UNIVERSITY OF VAASA
DEPARTMENT OF ACCOUNTING AND FINANCE

Inka Heikkilä

IMPACT OF BOARD GENDER DIVERSITY ON RISK AND PERFORMANCE

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UNIVERSITY OF VAASA
School of Accounting and Finance
Author: Inka Heikkilä
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ABSTRACT:

The objective of this paper is to investigate if gender diversity has an impact on corporate economic performance and risk. Furthermore, the aim is to answer if there is an economic justification for the gender quota that the European commission has proposed. This paper contributes to the existing literature by comparing two countries Norway and Finland, which both have different method of improving gender diversity in the board room.

The sample is gathered from Thomson Reuters Worldscope and the sample period is 2007-2016. Ordinary least square regression model is used to answer four main hypotheses. The dependent variables to investigate impact of gender diversity on economic performance are Return on Asset and Tobin's Q and to investigate the impact of gender diversity on risk the dependent variables are Volatility and Debt to Asset ratio. Moreover, three diversity variables are chosen to act as a proxy for diversity, Percentage of women on board, Critical mass dummy and Blau index of diversity.

The main findings of this paper are that, regressing the full sample, the percentage of women has a positive impact on risk and performance. There can be found indications that the critical mass might not be the most optimal amount of diversity for improving the accounting performance as the coefficient was found to be negative. Companies with more diverse boards were found to be riskier which is controversial to the literature.

The results are highly country specific when two samples were regressed separately. For Finnish sample diversity has a positive impact on performance and risk but for Norwegian sample the findings are mainly negative. All in all, the main finding was that the results are country specific and there should not be a gender quota that mandates all the EU countries to have the same percentage of women on board.

KEY WORDS: Gender quota, Board of Directors, Gender diversity, Performance, Risk

1. INTRODUCTION

1.1. Background for the topic

In 2012, the European Commission started to take actions against the unequal representation of men and women on corporate boards. It proposed that legislative action should be taken, to increase women representation in the board room. The proposed solution to this was a gender quota which legislates every EU country to have at least 40% women on their listed company boards (Commission Press Release 2012). This proposal was part of the EU's 2020 program that has one of its objectives to increase equality between men and women (European Commission 2012).

After the proposal, many arguments have been made for and against the quota and many have been discussing if this is only a social dilemma and does it have any economic base. Therefore, a lot of research have been made around the world to find the economic justification to increase women representation in the board room. Also, there has not been found any universal answer to the question that does equal representation of men and women have any impact on corporate performance.

Even though many researches have been made from the topic of women and their impact on corporate economic performance, they mainly concentrate on one country or all listed companies in certain stock index. Furthermore, the methods wary and the variables are not the same in different research. Therefore, a question arises if these researches can be compared with each other and can we make a conclusion of the impact. Also, it is argued that the results of women having no impact on corporate economic performance might come from samples which have relatively low or high women representation (Reguera-Alvardo, Fuentes & Laffarga 2017: 341).

1.2. Aim of the research

The aim of this research is to see if there is a relationship between corporate economic performance and risk and board gender diversity. Also, the aim is to investigate if there is a difference between countries which have already gender quota in place, and which are using self-regulatory action.

This research takes into consideration two countries between years 2007-2016, Norway which has already gender quota in place and Finland which is using self-regulatory actions to improve gender diversity. The samples are gathered from Thompson Reuters World Scope database and the research will evaluate the performance from the accounting and market perspective as well as from economic performance and risk perspective.

This paper contributes to already existing literature by introducing two countries in the same research with different actions in place to tackle gender diversity. To my knowledge there is no research conducted to compare two countries with different legislation. The already existing research mainly focuses on all the countries in certain stock exchange or a specific country. Furthermore, research studying the risk and gender diversity is limited, which is why this paper will contribute to the literature by studying the relationship to risk as well.

1.3. Structure of the paper

The structure of this paper is as following. First the board of directors will be introduced, and the concept of gender quota will be discussed. After the introduction, the countries that will be researched in this paper shall be described. Secondly, the different schools of thoughts related to board of directors' composition shall be discussed and analyzed in relation to the gender diversity. Following, the introduction of the scholars and papers that have studied the same topic. Thirdly, the data and method are discussed, and the summary statistics will be described. This paper will end with the empirical results and conclusion of the analysis.

2. BOARD OF DIRECTORS AND GENDER QUOTA

In this part of the paper the main role of the board of directors will be introduced and the importance of the board of directors is stressed. After introduction, the ways of selecting gender diverse board shall be illustrated and gender quota in the EU countries is introduced and the concept of gender diversity is analyzing from the social side. Lastly, this section will introduce the countries that are taken into consideration in this research.

2.1. Board of directors and their main role in a company

Directors are people who have extensive pool of knowledge to govern and monitor the management. They have to operate between firm management and shareholders and grant the wishes of the shareholders (Hillman & Dalziel 2003: 384). In orders for these wishes to be granted board of directors have to communicate frequently with the management and delegate the authority to them.

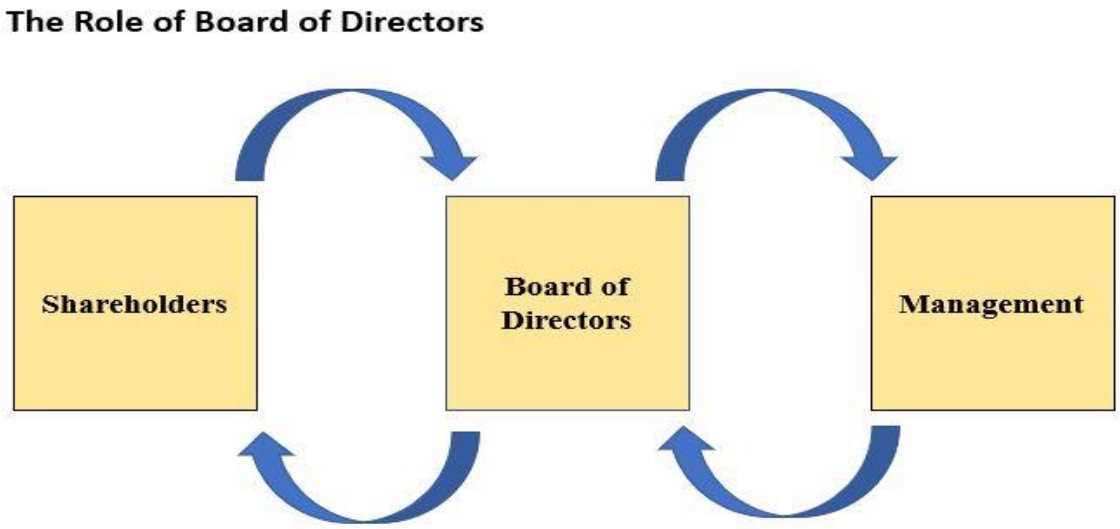

Figure 1. The Role of Board of Directors.

Figure 1 illustrates the picture of board of directors being in the middle of the shareholders and managers. In short, the responsibly of the shareholders is to elect the board of

directors and the board of directors elect the managers. This chain of command insures that the company is working according to shareholders best interest. The chain goes other way around as well, as the managers are given the authority to lead the company in daily bases. Managers reports their activities to board of directors to which they are liable to and the directors report these activities to shareholders to which they are liable to.

Boland and Hofstrand (2009: 1-2) state that the main responsibilities of the board of directors are the following:

1. Recruiting, supervising, retraining and compensating the managers.
2. Providing direction for the company.
3. Establishing a policy-based governance system.
4. Governing the organization and the relationship with the CEO.
5. Protecting the organization´s assets and member´s investments.
6. Monitoring and controlling function.

All these points require a lot of knowledge from the business industry and leading skills. They are also, demanding tasks if you do not have the necessary skills to tackle these points. Therefore, it is important that the board is elected based on their skills and merits. Later in this part the different theoretical schools of thoughts concerning the importance of the board of directors are introduced based on point of view of gender diversity.

2.2. Link between women on board and firm value and glass ceiling

The link between firm economic performance and gender diversity is illustrated in Figure 2. There are three triggers to add more women on corporate board. First is by merits, second is by self-regulatory actions and third is by legislative actions. All these three triggers will be introduced and the link to the firm performance.

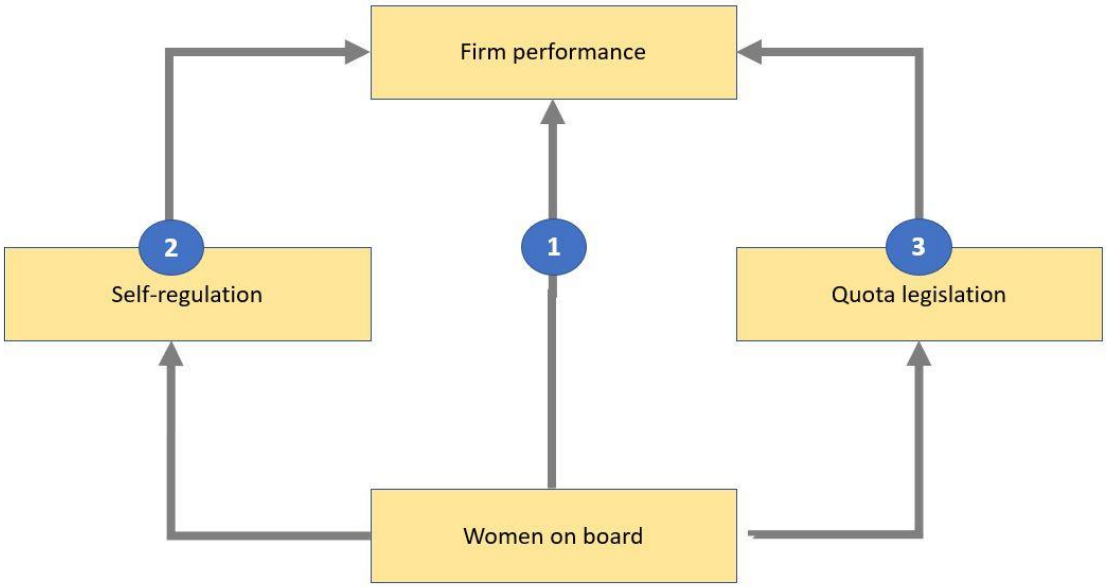

Figure 2. Link between women and firm value.

The first trigger to gender diversity is the merits of appointed women and men. They are elected by the shareholders because they believe that these appointed people can ensure the best performing board. By creating the panel of board of directors like this the selection of the genders is random. However, it cannot be ensured that there is equal amount of both genders in the selection list and the selection might be based on the "Old Boys' Club" where all the considered board members are men.

The second trigger for appointing both genders is self-regulation which can be a part of the countries Corporate Governance Core. For example, there are regulations based on "Comply or explain" idea that if you do not have both gender in the board of directors you should explain why the targets were not met. These self-regulatory actions are taken in countries such as Finland, Austria and Denmark (Adams & Kirchmaier 2013: 2).

Third and final trigger to increase gender diversity in the boardroom is by legislative actions. These actions are the ones that the EU has requested and the first country to adopt gender quota is Norway. Other countries such as Spain and Italy have followed Norway's example (Adams & Kirchmaier 2013: 2). These gender quotas have been directed to listed companies and their board of directors and the optimal per centage of women on board

has been se to 40% (Reguera-Alvardo, de Fuentes & Laffarga 2017: 337, Adams & Ferreira 2009: 292, Rose 2007: 405).

This gender quota phenomenon has first been merely a social dilemma to improve gender diversity and equality between men and women. According to EU action plan 2017-2019, men are more often appointed to managerial position than women and less than 5% of CEO's are women (European Commission 2017: 1). One of the most used term to describe the difficulties for women to get to managerial positions is Glass Ceiling (Brunding and Cadigan 2014: 18). According to European Commission and other scholars, men and women do not have the same opportunities and pay (European Commission 2017: 2, Keloharju, Knüpfer & Tåg 2016). It has been argued that there is an invisible barrier which disables women to advance after a certain point and after the point has been reached the advancing is much harder compared to men (Caril & Egly 2001:630). In order to tackle this barrier a quota legislation was introduced in 2012.

The difficulty to appoint more women to board of directors comes from the fact that there are not enough qualified women to appoint. For example, in Spain the women appointed after the quota are much younger and have less work experience (Ahern & Dittmar 2012). However, these women might be more educated (Terjesen & Sealy 2016: 19) but clearly lacking the work experience compared to men. These women might not have been added to the board of directors without the gender quota. For institutions to justify legislative actions relationship between diverse board and firm performance has been examined. Still there is no universal answer to justify gender quotas.

When it comes to firm performance and diversity on board, scholars have found the following relationship. Gender diverse board could produce better understanding of the industry, increase creativity and innovation, and improve problem solving and decision making (Gordini & Rancati 2017: 79). Furthermore, women behave differently than men and by more diverse boards have less attendance problems (Adams & Ferreira 2009). When board of directors are operating more efficiently due to all these traits the company might also perform better. Different findings from scholars will be introduced later in this paper.

2.3. Gender quota in the EU countries

European commission started to talk about gender quota and legislation in 2012, when it started the EU's 2020 program to tackle unequal representation of men and women in corporate boards. The initial intention was to improve gender equality and decrease the gender pay gap (European Commission 2017: 1). For EU to get quick actions, it proposed a gender quota to increase the number of women on corporate boards. In this paper gender quota is perceived as a certain number of women on corporate board and in fact European Commission has stated the amount to be 40% (Commission Press Release 2012). Furthermore, the quota was created to address the phenomena of critical mass which consists of the minority of the group and for the minority to influence the group they must fulfill at least 30 - 40% of the seats within a group (Dahlerup 2009). The theory will be introduced later in this paper.

Even though EU has not made a quota legislation yet, the quota has been adopted by many EU countries, for example by Norway, Spain, France, Belgium, Netherlands and Croatia (Women Citizens for Constitutional Reform 2017). These countries have taken legislative actions to improve gender diversity, however the consequences may not be as positive as the intention. According to Linnainmaa and Horttanainen (2015: 26) the number of listed companies have decreased due to the women quota and in Norway the number of publicly listed companies has decreased from 600 to 300. It might be that the radical drop in public companies is caused by the fact that companies try to choose the best people on board based on their merits and skills. If the quota is one of the criteria for appointing a director, it might not be the best interest of the company to continue as a publicly listed company.

When the increasing number of women seats on board of directors is inorganic the phenomena may lead to overemploying these few women who have the skills to act as board of director (Linnanmaa and Horttanainen 2015: 26). Furthermore, women are given preference over men and electing board members based on gender is not democratic (Dahlerup 2009). Even though scholars are debating for and agents the legislative quota

the European Commission has set a clear target to for improving the gender equality in the future.

2.4. Social side of gender diversity

There are many social arguments for and agents the diverse boards. However, most of the literature addresses the issue positively or neutrally. Overall gender diversity is considered to be a social phenomenon as we are addressing an issue with women not getting the same positions as men. Lückerath-Roovers (2013: 495) argues that society thinks diversity as a positive factor which will improve company's reputation, if a high degree of diversity is established. However, a high level of gender diversity has not been established in many countries.

Diversity can be associated with imaginative companies, but if women are elected based on gender, they may not bring the same value to the board (Campbell & Mínquez-Vera 2008: 444). On the other hand, if women are hired based on their merits, they can bring different perspectives and ideas to the company (Adams & Ferreira 2009: 305). Furthermore, they are better at monitoring CEO's, involved in strategies (Post & Byron 2015) and they increase the participation rate in the meetings (Adams &Ferreira 2009: 297). These arguments indicate that a gender diverse board could be a positive thing for a company and it could bring a better working board of directors. According to Singh and Vinnicombe (2014: 480) women bring more innovative, modern and transparent companies because they might have more imaginative solutions as they have more knowledge of the female customers. Therefore, if a company is diverse it might have better solutions to problems as well as more different points of view. On a social point of view gender diversity could bring something extra to corporate boards, however only social arguments do not justify the gender quota.

2.5. Introducing countries from this research

The aim of this research is to see if there is a relationship between corporate economic performance and board gender diversity. Also, the aim is to investigate if there is a difference between countries which have already gender quota in place, and which are using self-regulatory action. This paper contributes to already existing literature by introducing two countries in the same research with different actions in place to tackle gender diversity. To my knowledge there is no research conducted to compare two countries. The research mainly focuses on all the countries in certain stock exchange or a specific country. Furthermore, Norway is one of the most gender diverse countries in the world which is why it makes it a good country to evaluate the effect of the quota.

First country to be introduced is Norway. This country is chosen to this research because it is the first country to implement the gender quota. Also, there is a lot of research to be found concerning Norwegian companies and the gender quota (Ahren & Dittmar 2012, Wang & Kelan 2012). The impact of Norwegian quota has been affecting from 2003 so there is a lot of post-quota data.

The second country to be introduced is Finland. Finland is one of the countries which has introduced self-regulatory actions and all Finnish government owned companies should have at least 40% women on their board of directors. This country is a great comparison to Norway as it has increased its women directors to 27% (Linnainmaa and Turunen 201: 8) and it is nearly the amount that is stated to be the “critical mass” of the minority which has an effect on the population (Joecks, Pull and Vetter 2013: 61). Finland is placed third in the Global Gender Gap Report (2017: 10) and a good comparison to Norway as it is already gender diverse and the diversity be seen natural in Finnish companies. This is why these two countries are an interesting comparison.

2.5.1. Introducing the corporate governance code of Norway

Today Norway is considered to be the second most gender equal country in the world according to 2017 Global Gender Gap Report (2017: 10). It might be argued that this merit is due to the actions that Norwegian government took to tackle gender inequality. Norwegian parliament passed a law in 2003 which commanded all the publicly listed companies to have at least 40% female on their board of directors. The deadline for the reform was on July 2005 but the intention was failed, and women held only 9% of the seats. After the government noticed that the voluntary measures were not working it passed in 2006 a new demand that if the companies did not comply by 2008 it would be forced to dissolve. By 2008 all the listed companies followed the quota and Norway became the first country to adopt the gender quota. (Ahren & Dittmar 2012: 138).

Norwegian listed companies are divided by Private limited liability companies and Public limited liability companies (Andersen, Sandanger & Muggerud 2013). The main difference between these companies is that in public limited liability companies the number of employees is much higher (200) than in public ones. Also, the members of board of directors are elected 2/3 by the shareholders and 1/3 by the employees. The gender quota law was built to affect only the public limited liability companies. (Norwegian Corporate Governance Board 2014: 31; Ahren & Dittmar 2012: 144). There is not recommended board size for listed companies however, the minimum number of directors is three (Andersen et al. 2013). According to Ahren and Dittmar (2012: 145) the average Norwegian board size is five to six members.

2.5.2. Introducing the corporate governance code of Finland

Finland is considered to be a country in which men and women have equal rights in politics, education, work and business (Virtanen 2012: 572) and Finland placed third in 2017 Global Gender Gap Report (2017: 10) which means that the country has low gender gap between men and women compared to other countries in the world. In Finnish working environment women possess only 27% of all board seats of Finnish listed

companies in 2017 (Linnainmaa and Turunen 201: 8), which is relatively high taken into consideration Finnish self-regulation concerning women on boards. In 2004 Finnish government started a gender diversity program which regulated all government owned companies to have at least 40% of the director seats to be fulfilled by women and these goals were reached in 2006 (Linnainmaa and Turunen 2014: 6). Furthermore, an addition has been made to Finnish Corporate Governance Code concerning women directors. This recommendation states that every Finnish listed company should have at least one woman in its board of directors (Finnish Corporate Governance Code 2015: 5).

Finnish Corporate Governance code 2015 (2015:13) has stated that there are three to ten members in Finnish listed companies and the board size varies. Most of the listed companies have adopted the one-tire governance model, where there is only one body of directors and the control committee is appointed from the board of directors. Only few listed companies in Finland have two-tire system in which the supervisory board is separated from the management board (Virtanen 2012, 579) even though two-tier system is allowed. Also, almost all members of the board in Finland are non-executive (Linnainmaa and Turunen 2014, 7).

The share of women directors has grown annually in Finland. Only 9 companies have fully men dominant board of directors and two companies have 50% men and 50% women board members (Linnainmaa & Turunen 2017: 10). Even though the number of women directors has grown, still women are the minority in the board room. A recommendation was added to Finnish Corporate Governance code in 2015 that "the company shall establish principles concerning the diversity of the board of directors" (Finnish Corporate Governance Code 2015). This recommendation requires companies to report objectives relating to both genders being represented in board of directors as well as means how to achieve these objectives (Linnainmaa & Turunen 2017: 7). These recommendations have shown to be quite effective and Finland is one of the countries which has the most gender diverse boards in the Europe (Isidro and Sobral 2015, 9).

Without any legislations Finland has improved its gender diverse boards annually (Linnainmaa and Turunen 2015, 8) which is why it can be argued that the self- regulation

works in the case of Finland. However, nearly all Finnish listed companies have male majority which is why women may be seen as tokens. Especially in boards which have only one female and more than 60% men. In these situations, it may be that women cannot get their ideas into practice and is only following the lead of the majority. Then there is no significant correlation between women and corporate economic performance. This means that there is no difference if there is man or a woman filling this one board seat (Campbell and Minquez-Vera 2008, 444). However, if there is a significant relationship between board diversity and corporate economic performance it may be said that even small percentage of diversity can make a small difference.

3. THEORETICAL BACKGROUND AND MAIN LITERATURE

In this section different theoretical school of thoughts will be introduced. At company level, agency theory and resource dependency theory are introduced. Furthermore, to tackle the individual level this section tackles human capital theory, tokenism and risk behavior. These corporate governance topics are discussed in terms of diversity among board of directors and how these theories will contribute to the idea of diversity. In the end of this part different findings from gender diversity and firm performance and risk literature will be introduced.

3.1. Agency theory and gender diversity

Agency theory is considering the relationship between the agent (manager) and principal (shareholder). When the ownership of the company and control of the company is separated an agency cost may arise (Fama & Jensen 1983:304). How can we make sure that the agent works in the best interest of the principal? In this situation the board of directors creates a link between the agent and the principal. The duty of the board of directors is to act between the shareholders and the managers of a company. The board has to monitor the action of the managers in order to ensure the best interest of the shareholders. It has to deliver the wishes of the shareholders into actions and to guide the managers to lead the company to the right direction.

According to the literature the agency cost can be minimized by good governance structure and efficient flow of information (Reguera-Alvardo et al. 2017:339). Board monitoring can reduce the agency cost as the board tries to deliver shareholders wishes and to control that the management is not working for only its best interest. If the board of directors succeed in monitoring and informing the managers, it can improve company's performance (Fama 1980). The board of directors are operating as the information arbitrator between the shareholders and the management. Eisenhardt states that the information flow can be measured in terms of characteristics of the board. For example, the amount of board meetings, number of board committees, the amount of long-term

board members, diversity of board members and the different knowledge base of different industries of one individual board member. (Eisenhardt 1989:60). Therefore, it could be argued that, more diverse the company is, better the information flow and by better information flow and monitoring, the firm could perform better.

When it comes to gender diversity, previous literature (Adams and Ferreira 2009:292; Post & Byron 2015:1559) has suggested that female directors are better at monitoring the managers and CEO's. Also, they are more willing to keep sufficient information flow by making discussions, communicating with all the necessary parties and increasing the attendance in the board meetings (Pucheta-Martínez & Bel-Oms 2016:527). Furthermore, more diverse boards could bring better operating and performing companies.

3.2. Resource dependency theory and gender diversity

Resource dependency theory is based on an idea that a company is dependent on its environment and in order for a company to survive it has to gather or link itself to the external resources (Terjesen, Sealy & Singh 2009: 323). The role of board of directors in this theory is to act with the outside environment to decrease the effect of the external environment to the company. The idea is to harness these resources as well as possible to succeed. The theory considers corporate boards as important link between the company and its environment and the outside resource on which the company is dependent on (Lückerath-Rovers 2013: 493) Also, an assumption is that companies that are better at dealing with environmental uncertainty and independence, can perform better (Dalton, Daily, Johnson, & Ellstrand 1999).

Diversity in this theory is characterized as the knowledge about the industry, relationships with the industry and customers and the possibility to gather external finance for the company (Reguera-Alvardo et al. 2017: 339). Based on these characteristics, Regera-Alvardo et al. (2017:339) suggests that increased diversity on board could benefit the performance of the company. Therefore, more diverse the board is, more knowledge it has concerning the environment. Based on Hillman´s analysis, companies that are

operating in industries that have a lot of female employees do also have female on their boards (Hillman 2007: 948). It might be that female directors can act as the link between the environment and the company. Furthermore, if the diversity and the directors which create links between other organizations and stakeholders is great enough, the company can manage its uncertain environment better (Pfeffer & Salancik 1978:145). In fact, more diverse board tend to be less risky (Jizi and Nehme 2012: 599), which might be due to the links and knowledge of the environment.

3.3. Human capital theory and gender diversity

Human capital theory is related to an argument that the resources are stored into individuals that are working in a company. Therefore, companies have to invest into people to gather these resources. In other words, human capital is the knowledge the person possesses, experience from previous jobs and skills that the person has mastered (Harris & Helfat 1997: 896-897). As the human capital is stored inside people, others cannot store it or use it the same way as the owner of the human capital does (Nguyen, Nguyen, Locke & Reddy 2017: 3). If this resource is stored inside a human, it could walk out of the building or a company damage it. Therefore, a company should invest into people to manage its human capital.

If the company is dependent on its humans, then it should be highly important to have the right individuals in the board of directors to succeed in the business. Also, if the board of directors are the vessels to bring resources to a company then the board should contain as much human capital as possible. These individuals must have a lot of human capital stored inside them in order to be appointed as board of directors (Kanter 1988). According to Hillman, Cannella and Harris (2002) women tend to have less business background compare to men, they are more educated and join multiple boards at faster rates then men do. They could face discrimination in boards based on the lack of experience compared to men. Also, a question arises do these women have their position based solely on gender. On the other hand, women bring extra human capital to the board as they tend to be better

at networking and communicating (Hillman & Cannella 2007) with other companies and stakeholders.

3.4. Critical mass theory and tokenism

Critical mass theory suggests that when a certain rate (critical mass) is reached the effect of the subgroup (women on board) becomes clearer (Kramer, Konrad & Erkut 2006). However, when the certain rate is not reached the person with the specific trait that makes him/her the subgroup becomes a token. Tokens represent the whole demographic group within a bigger group and they may be seen as an example of the group (Lückerath-Roovers 2013: 497). When the person (woman) is considered to represent the example of the whole demographic group (women) the opinions that the person (woman) shares with the bigger group (board of director men) are taken as the opinions of the demographic group (all the women) even though the opinions were not the subgroups opinions.

When it comes to the diversity in the board room the tokenism arises. If only one woman is hired as director, she might bring new ideas and perspectives, however, she might end up as a token. This leads to a dilemma that her ideas are not listened, and she cannot bring any value to the board. According to Terjesen et al. (2009: 323) critical mass of three or more could "normalize" the situation, by making the gender issue no longer an issue. This would create an atmosphere where women can raise issues and feel more comfortable. Joecks, Pull and Vetter (2013: 61) also agree with the absolute number of at least 30% women on board. This is why in this study the critical mass of 30% is taken into consideration to control the effect of women on board.

3.5. Risk behavior

Many studies have tackled a question of do men and women act differently when it comes to risk. There is a well-known stereotype that men tend to take more risks than women (Siegrist, Cvetkovich & Gutscher 2002: 94) and it leads to an expectation that men seek

more risks compared to women (Powell & Ansic 1997). A research conducted by Mateos de Cabo, Gimeno and Nieto (2010) found out that banks which are less risky have more women on their boards. The authors conclude that these banks are more risk averse and that is why they are less risky (Mateos de Cabo et al. 2012: 157).

The theory might be also extended to the company risk, when it comes to risk behavior, gender diversity. Companies that have more women on their boards should be risk averse and a board which is more diverse should act differently compared to homogeneous group (Adams & Funk 2012: 234). There has been evidence (Jizi & Nehme 2017: 559) that boards with more women have less volatile stock returns, which might be due to the critical mass of women and when there are enough people of certain gender the ideas and values can be interpreted to the practice.

3.6. Findings from previous literature

A growing amount of research has been conducted to examine the association between board gender diversity and firm's economic performance. However, the literature has not found universal answer for this phenomenon. The scholars have been divided between those that have found positive relationship between gender diversity and corporate performance and those who have found no or negative relationship between these two. The extensive amount of interest towards this topic might be caused by the debate of justifying gender quota or justifying the reasons why it should not be implemented. The following table1 lists some of the research conducted of this topic.

Table 1. Overview of the literature

Writer(s)	*Gender diversity measure (Independent variable)*	*Performance measure (Dependent variable)*	*Main result*	*Country*
Erhard, Werbel & Shrader 2003	Gender and ethnic	ROA and ROI	Relative higher board diversity leads to better performance in ROA	USA
Rose 2007	Proportion of women on board	Tobin's Q	There is no effect between women and performance	Denmark
Campbell & Minguez-Vera 2008	Percentage of women and dummy (at least one women)	Tobin's Q	No effect by it self	Spain
Adams & Ferreira 2009	Log sales, women on board,	ROA and Tobin's Q	Female directors have a significant impact on board inputs and firm outcomes	USA
Ahern & Dittmar 2012	Women on board	Tobin's Q	Caused significant drop in stock price and decline on Tobin's Q. Led to younger boards, increased leverage	Norway
Jizi & Nehme 2012	Women on board	Volatility	Women reduce stock return volatility	UK
Lückerath-Rovers 2013	Female per centage, female dummy	ROA, ROE, ROS, EBIT, TSR	Firms with women directors perform better	The Netherlands

Table 1 continues.

Table 1 continues.

Writer(s)	*Gender diversity measure (Independent variable)*	*Performance measure (Dependent variable)*	*Main result*	*Country*
Joecks, Pull & Vetter 2013	Gender diversity	ROE	The effect of diversity is first negative and after the critical mass is establisher it starts to be positive	Germany
Solakoglu 2013	Diversity (dummy more than one)	ROA, ROI and average monthly return	Industry matters when it comes to relationship between diversity and firm performance	Turkey
Chen, Ni & Tong 2014	Percentage of women	Volatility	Women improve efficiency of risk management	USA
Isidro & Sobral 2014	Women on board	Firm value (Tobin's Q), ROA, ROS financial performance	Diversity does not have any impact on firm performance	36 countries
Post &Byron 2015			Female representation is positively related to firm performance.	Many countries
Gordini & Rancati 2017	Female dummy (at least one), per centage of women, Blau-index, Shannon-index	Tobin's Q	Blau and Shannon index have a positive and significant relationship with Tobin's Q	Italy
Horak & Cui 2017	Companies with and without women	Debt to asset	Companies with women on board are less risky	China
Reguera-Alvarado, Fuentes & Laffarga 2017	Percentage of women and dummy (at least one women) and Blau-index	Tobin's Q	More diverse boards perform better	Spain

Women have been seen to bring positive effect on firms' economic performance in the US (Adams & Ferreira 2009), Turkey (Solakoglu 2013), the Netherlands (Lückerath-Rovers 2013) and in Italy (Erhardt, Werbel, & Shrader 2003). In these countries, researchers have found a positive relationship especially with the accounting measures Return on Asset and Return on Equity. In contrast, negative effect has been found in Germany (Joecks et al. 2013), Denmark (Rose 2007) and no effect in Spain (Campbell & Minguez-Vera 2008). This part will introduce the different findings of the research and the methods how the research has been conducted. The following sections are divided between positive findings and negative and no findings parts.

3.6.1. Women have a positive impact

According to Jizi and Nehme (2012: 599) companies with more diverse boards, tend to have less stock volatility however, for some industries the effect is more favorable than to others. They argue (2012: 599) that for most of the industries female representation was not favorable, but especially for consumer goods and services, health care and utility firms the relationship was favorable. The findings are different when we look at the economic performance. According to Solakoglu (2013: 1565) diversity has different effect on corporate economic performance when the industry changes. Especially firms operating in manufacturing industry tend to perform better if the board of directors are diverse (Solakoglu 2013: 1565).

A positive relationship between gender diversity and firm's performance has been found from Spanish data and US data as well (Reguera-Alvardo et al. 2017: 347, Adams & Ferreira 2009). Adams and Ferreira with their S&P 500 sample, (2009: 308) argue that there is a value adding and significant effect on corporate board when it is diverse. On the other hand, there is no relationship to be found if the board is not motivated to add more diverse members into the group. If the motivation is merely inorganic the relationship might be different. (Adams & Ferreira 2009:308). Moreover, a positive relationship with gender diversity has been found especially with the accounting

measures (Post & Byron 2015, Adams & Ferreira 2009, Lückerath-Rovers 2013: 506). Meta-analysis conducted from 140 studies (Post & Byron 2015) found out that most of the positive and significant relationships could be found from Return on Asset and Return on Equity measures. Meanwhile, the relationship between market performance and diversity was nearly non-existing (Post & Byron 2015) or negative (Lückerath-Rovers 2013: 506).

From the research that has found gender diversity to have a relationship with firm´s performance justify these findings by saying that diversity brings greater variety of knowledge, experience and relationships to companies (Lucas-Pérez, Mínquez-Vera, Baixauli-Soler, Martín-Ugedo& Sámchez-Marín 2015: 269). They have less experience for being a director, but they compensate this by adding value in public relations, legal field and marketing communication (Hillman et al. 2002: 758). This is why, gender diverse boards add more value to the company and the relationship between diversity and performance might be found.

Most of the studies which found a positive relationship between gender diversity and firm's economic performance used ordinary least square regression method to determine the relationship (Adams & Ferreira 2009, Lückerath-Rovers 2013, Reguera-Alvardo & Laffaga 2015). Furthermore, most used indicators for firm's economic performance are ROA, ROE, ROI and Tobin's Q (Adams & Ferreira 2009, Lückerath-Rovers 2013, Reguera-Alvardo et al. 2017, Erhardt, Werbel, & Shrader 2003). As mentioned earlier the positive relationships could be found for accounting measures from nearly all of the studies but market measures such as total shareholder return (TSR) was not found to be related to gender diversity. It might be a good idea to enhance these market measures to diversity research. The variables used in this paper will be introduced later.

3.6.2. Women have a negative or no impact

A lot of positive findings have been made in the field of research, in the meantime Lückerath-Rovers (2013: 507) argue that women cannot have a direct impact on firm's

economic performance. She stresses that even though a weak correlation has been found between gender diversity and accounting measures, it is not enough to justify that by simply adding women on board would improve firm's performance. Some evidence has been found that there is so called "critical mass" which has to be reached in order for diversity to have an effect on a company. According to Joecks et al. (2013) with their sample of German listed companies, number of women has to be at least 30% of the whole population of director for them to have any significant relationship with firm's economic performance. If this number is not fulfilled, women will be seen as mere tokens and do not add value to the board. Joecks et al. (2013: 68) argue that the relationship between diversity and Return on Equity is considered to be U-shaped. When the diversity in less than 30% women, the relationship between gender diversity and ROE is negative or non-existing. But when the diversity in more than 30% women can have a positive relationship with ROE. Therefore, it might be argued that the number of women on board should be considered when a quota is established. However, it is also argued that the "right" balance between men and women constitutes a more effective board and the critical mass does not matter (Gordini & Rancati 2017: 87).

Ahren and Dittmar (2012) came to conclusion with their Norwegian listed company sample, that adding more women into corporate board dropped company stock price and decreased Tobin's Q substantially. Their research focused on the point of time when Norway implemented the gender quota and they argue that companies choose their board of directors to maximize shareholder value (Ahrem &Dittmar 2012: 188). In this paper, by adding women based on their gender did not lead to immediate success. This is why, they stress that regulatory quota might not be the best possible solution to improve gender diversity (Ahrem & Dittmar 2012: 189).

Similar findings were made by Rose (2007), who stresses that in Denmark the relationship between gender diversity and economic performance was not statistically significant. In other words, the diversity and Tobin's Q were not linked. Even though the same ordinary least square regression and nearly all the same variables were used, this the coefficient was found to be negative and not significant. Therefore, some conclusions might be drawn that these results could be country related.

When it comes to risk and gender diversity Horak & Cui (2017: 859) stress that in firms which have more diversity on their boards, the debt to asset ratio is lower. This means that companies in Chinese markets are less risky and leveraged when both men and women are represented on board of directors. The same findings were made by Chen, Ni and Tong (2014) who were argue that female directors improve board operations in risk management which might lead to less risky companies. All in all, the findings might be different when we take into consideration the economic performance and risk. However, a common finding is that most of the literature have found some evidence that there is a relationship.

4. RESEARCH HYPOTHESIS

There is a clear gap in the existing literature when it comes to comparing two countries and their gender equality on board if directors. Moreover, as there are many countries which have already adapted gender quota and those which practice self-regulation in gender equality it is essential to know if these companies in these countries differ in economic performance. This is why this paper will have two samples, one from Norway which uses gender quota and one from Finland which uses self-regulatory actions. The aim of this research is to see if there is a relationship between corporate economic performance and board gender diversity. Also, the aim is to investigate if there is a difference between countries which have already gender quota in place and which are using self-regulatory action.

Based on the previous literature, economic performance has been mainly measured by Return on Asset (ROA). Most of the papers have got a positive relationship between ROA and gender diversity and the researchers have pointed out that the positive relationship can be found from accounting measures. *(*Adams & Ferreira 2009, Erhard, Werbel & Shrader 2003, Isidro & Sobral 2014, Lückerath-Rovers 2013). Therefore, the hypothesis one is as following:

H1: There is a positive and statistically significant relationship with accounting performance and gender diversity.

To investigate the market performance and the impact of the diversity to it, the previous research has used Tobin's Q. According to previous findings the impact varies between positive, negative and no impact. However, most of the results suggest that there is no impact found (see Table 1). (Ahren & Duttmar 2012, Campbell & Minguez-Vera 2008, Gordini & Rancati 2017). This is why the hypothesis two is as following:

H2: There is no statistically significant impact between market performance and gender diversity.

The existing literature is mainly focused on the market and accounting performance as mentioned earlier. This is why this paper will contribute to the existing literature by adding a risk factor which will measure the riskiness and volatility of the company. Jizi and Nehme (2010) argued that companies which have more women on their board would be less risky and volatile. According to the theoretical schools of thoughts companies which have more diverse boards should have more knowledge of the industry, relationship with the industry and customers (Reguera-Alvardo, Fuentes & Laffarga 2017: 339). Because of these factors the company should understand its environment and manage the challenges better, and the risk might also be smaller or more stable compared to less diverse companies. The risk and volatility will be measured by the standard deviation of the yearly stock return.

H3: Diversity has a degreasing impact on volatility and risk.

In order for the analysis to be balanced a fourth and last hypothesis will contribute to the literature by analyzing the debt risk of the company. According to the literature, diverse boards should be less risky when it comes to debt risk (Horak & Cui 2017: 859). Furthermore, women should be more risk averse then men (Mateos de Cabo et al. 2012: 157), which might balance the risk taking related to debt.

H4: Diversity has a decreasing impact on debt risk.

This paper contributes to already existing literature by introducing two countries in the same research with different actions in place to tackle gender diversity. To my knowledge there is no research conducted to compare two countries. The research mainly focuses on all the countries in certain stock exchange or a specific country. Furthermore, the two data panels will be regressed together first to see the impact of gender diversity and after this the two different panels will be regressed separately as a robustness test. After the hypothesis have been studied from both Norwegian and Finnish samples, the results will be evaluated statistically if the result could be compared and some conclusions could be made based on the results and comparison.

5. DATA AND METODOLOGY

In this section the data that is use in the paper will be introduced. Also, the reasoning for the variables shall be explained. After data description this section will continue with introducing the methods of the data analysis.

5.1. Data description

The research consists of panel data gathered from Thomson Reuters and Worldscope and Nasdaq database during years 2007-2016. This research takes into consideration OMX Helsinki's and OMX Oslo's listed companies from which all the necessary datapoints could be found.

The following criteria was followed in data collection. The companies have to be listed in OMX Helsinki or OMX Oslo the whole period 2007-2016. All the variables and datapoints must be found from the companies that were selected to this study and the data has to be found from the annual reports of the companies, from Thomson Reuters and Worldscope database or from nardaqomxnordic.com website. All the financial companies are left out of the sample. All in all, the dataset consists of 35 companies and 350 observations from OMX Helsinki and of 19 companies and 16 observations from OMX Oslo.

5.2. Methods

In this research Ordinary Least Square regression is used to investigate if there is a relationship between gender diversity and company performance. The full sample is regressed first and after that the sample is split into Norwegian and Finnish samples as a robustness test. After the regression analysis has been conducted the results will be analysed.

5.2.1. Variable description

The following variables (Table 2) were selected in order to tackle the research question. The selection was mainly done based on the previous literature.

Table 2. Variable table

Dependent variables	*Variable code*
Return on Asset	ACC
Tobin's Q	MARK
Volatility	RISKM
Debt to Asset Ratio	RISKD
Independent variables	
Percentage of women	PERS
Critical mass dummy	MASS
Blau index	BLAU
Control variables	
Debt to Asset ratio	DEBT
Board size	BSIZE
Firm size	FSIZE
Yearly volatility of OMX Helsinki 20 PI index and OMX Oslo 20 PI index	OMX
LN Market value of the company	VAULE
Tobin's Q	TOBIN
Industry dummy	

As the first dependent variables the research uses Return on Asset which is one of the mostly used variable in the literature to measure the financial performance *(*Adams & Ferreira 2009, Erhard et al. 2003, Isidro & Sobral 2014, Lückerath-Rovers 2013). Return on Asset is calculated as following:

(1) $$Return\ on\ Asset = \frac{Net\ Income}{Total\ Asset}$$

As the second dependent variable, this research uses Tobin's Q to measure the market performance of specific companies. The same variable has been used in the previous research as well (Ahren & Duttmar 2012, Campbell & Minguez-Vera 2008, Gordini & Rancati 2017) and the same method of measuring the variable is used as Campbell and Minguez-Vera (2008), Rose (2007) and Gordini and Rancati (2017) uses in their researches. It measures the market value of the firm and at the same time the market performance. Tobin's Q is calculated as following:

(2) $$Tobin's\ Q = \frac{Market\ value\ of\ stock + Book\ value\ of\ deabt}{Book\ value\ of\ total\ asset}$$

Tobin's Q indicates the market's expectation of the future earnings and according to Montgomery and Wernerfelt (1988) it is a suitable proxy for company's competitive advantage. According to Campbell and Minguez-Vera (2008: 442) this measure offers a perfect measurement to evaluate firm's performance as companies which have Tobin's Q ratio greater than 1.0 are expected to create more value by effective use of resources. On the other hand, those companies that have Tobin's Q ratio less than 1.0 are seen as poor users of resources. They also argue that Tobin's Q applies as a risk measurement (2008: 442).

The third dependent variable is introduced to measure firm risk. The standard deviation of company stock return is used to act as a proxy of risk and volatility in the market (Adams &Ferreira 2009: 293). The yearly standard deviation is calculated from the monthly observations of each company's stock price change.

In order for our sample to be balanced we will add the last dependent variable Debt to Asset ratio to measure the debt risk. Companies with higher debt to asset ratio are perceived as risky investments as they have to pay the debtors even if the company is not in a good financial health (Horak & Cui 2017: 858) The ratio is calculated as following.

(4) $$Debt\ to\ asset = \frac{Total\ debt}{Total\ Assets}$$

Women on board of directors is measured in three ways in this research and all of the gender variables are lagged by one period to avoid endogeneity problem (Moreno-Gmez, Lafuente & Vaillant 2017: 110, Greene 2003: 381). Firstly, the proportion of women on board is measured as the per centage. Secondly, the critical mass theory is observed by adding a dummy of 1 if there are 30% or more women on board and 0 if there are less than 30% women on board. Thirdly, the Blau index of diversity is used to measure heterogeneity of a group. This index is most commonly used index in diversity research (Solanas, Selvam, Navarro, Leiva 2012: 4) and more specifically in board gender diversity research (Reguera-Alvardo et al 2015, Campbell & Minguez-Vera 2008, Joecks et al. 2013). The index is calculated as following:

(6) $$Blau\ index = 1 - \sum_{i=1}^{k} p_i^2$$

Where p_i is the proportion of the group members in category *i* and *k* demonstrates the category for an attribute of interest. This means that the index will be computed $1 - (proportion\ of\ women^2 + proporion\ of\ men^2)$ for every observation point.

This research also includes number of control variables which are estimated to have an effect on the dependent variables. The first controllable variable is debt to asset ratio, which is most likely affecting the profitability of the company. The second control variable is board size measured as the number of board members. It is argued that the board size might increase due to legislative actions of increasing diversity (Adams & Ferreira 2009: 296) this would mean that women are simply added on the board and the old board dynamic continues.

The third control variable in this research is the firm size. It is measured as the natural logarithm of total assets and according to previous literature it is highly related to the performance of a company (Campbell & Minquez-Vera 2008: 441). In addition, it is commonly used control variable in this field of research (Adams & Ferreira 2009, Isidro & Sobral 2014, Luca-Perez et al. 2013). The fourth control variable is the natural logarithm of the market value of the company, which is highly related to the risk of the company. The fifth control variables are standard deviations of OMX Helsinki PI index closing price and OMX Oslo 20 PI index closing price to discover the volatility of the stock markets. The yearly standard deviations are calculated from daily closing prices of the price index. To control Finnish and Norwegian markets separately the OMX Helsinki values will be interpreted to Finnish companies and OMX Oslo values will be interpreted to the Norwegian values.

Lastly the industry effect and the year fixed effects are included to the model. The industry controls will be executed by adding dummy variables of 1 if the company belongs to the industry and 0 otherwise. This paper follows the Nasdaq's 10 industry sector division (Nasdaq). The company fixed effect will not be used as all the companies belong to the same industry and if these two fixed effect controls were added to the same model there would be a collinearity problem. The year fixed effect is added by using Eview's internally build period fixed effect function.

5.3. Regression models

This paper will conduct several regression models. The models will be constructed for all four dependent variables separately and to investigate the gender diversity in three different perspective (Models 1-3), all four dependent variables will be regressed in three different regression models.

5.3.1. Regression models 1-3 for accounting and market performance

Model 1 will investigate if there is a relationship between percentage of women and performance of the company. The model will be as following:

(7) $$Y_t = \beta_0 + \beta_1 PERS_{t-1} + \beta_2 DEBT_{t-1} + \beta_3 BSIZE_{t-1} + \beta_4 FSIZE_{t-1} + \beta_5 OMX_{t-1} + \beta_7 DIND_t + \varepsilon$$

Where,

Y t	ACC, MARK
PERS t-1	Percentage of women on board lagged one year
DEBT t-1	Debt ratio lagged one year
BSIZE t-1	Board size lagged one period
FSIZE t-1	Firm size lagged one period
OMX t-1	Volatility of OMXH and OMXO lagged one period
DIND t	Industry dummy

The Model 2 is constructed to tackle the critical mass theory. A dummy variable was constructed to be 1 when the diversity is 30% or more and 0 if diversity is less than 30%. All the dependent variables will be regressed separately with the following regression model.

(8) $$Y_t = \beta_0 + \beta_1 MASS_{t-1} + \beta_2 DEBT_{t-1} + \beta_3 BSIZE_{t-1} + \beta_4 FSIZE_{t-1} + \beta_5 OMX_{t-1} + \beta_7 DINDUST_t + \varepsilon$$

Where,

Y t	ACC, MARK
MASS t-1	Dummy of 1 when there are equal or more than 30% women and 0 if less, lagged one year
DEBT t-1	Debt ratio lagged one year
BSIZE t-1	Board size lagged one period
FSIZE t-1	Firm size lagged one period

OMX t-1	Volatility of OMXH and OMXO lagged one period
DIND t	Industry dummy

The Model 3 shall take into consideration the Balu index of diversity which measures the heterogeneity of a group and all the dependent variables will be regressed the following model.

(9) $$Y_t = \beta_0 + \beta_1 BLAU_{t-1} + \beta_2 DEBT_{t-1} + \beta_3 BSIZE_{t-1} + \beta_4 FSIZE_{t-1} + \beta_5 OMX_{t-1} + \beta_7 DINDUST_t + \varepsilon$$

Where,

Y t	ACC, MARK
BLAU t-1	Blau index lagged one year
DEBT t-1	Debt ratio lagged one year
BSIZE t-1	Board size lagged one period
FSIZE t-1	Firm size lagged one period
OMX t-1	Volatility of OMXH and OMXO lagged one period
DIND t	Industry dummy

5.3.2. Regression models 1-3 for market and debt risk

The model 1-3 for market risk and volatility will not lag the OMX variable as in the previous models as the optimal lag structure for OMX is without lags.

(10) $$Y_t = \beta_0 + \beta_1 DIV_{t-1} + \beta_2 DEBT_{t-1} + \beta_3 BSIZE_{t-1} + \beta_4 FSIZE_{t-1} + \beta_5 OMX_t + \beta_7 DINDUST_t + \varepsilon$$

Where,

Y t	RISKM

DIV t-1	Model 1 Percentage of women lagged one year, Model 2 Dummy of 1 when there are equal or more than 30% women and 0 if less, lagged one year and Model 3 Blau index lagged one year
DEBT t-1	Debt ratio lagged one year
BSIZE t-1	Board size lagged one period
FSIZE t-1	Firm size lagged one period
OMX t	Volatility of OMXH and OMXO
DIND t	Industry dummy

This models 1-3 for Debt risk will follow the same pattern as the pervious equation 10. However, the debt variable will not be taken as the independent variable and will be replaced by Tobin's Q. Tobin's Q has been argued to measure risk as well and this is why it might be related to the debt risk of the company (Campbell and Minguez-Vera 2008: 442). Also, the market value of the company is added to the regression as it is considered to be related to risk of a company. The equation looks as following:

(11) $$Y_t = \beta_0 + \beta_1 DIV_{t-1} + \beta_2 TOBIN_{t-1} + \beta_3 BSIZE_{t-1} + \beta_4 FSIZE_{t-1} + \beta_4 VALUE_{t-1} + \beta_5 OMX_t + \beta_7 DINDUST_t + \varepsilon$$

Where,

Y t	RISKD
DIV t-1	Model 1 Percentage of women lagged one year, Model 2 Dummy of 1 when there are equal or more than 30% women and 0 if less, lagged one year and Model 3 Blau index lagged one year
TOBIN t-1	Tobin's Q lagged one year
BSIZE t-1	Board size lagged one period
FSIZE t-1	Firm size lagged one period
VALUE t-1	Market value of the company lagged one period
OMX t	Volatility of OMXH and OMXO
DIND t	Industry dummy

6. RESULTS

In this section the results of the statistical analysis will be introduced. First this part will start with descriptive analysis and continue with the correlation matrix. The section will end with the regression analysis of the whole sample and the split sample.

6.1. Descriptive analysis

The Table 3 below illustrates the descriptive statistics of the sample. When we look at the percentage of women between 2007 and 2016, it seems that the diversity varies between 66,67% and 0,00%. Also, the diversity index Blau varies between 0,5 and 0. This is quite dramatic variation and needs to be looked at more deeply. The average diversity in the sample is 31%, which is quite high compared to the minimum percentage of women on board.

Table 3. Descriptive statistics 2007-2016.

Descriptive statistics					
	Mean	*Median*	*Maximum*	*Minimum*	*Standard Deviation*
ACC	*6,95*	*6,52*	*27,76*	*-17,31*	*7,32*
MARK	*1,64*	*1,44*	*5,99*	*0,63*	*0,77*
RISKM	*0,33*	*0,30*	*1,37*	*0,10*	*0,18*
RISKD	*0,26*	*0,24*	*0,91*	*0,00*	*0,16*
PERS	*31,00*	*33,33*	*66,67*	*0,00*	*12,83*
MASS	*0,57*	*1,00*	*1,00*	*0,00*	*0,50*
BLAU	*0,39*	*0,44*	*0,50*	*0,00*	*0,11*
DEBT	*0,26*	*0,24*	*0,91*	*0,00*	*0,16*
BSIZE	*8,32*	*8,00*	*20,00*	*2,43*	*1,38*
FSIZE	*16,22*	*15,82*	*21.70*	*13,09*	*0,85*
VALUE	*8,87*	*8,68*	*12,43*	*5,97*	*1,51*
OMX	*0,23*	*0,199*	*0,54*	*0,11*	*0,09*

Notes: This table lists the descriptive statistics where, ACC is ROA, MARK is Tobin's Q, RISKM is stock volatility, RISKD is debt to asset ratio, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, VALUE is market value of a company, OMX is the average yearly closing price of OMXH and OMXO.

The median board size on the other hand is 8,32 and if we look at the diversity percentage, we can see that on average, there are two to three women in median sized board. Taking the perspective of the critical mass theory and tokenism, this finding indicates that women should have an impact on the corporation as the amount is more than one in average sized boards.

Table 4. Percentage of women on board

	Average percentage of women									
	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Full Sample	*23*	*24*	*25*	*26*	*27*	*28*	*28*	*29*	*29*	*30*
Finland	*23*	*24*	*25*	*26*	*27*	*28*	*28*	*29*	*29*	*30*
Norway	*26*	*27*	*29*	*30*	*33*	*33*	*34*	*33*	*35*	*36*
T	*27*	*29*	*31*	*31*	*35*	*34*	*36*	*34*	*36*	*37*
C	*25*	*27*	*29*	*31*	*35*	*34*	*35*	*34*	*34*	*36*
O	*27*	*28*	*30*	*32*	*35*	*34*	*36*	*35*	*36*	*37*
M	*29*	*29*	*31*	*30*	*34*	*33*	*34*	*33*	*36*	*36*
I	*26*	*27*	*29*	*30*	*34*	*34*	*34*	*33*	*35*	*36*
H	*28*	*28*	*34*	*28*	*28*	*27*	*29*	*25*	*27*	*34*

Notes: The table lists the average percentage of women from 2007-2016. Sample takes the whole sample into calculations, Finland takes only Finnish companies, Norway takes only Norwegian companies, T is the companies that are operating in telecommunication and technology, C is consumer goods and services, O is oil, gas and utilities, M is materials, I is industrials and H is healthcare industry.

If we look at the Table 4, we can see that the average percentage of women in the whole sample and the Norwegian sample and Finnish sample do not dramatically differ from each other. Even though Norway has a gender quota in place, Finland manages to have nearly as many women on bard as Norway has. The amount of diversity grows year by year and the variation between industries is not big. It might be that the gender quota and self-regulation makes the companies choose more women on boards and that is why there is no industry that would favor certain gender.

6.2. Correlation analysis

The correlation table can be seen in Table 5. Accounting performance (ACC) has a negative and a significant relationship with all the diversity variables. Furthermore, the firm size and accounting performance has negative and significant correlation. The same results can be seen from correlations of market performance (MARK) and gender variables and firm size. However, the correlation between diversity variables and market performance is not statistically significant. Furthermore, the magnitude of the correlations with market performance is not as big as with accounting performance. Which is why it is expected that there is no impact between gender diversity and market performance.

Correlation between market performance (Tobin's Q) and firm size is negative, and the magnitude of the correlation is strong. It indicates that companies, which are bigger would have lower Tobin's Q. These finding indicate that companies which have more women on their boards would perform worse compared to companies which have less women. Therefore, it is expected that regression analysis results are negative as well.

The risk factors are not as correlated with the gender factors as the performance factors were. The debt risk is only significantly correlated with percentage of women on board of directors and the correlation is positive. It gives an insight that companies with more diverse boards are riskier and have higher debt to asset ratio. Furthermore, firm size has a negative correlation with debt risk, which indicates that bigger companies have lower debt to asset ratio. Board size and market value controls most of the debt risk variable.

Market risk has significant correlation with percentage of women and critical mass variables. The correlation is quite strong with the first diversity variable (0,39) and it might be that diverse boards would be more volatile. Additionally, critical mass variable has a correlation with market risk, but the correlation is nearly non existing (0,07). Therefore, it is expected that the magnitude of diversity in regression analysis is not great.

Table 5. Table of Correlation

Correlation table

	ACC	MARK	RISKM	RIKSD	PERS	MASS	BLAU	BSIZE	FSIZE	VALUE	OMX
ACC	1,00										

MARK	0,55	1,00									
	(0,00)	-----									
RISKM	-0,33	-0,33	1,00								
	(0,00)	(0,00)	-----								
RISKD	-0,23	-0,31	0,33	1,00							
	(0,00)	(0,00)	(0,00)	-----							
PERS	-0,17	-0,05	0,39	0,11	1,00						
	(0,00)	(0,35)	(0,00)	(0,05)	-----						
MASS	-0,16	-0,08	0,07	0,06	0,83	1,00					
	(0,00)	(0,13)	(0,00)	(0,28)	(0,00)	-----					
BLAU	-0,16	-0,05	0,04	0,08	0,93	0,82	1,00				
	(0,00)	(0,34)	(0,51)	(0,12)	(0,00)	(0,00)	-----				
BSIZE	-0,14	-0,15	-0,23	-0,30	0,06	0,13	0,16	1,00			
	(0,01)	(0,01)	(0,00)	(0,00)	(0,30)	(0,01)	(0,00)	-----			
FSIZE	-0,18	-0,34	-0,05	-0,04	0,40	0,44	0,46	0,48	1,00		
	(0,00)	(0,00)	(0,37)	(0,48)	(0,00)	(0,00)	(0,00)	(0,00)	-----		
VALUE	-0,13	-0,23	0,07	0,23	0,08	0,03	0,04	-0,06	0,13	1,00	
	(0,01)	(0,00)	(0,17)	(0,00)	(0,13)	(0,55)	(0,42)	(0,29)	(0,02)	-----	
OMX	-0,02	-0,22	0,39	0,07	-0,06	-0,02	-0,06	0,03	0,08	-0,11	1,00
	(0,77)	(0,00)	(0,00)	(0,18)	(0,30)	(0,65)	(0,24)	(0,60)	(0,16)	(0,04)	-----

Notes: This table shows the correlation table where, ACC is ROA, MARK is Tobin's Q, RISKM is stock volatility, RISKD is debt to asset ratio, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, BSIZE is the board size, FSIZE is natural logarithm of assets, VALUE is market value of a company, OMX is the average yearly closing price of OMXH and OMXO.

6.3. Regressions

In this section all the regressions will be implemented and analyzed. First the Accounting performance will be regressed separately with percentage of women, critical mass dummy and Blau index. The same will be done to Market performance, Market risk and Debt risk. The standard errors will be clustered by period as the robustness test by using the White Cross-section method provided by the Eviews to control for serial correlation in the data (Eviews 10 Help). The results are provided in the Appendices.

6.3.1 Accounting performance

The first hypothesis says that diversity in the board room has a positive impact on corporate economic performance. In table 6 the first model considers the percentage of women and does it have an impact on Return on Asset. It seems that there is a small and positive statistically significant impact of diversity on ROA. However, the impact is quite small as the variable of the percentage of women has coefficient 0,0670. The impact in statistically significant but that small that just adding women on board cannot improve accounting performance. This result gives insight that more diverse boards are found from better performing companies.

When we look at the critical mass dummy in Model 2, the companies which exceed the 30% or more women would be performing worse in Return on Asset compared to those who have less women. The coefficient is negative and statistically significant, and the magnitude of the critical mass dummy is much stronger than the magnitude of the percentage of women. It might be that the Norwegian women quota has had an effect on the observed companies and by adding these women to the board it has caused a negative effect on accounting performance. This theory will be tackled in the robustness test. Another theory could be that there is not a critical mass but there should be a certain optimal balance of diversity in the board room in order to get the maximum impact (Gordini & Rancati 2017: 87). The optimal balance in this case could be between 0% and

30% of diversity as the critical mass dummy had negative impact and the percentage of women had a positive impact.

In the third model the diversity index Blau is not statistically significant. This is due to the fact that Blau index takes into account the contribution of both magnitude of the diversity and the board size. The combined effect seems not to be related to the Return on Asset.

Table 6. Regression analysis result for Accounting performance models 1-3

	Model 1	*Model 2*	*Model 3*
C	*25,0604* *(0,0000)*	*23,4511* *(0,0000)*	*25,7973* *(0,0000)*
PERS	*0,0670* *(0,0445)*		
MASS		*-1,7771* *(0,0309)*	
BLAU			*-3,9393* *(0,3120)*
DEBT	*-9,0435* *(0,0001)*	*-9,1076* *(0,0001)*	*-9,1772* *(0,0001)*
BSIZE	*-3,3079* *(0,0317)*	*-3,0766* *(0,0451)*	*-3,0278* *(0,0502)*
FSIZE	*0,8355* *(0,00093)*	*0,8178* *(0,0110)*	*0,9429* *(0,0032)*
OMX	*28,8458* *(0,0093)*	*27,9159* *(0,0049)*	*27,9362* *(0,00580)*
N	*350*	*350*	*350*
F-statistic	*6,0138* *(0,0000)*	*6,0535* *(0,0000)*	*5,8217* *(0,0000)*
R-squared	*0,2881*	*0,2894*	*0,2815*
Adjusted R-squared	*0,2402*	*0,2416*	*0,2331*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Accounting performance (ROA) where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, OMX is the volatility of OMXH and OMXO.

In Appendix 1 the robustness test with White Period clustering method is computed. The results stay unchanged and the third diversity variable Blau index remain not significant.

Therefore, the first hypothesis can be accepted from the first model, but when it comes to the second and third model the hypothesis cannot be accepted.

6.3.2. Market performance

The second hypothesis argues that diversity does not influence market performance. Based on the regression results on Table 7, all the diversity variables are statistically significant and have a small and significant impact on Tobin's Q. The percentage of women has again the smallest impact on the market performance. The impact is practically non-existent as in the previous regressions for Accounting performance. The same conclusion is drawn from the table 7 that diversity cannot impact the performance of the company by itself. Furthermore, by conducting the robustness test in Appendix 1 the results are unchanged as the diversity variables are still significant after clustering the standard errors.

If we look at the Model 2 the critical mass dummy seems to have greater magnitude than percentage of women. The impact is statistically significant and positive. It is interesting to see that 30% or more women on board has negative impact on accounting performance and a positive effect on market performance. Could it be that women are influencing on certain kind of decision making and for example participate into certain board group and therefore can have an impact into one area.

In Model 3 the Blau index is also positive and statistically significant and it might be concluded from the Table 7 that diversity has a positive and significant impact on market performance. On the other hand, the board size has no effect on the market performance. It could be that the amount of people on the decision-making position is not improving Tobin's Q, however it might be that the quality of the decision is the more important factor.

Table 7. Regression analysis results of Market performance models 1-3

	Model 1	*Model 2*	*Model 3*
C	*4,7091* *(0,0000)*	*4,7998* *(0,0000)*	*4,6718* *(0,0000)*
PERS	*0,0086* *(0,0034)*		
MASS		*0,1536* *(0,0354)*	
BLAU			*1,0760* *(0,0017)*
DEBT	*-1,4084* *(0,0000)*	*-1,3895* *(0,0000)*	*-1,4173* *(0,0000)*
BSIZE	*0,1585* *(0,2412)*	*0,1863* *(0,1706)*	*0,2088* *(0,1223)*
FSIZE	*0,1992* *(0,0000)*	*0,1927* *(0,0000)*	*0,1971* *(0,0000)*
OMX	*2,0373* *(0,0203)*	*2,2436* *(0,0107)*	*1,8593* *(0,0355)*
N	*350*	*350*	*350*
F-statistic	*13,2685* *(0,0000)*	*12,9107* *(0,0000)*	*13,3745* *(0,0000)*
R-squared	*0,4717*	*0,4648*	*0,4736*
Adjusted R-squared	*0,4361*	*0,4288*	*0,4382*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Market performance (Tobin's Q) where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, OMX is the volatility of OMXH and OMXO.

6.3.3. Market risk

The third hypothesis tackles the question of does gender diversity have an impact on volatility and risk. In fact, the hypothesis states based on pervious literature that companies with more diverse boards would be less volatile and risky. Looking at table 8 the Models 1-3 only percentage of women has a statistically significant and positive impact on the volatility. Furthermore, the results suggest that the board size does not have any relation to the firm risk and volatility.

All the other control variables are statistically significant. The results give an insight that companies with less debt are more volatile and these characters are seen in companies with greater asset value (FSIZE) as the coefficient of firm size is positive.

Looking at the robustness test where the standard errors are clustered the results show (Appendix 1) that none of the diversity variables are statistically significant. However, the impact is again nearly non-existing as the coefficient is small compared to the magnitude of the entire model. Therefore, in practice diversity does not have an impact on Market Risk and volatility in this case. More robustness tests will be made in the chapter 4.4.

Table 8. Regression analysis results of Market Risk models 1-3.

	Model 1	*Model 2*	*Model 3*
C	*0,3524* *(0,0019)*	*0,3610* *(0,0021)*	*0,3271* *(0,0040)*
PERS	*0,0016* *(0,0394)*		
MASS		*0,0247* *(0,2013)*	
BLAU			*0,0595* *(0,5102)*
DEBT	*0,2972* *(0,0000)*	*0,3016* *(0,0000)*	*0,3020* *(0,000)*
BSIZE	*-0,0266* *(0,4523)*	*0,0320* *(0,3715)*	*-0,0327* *(0,3635)*
FSIZE	*-0,0169* *(0,0221)*	*-0,0152* *(0,0406)*	*0,0137* *(0,0634)*
OMX	*0,8409* *(0,0039)*	*0,8868* *(0,0024)*	*0,8987* *(0,0023)*
N	*350*	*350*	*350*
F-statistic	*8,2784* *(0,0000)*	*8,0942* *(0,0000)*	*8,0099* *(0,0000)*
R-squared	*0,3577*	*0,3526*	*0,3501*
Adjusted R-squared	*0,3145*	*0,3090*	*0,3065*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Market Risk (volatility) where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, OMX is the volatility of OMXH and OMXO.

6.3.4. Debt risk

The regression results are reported in Table 9. All the diversity variables have a statistically significant impact on debt risk and the impact is positive. Therefore, results suggest that gender diversity has a small increasing effect on the debt risk. However, the coefficient is so small in Models 1 and 2 that just adding women to the board does not make a difference by itself.

Table 9. Regression analysis results for Debt risk Models 1-3.

	Model 1	*Model 2*	*Model 3*
C	*0,6411* *(0,0000)*	*0,6751* *(0,0000)*	*0,6407* *(0,0000)*
PERS	*0,0013* *(0,0881)*		
MASS		*0,0378* *(0,046)*	
BLAU			*0,2190* *(0,0132)*
FSIZE	*0,0134* *(0,0843)*	*0,0141* *(0,0687)*	*0,0148* *(0,0535)*
BSIZE	*0,1790* *(0,0000)*	*0,1836* *(0,0000)*	*0,1863* *(0,0000)*
VALUE	*0,0199* *(0,0007)*	*0,0204* *(0,0005)*	*0,0205* *(0,0004)*
TOBIN	*0,0809* *(0,0000)*	*0,0810* *(0,0000)*	*0,0822* *(0,0000)*
OMX	*0,6006* *(0,0341)*	*0,6064* *(0,0314)*	*0,5513* *(0,0514)*
N	*350*	*350*	*350*
F-statistic	*5,4000* *(0,0000)*	*5,4646* *(0,0000)*	*5,5954* *(0,0000)*
R-squared	*0,2759*	*0,2783*	*0,2830*
Adjusted R-squared	*0,2248*	*0,2273*	*0,2325*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Debt Risk (Debt to Asset) where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, VALUE is the market value of a company, TOBIN is Tobin's Q.

The results lead to the conclusion that companies with more diverse boards would be riskier and taking slightly more debt than companies with less women. This is controversial to the theory and hypothesis four, where women were perceived to be risk averse and diverse board was expected to be less risky.

The robustness test is shown in Appendix 1. The results seem to be unchanged after clustering the standard errors. Same conclusion can be made from the last regression as from the previous models, that the impact of gender diversity is quite small and by just adding more women to the board does not have an impact by itself. It is evident that the impact of one person is not coming straightly from the gender but also from other characteristics that he/she has.

6.4. Country specific regression analysis

This section will look at the country specific results for both Finnish and Norwegian data. The data is split into two and regressed the same way as in the previous part. Results will be analyzed and compared to the initial regression results.

6.4.1. Country specific analysis Finland

The regression results in table 10 indicate that the diversity variables would have a statistically significant and positive effect on most of the performance and risk variables. However, the impact is small and, in most cases, practically non-existing and these results follow mostly the initial regression results. It has to be noted that the regression model for Market risk is not optimal and the model is not statistically significant when it comes to Finnish sample.

In the full sample regression results for Accounting performance the critical mass dummy had a negative impact on ROA and Blau index did not have an impact at all. When the sample was split the results were positive and significant for Finnish companies.

Therefore, it might be that in case of Finnish companies the increasing number of women on board has a positive impact on Return on Asset. Furthermore, 30% or more women can make an increasing impact.

For market performance and debt risk regressions results are unchanged and all the diversity variables are statistically significant and positive. This means that companies with more diverse boards would perform slightly better and be a bit riskier.

Table 10. Country specific regression analysis Finland

Country specific regression analysis Finland												
	Accounting performance			*Market performance*			*Market Risk*			*Debt Risk*		
Model	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*
C	*21,0366*	*21,6215*	*20,5961*	*3,9008*	*4,0696*	*3,8198*	*0,3737*	*0,3664*	*0,3782*	*0,1166*	*0,1581*	*0,1207*
	(0,0474)	*(0,0368)*	*(0,0555)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,1100)*	*(0,1227)*	*(0,1100)*	*(0,0081)*	*(0,0005)*	*(0,0104)*
PERS	*0,0905*			*0,0282*			*-0,0015*			*0,0023*		
	(0,0008)			*(0,0000)*			*(0,0467)*			*(0,0000)*		
MASS		*1,5659*			*0,5349*			*-0,0354*			*0,0418*	
		(0,0028)			*(0,0000)*			*(0,0329)*			*(0,0079)*	
BLAU			*8,9291*			*2,4435*			*-0,1320*			*0,1829*
			(0,0001)			*(0,0000)*			*(0,0543)*			*(0,0013)*
DEBT	*-15,1244*	*-14,1683*	*-14,8009*	*-2,5329*	*-2,2517*	*-2,3864*	*0,3156*	*0,3042*	*0,3083*			
	(0,0000)	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*			
BSIZE	*-2,7240*	*-2,5024*	*-3,0331*	*0,0977*	*0,0369*	*0,1631*	*-0,0519*	*-0,0540*	*-0,0482*	*0,0237*	*0,0153*	*0,0257*
	(0,0001)	*(0,0009)*	*(0,0000)*	*(0,2950)*	*(0,7543)*	*(0,0506)*	*(0,0457)*	*(0,0326)*	*(0,0748)*	*(0,1854)*	*(0,4409)*	*(0,1560)*
FSIZE	*0,3502*	*0,2994*	*0,3309*	*0,1683*	*0,1528*	*0,1606*	*-0,0091*	*-0,0099*	*-0,0095*			
	(0,5945)	*(0,6596)*	*(0,6121)*	*(0,0001)*	*(0,0024)*	*(0,0001)*	*(0,5670)*	*(0,5412)*	*(0,5490)*			
OMX	*-7,2570*	*-8,1587*	*-7,0973*	*0,0211*	*0,2699*	*0,0532*	*0,7954*	*0,8041*	*0,7970*	*0,1053*	*0,0683*	*0,0887*
	(0,0692)	*(0,0335)*	*(0,0755)*	*(0,9692)*	*(0,6219)*	*(0,9251)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,1395)*	*(0,4027)*	*(0,2201)*
TOBIN										*0,0516*	*0,0507*	*0,0504*
										(0,0000)	*(0,0000)*	*(0,0000)*
VALUE										*0,0242*	*0,0237*	*0,0250*
										(0,0000)	*(0,0000)*	*(0,0000)*
R	*0,6360*	*0,6306*	*0,6386*	*0,6641*	*0,6444*	*0,6566*	*0,3607*	*0,3625*	*0,3038*	*0,4844*	*0,4727*	*0,4743*
Adj R	*0,6091*	*0,6033*	*0,6119*	*0,6392*	*0,6181*	*0,6312*	*0,3135*	*0,3153*	*0,3129*	*0,4464*	*0,4336*	*0,4355*
F	*23,6585*	*23,1082*	*23,9234*	*26,7656*	*24,5331*	*25,8843*	*7,6380*	*7,6973*	*7,6225*	*12,7209*	*12,1300*	*12,2168*
	(0,0000)	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*
Sample type	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*	*Finland*
Year fixed effect	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Indust. fixed effect	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Accounting performance, Market performance, Market Risk and Market Risk where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, OMX is the volatility of OMXH and OMXO, VALUE is the market value of a company, TOBIN is Tobin's Q.

6.4.2. Country specific analysis Norway

The regression analysis for Norwegian data can be seen in table 11. It indicates that for Norwegian companies, diversity has opposite effect compared to Finnish companies. All the diversity measures are negative and most of them statistically significant. The only model which is not statistically significant is model 1 for Market performance.

Table 11. Country specific regression analysis Norway

Country specific regression analysis Norway												
	Accounting performance			*Market performance*			*Market Risk*			*Debt Risk*		
Model	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*
C	*28,5628*	*16,5992*	*31,7324*	*3,8772*	*3,6929*	*4,1013*	*0,3387*	*0,5694*	*0,3771*	*1,2860*	*0,9978*	*1,3266*
	(0,0008)	*(0,0788)*	*(0,0002)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0425)*	*(0,0000)*	*(0,0138)*	*(0,0000)*	*(0,0000)*	*(0,0000)*
PERS	*-0,3073*			*-0,0054*			*0,0060*			*-0,0071*		
	(0,0000)			*(0,1131)*			*(0,0002)*			*(0,0000)*		
MASS		*-6,1866*			*-0,1544*			*0,0947*			*-0,1073*	
		(0,0000)			*(0,0554)*			*(0,0198)*			*0,0004*	
BLAU			*-49,6837*			*-1,3229*			*0,6797*			*-0,9644*
			(0,0000)			*(0,0003)*			*(0,0000)*			*(0,0003)*
DEBT	*-12,4048*	*-9,8561*	*-12,4913*	*-1,0752*	*-1,0537*	*-1,1290*	*0,4767*	*0,4145*	*0,4455*			
	(0,0000)	*(0,0016)*	*(0,0001)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*			
BSIZE	*-7,5682*	*-4,7240*	*-6,5332*	*-0,2270*	*-0,1858*	*0,2359*	*0,1405*	*0,0823*	*0,1040*	*-0,3262*	*-0,2830*	*-0,2855*
	(0,0010)	*(0,0358)*	*(0,0079)*	*(0,0540)*	*(0,1383)*	*(0,0506)*	*(0,0089)*	*(0,2528)*	*(0,1823)*	*(0,0000)*	*(0,0000)*	*(0,0000)*
FSIZE	*0,3356*	*0,2523*	*0,6315*	*-0,0859*	*-0,0850*	*0,0743*	*-0,0518*	*-0,0485*	*-0,0503*			
	(0,4236)	*(0,4902)*	*(0,0841)*	*(0,0175)*	*(0,0142)*	*(0,0304)*	*(0,0000)*	*(0,0000)*	*(0,0000)*			
OMX	*10,5411*	*11,8130*	*10,9352*	*0,317045*	*0,3203*	*0,2927*	*0,7143*	*0,6901*	*0,6877*	*0,0449*	*0,0782*	*0,0699*
	(0,0965)	*(0,1187)*	*(0,0824)*	*(0,2603)*	*(0,2861)*	*(0,2987)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,6630)*	*(0,3042)*	*(0,4674)*
TOBIN										*-0,1035*	*-0,0923*	*-0,1128*
										(0,0000)	*(0,0001)*	*(0,0000)*
VALUE										*0,0116*	*0,0112*	*0,0164*
										(0,3334)	*(0,2418)*	*(0,1574)*
R	*0,1956*	*0,1624*	*0,2159*	*0,3564*	*0,3592*	*0,3684*	*0,5726*	*0,5696*	*0,4062*	*0,4349*	*0,3707*	*0,4168*
Adj R	*0,141642*	*0,1069*	*0,1633*	*0,3132*	*0,3162*	*0,3261*	*0,5408*	*0,5376*	*0,3664*	*0,3970*	*0,3284*	*0,3776*
F	*3,6237*	*2,8891*	*4,1029*	*8,2497*	*8,3520*	*8,6921*	*18,0440*	*17,8053*	*10,1928*	*11,4690*	*8,7752*	*10,6480*
	(0,0002)	*(0,0025)*	*(0,0001)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*	*(0,0000)*
Sample type	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*	*Norway*
Year fixed effect	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Indust. fixed effect	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

Notes: This table lists the three regression models of Accounting performance, Market performance, Market Risk and Market Risk where, PERS is percentage of women on board, MASS is critical mass dummy, BLAU is the diversity index, DEBT is debt ratio, BSIZE is the board size, FSIZE is natural logarithm of assets, OMX is the volatility of OMXH and OMXO, VALUE is the market value of a company, TOBIN is Tobin's Q.

It seems that diverse boards have worse accounting performance and market performance. However, these companies have lower Debt risk which is controversial to the results in table 10. It could be that the results are country specific and diversity works differently in different regions. Also, it is important to mention that the regulatory background varies between Norway and Finland. In Norway, which is under quota legislation, companies were performing worse when more women were added to the board (Ahrem &Dittmar 2012: 188). Therefore, it might be that forcing companies to take more women on board could have a negative impact on accounting and market performance. However more research has to be made in order to determine if this is true.

Looking at the risk of Norwegian companies in table 11 and comparing it to the risk of Finnish companies in table 10, it is evident that diversity has an opposite impact in different samples. It might be that Norwegian companies are more risk averse when they are operating under new jurisdiction of quota women and all women are put into a specific sub group where they are only impacting on a specific area of a company. However, more research has to be made in order to determine if this explanation applies.

7. CONCLUSION AND DISCUSSION

The aim of this paper was to investigate if gender diversity has an impact on corporate performance and risk. The main idea for the research was drawn from the EU's gender quota proposal which states that there should be both men and women on board of directors. However, there was no economic justification for the quota proposal which has led to many researches in the field of gender diversity and economics. Even though a lot of research has been made based on this topic, there is a gap in the research filed because most of the research concentrate only on specific country or specific stock index.

This research concentrates on two countries with different gender acts in place. The first country which was introduced was Norway, which is the first country in the world to adopt a gender quota and the second country was Finland which uses self-regulatory actions to improve gender diversity in the board room. Both samples were regressed together and separately to investigate does gender diversity have an impact on risk and performance of Norwegian and Finnish companies.

The results for the first part of the analysis were based on the whole sample with both Finnish and Norwegian companies. The first regression which answered to the first hypothesis, the percentage of women and the critical mass dummy were found to be statistically significant. It was surprising that the coefficient of the percentage of women was positive and the critical mass dummy was negative. Moreover, it might be that if there are more than 30% women on the board the impact is negative, but if less than the impact is positive. On the other hand, as the coefficient for the percentage of women in positive, the growing number of women should have positive impact on the Accounting performance. Gordini & Rancati (2017: 87) argued that there is no correct percentage of diversity, but in fact there could be a balance which will determine the right amount of diversity in a group. Therefore, more research should be made to investigate if the critical mass or balance should be somewhere between 0% and 30%, rather than 30% or more.

The results from the second part of the analysis was based on the second hypothesis of the impact to the market performance. All the diversity variables were statistically

significant and positive. This indicated that the Market performance could be improved by more diverse boards. However, it should be noted that the coefficient in diversity variables were so small that by simply adding more women on the board would not make a positive impact. But by adding people with knowledge and skill of the task might make a difference.

The third regression tackled the third hypothesis of the Market risk and gender diversity. Only the variable of percentage of women was statistically significant and positive which means that companies with diverse boards would be more volatile and riskier. However, the coefficient was so small that any straight forward answers cannot be drawn from the regression. In the fourth and last full sample regression of debt risk, all the diversity variables were found to be statistically significant and positive, which indicates that companies which have more gender diverse boards would have more debt and more leveraged. These findings were not in line with the previous literature and stereotypes, where women were seen as more risk averse and companies with more women less risky (Adams & Funk 2012: 234).

By regressing two countries together the results combine the impact of gender diversity in two different countries. This is on the other hand the “average” combined effect and the effect of the country and legislation is not seen clearly. Therefore, it was important to regress the both samples separately, as it might be that the results are highly country related. However, more research is needed to determine if this impact is based on country and the fact that women are placed into different board groups inside the board and having an impact on the specific area of a company.

The sample was split into two samples, Finnish and Norwegian samples and they were regressed the same way as the initial sample. The results were opposite when the country changed. For Finnish data the diversity variables were positive across the models, which indicate that companies with gender diverse boards were performing better and they were riskier. On the other hand, Norwegian companies with more gender diverse boards were performing worse and were less risky. Based on the results it seems that the impact of gender diversity varies between countries.

One of the reasons why the results are country specific is that these two countries have different method to improve gender diversity. Norwegian companies might be performing worse due to the gender quota as companies have to add women on their boards which do not have the skills and merits to act as a director. Similar findings were found in Ahren and Dittmar's (2012) paper. As mentioned in the literature review, they argued that gender quota decreased the performance of Norwegian companies and the quota was determined to have negative short-term impact. It is interesting that even though the time line in this paper is 2007-2016 the results are the same as in the Ahren and Dittmar (2012) research paper. It might be that the quota is still affecting the companies after time has passed.

For Finnish companies, diversity had positive impact on performance. This could indicate that self-regulatory actions are working, and those women are elected to the board, which have the right mindset to contribute to the decision making. However, these companies tend to be riskier, which could be due to the fact that women are in committees that have an effect to a certain area of the company. As mentioned before this theory should be further researched in order to determine if this justification is true.

All in all, the results lead to the conclusion that gender diversity and performance and risk are in this case country specific. Therefore, it would not be wise to put a quota which would mandate all EU countries to follow a certain diversity percentage. Many countries do not have capable women with enough experience to start acting as a director overnight, which is why the self-regulatory actions could be the answer to the improvement of the gender diversity. However, further research is needed to determine the right way to tackle gender diversity in the EU.

7.1. Limitations

This research is just a scratch of an ice berg, which is why it has a lot of limitations and a lot of further research has to be made to get a full picture of the phenomenon. Firstly, the data which was gathered from Thomson Reuters was not perfect and many data points

were not in the line with the real data from the annual reports. This research had to rely on one source of data due to the limited resources and time.

Secondly, the control variables were chosen based on previous literature, but the model was not optimal in most cases. Therefore, for further research better control variables should be chosen to get a stronger model. Thirdly, the data set consist only 16 companies from Norway and 19 companies from Finland. This data set is relatively small and could be greater if there were more data sources at hand. However, at this point the research had to rely on the Thomson Reuters database only. By having more companies in the research, the regression could be more reliable, and it would tell a better story.

Fourthly, the effect of the industries was controlled by dummy variables, but as mentioned in the literature review some of the papers found different impact on performance when the results were analyzed within a certain industry. Further research could focus on the effect of the industry. Fifthly, the impact of the committee where a specific women director was sitting was not analyzed. This variable could have led to a stronger argumentation and better results as it was assumed that the risk of the companies and especially between countries depends on in which area of these companies the director is influencing on.

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APPENDICES

Appendix 1. Regression robustness test with White cross-section method

Robustness test for Accounting performance			
	Model 1	*Model 2*	*Model 3*
C	*25,0604* *(0,0000)*	*23,4511* *(0,0000)*	*25,7973* *(0,0000)*
PERS	*0,0700* *(0,0369)*		
MASS		*-1,7771* *(0,0218)*	
BLAU			*-3,9393* *(0,1114)*
DEBT	*-9,0435* *(0,0002)*	*-9,1076* *(0,0001)*	*-9,1772* *(0,0002)*
BSIZE	*-3,307899* *(0,0026)*	*-3,0765* *(0,0038)*	*-3,0278* *(0,0069)*
FSIZE	*0,8355* *(0,0053)*	*0,8176* *(0,0052)*	*0,9428* *(0,0008)*
OMX	*28,8459* *(0,0000)*	*27,9160* *(0,0000)*	*27,9362* *(0,0000)*
N	*350*	*350*	*350*
F-statistic	*6,0138* *(0,0000)*	*6,0535* *(0,0000)*	*5,8219* *(0,0000)*
R-squared	*0,2881*	*0,2894*	*0,2814*
Adjusted R-squared	*0,2402*	*0,2416*	*0,2331*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Robustness test for Market performance			
	Model 1	*Model 2*	*Model 3*
C	*4,7091*	*4,7998*	*4,6718*
	(0,0000)	*(0,0000)*	*(0,0000)*
PERS	*0,0086*		
	(0,0004)		
MASS		*0,1536*	
		(0,0746)	
BLAU			*-1,4173*
			(0,0000)
DEBT	*-1,4084*	*-1,3895*	*-1,4173*
	(0,0000)	*(0,0000)*	*(0,0000)*
BSIZE	*0,1585*	*0,1863*	*0,2088*
	(0,0096)	*(0,0037)*	*(0,0012)*
FSIZE	*0,1992*	*0,1927*	*0,1971*
	(0,0096)	*(0,0000)*	*(0,0000)*
OMX	*2,0373*	*2,2436*	*1,8593*
	(0,0000)	*(0,0000)*	*(0,0000)*
N	*350*	*350*	*350*
F-statistic	*6,0138*	*6,0535*	*5,8219*
	(0,0000)	*(0,0000)*	*(0,0000)*
R-squared	*13,2685*	*12,9107*	*13,3745*
Adjusted R-squared	*0,4361*	*0,4288*	*0,4382*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Robustness test for Market Risk			
	Model 1	*Model 2*	*Model 3*
C	*0,3524*	*0,3613*	*0,3270*
	(0,0000)	*(0,0000)*	*(0,0000)*
PERS	*0,0016*		
	(0,1470)		
MASS		*0,0247*	
		(0,3001)	
BLAU			*0,0596*
			(0,4664)
DEBT	*0,2972*	*0,3026*	*0,3020*
	(0,0002)	*(0,0002)*	*(0,0002)*
BSIZE	*-0,0269*	*-0,0320*	*-0,0327*
	(0,3902)	*(0,3545)*	*(0,3479)*
FSIZE	*-0,017*	*-0,0013*	*-0,0137*
	(0,0003)	*(0,0025)*	*(0,0036)*
OMX	*0,8409*	*0,8868*	*0,8987*
	(0,0000)	*(0,0000)*	*(0,0000)*
N	*350*	*350*	*350*
F-statistic	*8,2784*	*8,0940*	*8,1000*
	(0,0000)	*(0,0000)*	*(0,0000)*
R-squared	*0,3577*	*0,3526*	*0,3501*
Adjusted R-squared	*0,3145*	*0,3090*	*0,3065*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*

Robustness test for Debt Risk			
	Model 1	*Model 2*	*Model 3*
C	*0,6411* *(0,0000)*	*0,6751* *(0,0000)*	*0,6407* *(0,0000)*
PERS	*0,0013* *(0,0604)*		
MASS		*0,0378* *(0,0790)*	
BLAU			*0,2190* *(0,0070)*
BSIZE	*0,1790* *(0,0000)*	*0,1836* *(0,0000)*	*0,1863* *(0,0000)*
FSIZE	*0,0134* *(0,0107)*	*0,0141* *(0,0082)*	*0,0148* *(0,0049)*
VALUE	*0,019942* *(0,0000)*	*0,020442* *(0,0000)*	*0,020483* *(0,0000)*
TOBIN	*0,0809* *(0,0000)*	*0,0810* *(0,0000)*	*0,0822* *(0,0000)*
N	*350*	*350*	*350*
F-statistic	*5,4000* *(0,0000)*	*5,4646* *(0,0000)*	*5,5954* *(0,0000)*
R-squared	*0,2759*	*0,2783*	*0,2830*
Adjusted R-squared	*0,2248*	*0,2273*	*0,2325*
Sample type	*Full*	*Full*	*Full*
Year fixed effect	*Yes*	*Yes*	*Yes*
Industry fixed effect	*Yes*	*Yes*	*Yes*