The effect of gender diversity

on earnings quality

A study about the influence of women in the board of

directors and audit committee on earnings quality

Abstract: *Prior studies show that more women in a board of directors or audit committee lead to a higher earnings quality. However, there is no prior research for firms located in the European Union. This study contributes to the existing stream of literature by providing empirical evidence that there is a significant positive relation between women in the board of directors and earnings quality. Furthermore, the results of this study show that gender diversity in the audit committee also leads to an increase in the earnings quality. Besides these two findings, this thesis also shows empirical evidence that there is a difference between countries with a mandatory gender quota and countries with a voluntary gender quota.*

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Content

1   Introduction

For years, analysts are trying to measure the value of companies. A discussion related to this was whether the number of earnings are useful for investors. Ball & Brown (1968) showed that earnings are useful to measure the firm's performance. After this study, more discussion about this subject arose. For example, there were doubts about the quality of the earnings. Dechow (1994) showed that accruals are important for the measurement of a firm's performance. According to the Positive Accounting Theory (PAT) managers are influenced by different reasons to create a good firm performance. The theory states that different factors could lead to earnings management. Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to mislead stakeholders about the underlying economic performance of the company (Healy and Wahlen, 1999). Earnings management leads to a lower earnings quality (Lo, 2008).

This thesis will focus on the composition of the boards of directors and audit committees. Different aspects of the boards of directors and audit committees could lead to a different way of management style and thus to possible earnings management. A topic which is related to the composition of the boards of directors and audit committees is gender diversity.

In recent years gender diversity has led to a discussion in the business world. Where top functions used to be seen as 'man jobs', this view has been changed over the last decade. Countries like Luxembourg or Italy only have 18%, respectively 24% female managers (ONS, 2013). On the other hand, in Norway 38% of the managers is female (De Bruijn, 2013).

To stimulate the participation of women, some countries introduced a gender quota. In 2004, Norway was the first country which adopted a quota of 40% for female board members. The countries that also adopted a mandatory gender quota were Belgium, France, Germany, Iceland and Italy. They had different quotas, but the idea was the

same. On the other hand, there are also countries, like The Netherlands, Sweden and Finland which adopted a voluntary gender quota (Wiersema & Mors, 2016).

In response to the adoption of the quotas a discussion arose about whether these quotas were a good or a bad thing. Smith (2014), for example, sums up the pros and cons of voluntary and mandatory gender quotas on the board of directors. She states that the quota leads to an increase of number of women in the board of directors. According to her study the decision-making process would improve when there is a greater gender diversity on boards. Another example of a pro, according to Smith, is that it would lead to a higher attendance of the board. On the other hand Smith states that quotas imply that less experienced women will join boards. This is because the supply of qualified women in senior executive positions is thin. Another con of a gender diverse board is that the quotas seem to have little positive effect on increasing the pool of women with senior executive experience.

There is research about gender diversity, which supports the findings of Smith. For example, Campbell and Mínguez-Vera (2008) stated that the gender composition of the board can affect the quality of the monitoring role and thus the financial performance of a firm. Adams and Ferreira (2004) examined whether a higher rate of women in the board has influence on the firm performance. They conclude for example that female directors have fewer attendance problems at board meetings, which is consistent with the findings of Smith (2014). They also conclude that more diverse boards may require additional mechanisms to induce cooperation such as performance pay and additional board meetings, which could be costly.

The purpose of this paper is to examine what the effect is of gender diversity on the earnings quality. The research question therefore is:

What is the effect of gender diversity on earnings quality?

This research question will be divided in different subjects. This research will examine the effect of gender diversity on two different groups. The first group is the board of directors. The second group that could be influenced by gender diversity is the audit committee.

There will also be a distinction between the mandatory and voluntary adoption of a gender quota.

The sub questions therefore are:

1. What is the effect of gender diversity in the board of directors on the earnings quality?
2. What is the effect of gender diversity in the audit committee on the earnings quality?
3. Is there a difference in the effect on earnings quality between the mandatory and voluntary adoption of a gender quota?

Gender diversity is for a part a political topic, which has led to discussion. Feminists are trying to improve the equality of men and women by organizing different events. For example International Women's Day (8 March), which is a global day celebrating the social, economic, cultural and political achievements of women (Anderson, 2014). Besides symbolic actions, there are often protests and actions. For example in January 2017, where groups of people all over the world protested against the women contemptuous statements of Donald Trump (NOS, 2017).

Nowadays, it is also a topic in the business world. Prior research shows that there is a difference between men and women. For example Pounder and Coleman (1980) examine whether women are better leaders than men. They try to distinguish the genders by using for example the skill 'leadership'. There are more theories about the difference between gender, like the Social Role Theory (Eagly, Wood & Diekman, 2000).

The political developments lead to more women in managerial functions. The social relevance of this thesis is therefore whether the political issues, which will lead to a higher utilization of women in management functions, according to Smith (2014), will have an effect on the earnings quality.

This thesis contributes to the research because it investigates the influence of gender diversity in different European countries which adopted a gender quota. It also examines whether there is a difference between mandatory or voluntary adoption. Another contribution is that for those specific countries the influence of gender diversity in the board of directors as well as in the audit committee on earnings quality will be measured.

This research contains two parts, which are divided by the independent and dependent variables. The independent variable is gender diversity. This will be measured by the level of participation of women in two different settings (Boards of directors and audit committees). As proxies for the gender diversity dummy variables are used. The variable takes a value of one when at least one woman is present. When there is no woman in the board of directors and audit committee, the value is zero. This measurement is also used in prior research (Campbell & Minguez-Vera, 2008).

The dependent variable is earnings quality. Over time different methods are used to measure earnings quality. In this thesis the model of Kothari et al. (2005) will be used, which is based on the Jones model, but corrected over years. This model is also used in other research, such as Istrate et al. (2015). The models will be explained in the fourth chapter.

Numerous authors have proposed modified variants of Jones' model, which had different perspectives on the elements that influence the earnings management process. For example, Dechow et al. (1995) considers the liabilities as means of managing the turnover and emphasizes the need of deducting their variance from the value of the non-discretionary accruals. Teoh et al. (1998) removed the PPE component to create an estimation model of current discretionary accruals. Kothari's et al. (2005) model improved Jones' (1991) model by including the return on assets (ROA) as an independent variable.

The third sub question will be answered by using the same data as the first sub question, but with the sample divided in two groups. The sample is divided in countries which had a mandatory adoption of a gender quota and countries which had a voluntary adoption of a gender quota. To measure this, the difference-in-difference approach will be used.

The data will be found in Compustat Global database and edited in STATA. The sample consists of two groups of countries. The first group consists of Germany, France, Belgium and Italy. In these four countries, the adoption of a gender quota is mandatory. The second group consists of Spain, The Netherlands, Sweden and the UK. In these four countries, the adoption of a gender quota is voluntary. The sample period that is used is 2010 till 2015.

The results of this thesis argue that there is a significant positive relation between women in the board of directors and earnings management. There is a negative relation between women in the audit committee and earnings management. However, this relation is not significant. Therefore, the conclusion of this research is that gender diversity in the board of directors has a positive effect on the earnings quality. Furthermore, this thesis gives empirical evidence that a mandatory gender quota has influence on the strength of the influence of women in a board of directors or audit committee on the earnings quality of a firm.

The structure of this paper is as follows. This thesis starts with an introduction, which briefly summarizes the subject and describes how the research is going to be done. The second chapter consist of background theory, which partially explains the idea behind the variables. This chapter also contains prior research, where the empirical part of this thesis is based on. The third chapter discusses the prior literature, which is the fundament for the fourth chapter in which the hypothesis of this research will be explained. In the fifth chapter the statistics, results and its analysis will be discussed.

The sixth and last chapter will summarize the thesis by giving a conclusion, based on the interpretation of the results.

2   Theoretical Background

2.1 Introduction

This chapter will explain different theories that are relevant for this thesis. Besides the specific theories, this chapter will also discuss definitions and explanations of different concepts that will be used in the literature review.

The theory of this thesis consists of two parts. The first part is about the independent variable gender diversity. Gender diversity is when a company is represented by a more equal proportion of men and women (Lombardo, unknown).

The second part of theory is about the dependent variable earnings quality. Before the theory about this subject will be discussed, the definitions of earnings quality and earnings management will be explained. Earnings quality is defined by Krishnan and Parsons (2008) as the degree to which reported earnings capture economic reality, in order to appropriately assess a company's financial performance. The economic reality is not always reflected in the annual report. A reason for this could be earnings management. Earnings management happens when the reported earnings differ from the actual earnings. This may be caused by an agent who dishonestly communicates his private information (Dutta & Gigler, 2002).

2.2 Leadership styles

Based on different researches and theories, this paragraph will explain the concept of the most common styles of leadership. Michener, DeLamater and Schwartz (1990) define leadership as a process that takes place in groups in which one member influences and controls the behaviour of the other members toward some common goal. The styles that are described are transformational, transactional, empowering and directive leadership. All of these styles are explained in the theoretical framework, because it will be a relevant part of the literature review.

2.2.1 Transformational leadership

Prior research, for example Rosener (1989), uses the terms transformational- and transactional leadership to find an explanation for the differences between men and women. Both leadership styles contain various distinctive characteristics.

Transformational leadership is a style of leadership which is, according to Bass (1985), generally seen as a superior style of leadership. Transformational leadership consist of 4 dimensions (Pounder and Coleman, 2002). The first one is idealized influence of charisma. In this dimension is based on the respect for the leader. A leader should excite and subordinate his followers. He could do this by providing a clear vision, increasing optimism and gaining trust.

The second dimension is inspirational motivation. This dimension measures the ability of a leader to increase the support in his vision and values. To do this, he should inspire people by acting like a role-model.

The third dimension is individual consideration. Here the attention and care of a leader about his followers is measured. Import factors in this dimension are, for example, the coaching of people and the provision of feedback.

The fourth and last dimension is intellectual stimulation. In this dimension the stimulation of the followers is the goal. A leader could achieve this by stimulating his followers to solve their own problems by encouraging and giving them challenging tasks.

2.2.2 Transactional leadership

Pounder and Coleman (2002) not only describe transformational leadership, but also transactional leadership. Al-Mailam (2004) defines transactional leadership as a style of leadership in which the leader acts as an agent of change, which makes meaningful exchanges with employees that result in improvements in productivity. Transactional leadership is, according to Pounder and Coleman (2002), the foundation of transformational leadership.

Transactional leadership is divided in three subscales, which are (1) contingent reward, (2) active management by exception and (3) passive management by exception.

Contingent reward, also called contingent reinforcement is measured by the contingency of the rewards of leaders based on their performance.

Active management by exception is based on how a leader seeks out deviations of desired behaviour of followers actively. A leader should take corrective actions.

Passive management by exception on the other hand is not based on the active attitude of leaders. In this subscale, leaders only take action if problems present themselves.

2.2.3 Empowering leadership

Besides these two most common styles of leadership, Lorinkova, Pearsall and Sims (2013) make a distinction between directive and empowering leadership. They describe empowering leadership as a style which is based on different behaviors, such as supporting information sharing, teamwork and the encouraging of followers to express ideas and opinions. This has to lead to an increase of the level of autonomy and responsibility of the followers. This type of leadership will lead to the creation of psychological ownership of a task, higher levels of coordination and heightened efficacy and commitment.

2.2.4 Directive leadership

The other type of leadership which is described by Lorinkova et al. (2013) is directive leadership. This leadership style is based on the positional power of the leader. The behaviours that are related to this style are aimed at actively structuring the work of the followers by providing clear expectations and directions. Directive leadership reduces process loss and helps the team to execute problems more quickly by providing external monitoring and feedback on the performance of the followers.

2.3 Social role theory

This thesis is based on the idea that there is a difference between men and women. A theory that confirms and explains this idea is the Social Role Theory. The Social Role Theory states that the way people see the different sexes is based on observations of the role performance of men and women. Therefore, those beliefs about the sexes are reflected in the hierarchy of the society of the sexual division of labour and gender. By several mediating processes, those beliefs shape gender roles, which stimulate real differences in behaviour.

The differences in hierarchy are, according to Eagly, Wood and Diekman (2000), the root cause of the differences in behaviour between men and women. Other features of social organization, for example that women have less power, status and resources (Rhoodie, 1989), are also factors that could influence those differences. Another example of a feature of social organization is the fact that women, compared to men, perform more domestic work and spend less hours in paid employment (Shelton, 1992).

The Social Role Theory argues that from the different typical roles of men and women, a set of specific skills arise for both men and women. From a historical view, men are seen as the providers and women as the homemakers. Both genders learned skills that are related to their social roles. For example, women have learned the traditional skills to cook en sew, where men learned skills that are marketable in the paid economy.

Another labour related contention according the Social Role Theory is that the skills of each gender leads to the fact that there are occupations that are dominated by one of the sexes. This is because that some occupations require certain skills that are only possessed by one of the sexes. An example of this is nursing, which is an occupation dominated by women, because it requires nurturing skills that women also learned in their family activities.

All these facts are the reason, according to the Social Role Theory, that women, although they do paid work, receive lower wages than men and rarely hold a senior position within a company.

2.4 Agency Theory

Many researchers tried to explain why managers use accounting policies based on their own preferences. Another theory, besides the PAT, is the agency theory. This theory is relevant for this thesis, because it gives a possible reason for the use of earnings management.

The agency theory is developed by Jensen and Meckling in 1976. The theory is based on the problem that an 'agent' does not behaves as if he maximizes the 'principal's' welfare. The relationship between the agent and the [principal is the agency relationship. Jensen and Meckling (1976) define this relationship as a contract under which one or more persons engage another person to perform some service on their behalf which involves delegating some decision making authority to the agent. The underlying assumption of the fact that the agent will not always act in the best interest of the principal is that both parties maximize their own utility.

The second assumption on which the agency problem is based on the fact that the principal is not able to figure out the activities and goals of the agent. The reason for this problem is that lack of information of the principal. The agent is in fact closer to the subject than the

principal, so the agent has an information advantage. This so-called information asymmetry will lead to inefficiency.

Two problems that are related to information asymmetry are (1) adverse selection and (2) moral hazard. Adverse selection is defined by Chambers and Crowley (2003) as a problem that takes place before a transaction takes place and is, most of the time, related to market inefficiency. Chambers and Crowley give an example based on the 'lemons problem' of Akerlof (1970), in which a customer wants to buy a car. The car dealer has more information about the car than the customer, so he could use that in his advantage. Therefore, the adverse selection problem will lead to higher prices for the customers.

Moral hazard is defined by Holmström (1979) as the problem that arises when individuals engage in risk sharing under conditions such that their privately taken actions affect the probability distribution to the outcome.

To reduce the information asymmetry, several actions can be taken. One of the most common solutions is the observation of the agent by the principal, which is also called 'monitoring' (Shavel, 1979). Related to this thesis, Adams and Ferreira (2009) stated that a more gender diverse board causes a better monitoring environment. This means that more women in managerial functions could lead to a reduction of agency problems.

2.5 Positive Accounting Theory

The Positive Accounting Theory (PAT) is a theory which is developed by Watts and Zimmermann (1986). With this theory the reason behind a choice for the use of certain accounting principles is explained. This theory is also used to give a prediction of which accounting method is preferred over other methods. Prior to the PAT, normative accounting research was the dominant type of accounting research (Hamayun Kabir, 2010).

With the rise of the PAT, normative theory was relegated to the background. The theory of Watts and Zimmermann discusses why managers make specific decisions. This theory uses different relations between groups of people, such as managers versus owners, managers versus investors and an organization versus the society. All of these different groups of people, also called stakeholders, have different needs and behave in different ways in order

to fulfil their own needs. Therefore, managers will use accounting methods that maximize their own benefits.

The PAT makes a distinction between three hypotheses that have been developed by Watts and Zimmermann to explain the choice of managers for certain accounting methods. These hypotheses are the 'bonus-plan' hypothesis, the 'debt covenant' hypothesis and the 'political cost' hypothesis. The predictions that are made with these three hypotheses have been empirically verified in several studies. However, in this chapter will on explain the hypotheses briefly.

The 'bonus plan' hypothesis argues that managers that work in companies with a bonus system are more motivated to make a profit for the company as high as possible. Managers could be willing to take future profits now, in order to increase the current profit. The hypothesis predicts an increase in reported earnings, when executives are rewarded with bonuses. According to the theory of this hypothesis, the behaviour of managers is based on the so-called 'self-interest'. Self-interest indicates that managers behave towards their own interests and not to the interests of the company.

A debt covenant is an agreement between a party which issues the debt and the holder/borrower of the debt. This could, for example, include a loan from a bank or credit in favour of an organization. This agreement has some restrictions for the borrower of the debt. These restrictions ensure that the company can and will be able to repay the debt and fulfil its obligations. These restrictions give managers an incentive to take future profits now in order to report a current profit as high as possible. This makes them less depended on the debt and the corresponding limitations. The more a manager is limited by debt covenants, the more a manager tends to increase the current gain. The reason of this is to be less dependent on debt.

The 'political cost' hypothesis argues that increasing political costs are a motivation for the management to take current earnings later instead of waking future profits now, as stated in the first two hypotheses. For big organizations with brand awareness and impact on society extra attention of society and social institutions will be generated, when profits are relatively

high. This could lead to higher political costs in the form of negative publicity, higher taxes, more regulatory costs, costs related to union demands regarding a higher profit share or higher salaries for workers, decreasing subsidies etc. These examples could lead to 'income smoothing'. Income smoothing is the shifting of the recognition of some of the firm's income by a manager. It occurs for example when a manager shifts the income from the second period to the first period, if the first period's economic earnings are less than the expected per period economic earnings (Trueman & Titman, 1988).

2.6 Summary

The first subparagraph explained the different styles of leadership. This different styles of leadership do have an effect on the way a company is managed. This has an influence on the way employees work, and has a possible effect on earnings quality. In the next chapter the different styles are assigned to the different genders, based on prior research. Besides the concept 'leadership', this chapter also discussed theories, which are relevant for this subject.

The social role theory explains the social hierarchical difference between men and women. The theory states that men and women behave different because of this historical hierarchy. It explains partially why some occupations are dominated by only men or women. This is because certain skills are needed, which are a result of some typical behaviour.

The PAT is used to explain the reasons for earnings management. Three hypothesis are discussed, which could be motives to choose for earnings management.

At last, the agency theory is used to explain why some managers choose for certain accounting policies. The theory is based on two assumptions an comes along with two problems. Both problems, adverse selection and moral hazard are discussed.

Overall, the concepts and theories give a reason to assume that differences between men and women could lead to a different management style, which could have an influence on the earnings quality.

3   Literature review

3.1 Introduction

This chapter will discuss the prior research that is used in this thesis. The chapter is divided in different subjects which relates to the different parts of the hypotheses. The first part is about gender diversity, which mainly describes the differences between men and women.

The second paragraph is about earnings quality, which is divided in a part which describes the influence of women in the board of directors on earnings quality and a part which describes the influence of women in the audit committee on earnings quality. The main focus in this part is to describe the measures of earnings quality in prior research.

The third paragraph describes the prior research about gender quota. It explains differences between mandatory and voluntary quota.

3.2 Gender Diversity

A skill that is required for someone in the board of directors or someone in the audit committee is 'leadership'. A difference in the style of leadership could lead to another way of managing, which could influence the earnings quality of a certain company. Different types of leadership are based on several different characteristics.   Pounder & Coleman (2002) give an overview of different researches about the characteristics of men and women. Park (1996) is one of those researchers, who describes the different characteristics of men and women. The conclusion of his paper is that men are aggressive, independent, objective, logical, rational, analytical and decisive. In contrast to that, women are emotional, sensitive, expressive, co-operative, intuitive, warm and tactful. Research that is related to this, is the paper of Osland et al. (1998), which adds that the characteristics of men are also confident, assertive, ambitious, opportunistic an impersonal. On the other hand, the characteristics that are found in this paper are the fact that women are receptive to ideas, talkative, gentle, empathetic and submissive.

Pounder & Coleman (2002) also discuss whether gender differences lead to different leadership or management styles. For example, Helgesin (1990) states that women's central involvement in managing households, juggling careers and raising children give them the

skills for prioritization in a leadership role that men do not own. Rosener (1989) used a survey and found significant differences in the practice of leadership between men and women. He argues that women tend to be more transformational in their leadership than men. Transformational leadership is explained in the theoretical framework. This type of leadership is based on transactional leadership. Transactional leadership is already explained in the theoretical framework and consists of three subscales; contingent reward, active management by exception and passive management by exception. The paper of Eagly and Johannesen-Schmidt (2001) states that women exceed men on the scale of contingent reward. This means that female leaders give their followers a reward for good behaviour. Men, on the other hand, exceed women in the other two scales. This means that male leaders pay more attention to the problems of their followers.

Besides these two styles of leadership, the paper of Lorinkova, Pearsall and Sims (2013) describes two other styles of leadership, empowering and directive. These concepts are already discussed in the theoretical framework of this thesis. In the paper of Lorinkova et al. (2013) the relative influence of empowering and directive leadership on the performance of teams over multiple phases of team interaction and development is examined. The explanations of those differences are found by identifying critical behavioural, motivational and cognitive mechanisms. The results are that a team with a directive leader performed well more quickly than the team with an empowering leader. The team with an empowering leader, however, improved over time by the emergent conditions, improved learning and cooperation capabilities. To relate this subject to this thesis, the paper of Eagly and Johannesen-Schmidt (2001) is used. They state that men are more directive leaders and women are more empowering leaders.

Rigg and Sparrow (1994) found significant differences between men and women and argue that female leaders are regarded as more people oriented and that they emphasized the team approach more than men. On the other hand, male leaders are considered more authoritarian and paternalistic than women.
Gibson (1995) argues that female leaders are more likely to focus on facilitation of interaction than male leaders. Jewell and Whickler (1994) found in addition to this that

female leaders are more likely to be consensual leaders and less likely to be command leaders than men.

Finally, the differences between men and women is also discussed in the paper of Schubert et al. (1999). In this paper an experiment has been done to investigate the risk attitudes of men and women. The experiment is not only about gambling decisions, but also tests financial decisions. A group of 36 men and 32 women was asked to make different risky investment choices. One of the outcomes is that men are more risk-prone toward gains, in gambling decisions, and women are more risk-prone toward losses. However, the results of the investment decisions state that there are no differences in the behaviour of men and women, when they have to make a risky choice. The conclusion of this paper therefore is that there are no differences in the risk-attitudes of men and women.

3.3 Earnings quality

3.3.1 Board of directors

The first sub question is about the effect of gender diversity in the board of directors on earnings quality. This part will mainly examine which proxy for earnings quality is the most useful for this thesis. There exists prior research on this topic, such as the paper of Srinidhi, Gul and Tsui (2011). This paper examines whether U.S. corporations with gender diverse boards exhibit higher quality earnings. This paper tried to add empirical evidence to the prior research about this subject. This paper measures the earnings quality in two ways. First a model is used which is based on Francis et al. (2005) and compute discretionary accrual quality as the absolute value of the estimation error in accruals after controlling for several aspects. The second measure is based on Kothari et al. (2005), which measures earnings quality by lower-performance-adjusted discretionary current accruals. The sample consists of U.S. companies in the period 2001 – 2011.

The results of the research are that firms with female directors exhibit better reporting discipline by managers. Another conclusion is that gender-diverse boards are associated with higher earnings quality. Srinidhi et al. (2011) also conclude that including female directors on the board is a plausible way to improve the reporting discipline of a firm and to increase the confidence of investors in the financial statements. This paper is based Adams and Ferreira

(2009), which also conclude that that female directors have a significant impact on board inputs and firm outcomes.

Another paper that examines the relation between gender diversity in the board of directors and earnings quality is the one of Peni and Vähämaa (2010). They examine the association between the gender of the firm's executives and earnings management. The sample is a list of 1955 firms observations from the S&P 500 for the years 2003 – 2007. Also in this research discretionary accruals are used as a measure for earnings quality. However, Peni and Vähämaa (2010) use the model of Dechow and Dichev (2002) and the modified DD model to measure this.

One of the result of their research is that the gender of firm's executives may affect the quality of financial reporting. Firms with female CFOs are associated with income-decreasing discretionary accruals. This implies that female CFOs are following more conservative financial reporting strategies. However, no evidence is found for an association between earnings management and the gender of a firm's CEO. These results correspond with the results of Srinidhi et al. (2011).

Krishnan & Parsons (2008) is also about the impact of gender diversity in high functions. This paper contributes to the prior research about the relation between gender diversity and earnings quality by using female senior managers as an explanatory factor. To measure the earnings quality the model of Basu (1997) is used. In this model the measure of asymmetric timeliness of accounting earnings is used to examine the differences in reactions on bad news of gender diverse firms. Krishnan and Parsons also examine the persistence to measure the earnings quality. In this research a sample of 353 of the Fortune 500 companies is used during the period 1996–2000.

Although the measurement of earnings quality is different than Peni and Vähämaa (2010) and Srinidhi et al. (2011), the findings are similar. The results of Krishnan and Parsons (2008) do not suggest that hiring more women will result in increased quality of reported earnings, but it suggest that earnings quality is positively and significantly related to a high gender diverse senior management.

Ye, Zhang and Rezaee (2006) investigate whether the gender of top executives affects earnings quality for a large sample of Chinese companies. In this research different measures of earnings quality are used. Those different proxies are earnings persistence, which is also used in Krishnan & Parsons (2008), the accuracy of current earnings in forecasting future cash flows, the association between earnings and stock returns, and the absolute magnitude of discretionary accruals, which is also used in the other prior research. To measure the magnitude of the *discreti*onary accruals the Jones (1991) model is used. In contrast to the other prior research the results of this article do not display any significant differences between firms with female and male top executives.

A more recent research about the influence of women on earnings quality is the one of Barua et al. (2010). The objective is not directly linked to the complete board of directors, because the objective is to examine the influence of the gender of the CFO on the accruals quality. To measure the accrual quality they use the absolute value of performance-matched abnormal total accruals and abnormal current accruals. This is, corresponding with Srinidhi et al. (2011), based on the model of Kothari et al. (2005). They use a sample of 1,559 companies in 2005. The conclusion of the research is that companies with female CFOs have lower absolute abnormal accruals and lower accrual estimation errors. This means that female CFO's lead to a higher earnings quality, which is in accordance with the results of the earlier discussed prior research.

3.3.2 Audit Committee

The second sub question is about the effect of gender diversity in the audit committee on earnings quality. The paper of Srinidhi et al. (2011) not only provides evidence for the effect of gender diversity in the board of directors on earnings quality, but also for the effect of gender diversity in audit committees. The result that argued that female directors exhibit better reporting discipline for example, was specifically in the audit committee. The other two findings in the paper were also applicable on the audit committee.

Another paper that describes the effect of gender diversity in audit committees is the one of Thiruvadi and Huang (2011). This paper investigates the effect of gender diversity of audit committees on the earnings quality of a firm. In this research a performance-adjusted

discretionary accrual model is used to examine the association between the variables. This model is based on Ashbaugh, LaFond and Mayhew (2003), which had two measures for earnings quality. The model that is used in these researches is similar to the Kothari (2005) model, because the ROA is added. However, in the model of ALM, the PPE variable is not used. A regression analysis is applied on a sample of 320 firms from the S&P Small Cap 600 for the year 2003. One of the findings was that gender diversity increases the external governance function of an audit committee. This leads to a decrease of earnings management. Another finding is that the presence of women in the audit committee reduces earnings management by increasing negative discretionary accruals.   Finally,   this paper adds to the prior literature that the presence of female directors in the audit committees is positively associated with audit committee meeting frequency. The conclusion of Thiruvadi and Huang (2011) therefore is that female directors in the audit committee do have a significant impact on the earnings quality.

3.4 Gender quota

The third sub question is about the difference of the effect of a mandatory or a voluntary quota. There has been done research about gender quota's. For example Smith (2014), who was one of the first who delivered empirical results to the research about gender diversity. Smith investigated whether having a gender quota is efficient or not. She argued that the prior research did not justify gender quotas on grounds of economic efficiency. This paper contains an overview of which countries do have a mandatory or voluntary gender quota. The countries that are used in this thesis are also used in the research of Smith. This paper contains an overview of the percentage of women in boards in the largest listed companies. The results suggest that only Norway is reaching its target. The proportion of women in boards there is a little more than 40%. All the other countries are below the proposed 30%.

The main conclusion of Smith (2014) is that research offers no clear answer on whether gender diversity on boards of directors positively affects economic efficiency and firm performance. Only at badly performing companies leads having more women on the board to a positive result. Smith also concludes that there are not enough women with the needed capacity to satisfy the demand. She argues that politicians should change the focus from quotas at the top of the organization to the much broader task of getting a more equal

gender division of careers within the family. A solution to achieve this could be the introduction of gender-neutral family policies and quotas for fathers in parental leave schemes.

Another paper that relates to the subject of gender quota is the one of Wang and Kelan (2012). This paper investigates the impact of gender quota on the presence of women in the boards. This research is only done for Norwegian companies, because Norway was the first country which adopted a mandatory gender quota. In the research they use a sample of Norwegian quoted companies for the period 2001 – 2010. To estimate the impact of the adoption of a gender quota, a regression analysis is used and different trend analyses are used. One of the findings was that the adoption of a gender quota has a consistent and positive effect on the presence of women in the board. Another conclusion was that the percentage of female directors has a positive impact on the unique appointments of female CEOs. This paper also states that there is a positive links between the presence of women in boards and the appointments of the boards.

Based on the research of Brammer et al (2009), the conclusion is that mandatory quotas bring effective top-down changes to the gender diversity in organizations. However, the validity of the voluntary approach may be questionable, because there is a lack of female leaders in the job markets. When the voluntary adoption is used, disclosure requirements regarding gender diversity could be used to put pressure on listed firms to take on more women. The representation of those women is positively associated with firm reputation.

Wang and Kelan (2012) also conclude that there are two implications for policy makers according the adoption of mandatory gender quotas. The first one is that a gender quota can cause organizational changes. It could for example lead to the encouragement of women to take top leadership positions. Although there are not many women in the Norwegian boards, the experience these women gain from serving on corporate boards will qualify them for executive jobs in the future. These women are also seen as role models for other women. Overall a quota could be effective in producing more female leaders.

The second implication is that policy makers should be more assertive and shorten or even completely avoid the voluntary phase that was used in Norway. The conclusion from the

trend analyses is that firms tended to recruit younger and less independent female directors, when firms had a voluntary choice of the enhancing of women in their board.

3.5 Summary and conclusion

The summary of this chapter has been elaborated in the next table, which gives an overview of the purposes and the results of the papers which are relevant for this thesis.

Article	Purpose	Results
Park (1996)	Describes the different characteristics of men and women	Men: aggressive, independent, objective, logical, rational, analytical and decisive Women: emotional, sensitive, expressive, co-operative, intuitive, warm and tactful
Osland et al. (1998)	Describes the different characteristics of men and women	Men: confident, assertive, ambitious, opportunistic an impersonal Women: receptive to ideas, talkative, gentle, empathetic and submissive.
Helgesin (1990)	Examines the differences in skills between men and women	Women's central involvement in managing households, juggling careers and raising children give them the skills for prioritization in a leadership role that men do not own.
Rosener (1989)	Survey about leadership differences men and women	Women tend to be more transformational in their leadership than men
Eagly and Johannesen-Schmidt (2001)	Examines the difference between men and women in transactional leadership	- Women exceed men on the scale of contingent reward. - Men exceed women in the other two scales
Lorinkova, Pearsall and Sims (2013)	Describes the differences between directive and empowerment leadership	A team with a directive leader performed well more quickly than the team with an empowering leader
Rigg and Sparrow (1994)	Examines the different factors of leadership that are related to men/women	- Female leaders are regarded as more people oriented (better team approach). - Male leaders are considered more authoritarian and paternalistic than women
Gibson (1995)	Investigates the interaction differences between men and women	Female leaders are more likely to focus on facilitation of interaction than male leaders.
Jewell and Whickler (1994)	Examines the different styles of leadership of men and women	Female leaders are more likely to be consensual leaders and less likely to be command leaders than men

Schubert et al (1999)	Experiment of risk attitudes of men and women	There are no differences in the behaviour of men and women, when they have to make a risky investment choice
Srinidhi, Gul and Tsui (2011)	examines whether U.S. corporations with gender diverse boards exhibit higher-quality earnings	- Firms with female directors exhibit better reporting discipline by managers. - Gender-diverse boards are associated with higher earnings quality
Krishnan & Parsons (2008)	Examines the impact of gender diversity in high functions	Earnings quality is positively and significantly related to a high gender diverse senior management.
Peni and Vähämaa (2010).	Examines the association between the gender of the firm's executives and earnings management	The gender of firm's executives may affect the quality of financial reporting
Barua et al. (2010).	Examines the influence of the gender of the CFO on the accruals quality	Companies with female CFOs have lower absolute abnormal accruals and lower accrual estimation errors
Thiruvadi and Huang (2011).	Investigates the effect of gender diversity of audit committees on the earnings quality of a firm	- Gender diversity increases the external governance function of an audit committee - The presence of women in the audit committee reduces earnings management
Smith (2014)	Examines the consequences of gender quotas	Research offers no clear answer on whether gender diversity on boards of directors positively affects economic efficiency and firm performance
Wang and Kelan (2012)	Investigates the impact of gender quota on the presence of women in the boards	The adoption of a gender quota has an consistent and positive effect on the presence of women in the board

After this summary several conclusions can be made based on the prior research. The first paragraph contains different articles which explain the differences between men and women. Based on this information we can conclude that men and women behave differently. Men are for example more aggressive, independent, objective, confident and assertive. Women, on the other hand, are more expressive, co-operative, intuitive and talkative. Prior research also describes that men and women have different styles of leadership styles. Women tend to be more transformational in their leadership than men. Another conclusion about the difference between the genders is that women are more likely to be consensual leaders and less likely to be command leaders than men. These different

characteristics and leadership styles of the board of directors or the audit committee could influence the earnings quality. Earnings quality has been discussed in the second paragraph. The conclusion of almost all the discussed prior research about this subject is that more gender diversity in the board of directors or audit committee leads to a higher earnings quality. The proxy to measure earnings quality which is most used in prior research related to this subject is the model of Kothari et al. (2005).

The third paragraph described the pros and cons of gender quota. We can conclude that mandatory gender quota bring effective top-down changes to the gender diversity in organizations. A voluntary gender quota may be questionable, because there is a lack of female leaders in the job markets.

4   Hypothesis development and research design

The previous chapters provided a theoretical basis relevant for this research. In this chapter the hypothesis and the research design will be discussed. The hypotheses are based on the research question:

What is the effect of gender diversity on earnings quality?

This chapter will start with an explanation of the motives for the hypotheses. After that the sample will be described, the hypotheses will be developed and the models used to test the hypotheses will be discussed. At last, there will be a brief explanation of different important concepts related to this research.

4.1 Hypotheses and expectations

This paragraph will discuss the hypotheses and the expectations regarding the results of the empirical analysis. The expectations are based on the different theories and outcomes of the prior research, which are already discussed in the previous chapters.

The concept of different styles of leaderships in combination with prior research assumes that men and women do have a different style of leadership. This fact could lead to a difference in the earnings quality.

The agency theory states that the management of a company makes decisions that are based on self-interest. According to this theory, monitoring could solve this problem partially. Prior research tells us that women have better monitoring skills, which would suggest that women could have a positive influence on the earnings quality.

Srinidhi et al. (2011), Thiruvadi and Huang (2011), Krishnan & Parsons (2008) and Barua et al. (2010) all argue that more gender diverse boards will have a positive effect on the earnings quality. Based on the outcomes of all these prior researches, the expectations of the outcomes for the first two hypotheses of this thesis are that companies without women in the board of directors or in the audit committee have a lower earnings quality than companies with women in the board of directors or in the audit committee. For the first two sub questions, I will examine the following hypotheses:

H1: The earnings quality in companies with gender diverse boards of directors is higher than in companies without gender diverse board of directors

H2: The earnings quality in companies with gender diverse audit committees is higher than in companies without gender diverse audit committees

The expectations for the third hypotheses are based on prior research about gender quota's. Smith (2014) states that there are different advantages and disadvantages of both mandatory and voluntary adoption of a gender quota. The expectation is that there will be a difference in the effect of a mandatory or voluntary adoption of a gender quota on the earnings quality. To test this, the third hypothesis is:

H3: The effect of a voluntary adoption of a gender quota on earnings quality does not differ from the effect of a mandatory adoption of a gender quota.

4.2 Sample

The sample of this thesis exists of publicly listed firms in The Netherlands, Spain, Sweden, The United Kingdom, Germany, Belgium, Italy and France. The sample period starts in 2010 and ends in 2015. The reason for this sample is that these countries had data available, have not been examined about this subject yet and have a good balance between mandatory and voluntary gender quota. The reason for the sample period is that it provided enough and the most current data available.

All the financial data is retrieved from the Compustat Global database. After excluding all the firms with missing observations, the sample contained 1534 firms. For these firms, the information about the composition of the boards of directors and audit committees had to be collected by hand. Therefore a sample of 135 randomly selected firms is taken as data. After removing 10 observations because of missing data, the total amount of observations used in this thesis is 800.

4.3 Empirical model

In this thesis different proxies will be used to measure the variables. The first two hypotheses consist of two parts. To measure the gender diversity in a board of directors or an audit committee, a dummy variable will be used. The dummy will be 1 if at least one woman is participating in the board of directors or the audit committee. If not, the dummy will be 0. The other part of the first two hypotheses is the measurement of earnings quality. In the previous chapter one of the conclusion based on the prior research was that the most used, most recent and most useful model related to this subject was the model of Kothari et al. (2005). This model is based on the modified Jones model, which performs the best as discretionary accrual model, according to Dechow & Dichev (1995).

Kothari et al. (2005) estimates the performance-matched Jones model discretionary accrual as the difference between the Jones model discretionary accrual and the corresponding discretionary accrual for a performance-matched firm. Kothari et al. (2005) estimates an additional discretionary accrual measure in which the ROA (return on assets) is included to compare the effectiveness of performance matching, versus a regression-based approach. Total accruals are used in this model to estimate the discretionary accrual model. These are defined by Kothari et al. (2005) as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets. The model looks as follows:

$$ACC_{it} = \alpha_0(1/TA_{it-1}) + \alpha_1\Delta REV_{it} + \alpha_2 PPEG_{it} + \alpha_3 ROA_{it} + \varepsilon_{it}$$

Where:

ACC_{it} – accruals (change in non-cash current assets minus change in current liabilities adjusted for the current portion of long-term debt minus depreciation and amortization expense) scaled by lagged total assets of firm i in year t;

TA_{it-1} – total assets of firm i in year t-1;

ΔREV_{it} – change in revenues minus the change in receivables scaled by lagged total assets of firm i in year t;

$PPEG_{it}$ – gross value of the property, plant, and equipment scaled by lagged total assets of firm i in year t;

ROA_{it} – net income scaled by lagged total assets of firm i in year t;

This model shows to which extent the dependent variable is explained by the different independent variables. All the independent variables Kothari et al. (2005) used are the part of accruals that are non-discretionary accruals. The nondiscretionary component reflects business conditions that naturally create and destroy accruals. The discretionary component identifies management choices. The result of pulling discretionary accrual amounts from the total accrual amount is a metric that reflects accruals that are due to management's choices alone, which means that there appears to be no business reason for these accruals. Therefore, to measure earnings quality, the discretionary accruals have to be calculated. This will be the part of the accruals that is not explained by the non-discretionary accruals, which will be the ε_{it} in this model. The higher the discretionary accruals, the lower the earnings quality.

After the discretionary accruals are measured by the model of Kothari et al. (2005), the influence of the variables of the different hypotheses will be measured. Control variables are added and discussed in the next paragraph.

Overall, the model that will be used in this thesis is:

$$EQ_{it} = \alpha_{it} + \beta_1 FEMBOD_{it} + \beta_2 FEMAC_{it} + \beta_3 QUOTA_{it} + \beta_4 FIRMSIZE_{it} \quad + \beta_5 SGROWTH_{it} \quad + \beta_7 LEVERAGE_{it} + \varepsilon_{it}$$

where EQ_{it} stands for earnings quality. Earnings quality is measured by taking the absolute value of the discretionary accruals (ACC), which are already explained by the model of Kothari et al. (2005). Therefore, earnings quality will also be mentioned as "abs_acc" in the mathematical formulation. α_{it} is the intercept. The meaning of the other variables are as follows:

$FEMBOD_{it}$ is a dummy variable, which will be 1 if at least one woman is present in the board of directors. If not, the amount of the dummy will be 0.

$FEMAC_{it}$ is also a dummy variable, which will be 1 if at least one woman is present in the audit committee. If not, the amount of the dummy will be 0.

$QUOTA_{it}$ is the third dummy variable, which will be 1 if the company is based on a country which mandatory adopted a gender quota. If it was a voluntary adoption, the amount of the dummy will be 0.

$SGROWTH_{it}$, $FIRMSIZE_{it}$ and $LEVERAGE_{it}$ are the control variables, which will be explained in the next paragraph.

The third hypothesis will be measured with a difference-in-difference approach. The results of hypotheses one will be used and a distinction will be made between the countries with a voluntary adoption (The Netherlands, Spain, Sweden and the United Kingdom) of gender quota and countries with a mandatory adoption of gender quota (Germany, Belgium, Italy and France). The results will be compared to each other to see if there is a difference in the effect on the relation.

4.4 Control variables

This paragraph will describe the control variables used in the model. Furthermore, the reason for the choice of these control variables will be discussed.

The control variables are $SGROWTH_{it}$, $FIRMSIZE_{it}$ and $LEVERAGE_{it}$.

There are different constructs that can measure earnings quality. In this thesis we only test the possible influence of members of the board of directors and audit committee of an organization on earnings quality. However, this process can be influenced by many other factors. Therefore, it is necessary to control for some of those factors. The choice of the four control variables in this thesis is based on prior literature.

The first variable that will be controlled for in the regression model is $SGROWTH_{it}$. This is the increase in sales compared to the previous year expressed in a number. To measure this the difference between the number of sales of a certain year and the number of sales the year before is divided by the number of sales of the year before. According to Peni and Vähämaa (2010), high-growth firms are typically less transparent and may have greater opportunities for opportunistic earnings management.

The second control variable if $FIRMSIZE_{it}$. The firm size will measured by taking the log of the total assets. Davidson et al (2005) states that the size of a firm is negatively associated with earnings management and positively associated with board and audit committee independence. Peni and Vähämaa (2010) also states that the size of the firm is negatively associated with earnings management, because Larger firms may have stronger governance structures, lower information asymmetries, and are generally subject to greater monitoring by auditors and financial analysts.

The third control variable is $LEVERAGE_{it}$, which is measured by taking the long-term debt of a company scaled by the lagged total assets. Roychowdhury (2006) states that debt holders of long-term debt are important stakeholders for an organization. A company is considered as high leveraged, when a company has a lot of debt. Most of these high leveraged companies have more debt covenants. As a result of these covenants, the board is responsible for their performance by debt holders. Roychowdhury (2006) also states that managers will engage in earnings management to keep the debt holders satisfied. This will lead to an decrease of the earnings quality.

4.5 Validity, reliability and endogeneity

While doing research, some concepts are important to keep in mind. Validity is one of those concepts. A research is valid, when it measures what it intends to measure. Validity can be divided into three types. Those three types are construct validity, internal validity and external validity. By using the Libby Boxes in figure 1 these different types of validity will be explained. Construct validity refers to the degree to which inferences can legitimately be made from the operationalization in a study to the theoretical constructs on which that operationalization is based. Construct validity is explained in the Libby boxes by link 2 and link 3. The independent variable 'gender diversity' will be measured by the presence of female in a board of directors or in an audit committee. For this measure a dummy variable will be used. The dependent variable is earnings quality, which will be measured by using discretionary accruals. To measure this, the model of Kothari et al. (2005) will be used.

Internal validity is the extent to which a causal conclusion based on a study is warranted. This is determined by the degree to which a study minimizes systematic error. In the Libby boxes the increase of internal validity is explained by link 5. Link 5 stands for the control of other external variables that could influence the possible outcome. The control variables of

this thesis are already discussed. External validity is the validity of causal inferences in scientific research, what means to which extent a result of a study can be generalized to other situations. This is explained by link 1 in the Libby Box.

The second concept is 'reliability', which is the overall consistency of a measure. In other words, a research is reliable when the outcomes are similar to the earlier obtained results, when the same research is done multiple times.

The third concept is endogeneity. An endogeneity problem occurs when an explanatory variable is correlated with the error term. There are two types of endogeneity problems. The first one is reverse causality, which means that two variables are associated, but not as expected. Instead of X causing a change in Y, Y is causing changes in X. In this thesis that would mean that there is a possibility that more gender diverse boards or audit committees leads to higher earnings quality, but also a possibility that firms with higher earnings quality are more likely to hire women in the board or audit committee. The second endogeneity problem is the presence of an omitted variables bias, which is a standard expression for the bias that appears in an estimate of a parameter if the regression run does not have the appropriate form and data for other parameters. In this thesis, this could be a problem, because gender diversity itself could be endogenous.
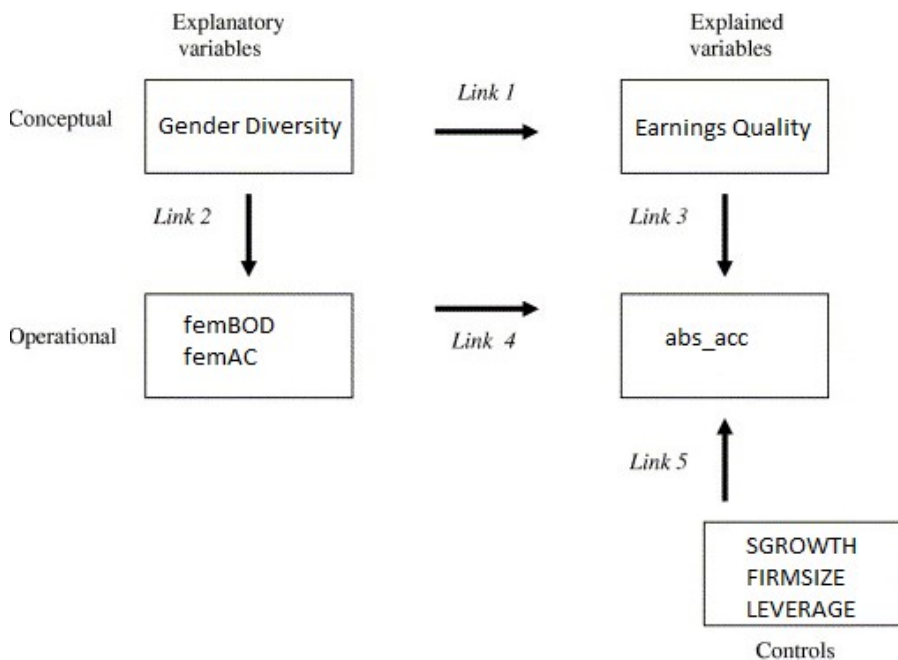

Figure 1: Libby Boxes

5   Empirical evidence

5.1 Introduction

In this chapter the results of this research will be discussed. The first part is about testing for the three OLS assumptions. The first one is the test for the normality of residuals, which is tested by the Shapiro-Wilk test. The second one is the test for homoscedasticity, which is tested by the Breusch-Pagan test. The third one is the test for multicollinearity which is tested by computing the variance inflation factors. This test is discussed in subparagraph 5.4 The fourth one is the test for autocorrelation, which is tested by the Wooldridge test. Thereafter, the descriptive statistics, correlations and test for multicollinearity will be discussed. After that, the regressions will be explained and the results will be related to the hypotheses. Finally, a summary is made and a conclusion will be given.

5.2 OLS assumptions

5.2.1 Normality test

The first test that has to be done to run a regression is the check for normality. A normality test is a check to determine if a data set is well-modelled by a normal distribution. A normality test is also used to compute how likely it is for a random variable underlying the data set to be normally distributed. To test for normality the Shapiro-Wilk test is used. The outcomes are showed in table 1.

Table 1

Variable	Observations	W	V	z	Prob>z
Abs_acc	800	0.77198	117.384	11.692	0.00000

The null hypothesis is that the variable is normally distributed. The P-value is 0.00000, which means that the null-hypothesis should be rejected. Therefore, the continuous variables have to be winsorized to the first and last five percentiles. The histograms of the residuals before and after winsorizing are shown respectively in Appendix A and B. Appendix B shows that after winsorizing the variables the residuals are still not normally distributed.

A test that is related to normal distribution is the test for skewness and kurtosis, which is the Jacques-Bera test. Table 2 shows the outcomes of this test.

Table 2

Variable	Observations	Pr(skewness)	Pr(Kurtosis)	Adj chi2 (2)	Prob>chi2
residuals	800	0.0000	0.0000	.	0.00000

For this sample the p-values of both skewness and kurtosis are 0.0000. This means that the residuals are skewed, which means that they are asymmetrically distributed. This also means that the dataset suffers from kurtosis, which means that the tails of the distribution differ from the tails that it would have had when the sample would be normally distributed.

5.2.2 Homoscedasticity test

The second test is the test for homoscedasticity. Homoscedasticity is when all the random variables have the same variance. If the variances differ, this is called heteroscedasticity. To test for heteroscedasticity, the Breusch-Pagan test is used. The null hypothesis of this test is that the residuals are homoscedastic. The results are as follows:

$$chi2(1) = 156.29$$
$$Prob > chi2 = 0.0000$$

Because the p-value is 0.000, the null hypothesis has to be rejected. Therefore, the conclusion is that the sample is heteroscedastic. To support this, a residuals versus fitted plot is presented in Appendix C. This plot also suggests that the sample is heteroscedastic, because the residuals around the fitted value 0 are closer to the red line than the residuals at the fitted value 0.04.

5.2.3 Autocorrelation test

The third test is the test for autocorrelation. Autocorrelation means that the error terms of a regression are not independent of each other. To test this assumption, the Wooldridge test is used. The null hypothesis is that there is no autocorrelation. The results are as follows:

$$F(1, 132) = 0.683$$
$$Prob > F = 0.4102$$

The P-value is 0.4102. Therefore, the null hypothesis will not be rejected. Thus, the conclusion is that there is no autocorrelation.

5.3 Descriptive statistics

In this part the distribution of the sample is discussed and the table of the descriptive statistics is shown. The sample of this research contains 135 companies with 800 observations in total. From these 800 observations, 604 (75.5%) are related to a company with at least one woman in the board of directors. Another observation is that only 378 (47.2%) observations are related to companies that have at least one woman in the audit committee. The observation related to the gender quota is that 380 (47.5%) observations are related to companies that are listed in a country where a gender quota is mandatory. The other 420 (52.5%) observations are related to companies that are listed in a country where a gender quota is voluntary. The average sales growth is 7.3%. The average firm size is 5.824. The average leverage of the firms is 0.095. The minimum of leverage is 0, which means that there are companies in the sample which are financed with only equity and short-term debt.

Table 2 contains the descriptive statistics of all the variables in this research.

Table 3

VARIABLES	N	mean	sd	min	max	median	25%	75%
femBOD	800	0.757	0.429	0	1	1	1	1
femAC	800	0.472	0.500	0	1	0	0	1
Quota	800	0.475	0.500	0	1	0	0	1
salesgrowth	800	0.073	0.288	-3.279	1.31	0.043	-1.078	0.137
Firmsize	800	5.824	2.327	-0.324	11.41	5.701	3.992	7.578
Leverage	800	0.095	0.146	0	14.76	0.095	0.004	0.194

5.4 Correlations

The next table shows the correlations between the variables. In line with the expectations, the table shows that | |acc is negatively correlated to both $femBOD$ and $femAC$. However, this cannot be asserted with certainty, because these correlations are not significant. The correlation between $quota$ and $femBOD$ is positive significant. This is in line with the expectations based on Smith (2014) which stated that mandatory quota lead to more women in board of directors. The correlation between $quota$ and $femBOD$ is also positive significant. This suggests that countries with a mandatory gender quota have a higher level of discretionary accruals within firms. One striking correlation is the one between $femBOD$ and $femAC$. This high number could be explained by the fact that when there is a woman in the board of directors, most of the times the audit committee also consists at least one woman.

Table 4

	Abs_acc	femBOD	femAC	quota	salesgrowth	firmsize	Leverage
Abs_acc	1.0000						
femBOD	-0.0295	1.0000					
femAC	-0.0361	0.5355***	1.0000				
Quota	0.0730**	0.1410***	0.0323	1.0000			
Salesgrowth	-0.0201	-0.0620*	-0.0331	0.0358	1.0000		
Firmsize	-0.2056***	0.3971***	0.2989***	-0.0831**	-0.0309	1.0000	
Leverage	-0.0763**	-0.0681**	-0.0477	0.0471	0.09445***	0.0149	1.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

It is also important to check for multicollinearity, which means that two dependent variables are correlated itself. In Appendix D, the check for multicollinearity on the four regressions is shown. In general, VIF values higher than 10 are an indicator for multicollinearity. However, there also researches where a maximum of 30 is used, such as Mason & Perreault (1991). The outcomes of the VIF values seem to be rather low. Therefore, this thesis assumes that there is no danger of multicollinearity.

5.5 Results of the regression models

This subparagraph discusses the outcomes of the regressions. Because the sample was not normally distributed and the sample was heteroscedastic, a robust regression is used. Robust regressions are designed to circumvent some limitations of traditional parametric and non-parametric methods.

5.5.1 Analysis Hypothesis 1 and 2

In the first hypothesis the relation between abs_acc and $femBOD$ is tested. In the second hypothesis the relation between abs_acc and $femAC$ is tested. Tabel 4 shows the regression of Hypothesis 1 and 2. The dummy variable of female in the board of directors has a significant positive relation with the level of discretionary accruals (abs_acc). The number 0.00899 is significant at a one percent level. This means that the presence of a woman in the board of directors leads to higher level of discretionary accruals, and thus a lower earnings quality. The dummy variable of women in the audit committee has a negative relation with the level of discretionary accruals. However, the number -0.0008 is not significant. This means that we cannot conclude anything with certainty.

The adjusted R-squared is 0.0469, which is not high. The adjusted R-squared indicates the explanatory power of the regression. This number is based on the number of explanatory variables.

Table 5

VARIABLES	Abs_acc
femBOD	0.00899***
	(0.000)
femAC	-0.000873
	(0.563)
salesgrowth	0.0012137
	(0.565)
firmsize	-0.00093***
	(0.002)
leverage	-0.01128***
	(0.009)
Constant	0.01295***
	(0.000)
Observations	800
Adj. R-squared	0.0469
F	8.86
Prob > F	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.5.2 Analysis Hypothesis 3

In the third hypothesis the same variables as Hypothesis 1 are used and tested, but the focus lays on the distinction between countries with a mandatory or voluntary gender quota. Table 6 shows the results of the regression for countries with a voluntary gender quota. In these countries women in boards do have a significant positive influence on the level of discretionary accruals. The number 0.00398 is significant at a five percent level. The adjusted R-squared of this regression is 1.91%, which is low.

Table 6	
VARIABLES	Abs_acc
femBOD	0.00393**
	(0.028)
salesgrowth	0.00265
	(0.222)
firmsize	0.000295
	(0.456)
leverage	-0.01178**
	(0.027)
Constant	0.00621***
	(0.004)
Observations	420
Adj. R-squared	0.09408
F	3.31
Prob > F	0.0000

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7 shows the results of the regression for countries with a mandatory gender quota. In these countries women in boards also have a significant positive influence on the level of discretionary accruals. The number 0.0100 is significant at a one percent level. The adjusted R-squared of this regression is 1.91%, which is low.

Table 7

VARIABLES	(1) abs_acc
femBOD	0.01015***
	(0.000)
salesgrowth	-0.00963**
	(0.040)
firmsize	-0.00208***
	(0.000)
leverage	-0.01869***
	(0.009)
Constant	0.02337***
	(0.000)
Observations	380
Adj. R-squared	0.10066
F	11.61
Prob > F	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.6 Analysis and interpretation

The first hypothesis stated that companies without women in the board of directors have a higher earnings quality than companies with gender diversity in the board of directors. Srinidhi et al. (2011), Thiruvadi & Huang (2011), Krishnan & Parsons (2008) and Barua et al. (2010) all argued that more gender diverse boards will have a positive effect on the earnings quality. The results of this thesis provide evidence that gender diversity in the board of directors is positively related to the level of discretionary accruals. Therefore the conclusion is that at least one woman in the board of directors has a negative influence on the earnings quality.

The second hypothesis focuses on the relation between women in the audit committee and the earnings quality. The research of this thesis finds a positive relation for women in the audit committee and the level of discretionary accruals, which is in contrast to what was expected based on the findings of Srinidhi et al. (2011) and Thiruvadi & Huang (2011). Therefore the conclusion is that at least one woman in the audit committee has an negative influence on the earnings quality. Therefore this thesis rejects the null hypothesis of no relation between women in the board of directors and the earnings quality.

The third hypothesis focuses on the influence of the adoption of a mandatory or a voluntary gender quota in a country on the relation between gender diversity in the board of directors and earnings quality. This research finds a positive relation between women in the board of directors and the level of discretionary accruals with the sample of firms in countries with a mandatory gender quota as expected based on Smith (2014). The same relation but with the sample of firms in countries with a voluntary gender quota is also positive. The conclusion therefore is that both countries with a mandatory gender quota and countries with a voluntary gender quota have a positive relation between gender diverse boards of directors on the level of discretionary accruals. The only difference is that the influence of women in the board of directors in a country with a mandatory gender quota is stronger on the earnings quality than in countries with a voluntary gender quota. This means that the null hypothesis has to be rejected.

5.7 Summary

The first part of this chapter was about testing for the OLS assumptions. The conclusion of the different tests is that the sample is heteroscedastic and not normally distributed. This leaded to the fact that a robust regression has to be used. The next part provided information about the sample by discussing the descriptive statistics and the correlations. Before the regression was done, the test for multicollinearity was performed. There was no multicollinearity in the different regression model. Thereafter three regressions were executed and discussed per hypothesis. Finally, the results were discussed and interpreted.

6 Conclusion

6.1 Answering the research question

The objective of this thesis is to contribute to the prior research about the association between gender diversity and earnings quality by gathering empirical evidence. Therefore, the research question of this thesis was:

What is the effect of gender diversity on earnings quality?

This research discussed three hypotheses. Gender diversity was defined as boards of directors or audit committees with at least one woman and one man in it. Gender diversity was tested as a dummy variable. Earnings quality was measured by the model of Kothari et al. (2005), which used the level of discretionary accruals as measure.

The first hypothesis was:

Companies without women in the board of directors have a higher earnings quality than companies with gender diversity in the board of directors.

After checking the sample for normality, homoscedasticity and multicollinearity, a robust regression was executed. The outcome of this regression was that there is a significant positive relation between a woman in the board and the level of discretionary accruals. Therefore, the conclusion of this part is that more gender diverse boards lead to a lower earnings quality. This is in contrast with the expectations.

The second hypothesis was:

Companies without women in the audit committee have higher earnings quality than companies with gender diversity in the audit committee.

This hypothesis focuses on the gender diversity in an audit committee. The outcome of the regression related to this hypothesis was that there is a negative relation between gender diversity in the audit committee and the level of discretionary accruals. However, this relation is not significant. Therefore, we cannot assert anything with certainty.

The third hypothesis was:

The effect of a voluntary adoption of a gender quota on earnings quality does not differ from the effect of a mandatory adoption of a gender quota.

This hypothesis focused on the differences between countries with a mandatory or voluntary gender quota tested with the effect of gender diverse boards on earnings quality. The same relation as hypothesis 1 was tested, but with two different samples. The first sample consisted of firms which are located in countries with a voluntary gender quota. The second consisted of firms which are located in countries with a mandatory gender quota. The outcomes of both regressions argued that in both type of countries there is a significant negative relation between gender diversity in the boards of directors on earnings quality. However, the strength of the effect of women in a board on earnings quality is stronger for firms which are located in countries with a mandatory gender quota. Therefore, the conclusion is that although both type of countries have a negative relation, they differ in the strength of influence.

Overall, based on the conclusions of the three hypotheses the answer to the research question is that gender diversity does have influence on the earnings quality of a firm.

6.2 Contribution

Different researches have already been conducted about the relation between gender diversity in the boards of directors and earnings quality. The influence of women in the audit committees on earnings quality also has been investigated. This thesis contributes to the existing stream of literature by using a recent sample of firms in the European Union. The relations already have been investigated in the United States and China, but not for European countries. Furthermore, this thesis contributes to the prior literature by investigating the influence of a mandatory gender quota or a voluntary gender quota. This subject has not been investigated yet.

6.3 Limitations

This thesis suffers from limitations, despite the academic relevance. The major limitation is the small sample used in the research. With only 800 observations, it is hard to generalize the results of this research. This could be a point of improvement for future research.

Another limitation is that the adjusted R-squares are all low. This means that the percentage of variation explained by only the independent variables that actually affect the dependent variable is not high.

The third limitation of the paper is the use of discretionary accruals as measure for earnings quality, which does not have to be the best proxy. The reason to see this as a limitation is that earnings management does not have to be a bad thing. According to Mintz & Morris (2016), stakeholders could support the use of earnings management by managers. The reason therefore is that managers use earnings management to meet earnings forecasts. Therefore, a higher level of discretionary accruals could improve the predictability of a company's performance.

6.4 Recommendations

Further research could generate more empirical evidence, based on a bigger sample. Therefore, one recommendation is that other European countries could be tested. More firms could be tested, which gives a bigger opportunity to generalize the outcomes of the research.

Furthermore, future research could use another measure for earnings quality. As mentioned before the level of discretionary accruals as measure for earnings quality does not have to be the best one.

Finally, future research could also use another measure of gender diversity in the boards of directors or audit committees. In this thesis gender diversity is tested as a dummy when there is at least one woman at the board of directors or audit committee. Future research could use a percentage of woman in the board to measure the influence of women on earnings quality better.

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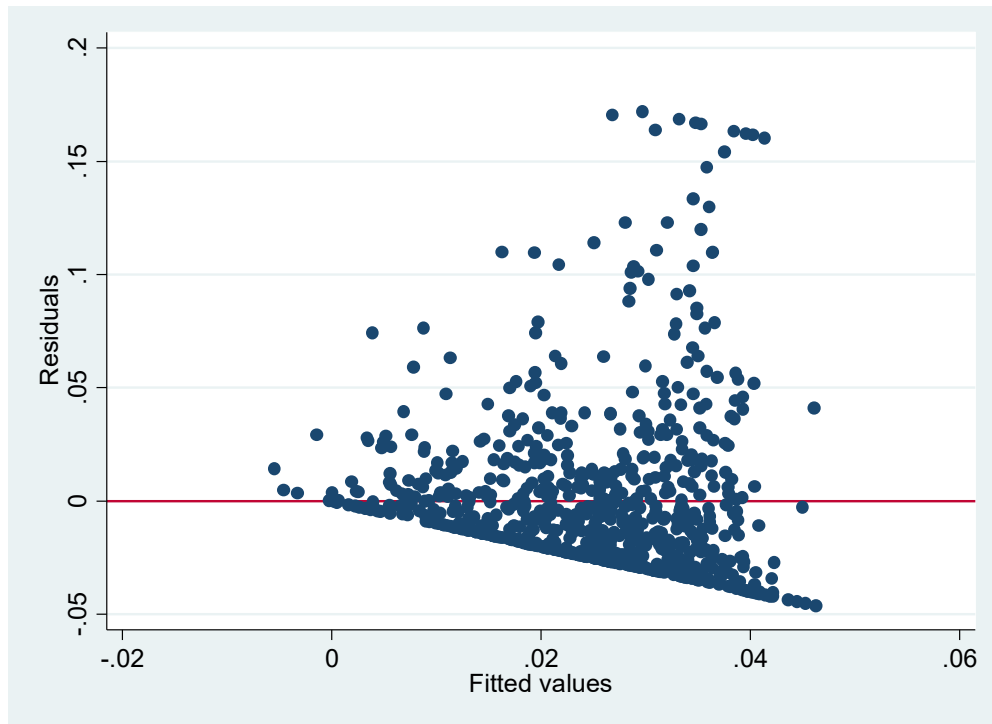
Appendix

Appendix A: Normality test before winsorizing
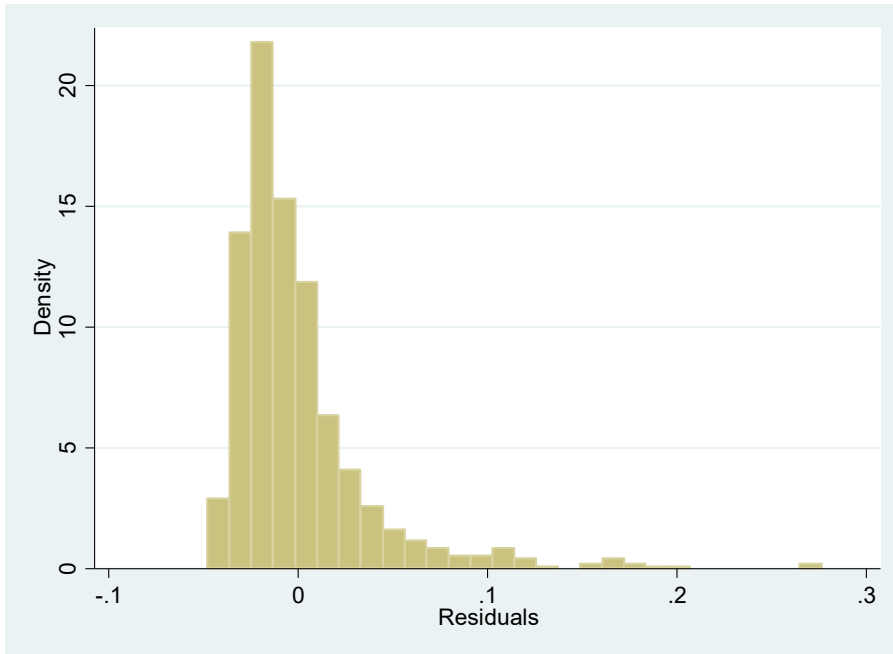
Appendix B: Normality test after winsorizing
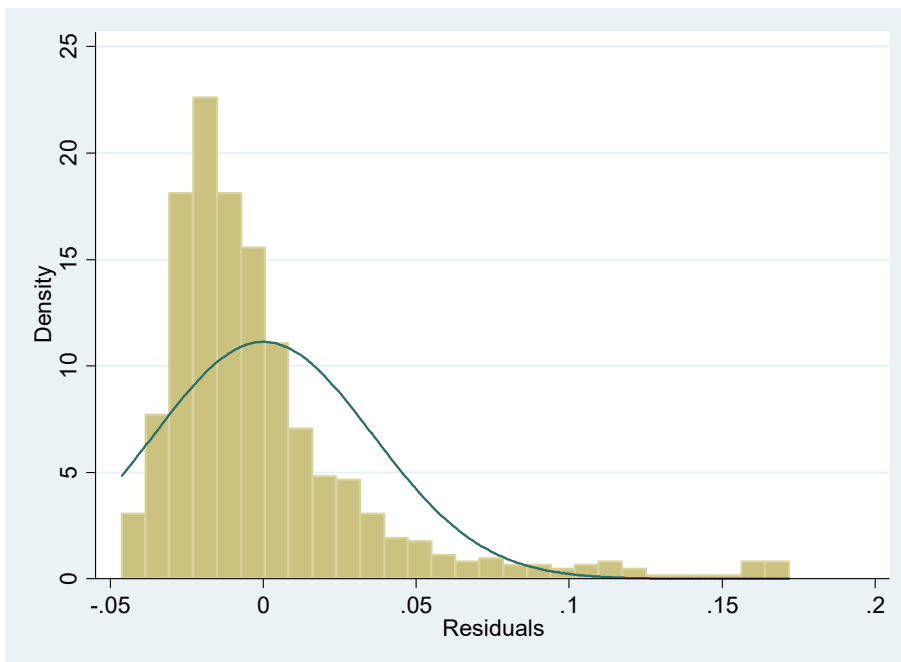
Appendix C: Residual-versus-fitted plot

Appendix D: Multicollinearity test

H1+2:

VARIABLE	(1) VIF	(2) 1/VIF
femBOD	1.54	0.650258
femAC	1.43	0.699734
salesgrowth	1.01	0.770768
firmsize	1.30	0.916472
leverage	1.09	0.990578
Mean VIF	1.27	

H3(1):

VARIABLE	(1) VIF	(2) 1/VIF
femBOD	1.25	0.798662
salesgrowth	1.01	0.992986
firmsize	1.41	0.707207
leverage	1.16	0.864849
Mean VIF	1.21	

H3(2):

VARIABLE	(1) VIF	(2) 1/VIF
femBOD	1.21	0.823350
salesgrowth	1.02	0.978929
firmsize	1.23	0.814519
leverage	1.07	0.934685
Mean VIF	1.13	

Appendix E: List of European countries used in this research

Countries (Country code)
Belgium (BEL)
France (FRA)
Germany (GER)
Italy (ITA)
Netherlands (NLD)
Spain (ESP)
Sweden (SWE)
United Kingdom (UK)