CFO gender, gender quotas and accounting conservatism

Master Thesis

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Content

Abstract

These days, more countries install policies to create more gender equality in boardrooms. The impact of these new regulations lack scientific research and there is no common opinion on the effects of gender on corporate decision making. With a sample of listed European firms from countries that have and have not installed binding gender quotas, this thesis explores the effect of both CFO gender and binding gender quotas on accounting conservatism. Using the Ball and Shivakumar Asymmetric Accrual to Cash-flow Measure, the study finds a significant result that with a female CFO, a company uses more accounting conservatism. The same result is found when a company is subject to a binding gender quota. Inconsistent results are found when the marginal impact of a female CFO in a company that is not subject to a binding gender quota is researched, therefore this subject needs further research. This study adds to the literature of gender, gender quotas and accounting conservatism by concluding that both CFO gender and binding gender quotas have an effect on the use of accounting conservatism.

1. Introduction

In the S&P 500 companies' workforce women are well represented, just not in higher management. 45 percent of the labour force consists of women, but from thereon upwards there is a sharp decline. Only 39 percent of mid-level managers are female and also only 25 percent of senior managers. The number of board seats they hold is no more than 19 percent (Forbes, 2016). Firms with homogeneous leadership might be missing out, according to a study by Noland, Morand and Kotschwar (2016). The researchers studied public firms all around the globe and concluded that firms where 30 percent of leadership roles were given to women, had a net profit margin that is 6 percent higher. A possible explanation to this correlation is as that women increase the firm's skill diversity.

Pressure to put more women in high management and board functions is exerted by politicians within countries and also by the European Union (The Economist, 2014). A change in institutional settings in many countries is the passing of legislation to increase the number of female executives. In 2003, Norway was the first country in Europe to legislate boardroom quotas, setting the minimum amount of women in executive functions at 40 percent. Spain, France, Brazil and Iceland have taken on the same quota since. Italy now has a quota of one-third, just like Belgium and the Netherlands a 30 percent target that however, is not binding (The Economist, 2014). Germany passed a similar legislation in 2015, requiring executive positions be filled by women for 30 percent or otherwise not filled at all. More movement is visible in several other countries such as Australia, Great Britain and Sweden, of which governments have threatened to set quotas if companies do not appoint more women as directors voluntarily (The Economist, 2014). These developments an interesting field of research to the effects of gender quota.

Croson and Gneezy (2009) have set out an overview of the most important results of research in behavioural gender differences and conclude that women are more risk averse than men are, men are more overconfident than women are and women have a greater aversion to competition than men. Risk aversion in this context is often more related to losses than gains, which indicates that preferences are faced at playing safe (He et al., 2007). However, there are also studies that argue there is no difference in behaviour between the genders, they do not find such differences between the two genders or that argue that education and profession diminish such differences, which leaves the topic open to more research (Maxfield et al., 2010; Gupta et al., 2009).

Research has been done to examine whether women are more risk averse compared to men in a variety of settings, including settings that involve corporate boards. Studies have been done on several aspects of the influence of female executives on a range of corporate decisions, such as mergers and acquisitions, financing, and investment reporting differences (e.g., Levi, Li, and Zhang 2014; Huang and Kisgen 2013, Francis et al., 2015; Ho et al., 2015) or studies that show that executive gender does not make a difference in corporate decision making (Mohan and Chen 2004; Ge et al., 2011). Given these mixed results, the effects of gender on corporate decision making call for more research (Birnberg, 2011).

Another type of decision making that can measure the influence of female executives on a range of corporate decisions is accounting conservatism. Accounting conservatism is seen as the requirement of higher verification standards for recognizing good news than recognizing bad news (Watts, 2003). Accounting conservatism, in the context of earnings, is a desirable property and a central indicator of the quality of earnings, as losses tend to be recognized timely and profits tend to be taken only taken when ensured (Ball and Shivakumar, 2005). Managers' and executives' estimates have a critical role in the appliance of accounting conservatism (Ahmed and Duellman, 2013) and therefore the influence of management incentives on accounting conservatism is suitable for this research.

Accounting conservatism influences the financial reporting process of the firms, which is typically overseen by the Chief Financial Officer (CFO). This director has the most direct impact of all senior management on financial reporting and accounting related decisions such as making accounting adjustments and choosing accounting methods (Ge et al., 2011, Francis et al., 2015). Also, Jiang et al. (2010) remark that the size of accruals and beating forecasts are both more sensitive to the incentives of the CFO than to those of the Chief Executive Officer (CEO). Therefore, this research focuses on the CFO in examining the effects of gender diversity on accounting conservatism, as this specific influence on accounting conservatism is an interesting way to study the effects on corporate decision making that is still open for research.

Next to CFO gender, this study also incorporates the existence of a gender quota on the use of accounting conservatism. As gender quotas are relatively new, there is a fertile field of research in the effects these quotas have on companies and corporate decision making. As the effect of gender quotas on the use of accounting conservatism has not been studied before, this will extend existing literature. Combining, this study researches the influence of the

gender of the CFO on the use of accounting conservatism and the influence that gender quotas have on this relation. This leads to the following research question:

> *To what extent do the gender of the CFO and binding gender quotas on appointing female board members influence the firms' accounting conservatism?*

A difference in male and female behaviour towards accounting conservatism is an interesting topic for research that adds to the existent literature in the fields of both gender and accounting conservatism. As both of these fields of study show mixed results on women in corporate positions, this study helps to provide more clarity. In addition, this research is of value to auditors, creditors, analysts, and investors, as the conservative and ethical tendencies of female board members might have important economic and accounting implications because they are able to serve as a natural defence that protects from fraudulent misstatements (Ho et al., 2015).

Another useful implication is that the study shows the effects of implementing gender quotas and other legislations in executive boardrooms. This provides information to legislators of both accounting standards and laws by showing the effects of an increasing number of female directors on the use of accounting standards and reported earnings, as the increasing number of female directors may eventually even change expectations for various financial ratios (Ho et al., 2015). Also, it provides useful source of reflection on implemented quotas for both corporations and legislators.

The remaining chapters of this thesis are the following: Chapter two contains a study of prior literature on this topic. Based on this literature the hypotheses are formulated in this chapter as well. In chapter three the model and research method are elaborated. Chapter four illustrates the results of the research and in chapter five a conclusion is given.

2. Literature review

This chapter discusses prior literature and theories, written on relevant topics for this research, which are: the defining and use of accounting conservatism; differences in behaviour between men and women; legislation concerning the composition of the board of directors and research regarding director behaviour. At the end of the chapter, the hypotheses used for this research are formulated.

2.1 Accounting conservatism

The definition for accounting conservatism used is given by Basu (1997):

> '*I interpret conservatism as capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements. Under my interpretation of conservatism, earnings reflect bad news more quickly than good news.'* (p. 4)

The distinction can be made between two different kinds of accounting conservatism: conditional and unconditional (Beaver and Ryan, 2005). The conditional conservatism occurs when this bias relates to the timeliness of reported earnings. Ruch and Taylor state: 'conditional conservatism is characterized by the asymmetric recognition of positive and negative economic news' (p. 20). In this case, negative economic news is reflected earlier in accounting earnings than positive economic news, which also suits the definition of Basu. Beaver and Ryan (2005) describe this as '*book values are written down under sufficiently adverse circumstances but not written up under favourable circumstances'* (p. 269). The distinction between conditional and unconditional conservatism is the use of economic news, this plays a big role in conditional conservatism, but not in unconditional conservatism. Unconditional conservatism occurs through consistently under-recognizing net assets and overstating liabilities. This version is not news dependent (Ball and Shivakumar, 2005; Ruch and Taylor, 2015), and thus, is pervasively applied (Chen et al., 2014). Table 1 shows examples of the use of accounting conservatism.

Table 1: Examples of accounting conservatism

Type of conservatism	Common examples
Conditional conservatism	Goodwill impairment
	Long-lived asset impairment
	Inventory recorded at the lower of cost or market
	Asymmetry in gain/loss contingencies
Unconditional conservatism	Accelerated depreciation methods
	Expensing R&D costs
	Expensing advertising costs
	LIFO inventory
	Accumulated reserves in excess of expected future cost

Source: Ruch and Taylor, 2015, p. 21

By explaining both forms of conservatism, a better overview of the accounting conservatism is created for different reasons. First, the different forms of conservatism have different effects on the financial statements. The use of accounting policies that are associated with unconditional conservatism has an impact that is relatively consistent from period to period. On the other side, the use of policies that are associated with conditional conservatism are more transitory as seen on the income statement, as there are fluctuations in the timing and content of the news on which the conditional conservatism is based. This also leads to differences in the timing of balance sheet recognition (Chen, et al., 2014). This means the different forms have to be measured in a different way.

Second, the forms of conservatism have different conditions under which they occur. Watts (2003) offers four different explanations for accounting conservatism: litigation; contracting; taxation and regulation. Conditional conservatism is induced by enhanced contracting and litigation threats (Watts, 2003; Lara et al., 2009). Threats of litigation also have an effect on unconditional conservatism, as do taxation and regulation, although these economic determinants are stronger for conditional conservatism (Watts, 2003; Lara et al., 2009). Circumstances as these have to be incorporated when conservatism is researched.

Most studies on conservatism put the focus on conditional conservatism (Ruch and Taylor, 2015), as does this study. An explanation for the common use of conditional conservatism might be that it, unlike conditional conservatism, communicates information regarding uncertain events, which makes it of greater use to researchers that study valuation and contracting issues (Ball and Shivakumar, 2005). This study incorporates a model that uses the timeliness of earnings to measure conservatism, thus measuring conditional conservatism. Therefore, the remainder of this paragraph focuses on conditional conservatism.

There is an ongoing discussion about implications of conservatism for the users of financial statements and other stakeholders (Ruch and Taylor, 2015). Watts (1993) and Ahmed et al. (2002) imply that conservatism most likely evolved from the role accounting plays in contracting. Conservative accounting structures tend to reduce noise, to improve the informativeness of accounting performance measures and to reduce the marginal benefits that firms gain from earnings management (Chen et al. 2007). LaFond and Watts (2008) also find this improvement in informativeness. Information asymmetry is reduced by conservatism because it restricts the possibilities for management to manipulate financial reporting, which provides an environment that allows for multiple sources of information to be taken into account. Firms that apply more conservatism tend to provide richer information concerning negative earnings outcomes, resulting in better monitoring and lower contracting costs (LaFond and Watts, 2008). The improvement of informativeness is also useful in reducing problems caused by agency theory, because it may help in the alignment of the interests of board members or managers and shareholders of a company. Altogether, improving contracting efficiency leads to lower costs of capital and can eventually enhance firm value (Ho et al., 2015, Ahmed et al., 2002).

Accounting conservatism has an impact on earnings measures and those are often used in management compensation arrangements. Conservatism limits incentives for earnings management driven by management compensation contracts and it enhances the usefulness and reliability of accounting performance measures (Iyengar and Zampelli, 2010). Other findings about accounting conservatism include a lower magnitude and likelihood of extraordinary items charges and higher future gross margins and cash flows, which means that conditional conservatism is associated with higher quality investment decisions (Ahmed and Duellman, 2011). Conditional conservatism indicates the timely recognition of losses and thus

creates the incentive for management to cancel projects with a negative net present value on a more timely basis (Ruch and Taylor, 2015).

In selecting the accounting principles used and, there is a big role for board members and especially the CFO of a company. Therefore, the choices and estimates made by managers play an important role in the application of conservative accounting (Ahmed and Duellman, 2013). For example, last-in first-out (LIFO) inventory valuation method is more conservative than the use of first-in first-out (FIFO) valuation method. Also, the use of goodwill impairment and long-lived asset impairment are signs of conservatism, as are accelerated depreciation methods compared to the use of straight-line depreciation (Iyengar and Zampelli, 2010; Ruch and Taylor, 2015). As these methods are decided upon by management and directors, the use of accounting conservatism is a reflection of a manager's attitude toward risk (Francis et al., 2015). There is a direct influence of management on the use accounting conservatism.

2.2 Gender differences and risk

Next to conservatism, this study also takes gender into consideration. Croson and Gneezy (2009) write an overview of studies in differences in characteristics between men and women. The researches reviewed in their paper all show that women are more risk averse and less overconfident than men. This is found in a majority of tasks and environments, including a setting that involves investment decisions (Sunden and Surette, 1998). This indicates that women are more conservative than men are. Another summarizing paper on business-related ethical behaviour is written by Peterson et al. (2010). The researchers have done a review of studies on gender and ethics and write in their conclusion that the majority of studies in this area draw the conclusion that women show higher ethical standards and ethical behaviours than men do (e.g. Roxas and Stoneback, 2004; Franke et al., 1997).

Gender differences between managers and corporate board members show somewhat different results than the more general researches discussed above. Maxfield et al. (2010) examine risk behaviour of women in a broader managerial setting and conclude that the motivators for risk taking are the same for women as motivators identified in research as gender-blind motivators, which means no difference between men and women is found. Women take risk in a managerial setting and little evidence is found to support a 'particularly "female" decision process' when estimating risks. A possible explanation for this result can

be found in the level of education these women have, as is demonstrated by Johnson and Powell (1994). A higher level of education might indicate a better assessment of risks. The study of Gupta et al. (2009) also shows through a survey that women in managerial positions do take risks just as their male colleagues do, challenging the commonly known stereotype. This adds to the evidence of more gender neutrality regarding risk propensity in a professional management context. Atkinson, Baird and Frye (2003) find similar results when examining the risk taking behaviour in investment of fund managers of both genders. As evidence on the behaviour of men and women appears to be mixed, it is interesting to examine the influence of gender on the aspects of managerial decision making to add to this field of research.

2.2.1 Director behavior

The effects of board gender diversity on corporate decision making, risk taking and firm performance have been researched in different areas such as investments, risk taking and earnings management. Huang and Kisgen (2013) provide empirical evidence that shows that firms with male directors are more likely to issue debt and make acquisitions than firms with female directors. This suggests that female directors are taking less risk than their male counterparts. Investors tend to react more favourably to corporate financial decisions that are made by female directors in the areas of debt offerings and acquisitions (Huang and Kisgen, 2013). Levi, Li, and Zhang (2014) study acquisition bids of S&P 500 companies and found that an additional female director on a bidding board of directors is associated with fewer bids and a reduction in the paid bid premium. From these findings, the conclusion is drawn that firms with female executives are less likely to make an acquisition, and a lower bid premium is paid if they do. This is in line with the results of Huang and Kisgen (2013), showing more precaution.

A negative relation with female members of the board of directors and earnings management is found by Labelle, Gargouri, and Francoeur (2010), therefore the conclusion is drawn that gender diversity is positively related to earnings quality. This opinion is shared by Krishnan and Parsons, (2008) who found a significant relation between high gender diversity and earnings quality. This result is also found for the quality of accruals, by Barua, Davidson, Rama and Thiruvadi (2010). Their empirical study shows that firms with female CFOs report lower performance-matched absolute discretionary accruals and lower absolute accrual estimation errors, suggesting more careful accounting and less risk taking than when a male CFO is in place.

Martin et al. (2009) find that the changes in risk-taking by a company that is changing CEO's is significantly higher in the cases where a female CEO is appointed, which supports the view that female CEOs are relatively risk averse. This study also concludes that firms that perceive a higher sense of risk are more likely to select a female CEO, trying to reduce this risk. This is also concluded by Elsaid and Ursel (2011), implying that female directors take less risk than male directors and bring a positive influence, as do the studies on governance, shareholder value and earnings management.

Bringing together the previously discussed topics, the study of Ho et al. (2015) demonstrates a positive relationship between companies with female CEOs report more conservative earnings. Bad news in reported earnings is recognized earlier by female CEOs, especially in firms with strong corporate governance, smaller firms and firms with high litigation and takeover risks. In accordance with Ho et al. (2015), Francis et al. (2015) show an increase in the level of accounting conservatism after a female CFO has been hired to replace a male CFO, providing a direct relation between the risk aversion of new female CFOs and conservative accounting.

A study between overconfidence by top management and accounting conservatism is done by Ahmed and Duellman (2013). The research provides evidence for a significant negative relation between managerial overconfidence and accounting conservatism. Connecting this to the idea that men are more overconfident than women (Croson and Gneezy, 2009), the expectation rises that women engage more in accounting conservatism than men do.

Following the majority of previous literature discussed above on gender and director behaviour, the first hypothesis of this research considers that women are less overconfident and more risk averse than men when directing a company. As previous research also suggests that overconfidence is negatively related to accounting conservatism (Ahmed and Duellman, 2013), the following hypothesis is formulated:

H1: *Firms with a female CFO show more accounting conservatism than firms with a male CFO.*

2.3 Binding gender quotas and critical mass theory

An increasing number of countries is implementing laws to increase the number of females in high positions in a number of areas, such as parliaments, government functions and corporate boards. The aim of the legislation is to address the lack of female directors on corporate

boards, to prevent the underrepresentation of women despite their often equal competence (Terjesen et al., 2015). There are two types of legislation when it comes to women on corporate boards. The first one is binding gender quotas, which are defined as '*a percentage target that mandates a proportional representation of a particular group*' (Kogut et al., 2014, p. 892). The second type of legislation concerns non-binding quotas and other soft regulations that do not include sanctions.

Norway was the first country to imply a binding gender quota in 2003 that requires 40% of the members of the Board of Directors (BOD) of publicly traded enterprises and state-owned enterprises to be women. The latest binding quota has been set by Germany in 2015. In table 2 an overview of all binding gender quotas is given. These quotas have various forms but include at least three parts: a gender quota, which is usually between 30 and 50 percent; a time period, which is usually between 3 to 5 years, and the last criterion, includes penalties for non-compliance (Terjesen et al, 2015).

Table 2: Binding gender quotas on corporate boards in Europe

Country	Quota	Year of Introduction	Year Due
Belgium	33%	2011	2017
France	40%	2010	2016
Germany	30%	2015	2016
Iceland	40%	2009	2013
Italy	33%	2011	2015
Norway	40%	2003	2008
Spain	40%	2007	2015

Source: World Bank Group (2015), Lee et Al. (2015), European Commission (2015)

These quotas obligate firms to find and invest in enough suitable and sustainable female talent to fill their corporate boards with capable female directors (Terjesen et al., 2015). When a higher number of females is selected for board functions because of a quota, their ability to influence decisions made by the board increases with their amount (Kramer et al., 2006). This is also found in governance (Adams and Ferreira, 2009), and organizational innovation (Torchia et al., 2011). A single female director often makes substantial contributions, but when the number of women is increased to at least three, the likelihood increases that

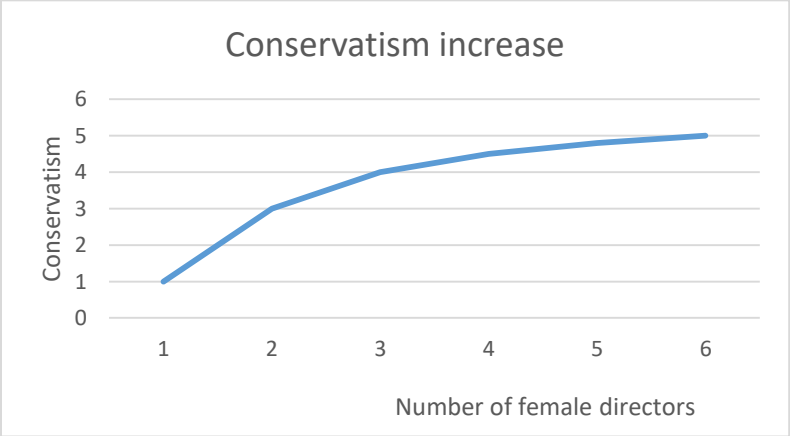
women's ideas and voices are heard and boardroom dynamics make a substantial change, according to the critical mass theory (Kramer et al., 2006). This threshold of three makes the impact of female board members more pronounced. The increase of the ratio of women may lift the social barrier that exists for a minority of women, which is beneficial to their participation and influence (Elstad and Ladegard, 2012).

As women are more risk averse, it is expected to see a rise in the level of conservatism applied when the number of female board members goes up. Following this, firms in countries that use a binding quota may show a higher level of conservatism than firms that do not have to take in account such a quota. The following hypothesis is formulated:

H2: Firms in countries with a binding gender quota show more accounting conservatism in financial reporting than firms in countries without binding quotas.

The critical mass theory suggests that women's ability to influence decision making on the board is best when there is at least three of them. When looking at marginal utility, the implication can be made that the marginal impact of the first woman on the board of directors is bigger than that of a second or a third female board member. The marginal utility graph is displayed in figure 1. The marginal influence of a female CFO that is the only woman on a board of directors, which is often the case when there is no binding gender quota installed, is larger than that of a female CFO surrounded by more female board members.

Figure 1: marginal increase of conservatism



As companies that have to apply a binding gender quota have more women on the board of directors, the assumption can be made that a female CFO in such a company has marginally less influence than a female CFO in a company that does not apply such a quota. The third and final hypothesis is the following:

H3: The marginal impact of a female CFO on accounting conservatism is stronger for firms in countries without a binding gender quota than in countries with a binding gender quota.

3. Research method

This chapter describes the quantitative research method used to test the three hypotheses that are drafted in the previous chapter. A quantitative study is conducted. The measurement of the dependent, independent and control variables is described in the operationalization, the regressions are drafted and the selection of the sample is discussed in this chapter.

3.1 Sample selection

The sample for the research consists of listed, European firms. As these often use IFRS, this controls for differences in accounting standards. Belgium, Norway, Spain and France are the first four countries that have installed binding gender quota, except for Iceland, of which the stock exchange has ceased to exist. Therefore, the companies in the Belgian BEL20, the Norwegian OBX25, the Spanish IBEX35 and 20 companies of the French CAC40 make up the sample for companies subject to a binding gender quota.

For companies that are not subject to a binding gender quota, The Netherlands, the United Kingdom and Germany are selected. As Germany has installed a gender quota in 2015 and this study uses data until 2014, Germany is selected a country without a binding gender quota. The selected companies are those listed on the Dutch AEX and AMX, the German DAX30 and 25 companies from the British FTSE100.This gives a total sample of 205 companies. The data are chosen from 2011 to 2014, which gives a total of 820 observations. As the model uses accruals to test for conservatism, the year 2010 is added as a lag variable.

Data on CFO gender are collected from the BoardEx database and if not available there, hand collected from the firm's annuals reports of 2011 - 2014. The financial data are collected from the Orbis database. Banks, insurance companies and other financial institutions are not included in the sample, therefore all companies with SIC codes 6000-6999 are removed (Francis et al., 2015). After removing observations with missing values, 577 observations of 148 companies remain. A description of the sample is displayed in table 3.

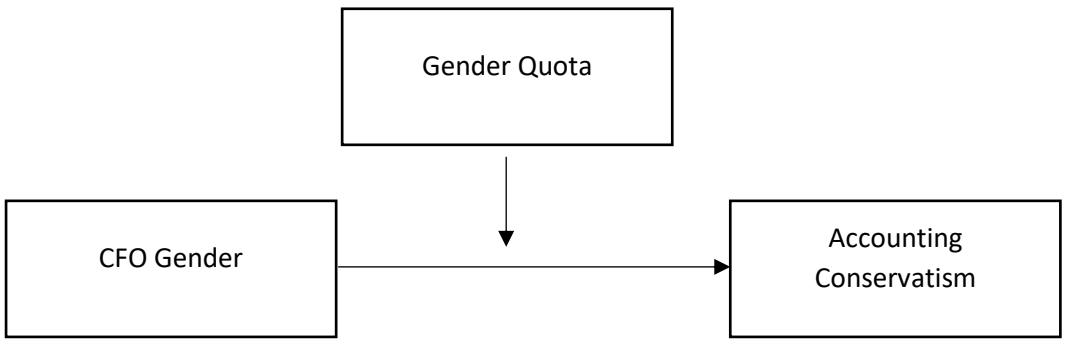
Table 3: Sample description

Country	No. of companies	
Binding gender quota		
Norway	16	
Belgium	13	
Spain	22	
France	21	
Total		72
No binding gender quota		
United Kingdom	21	
The Netherlands	31	
Germany	24	
Total		76
Total		**148**

Observations		
Binding gender quota	280	
No binding gender quota	297	
Total		577
Male CFOs	502	
Female CFOs	75	
Total		577
Positive cashflow	530	
Negative cashflow	47	
Total		577

3.2 Operationalization

Figure 2: Conceptual model



The variables described in the conceptual model above (Figure 2), are operationalized to test the hypotheses.

3.2.1 Dependent variable

Accounting conservatism can be measured with different models. Wang, Hogartaigh, and Van Zijl (2009) identified key measures of accounting conservatism, and determine that the most often used measure is Basus (1997) asymmetric timeliness of earnings measure ('AT'), but as this measure is often critiqued in literature (Givoly et al., 2007; Beaver et al., 2008) this thesis turns to the measure of Ball and Shivakumar (2005), the Asymmetric Accrual to Cash-flow Measure (AACF). This model is an adaption of the model made by Dechow et al. (1998). It determines conditional accounting conservatism by looking at the reported accruals of the firm. The application of conservatism on financial statements is often accomplished through accruals, particularly in case of timely loss recognition (Ruch and Taylor, 2015), which is the case with conditional accounting conservatism. The accruals in the model serve two roles. The first role for accruals is to mitigate the noise in the operating cash flow and construct a more stable earnings variable by eliminating transitory effects (Ball and Shivakumar, 2005).

The second role for accruals lies in the timely recognition of losses and gains. Ball and Shivakumar (2005) describe a positive and asymmetric correlation between contemporaneous cash flows and accruals that measures conservatism. This positive correlation is present because cash flows derived from an individual long-term asset are persistent, or correlated over time. When the expected future cash flow of such an asset is revised in a current period, this is also the case for the future periods following, implicating that a revision in the current period cash flow is positively correlated with the expected future cash flows (Ball and Shivakumar, 2005). Timely loss and gain recognition is accomplished through accruals, as it is not based on realized cash flows, but expected cash flows. Therefore, this recognition creates a positive correlation between current period cash flow and accruals, which is used to measure conservatism. As bad news is recognized earlier than good news under conservatism, losses are recognized earlier than gains. This asymmetric relationship suggests that the positive correlation found between accruals and current period cash flow is greater when a loss is recognized than a gain (Ball and Shivakumar, 2005).

The AACF measure is based on the following regression:

$$ACCt = \beta 0 + \beta 1DCFOt + \beta 2CFOt + \beta 3DCFOt * CFOt + \varepsilon t \quad (1)$$

Where:

ACCt = Accruals in year t, standardized by total assets at the beginning of the book year. Accruals are defined as earnings before extra-ordinary and exceptional items, minus cash from operations.

CFOt = Cash from operations in year t, defined as earnings before extra-ordinary and exceptional items in period t + Depreciation - Δ working capital, standardized by total assets at the beginning of year t.

Δ working capital is measured as: Δ inventory + Δ Debtors + Δ other current assets – Δ Creditors – Δ Other current liabilities.

DCFOt = Dummy variable that is set to 0 if CFOt ≥ 0, and is set to 1 if CFOt < 0.

Ball and Shivakumar, 2005, p. 94 and 114

Considering the first role of accruals, mitigating noise in earnings, the prediction for coefficient β2 is to be negative. The model expects a higher amount of accrued losses when the cash flow is negative, so β3 is predicted to be positive when there is a negative cash flow (Ball and Shivakumar, 2005).

3.2.2 Independent variables

The first independent variable is CFO gender. This variable is added as a dummy variable, which equals 0 when the CFO of the sample company is a female and 1 if the CFO is a male. The variable is named GEN. The second independent variable concerns the existence of a binding gender quota. This variable, named LAW, is also added as a dummy variable, which equals 0 when the home country of the company in the sample has installed a binding gender quota and equals 1 when such a quota is not in place.

3.3 Regressions

This section contains the regression used to test the three hypotheses, which are displayed in table 4.

Table 4: Hypotheses

H1:	Firms with a female CFO show more accounting conservatism than firms with a male CFO.
H2:	Firms in countries with a binding gender quota show more accounting conservatism in financial reporting than firms in countries without binding quotas.
H3:	The marginal impact of a female CFO on accounting conservatism is stronger for firms in countries without a binding gender quota than in countries with a binding gender quota.

To create the regression to test hypothesis 1, the variable GEN is added to regression (1) in the same way Ball and Shivakumar (2005) added their variable for the distinction between public and private firms. The term is added as an interaction variable, providing the following regression for hypothesis 1:

$$ACCt = \beta0 + \beta1DCFOt + \beta2CFOt + \beta3DCFOt * CFOt + \beta4GEN + \beta5DCFOt*GEN + \beta6CFOt*GEN + \beta7DCFOt * CFOt \times GEN + \varepsilon t \quad (2)$$

As stated above, the predictions for coefficients β2 and β3 are negative and positive respectively. When hypothesis 1 is correct and female CFO's apply more conservatism, they apply more asymmetry between the recognition of gains and losses. Therefore, coefficient β7 is expected to be negative, because male CFO's are expected to be less asymmetric in recognizing gains and losses.

To test hypothesis 2, the variable GEN in regression (2) is replaced by the variable LAW. This gives the following regression:

$$ACCt = \beta0 + \beta1DCFOt + \beta2CFOt + \beta3DCFOt * CFOt + \beta4LAW + \beta5DCFOt * LAW + \beta6CFOt * LAW + \beta7DCFOt * CFOt * LAW + \varepsilon t \quad (3)$$

The expectations for the coefficients are equal to those of regression (2), if binding gender quotas lead to more accounting conservatism, it is expected that β7 is negative.

For the test of hypothesis 3, both the dummy variables GEN and LAW are used. Therefore, the dummy variable LAW is added to formula (2). Because hypothesis 3 tests the effect when there is a female CFO, but no quota, the dummy variable GEN is reversed. The variable equals 1 when a female CFO is in place and 0 when a male CFO is in place, this variable is named GENR. This gives the following regression:

$$ACCt = \beta0 + \beta1DCFOt + \beta2CFOt + \beta3DCFOt * CFOt + \beta4GENR + \beta5DCFOt * GENR + \beta6CFOt * GENR + \beta7DCFOt * CFOt * GENR + \beta8LAW + \beta9DCFOt * LAW + \beta10CFOt * LAW + \beta11DCFOt * CFOt * LAW + \beta12GENR * LAW + \beta13DCFOt * GENR * LAW + \beta14CFOt * GENR * LAW + \beta15DCFOt * CFOt * GENR * LAW + \varepsilon t \quad (4)$$

The predictions for this model are the following, β2 is still negative as described above. β3 is now expected to be positive as GEN has reversed, also this is the case for β7, which is now expected to be positive. β11 is expected to be negative, as it is the same as β7 in regression (3). The outcome of hypothesis 3 is derived from β15. When there is a female CFO, but no quota, the coefficient is expected to be positive, as a higher impact on conservatism is expected when there is a female CFO present without the influence of a quota according to hypothesis 3.

3.4 Control variables

In accordance with prior literature (e.g. Ahmed and Duellman, 2007 and 2013; Ho et al., 2015, Francis et al,. 2015; Watts, 2003; Ball and Shivakumar, 2005), robustness is checked by controlling for the following variables: size, leverage and litigation.

Size is included because large firms often have less information asymmetry as they publish more publicly available information, which reduces the demand for accounting conservatism (LaFond and Watts, 2008). Companies with high leverage levels tend to have bigger shareholder and bondholder conflicts. These have shown to affect the demand for contractual conservative accounting (Ahmed Duellman 2007). Finally, litigation risk is added because according to Watts (2003) this is one of the most important factors affecting accounting conservatism, as litigation is more likely to happen when net assets and earnings are overstated, not understated which is the case when accounting conservatism is used.

The control variables are operationalized as:

- Litigation risk (LIT): this is a dummy variable that equals 1 if a firm belongs to high-litigation industries and 0 when this risk is not applicable. Litigious industries are represented by these primary SIC codes: 2833–2836 (biotechnology), 3570–3577 (computer equipment), 3600–3674 (electronics), 5200–5961 (retailing), and 7370–7374 (computer services) (Francis et al., 2015).

- Company size (SIZE): This is total assets, taken at the fiscal year end, scaled from 0-1.

- Leverage (LEV): The firm's leverage is measured as the total long term liabilities divided by total assets.

3.5 Additional measure of conservatism

A second model used by Ball and Shivakumar (2005) is an adaption of the model developed by Basu (1997) and is added to this study to test the robustness of the results. This model looks at the transitory nature of income to determine the use of accounting conservatism, measured by the tendency for decreases and increases in income to reverse. The effect of good news on earnings is persistent, in contrast to bad news. Basu argues that, when a firm has received bad news, current earnings suffer an impairment change and are lower, but this earnings decrease reverses in the following period. Future earnings are therefore unaffected, which means bad news only has a temporary effect on earnings and the decrease in income will reverse. A higher degree of accounting conservatism then shows a higher frequency of reversal of income decreases (Basu, 1997). The transitory loss and gain components in accounting income are identified by the following regression:

$$\Delta NIt = \beta 0 + \beta 1 D\Delta NIt\text{-}1 + \beta 2 \Delta NIt\text{-}1 + \beta 3 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 + \varepsilon t \quad (5)$$

Where:

ΔNIt = represents change in income from year t - 1 to t. This value includes extraordinary items and excludes exceptional items. This value is scaled by total assets book value at the beginning of the fiscal year.

DΔNIt-1 = Dummy variable that is set to 0 if the prior-year change in income is positive and 1 is this change is negative.

ΔNIt-1 = prior-year change in income, year, t-2 to t-1. This value is scaled by total assets book value at the beginning of the fiscal year.

Ball and Shivakumar, 2005, p. 92

The deferred recognition of gains is a 'persistent' positive component of income, suggesting β2 has a value of 0. A higher degree of accounting conservatism shows a higher frequency of reversal of income decreases, which implies that β3 is negative.

To test the hypotheses, the same steps are followed as in the accruals model. For the test of hypothesis 1, the variable GEN is added. This gives the following regression:

$$\Delta NIt = \beta 0 + \beta 1 D\Delta NIt\text{-}1 + \beta 2\Delta NIt\text{-}1 + \beta 3 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 + \beta 4 GEN + \beta 5 D\Delta NIt\text{-}1 * GEN + \beta 6\Delta NIt\text{-}1 * GEN + \beta 7 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 * GEN + \varepsilon t \quad (6)$$

As stated above, β2 has an expected value of 0 and β3 is expected to be negative. The hypothesis states that female CFOs are more likely to recognize losses in a timely manner than male CFOs, leading to the prediction of β7 to be positive.

To test hypothesis 2, the variable GEN is added:

$$\Delta NIt = \beta 0 + \beta 1 D\Delta NIt\text{-}1 + \beta 2\Delta NIt\text{-}1 + \beta 3 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 + \beta 4 LAW + \beta 5 D\Delta NIt\text{-}1 * LAW + \beta 6\Delta NIt\text{-}1 * LAW + \beta 7 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 * LAW + \varepsilon t \quad (7)$$

As stated above, β2 has an expected value of 0 and β3 is expected to be negative. The hypothesis states that firms that are subject to a binding quota are more likely to recognize losses in a timely manner than firms that are not subject to a quota, leading to the prediction of β7 to be positive.

To test hypothesis 3, both the dummy variables GEN and LAW are used, GEN is being reversed to GENR, as in the model above. Because hypothesis 3 tests the effect when there is a female CFO, but no quota, the dummy equals 1 when a female CFO is in place and 0 when a male CFO is in place.

$$\Delta NIt = \beta 0 + \beta 1 D\Delta NIt\text{-}1 + \beta 2\Delta NIt\text{-}1 + \beta 3 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 + \beta 4 GENR + \beta 5 D\Delta NIt\text{-}1 * GENR + \beta 6\Delta NIt\text{-}1 * GENR + \beta 7 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 * GENR + \beta 8 LAW + \beta 9 D\Delta NIt\text{-}1 * LAW + \beta 10\Delta NIt\text{-}1 * LAW + \beta 11 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 * LAW + \beta 12 GENR * LAW + \beta 13 D\Delta NIt\text{-}1 * GENR * LAW + \beta 14\Delta NIt\text{-}1 * GENR * LAW + \beta 15 D\Delta NIt\text{-}1 * \Delta NIt\text{-}1 * GENR * LAW + \varepsilon t \quad (8)$$

As stated above, β2 has an expected value of 0 and β3 is expected to be negative. The outcome of hypothesis 3 is derived from β15. When there is a female CFO, but no quota, the coefficient is expected to be negative, indicating that the female CFO has a higher impact when there is no binding gender quota present.

4. Results

4.1. Descriptive statistics

Table 5: Descriptive statistics

Variable	N	Mean	Min	Median	Max	Std. Dev.
ACCt	577	-0.0488	-0.4945	-0.0426	0.3056	0.0827
DCFOt	577	0.0780	0.0000	0.0000	1.0000	0.2684
CFOt	577	0.0928	-1.9507	0.0915	0.5164	0.1218
GEN	577	0.8700	0.0000	1.0000	1.0000	0.3366
GENR	577	0.1300	0.0000	0.0000	1.0000	0.3366
LAW	577	0.5147	0.0000	1.0000	1.0000	0.5002

The information displayed in this table includes the number of observations made (N), the variable mean, the minimum and maximum values, the median and the standard deviation (Std. Dev.)

In table 5 the descriptive statistics of the variables used in the accrual model are displayed. 8 percent of the observations show a negative cash flow, according to the DCFOt dummy. The mean of cash flows (CFOt), is positive, whereas the mean of accruals (ACCt) is negative. The table shows that of the 577 observations made, 13 percent of the CFO's is female and 87 percent is male as displayed by GEN and GENR. In addition, 52 percent of the observed companies are located in countries that do not have a mandatory gender quota.

4.2. Correlation matrix

Table 6: Correlation Matrix

	ACCt	DCFOt	CFOt	GEN	GENR	LAW
ACCt	1.0000					
sig.						
DCFOt	0.3550	1.0000				
sig.	0.0000					
CFOt	-0.5176	-0.4864	1.0000			
sig.	0.0000	0.0000				
GEN	-0.0409	-0.0990	0.1201	1.0000		
sig.	0.3263	0.0174	0.0039			
GENR	0.0409	0.0990	-0.1201	-1.0000	1.0000	
sig.	0.3263	0.0174	0.0039	1.0000		
LAW	0.0883	-0.0668	0.0229	0.0475	-0.0475	1.0000
sig.	0.0340	0.1091	0.5828	0.2548	0.2548	

Table 6 contains the correlation matrix for the variables of the model. The highest significant correlation is found between ACCt and CFOt, with a correlation coefficient of -0.5176, which indicates the negative relation between cash flow and accruals that described in the model, accruals mitigate noise in earnings (Ball and Shivakumar, 2005). The correlation coefficient between CFOt and DCFOt is -0.4864 and significant. This illustrates the positive value of the dummy when the cash flow is negative, hence a negative correlation. The correlation between GEN and GENR shows a perfect negative correlation, because of the reversal of the GEN dummy variable. Also because of this, all the other correlations for GENR are the same but negative correlation for GEN. To check for multicollinearity, the VIF values of the variables are computed. These values show no sign of multicollinearity, which means all variables are able to be used in the regressions.

4.3. Multivariate analyses

Table 7: Multivariate tests (1)

Test for hypothesis 1: $ACCt = \beta 0 + \beta 1DCFOt + \beta 2CFOt + \beta 3DCFOt * CFOt + \beta 4GEN + \beta 5DCFOt*GEN + \beta 6CFOt*GEN + \beta 7DCFOt * CFOt \times GEN + \varepsilon t$

Test for hypothesis 2: $ACCt = \beta 0 + \beta 1DCFOt + \beta 2CFOt + \beta 3DCFOt * CFOt + \beta 4LAW + \beta 5DCFOt * LAW + \beta 6CFOt * LAW + \beta 7DCFOt * CFOt * LAW + \varepsilon t$

		Hypothesis 1		Hypothesis 2	
Beta	**Predicted sign**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
β1		0.0684	0.0080***	0.0573	0.0000***
β2	-	-0.4751	0.0000***	-0.6945	0.0000***
β3	+	0.4710	0.0000***	0.6839	0.0000***
β4		0.0236	0.1450	0.0113	0.2410
β5		-0.0869	0.0040***	-0.1148	0.0000***
β6		-0.2218	0.0760*	0.0625	0.3980
β7	-	-0.6276	0.0040***	-0.9527	0.0000***
Adj. R^2		0.4633		0.4724	
No. of obs.		577		577	

, **, * Significant at 0.10, 0.05, and 0.01 level.*

Table 7 displays the results of the tests of hypothesis 1, the influence of a female CFO and hypothesis 2, the influence of a binding gender quota. The test for hypothesis 1 has an adjusted R^2 of 0.4633, indicating that 46% percent of the variance is explained by the model. β2 has a negative coefficient (-0.4751) in accordance with the predicted sign, which is also significant. The coefficient implies that on average, 48% of the cash flow is offset through accruals in years of positive cash flow, indicating that accruals mitigate noise in earnings. β3 provides a significant result, with a positive coefficient (0.4710), as predicted, implying that in years with a negative cash flow, on average only 1% (48–47%) of the cash flow is offset through accruals (Ball and Shivakumar, 2005). This shows that the negative relation between cash flow and accruals is far less pronounced when the cash flows are negative, implying that there is more unrealized loss recognition than gain recognition through accruals. This asymmetric behaviour is in accordance with the view that accounting accruals play an

important role in timely loss and gain recognition (Ball and Shivakumar, 2005). The result of β7 gives a significant negative coefficient (-0.6276). This implies that male CFOs less often recognize losses as transitory items. This coefficient implies that, compared to female directors, they appear to accrue substantially less unrealized losses in cash-loss years, indicating that female CFOs use more accounting conservatism than male CFOs. All predicted signs for this hypothesis are derived by the model.

The regression-testing hypothesis 2 has an adjusted R^2 of 0.4724. This model also has a significant negative coefficient for β2 (-0.6945) as expected and for β3, a significant positive result (0.6839) is achieved which also matches the predicted sign. This test gives the same results as the previous test, implying that there is asymmetric behaviour in timely loss and gain recognition. β7 is significant and gives a negative coefficient of -0.9527 where a negative coefficient was predicted. All predicted signs are given by the model for this hypothesis. This shows that there is less asymmetric behaviour when there is no binding gender quota in place.

Table 8: Multivariate tests (2)

*ACCt = β0 + β1DCFOt + β2CFOt + β3DCFOt * CFOt + β4GENR + β5DCFOt * GENR + β6CFOt * GENR + β7DCFOt * CFOt * GENR + β8LAW + β9DCFOt * LAW + β10CFOt * LAW + β11DCFOt * CFOt * LAW + β12GENR * LAW + β13DCFOt * GENR * LAW + β14CFOt * GENR * LAW + β15DCFOt * CFOt * GENR * LAW + εt*

		Hypothesis 3	
Beta	**Predicted sign**	**Coefficient**	**P-value**
β1		-0.0064	0.7660
β2	-	-0.6992	0.0000***
β3	+	-0.7609	0.0590*
β4		-0.0068	0.7510
β5		0.0955	0.0110**
β6		0.0573	0.7390
β7	+	1.4174	0.0010***
β8		0.0144	0.1530
β9		-0.0504	0.1040
β10		0.0281	0.7150
β11	-	0.5320	0.2390
β12		-0.0286	0.3710
β13		0.1589	0.2400
β14		0.2722	0.2690
β15	+	4.9752	0.1130
Adj. R^2		0.4869	
No. of obs.		577	

, **, * Significant at 0.10, 0.05, and 0.01 level*

The results for the test of hypothesis 3 are shown in table 8. The adjusted R^2 is 0.4869. As seen by hypothesis 1 and 2, β2 is negative and significant. β3 also has negative coefficient, which goes against the predicted value, with significance at the 0.10 level. This result is not in

line with the first two tests and does not confirm that the negative relation between cash flow and accruals is less pronounced with negative cash flows. β7, which was negative and significant when testing hypothesis 1, is now positive and significant as expected with the reversed GENR variable. β11, which is equal to β7 in the test of hypothesis 2, is now positive but no longer significant. Hypothesis 3 is explained by β15. This coefficient is positive (4.9752) as expected, but not significant. Because of the contradictory result of β3 and the insignificant result of β15, the results of this test are not in line with hypothesis 3, that the marginal impact of a female CFO on accounting conservatism is stronger when there is no binding gender quota.

4.4. Additional tests

Appendix A shows the descriptive statistics of the variables to test the robustness of the results shown above. To obtain a better normality of the variables, NIt and NIt-1 are winsorized, generating WNIt and WNIt-1. WNIt-1 has a lower count of observations, because this variable takes 2010 and 2011 into account as lag variables, leaving 429 observations. The dummy DNIt-1 has a mean of 0.3137, indicating that there is a reversal of loss and gain in 31% of the observations.

In appendix B the correlation matrix including the control variables is displayed. This matrix does not show any new correlations that distort the model, therefore all control variables are included in the model. The table shows that 17% of the observations include companies that operate in industries with an increased risk of litigation. The correlation matrix of the transitory loss and gain model in appendix C shows a significant correlation coefficient between DNIt-1 and WNIt-1 of -0.5626, indicating the positive value of the dummy when income change in a year is negative. Another significant correlation coefficient of -0.2658 is found between WNIt and WNIt-1, which also is allowed within the model. A test for multicollinearity is done for both the variables in appendix B and C. The VIF values from these tests do not give rise to a suspicion of multicollinearity.

The only control variable that has a significant effect is leverage (WLEV). For all models it has a small negative coefficient as is shown in appendix D and E. The adjusted R^2 of the models is slightly increased by the control variables, which means that the control variables do add some explanatory power. The test for hypothesis 3 shows a different value for β3 than when tested without control variables, the negative coefficient is no longer significant. In addition, the value for β15 is now significant at the 0.10 level. These results provide a better fit for the model when the control variables are included, but with the inconsistent coefficient

for β3, the results do not show the expected asymmetry which is needed to make assumptions about the hypothesis.

Table 9: Multivariate tests (transitory loss and gain model 1)

*Test for hypothesis 1: ΔNIt = β0 + β1DΔNIt-1 + β2ΔNIt-1 + β3DΔNIt-1 * ΔNIt-1 + β4GEN + β5DΔNIt-1 * GEN + β6ΔNIt-1* GEN + β7DΔNIt-1 * ΔNIt-1 * GEN + εt*

*Test for hypothesis 2: ΔNIt = β0 + β1DΔNIt-1 + β2ΔNIt-1 + β3DΔNIt-1 * ΔNIt-1 + β4LAW + β5DΔNIt-1 * LAW + β6ΔNIt-1* LAW + β7DΔNIt-1 * ΔNIt-1 * LAW + εt*

		Hypothesis 1		Hypothesis 2	
Beta	**Predicted sign**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
β1		-0.0564	0.0220**	-0.0191	0.1090
β2	0	-0.1615	0.2890	0.3407	0.0030***
β3	-	-0.8784	0.0000***	-0.9903	0.0000***
β4		-0.0175	0.2860	0.0101	0.3320
β5		0.0464	0.0770*	0.0056	0.7360
β6		-0.1179	0.5060	-0.9769	0.0000***
β7	+	0.8488	0.0030***	1.1981	0.0000***
Adj. R^2		0.1062		0.1778	
No. of obs.		429		429	

, **, * Significant at 0.10, 0.05, and 0.01 level*

The test results of the transitory loss and gain model are displayed in tables 9 and 10. The adjusted R^2 of these tests vary from 0.1062 to 0.2259. This indicates that the transitory loss and gain model has less explanatory power than the accruals model, which tests all had an adjusted R^2 above 40%. This result points out that the accruals model is a better fit to measure conditional accounting conservatism, as predicted by Ruch and Taylor (2015).

The test for hypothesis 1 does not give a significant outcome for β2, but gives a significant negative coefficient (-0.8784) for β3, confirming that conservatism leads to a higher frequency of reversal of income decreases. The conclusion on hypothesis 1 can be drawn from β7, which shows a significant and positive result. This shows that decreases in income are less transitory, but increases are more transitory when a male CFO is in place. Overall, these

results are consistent with hypothesis 1 that male CFOs report less conservative earnings, with less asymmetry in the timely recognition of gains and losses.

The test for hypothesis 2 shows a significant result for β2, with a coefficient of 0.347, although the predicted value was 0. This value indicates that there is continuation of income increases (Ball and Shivakumar, 2005), questioning the persistence of deferred recognition of economic gains. This is a possible bias in the existence of the conservatism. β3 is also significant with a coefficient of -0.9903. β7 shows a significant and positive result (1.1981), indicating that there is less asymmetry in the timely recognition of gains and losses when there is no binding gender quota in place, which is in line hypothesis 2.

Table 10: Multivariate tests (transitory loss and gain model 2)

*ΔNIt = β0 + β1DΔNIt-1 + β2ΔNIt-1 + β3DΔNIt-1 * ΔNIt-1 + β4GENR + β5DΔNIt-1 * GENR + β6ΔNIt-1* GENR + β7DΔNIt-1 * ΔNIt-1 * GENR + β8LAW + β9DΔNIt-1 * LAW + β10ΔNIt-1* LAW + β11DΔNIt-1 * ΔNIt-1 * LAW + β12GENR * LAW + β13DΔNIt-1 * GENR * LAW + β14ΔNIt-1 * GENR * LAW + β15DΔNIt-1 * ΔNIt-1 * GENR * LAW + εt*

		Hypothesis 3	
Beta	**Predicted sign**	**Coefficient**	**P-value**
β1		-0.0012	0.9220
β2	0	0.6530	0.0000***
β3	-	-1.0493	0.0000***
β4		0.0491	0.0130**
β5		-0.0636	0.0690*
β6		-0.8065	0.0000***
β7	-	0.3096	0.3930
β8		0.0240	0.0290**
β9		-0.0079	0.6490
β10		-1.3857	0.0000***
β11	+	1.5354	0.0000***
β12		-0.0624	0.0480**
β13		0.0250	0.6180
β14		1.3679	0.0000***
β15	-	-2.1265	0.0000***
Adj. R^2		0.2259	
No. of obs.		429	

, **, * Significant at 0.10, 0.05, and 0.01 level*

The test for hypothesis 3 shows significant results for β2, which has a positive coefficient (0.6530) while the predicted value was 0 again. β3is significant and negative (-1.0493) as expected. β7 is not significant, opposed to β7 in the test for hypothesis 1 even though it

concerns the same variable. β11, which is equal to β7 in the test for hypothesis 2, is again significant with a positive coefficient (1.5354). The outcome for hypothesis 3 comes from β15. This has a significant negative coefficient (-2.1265), in accordance with the predicted sign, showing that there is more conservatism when a female CFO is in place while not subject to a binding gender quota, in line with hypothesis 3.

5. Conclusion

Previous research has examined the effect of gender on accounting conservatism and the existence of gender quotas, but only separately. This thesis combines these concepts and examines the influence of a female CFO and binding gender quotas on the use of accounting conservatism. This is done by the following research question: 'To what extent do the gender of the CFO and binding gender quotas on appointing female board members influence the firms' accounting conservatism?' This research question leads to three hypotheses, which are tested with the Ball and Shivakumar (2005) Asymmetric Accrual to Cash-Flow model. This model determines accounting conservatism by looking at the reported accruals of the firm.

The regression in the accruals model shows results that are consistent with hypothesis 1. Female CFOs use more conditional accounting conservatism than male CFOs, therefore this hypothesis is accepted. The model shows there is an asymmetry between the recognition of unrealized gains and losses, which indicates the use of conditional accounting conservatism and also shows a significant difference in the use of this conservatism between female and male CFOs. This result is robust when the control variables are added and is also the transitory loss and gain model gives the same result.

Hypothesis 2 states that more conservatism is applied within countries that have installed a binding gender quota to improve the number of female board members. This hypothesis is also confirmed. The model shows the same asymmetry as with hypothesis one and a significant difference in the use of conditional accounting conservatism between countries with quotas and countries without quotas, which use less conservatism. These findings are also robust for the control variables and the transitory loss and gain model.

The tests of the third and final hypothesis give more ambiguous results than those of the first two hypotheses. The asymmetry between unrealized gains and losses is not derived from the model and therefore is does not significantly show the presence of conditional accounting conservatism. The model does show a result that indicates there is a higher amount of conservatism when a female CFO is in place whilst not subject to a binding gender quota but this result is not significant. Also, since the model does not significantly show conservatism, this is not a valid result. When the control variables are added to this regression, a significant result is found for the hypothesis, but since the model still does not significantly show conservatism, the hypothesis is cannot be accepted. A larger sample size could help dissolve some of the issues, because with the sample used, only 10 companies had both a female CFO

and a negative cash flow at the same time, leaving with a very small proportion of the sample, about 1.7% of all observations. The robustness check with the transitory loss and gain model shows a significant result for hypothesis 3, but again the model is not significantly conclusive about conservatism. Further research is needed to draw a solid conclusion on this hypothesis, preferably with a bigger sample.

Overall, both the gender of the CFO and the existence of a binding gender quota have a significant influence on the use of accounting conservatism. Female CFOs are more conservative than male CFOs and more conditional accounting conservatism is applied in countries that have installed a binding gender quota. More research is needed to draw conclusions about the interaction of these concepts.

This study adds to the existent literature in the fields of both gender and accounting conservatism. The research shows that both CFO gender and binding gender quotas have an effect on the use of accounting conservatism, which might be of value to auditors, investors and policy makers. The findings about binding gender quota provide information to legislators of both accounting standards and laws by showing the effects of an increasing number of female directors on the use of accounting standards and reported earnings.

There are some limitations to this study. As discussed above, a bigger sample size is needed, as only a small part of the observations meets the requirements of the dummies. A larger sample could be a better fit for the model. In addition, this study only looks at listed companies, although the model is also fit for private companies. Research in private companies could provide different results. The model as used in this study does not include a dummy variable for the different years that are included in the sample. Adding this shows the differences in the results over the included years and might show some trends over the years.

Binding gender quotas are a relatively new kind of policy and they may not yet have reached their full potential. In the sample used, only 13% of the CFO's were female, showing that the inequality between men and women is far from resolved. When the quotas reach their due date and more countries install these quotas, the results of a study like this might differ from the results that are shown here. Therefore, a similar research in another timeframe can provide further useful insights on the use and development of binding gender quota. Other opportunities for further research could look into the effects of female board members and binding or non-binding gender quotas on other accounting concepts.

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Appendices

Appendix A: Descriptive statistics (2)

Variable	N	Mean	Min	Median	Max	Std. Dev.
ACCt	577	-0.0488	-0.4945	-0.0426	0.3056	0.0827
DCFOt	577	0.0780	0.0000	0.0000	1.0000	0.2684
CFOt	577	0.0928	-1.9507	0.0915	0.5164	0.1218
GEN	577	0.8700	0.0000	1.0000	1.0000	0.3366
GENR	577	0.1300	0.0000	0.0000	1.0000	0.3366
LAW	577	0.5147	0.0000	1.0000	1.0000	0.5002
LIT	577	0.1733	0.0000	0.0000	1.0000	0.3788
SIZE	577	0.1212	0.0000	0.0423	1.0000	0.1904
WLEV	577	0.3238	0.0182	0.3183	0.8483	0.1678
WNIt	577	0.0052	-0.2841	0.0032	0.3891	0.0746
DNIt1	577	0.3137	0.0000	0.0000	1.0000	0.4644
WNIt1	429	0.0044	-0.2572	0.0031	0.3150	0.0694

The information displayed in this table includes the number of observations made (N), the variable mean, the minimum and maximum values, the median and the standard deviation (Std. Dev.)

Appendix B: Correlation matrix (control variables)

Variable	ACCt	DCFOt	CFOt	GEN	GENR	LAW	LIT	SIZE	WLEV
ACCt	1.0000								
sig.									
DCFOt	0.3550	1.0000							
sig.	0.0000								
CFOt	-0.5176	-0.4864	1.0000						
sig.	0.0000	0.0000							
GEN	-0.0409	-0.0990	0.1201	1.0000					
sig.	0.3263	0.0174	0.0039						
GENR	0.0409	0.0990	-0.1201	-1.0000	1.0000				
sig.	0.3263	0.0174	0.0039	1.0000					
LAW	0.0883	-0.0668	0.0229	0.0475	-0.0475	1.0000			
sig.	0.0340	0.1091	0.5828	0.2548	0.2548				
LIT	0.0228	0.0143	-0.0081	0.0272	-0.0272	0.1881	1.0000		
sig.	0.5845	0.7317	0.8455	0.5142	0.5142	0.0000			
SIZE	-0.0065	-0.1010	-0.0358	0.1208	-0.1208	0.1018	-0.0869	1.0000	
sig.	0.8765	0.0152	0.3906	0.0037	0.0037	0.0145	0.0370		
WLEV	-0.0565	0.0485	-0.1134	-0.0363	0.0363	-0.0989	-0.1493	0.1537	1.0000
sig.	0.1752	0.2451	0.0064	0.3846	0.3846	0.0175	0.0003	0.0002	

Appendix C: Correlation matrix (transitory loss and gain model)

Variable	WNIt	DNIt1	WNIt1	LAW	GEN	GENR
WNIt	1.0000					
sig.						
DNIt1	0.0880	1.0000				
sig.	0.0346					
WNIt1	-0.2658	-0.5620	1.0000			
sig.	0.0000	0.0000				
LAW	-0.0271	0.0212	0.0049	1.0000		
sig.	0.5161	0.6117	0.9192			
GEN	-0.0448	-0.0164	0.0171	0.0475	1.0000	
sig.	0.2827	0.6949	0.7236	0.2548		
GENR	0.0448	0.0164	-0.0171	-0.0475	-1.0000	1.0000
sig.	0.2827	0.6949	0.7236	0.2548	1.0000	

Appendix D: Multivariate tests (Control variables 1)

Test for hypothesis 1: $ACCt = \beta0 + \beta1DCFOt + \beta2CFOt + \beta3DCFOt * CFOt + \beta4GEN + \beta5DCFOt*GEN + \beta6CFOt*GEN + \beta7DCFOt * CFOt \times GEN + \beta8 \times LIT + \beta9 * SIZE + \beta10 \times WLEV + \varepsilon t$

Test for hypothesis 2: $ACCt = \beta0 + \beta1DCFOt + \beta2CFOt + \beta3DCFOt * CFOt + \beta4LAW + \beta5DCFOt * LAW + \beta6CFOt * LAW + \beta7DCFOt * CFOt * LAW + \beta9 * SIZE + \beta10 \times WLEV + \varepsilon t$

		Hypothesis 1		Hypothesis 2	
Beta	**Predicted sign**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
β1		0.0622	0.0140**	0.0509	0.0000***
β2	-	-0.5218	0.0000***	-0.7344	0.0000***
β3	+	0.5130	0.0000***	0.7187	0.0000***
β4		0.0201	0.2070	0.0063	0.5120
β5		-0.0821	0.0050***	-0.1079	0.0000***
β6		-0.2029	0.0980*	0.0842	0.2480
β7	-	-0.6516	0.0020***	-1.0048	0.0000***
β8 (LIT)		0.0029	0.6650	-0.0006	0.9250
β9 (SIZE)		-0.0043	0.7480	-0.0101	0.4500
β10 (WLEV)		-0.0776	0.0000***	-0.0749	0.0000***
Adj. R^2		0.4863		0.4935	
No. of obs.		577		577	

, **, * Significant at 0.10, 0.05, and 0.01 level*

Appendix E: Multivariate tests (Control variables 2)

*ACCt = β0 + β1DCFOt + β2CFOt + β3DCFOt * CFOt + β4GENR + β5DCFOt * GENR + β6CFOt * GENR + β7DCFOt * CFOt * GENR + β8LAW + β9DCFOt * LAW + β10CFOt * LAW + β11DCFOt * CFOt * LAW + β12GENR * LAW + β13DCFOt * GENR * LAW + β14CFOt * GENR * LAW + β15DCFOt * CFOt * GENR * LAW + β16 x LIT + β17 * SIZE + β18 x WLEV + εt*

		Hypothesis 3	
Beta	**Predicted sign**	**Coefficient**	**P-value**
β1		-0.0058	0.7830
β2	-	-0.7348	0.0000***
β3	+	-0.5433	0.1710
β4		0.0016	0.9410
β5		0.0839	0.0230**
β6		0.0270	0.8730
β7	+	1.2627	0.0030***
β8		0.0108	0.2760
β9		-0.0499	0.1010
β10		0.0439	0.5630
β11	-	0.3017	0.4980
β12		-0.0425	0.1760
β13		0.1905	0.1520
β14		0.3151	0.1920
β15	+	5.7979	0.0610*
β16		0.0020	0.7690
β17		-0.0107	0.4210
β18		-0.0730	0.0000***
Adj. R^2		0.5073	
No. of obs.		577	

, **, * Significant at 0.10, 0.05, and 0.01 level*