	0.2718749	0.1951621
	(-5.00)	(-3.72)	(0.48)	(0.37)
EDUC1	0.5189697***		-1.008143***	
	(5.07)		(-3.22)	
GENQ*EDUC1	-0.2533858**		0.7540333**	
	(-2.00)		(2.20)	
EXP1		0.1398116**		-1.067966***
		(2.07)		(-5.08)
GENQ*EXP1		-0.0727443		0.827804***
		(-0.82)		(3.12)
logTOQ	0.0010744	0.0308561	0.1459454*	0.178766**
	(0.03)	(0.74)	(1.75)	(2.15)
LEV	0.0006123***	0.0005498***	0.0580813	0.054997
	(9.62)	(8.13)	(0.98)	(0.96)
CASH	0.1743628	-0.0452612	-0.3554426	-0.3574451
	(0.56)	(-0.14)	(-1.21)	(-1.15)
ASS	0.3798215***	0.4058512***	1.161824***	1.158621***
	(10.83)	(11.70)	(12.98)	(13.24)
logBSIZE	-0.0245548	-0.0062867	0.2033291**	0.0887019
	(-0.81)	(-0.20)	(2.39)	(1.29)
INDIR	-0.0719948	-0.0987569	0.428851	0.6248835**
	(-1.03)	(-1.38)	(1.57)	(2.25)
AVAGE	-0.0040513	-0.0080305*	0.0244694***	0.0263156***
	(-0.97)	(-1.82)	(3.29)	(3.48)
logGDP	-0.063547**	-0.0510095	-0.2889055***	-0.2955738***
	(-2.07)	(-1.59)	(-3.88)	(-4.00)
Constant	-2.842542***	-2.310758***	-0.2896796	-0.3032024
	(-5.74)	(-4.58)	(-0.25)	(-0.27)
R-squared	0.2979	0.2763	0.2593	0.2806
F statistic	67.05	62.63	19.93	21.91

t statistic in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%