ERASMUS UNIVERSITEIT ROTTERDAM

# Gender Discrimination Among Audit Partners: Differences in Audit Quality

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### Master: Accounting, Auditing & Control
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## Abstract

This thesis examines the gender effect on audit quality and the effect of gender discrimination on that effect for U.S. firms. Gender discrimination and chances for women to grow into high business positions are large topics of attention. Previous research on differences between gender in the audit profession show a gender effect on audit quality regarding female audit partners. With the growing debate about the female workforce and the possibilities for women in accounting the debate about discrimination in audit firms arises. This thesis investigates whether gender discrimination among audit partners has an effect on the proposed gender effect from prior research. Using univariate and multivariate tests, the findings show that a gender effect on audit quality exists and that discrimination has some effect on this proposed effect. However, it is still unclear in which direction.

**Keywords**: Audit quality, gender, discrimination, audit partners, discretionary accruals, audit fees.

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# 1     Introduction.

Gender discrimination and chances for women to grow into high business positions are large topics of attention. Just look at any business related newspaper and you will find articles on gender discrimination, gender gaps and improvement of the working environment for women almost once a week, and this while the second wave of feminism was almost 70 years ago.

So, even after decades of negotiations and legislation to enhance the working environment for women, the world is still not gender-equal. In 2016, KPMG US faced a large gender discrimination lawsuit against over 10.000 female KPMG employees (AccountingAge, 2016). According to this lawsuit, the deviation of gender KPMG's workforce is 50%. However, looking at KPMG's executive team, only 5% is female and for the board, this is only 4%. According to Hais, Hogg and Duck (1997), a leadership candidate should be prototypical of their group, or a representative of the population of the organization. However, the KPMG lawsuit and the news show that this is not always the case.

Possible explanations for this are well described in research. One of them is the phenomenon of the glass ceiling. The glass ceiling implies that women encounter an upper limit to which they can climb on the organizational ladder, but that this barrier is transparent and not apparent for the observer (da Costa Barreto, Ryan, & Schmitt, 2009). A possible explanation for the existence of the glass ceiling is sex discrimination. Eagly and Sczesny (2009) state that the disadvantages that women face as leaders are reflected in the similarity and dissimilarity between the cultural stereotypes of women, men and leaders. These stereotypes create expectations about what the capabilities of the members of these groups are and what they should be (Heilman, 2001). This situation is problematic for women because at this point in time, there is still no similarity between the stereotypes of women and leaders (Eagly & Sczesny, 2009). When a job's stereotype is not equal to the stereotype of the gender of the applicant, the probability of hiring this applicant is lower (Heilman M. E., 1983). This is conceptualized in the concept of Lack-of-Fit. If the fit of the expectations between the characterization of the applicant and the job is good, then the applicant will be hired (Heilman M. E., 2012).

This shows that there is still discrimination between men and women in the hiring for job positions because of the thoughts that women behave different than men. However, in social sciences is it a general idea that men and women behave the same in leadership positions (Eagly & Johnson, 1990). Gneezy et al. (2009) show that gender differences are not predetermined and most of the time driven by social aspects and Adams and Funk (2012) find evidence that women in leadership positions do not behave in line with the gender stereotypes.

So, in leadership positions it is not clear that females behave different. This is why Garcia Lara et al. (2017) examined the association between the monitoring role of the board in the presence of female directors. They state that: "if better governed firms are less likely to discriminate, and higher quality boards positively influence financial statements quality, gender biases may create a positive association between gender diversity and accounting quality". This is why they expected and found that absent discrimination in a firm, there is no association between gender diversity in boards and accounting quality. And that if such a gender effect exists, this is driven by the discrimination against women.

## 1.1   Research Question.

The effect of diversity amongst audit partners and board of directors is very similar. Auditors perform tasks to form an overall assurance opinion. To do so, various personal attributes of the auditor, such as skills and personality, influence the outcome (Nelson & Tan, 2005). Previous research on individual characteristics on audit quality provide inconsistent results, but is slightly positive towards female audit engagement partners (Ittonen, Vähämaa, & Vähämaa, Female Auditors and Accruals Quality, 2013) (Frank & Hoffman, 2014) (Lee, Nagy, & Zimmerman, 2017). In line with the research of Garcia Lara et al. (2017), the question arises whether this is not the effect of a gender bias; the experience of working with a women might dissolve the stereotyping problem and therefore increase the probability of hiring another women as an engagement partner. This may lead to no association between audit quality and the gender of the audit partner. The aim of this thesis is to examine if there is a moderating effect of gender discrimination on the gender effect on audit quality. This leads to the following research model:
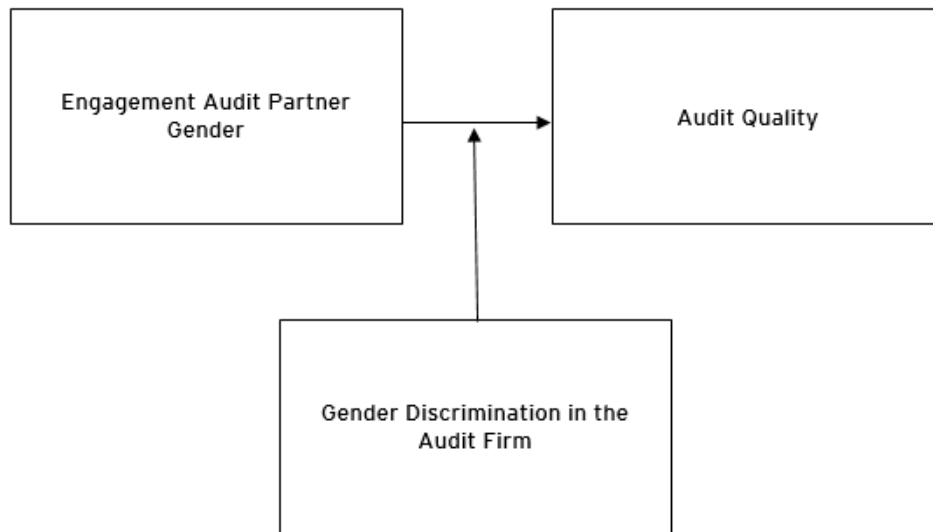
*Figure 1 - Research Model*

This model leads to the following research question:

**RQ**: To what extend does gender discrimination affect the gender effect on audit quality?

## 1.2   Contribution to Existing Literature.

This thesis makes two contributions to the existing literature. First, this study is one of the first studies focusing on the gender effect in the United States because of the fact that disclosing the engagement partners' name is mandated since March 2017. Second, to my knowledge, I will be the first to examine the effect of gender discrimination on the gender effect with respect to audit engagement partners. By doing so, I extend the two working papers on audit engagement partners in the United States. First, I extent the paper of Lee et al. (2017) that examines audit partner gender within the sample of Big4 auditors by using a sample of both Big4 and non-Big4 auditors. And second, I extend the paper of Burke et al. (2017) by examining the effect of gender discrimination on the gender effect on audit quality.

## 1.3   Structure of the Thesis.

The remainder of this thesis is structured as follows. Chapters 2, 3 and 4 contain the theoretical framework. A theoretical framework consists of three parts: a theoretical overview, a literature review and a hypothesis development. The theoretical overview in chapter 2 describes the leading theories behind the main concepts in this thesis: gender, gender discrimination and audit quality. This will be the social role theory and the social learning theory to explain the concept of gender, the lack-of-fit theory, the role congruity theory, and the phenomenon of the glass ceiling to explain the existence of gender discrimination and finally also the agency costs theory to explain the concept and definition of audit quality. To connect these concepts, the literature review in Chapter 3 describes the relationship between these concepts as described in prior literature. The literature review examines existing literature on the relationship between individual characteristics of audit engagement partners and audit quality with a focus on the gender effect. Based on Chapters 2 and 3, the hypotheses to answer the research question are developed in Chapter 4. To test the hypotheses from Chapter 4, I use a methodological framework which is described in Chapter 5. This framework will shed light on the data collection, sample selection and research method used in this thesis. The research itself is described in Chapter 6, with showing the performed statistical tests and its results. Finally, the conclusion is presented in Chapter 7. In this Chapter, the answer to de research question is given, but it will also mention some limitations and recommendations for following studies.

## 2    Theoretical Overview.

This chapter will explain the different theories and definitions that are relevant for the main concepts of this thesis. The theory consists of three parts. The first part is about the independent variable gender, just as simple as being male or female, and explained using the social role theory and the social learning theory. The second part is about the moderating variable, gender discrimination. This concept will be explained by using the concept of stereotyping, including the lack-of-fit theory, the role congruity theory and the phenomenon of the glass ceiling and its variations. And the third part is about the dependent variable audit quality. In this part, the definition and concept of audit quality will be explained by using the agency theory.

### 2.1  Gender.

The first concept of interest in this thesis is the concept of gender. By understanding the principles behind gender, we know more about the social world (Wharton, 2012). Ridgeway and Smith-Lovin (1999) define gender as a "system of social practices which creates and maintains distinctions and inequality on the basis of these distinctions". This shows that the gender system involves two processes; the creation of the distinctions and the inequalities based on these distinctions (Wharton, 2012).

However, for most of the people in the world, gender is interchangeably used with the term "sex", which is just as simple as being male or female. The assignment of the sex of a human being starts at the birth and this categorization continues throughout life (Kessler & McKenna, 1978). Once a person is born and given a gender, this gender is used to organize the additional information about that person. This process is the means trough which gender distinctions emerge. Sex cannot be seen due to clothing and therefore people rely on other "remarks" to assign a category. This can be physical, such as hair, body type or voice, or aspects of clothing and behavior.

This final category of "markers", behavior, is the basis for the *social learning theory* (Mischel, 1970) and the *social role theory* (Eagly, 1987). The social learning theory states that gender roles are learned through the incentives from the outside world, which shows mainly children, but also adults, what is gender-appropriate and gender-inappropriate behavior. Different treatments for female and male human beings create gender differences in behavior. Based on these differences in behavior,

men and women are expected to have different roles in society. The social role theory argues that people form expectations of another based on the roles they typically occupy in the social structure. Women are expected to be more emotional and concerned with others, whereas men are expected to be more independent and rational. These roles require different training and creates the difference between men and women on skills and beliefs. This forms the backdrop against which people make life choices, and even those who reject these expectations are held accountable to them.

However, an emerging stream of literature questions the view that women behave differently than men when they have the same social status. This can also be explained by the social role theory. The social role theory predicts that men and women will act similarly in similar roles. So, when the situation is the same, whereas both women and men have the same education and job, the behavior of both will be the same (Eagly & Johnson, 1990). As women try to avoid competitive environments, this suggests that women who pursue leadership positions may be similar to men (Adams & Funk, 2012). This may be an example of how women may adapt their behavior so that the gender differences disappear.

## 2.2   Gender Discrimination.

In this section, the theories that explain the existence of gender discrimination at the higher level in organizations will be discussed. First, the phenomenon of stereotyping will be described, which explains why men and women are treated differently, using the lack-of-fit theory and the role congruity theory. Second, there is some explanation about the phenomenon of the glass ceiling.

### 2.2.1  Stereotypes.

The social role theory and their expectations of gender appropriate behavior lead to stereotyping men and women. The definition of a stereotype is: "a widely held but fixed and oversimplified image or idea of a particular type of person or thing". This image contains the expected behavior and characteristics of a person. When a stereotype is exaggerated, this may lead to biased feelings towards a person and its actions (Heilman M. E., 2012).  Stereotyping is used to categorize people in many different ways, i.e. gender, race and sexuality. For this thesis, the most important

stereotyping, is the stereotype based on gender. Gender stereotypes categorize men and women as different social categories with different characteristics and behavior.

Gender stereotypes can be defined in two groups; descriptive and injunctive properties (Eagly & Karau, 2002). Descriptive stereotypes refer to the typical beliefs about the differences between men and women. Which characteristics are typically male, or which ones are typically female? Looking at the typical characteristics of the two stereotypes, it is seen that agency is often named as a typical characteristic for male and communality for female stereotypes (Bakan, 1966). Agency refers to achievement-orientation, assertive and rationality, whereas communality refers to concern for others, affiliative and emotional. This shows why it is sometimes called as the "opposite sex", the stereotypes really refer to the opposite characteristic. The injunctive properties refer to how male and female stereotypes should perform.

Both properties can compromise a women's career process (Heilman M. E., 2012). Descriptive stereotypes create negative expectations about a women's performance, and injunctive stereotypes can create negative implications about the individual itself. This is what Heilman (1983) defines as the *lack-of-fit model*. This model describes the situation of a mismatch between the expectation of the skills a women based on the women stereotype and the skills necessary for doing a good job in a traditionally male position (Heilman, 1983) (Heilman, 2001). Injunctive stereotypes establish normative expectations for both men and women, this results in a devaluation of the women who violate these norms (Heilman, 2001). In conclusion, it are not the gender stereotypes itself that create gender discrimination, but it is the mismatch between the stereotype of the women and the stereotype needed for the job that creates it (Heilman & Eagly, 2008).

Close to the lack-of-fit model of Heilman is the *role congruity theory* of Eagly and Karau (2002). The role congruity theory extends the social role theory and explains that the disadvantages that women face in the workforce arise from an incongruity between the qualification of a job and how these match with the stereotypical qualifications of the applicant. Because men are seen as more agentic, they will get the agentic job. Leadership positions, as top management positions are, are often referred to as agentic job, so men are seen to behave more similar to the asked behavior in leadership positions than women (Heilman M. E., 1997).

Eagly and Karau (2002) also argue that because men have less experience with women in top management, they are less likely to change their stereotype of women in organizations. If they have experience with working with women in top management, this may enhance the tendency to use individual information rather than gender-stereotypical information and increase the probability for women to get hired for top management. It's all about experience.

### 2.2.2 Glass Ceiling.

A phenomenon that is seen as a consequence of stereotyping, is the *glass ceiling*. The glass ceiling presents a transparent barrier at some point in a women's career (Morrison, White, & van Velsor, 1987), from which it is not possible for a women to climb further on the organizational ladder. This is derived from the fact that although women have gained increased access to the labor market, they remain rare at the top management positions (Eagly & Karau, Role Congruity Theory of Prejudice Toward Female Leaders, 2002). This is seen as a problem for women as a group, to preclude an individual from jobs at a higher level just because they are women rather than based on their capabilities. Although it could happen in all levels of organizations, it is typically seen as a barrier to enter the top-levels of an organization (Powell & Butterfield, 1994).

The existence of the glass ceiling is examined for various reasons (Powell & Butterfield, 2015). First, glass ceilings are problematic since its limits the pool of talent that managers consider for promotions. Second, employees are concerned with procedural justice and distributive justice. In other words, are the decisions fair and are the outcomes of those decisions fair. The glass ceiling is not in line with procedural justice since it is unjustifiable towards women. And third, it is important for organization to have a good reputation in regards with their personnel procedures. All in all, it are the perceptions of the glass ceiling that may have a negative impact on an organization's success in hiring and promoting women.

A phenomenon close to the glass ceiling is the *glass cliff*. This phenomenon represents behavior after the second wave of sex discrimination whereas women tend to break through the glass ceiling in times of crisis (Ryan & Haslam, 2005). This suggests that women are more likely to be appointed for more poorly performing

firms. A consequence of this phenomenon is that women experience more stress in doing their job and that women are more likely to be forced out of their jobs rather than a planned exit (Powell & Butterfield, 2015).

Another phenomenon are the *glass walls*. Whereas the glass ceiling reflects vertical diversity, the glass walls refer to the horizontal diversity. This shows that within the same managerial level, women tend to be concentrated in some functions and men in others (Lyness & Terrazas, 2006). Men tend to be more prevalent in the provision in organizational products and services, whereas women are more prevalent in "staff" jobs.

In order to get rid of these barriers, it is important to understand the invisible barriers that women in organization face. Organizations may be able to avert it by revising procedures and making these procedures know to all applicants (Powell & Butterfield, 1994).

## 2.3  Audit Quality.

The final concept of interest for this thesis is audit quality. In this section, the definition of audit quality will be discussed and different proxies for audit quality will be explained.

Auditing is a valuable form of monitoring to reduce the agency costs between debt and equity holders and the management (Jensen & Meckling, 1976) and it is therefore essential that the audit is of good quality. However, the quality of an audit report is expected to vary with the quality of the audit firm and the engagement partner.

DeAngelo (1981) provides an operational definition of audit quality: "the quality of audit services is defined to be the market-assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach." In other words, the audit quality depends on the auditors capabilities and independence. Auditing is a binary process, the auditor's role is to detect and report accounting violations and high quality extend beyond this. High quality audits also consider the fact whether financial statements reflect the firm's underlying economics. High audit quality is therefore considered to provide high financial reporting quality (DeFond & Zhang, 2014).

The general framework of engagement level audit quality (Francis, 2011) states that audit quality is affected at different levels of analysis. The input level  the audit process, accounting firms and institutions. The input level consists of two parts: the people performing the audit and the audit tests that are used. The observable outcome of the audit is the audit report. This audit report is of higher quality when the people are capable, independent and make good decisions. And when the procedures used are producing reliable and relevant information. This thesis focuses on the effect of the people on audit quality.

### 2.3.1 Measurement of Audit Quality.

Because of the fact that audit quality is not observable, a proxy is needed. In accounting research, there are many proxies used to measure audit quality but none of them are seen as the best choice. In this section, some of the different proxies used for audit quality will be described.

### Audit Firm Specific Measures

One of the first proxies that is used for audit quality is the size of the audit firm. This is measured as a dummy variable for Big4(6)/non-Big4(6) firms. The Big4(6) firms are the largest firms in the industry, and because of their larger client base they have more reputation to lose than smaller firms do (DeAngelo, 1981). This might be a greater incentive to be independent for these firms than it will be for smaller firms. Another proxy to measure audit firm size are: the number of clients and the percentage of audit fees dependent on one client (Deis & Giroux, 1992).

Another audit firm specific proxy used to measure audit quality is audit firm industry specialization. This proxy relates to the competency of the firm, specialist firms are expected to be more competent and have a bigger reputation which give the incentive to enhance the audit quality (DeFond & Zhang, 2014).

In contrast with the above, Francis and Reynolds (2001) state that it is more important to look at the office-level. Within Big4(6) firms, there can still be a lot of differences between the offices of those firms. For example, a small client for the firm might be a big client for one of the offices. The consequences related to this client

might create strong incentives for local practices to work in favor of the client. They, therefore, strongly suggest more research on office- and partner-level.

### Going-Concern Opinions

Another proxy for audit quality that is often used are going-concerns opinions. Auditors need to decide whether they issue a going-concern opinion or not, trading-off the relation with the client, its duty towards the stakeholders of the firm and the reputation of the audit firm. Going-concern opinions communicate whether the auditor has any doubt about the client's ability to continue its business in the upcoming year (DeFond & Zhang, 2014).

Going-concern opinions are a good measure of audit quality because it is the responsibility of and controlled by the auditor. Failing of issuing a going-concern opinion shows low audit quality and the process gives insight in the auditor independence. However, going-concern opinions are an output of the audit process and therefore not a proxy for the level of the audit process and they are only given to financially distress firms and therefore not applicable to all firms.

### Restatements

The proxy restatements are related to the financial statement. Restatements correct misstatements in the issued financial statements (DeFond & Zhang, 2014). Restatements are a very direct measure of audit quality because they indicate that the auditor has issued an unqualified opinion. This is therefore a good proxy for poor audit quality, this because it implies the presence of fraud which is seen as the primary focus of auditors. However, this proxy is not good to see if there is high audit quality. Besides the fact that restatement do not show that often, it also says nothing about the presence of earnings management.

### Accounting Accruals

Managers use accounting accruals to manipulate their earnings in favor of their goals. Dependence could cause an auditor to allow larger clients greater distinction with regards to their accounting accruals. Therefore, accounting accruals are often

used as a proxy for audit quality based on the assumption that fewer accruals imply higher quality.

But, also accounting accruals can be measured in different ways. Warfield et al. (1995) argue that accruals are best measures by the absolute value of accruals, this might be the total or the discretionary accruals. Another measure is the variation in the value of the signed accruals (Reynolds & Francis, 2001). Companies that have more accruals should, on average, have more variation in their accruals.

### Zero-Profit Benchmark

The presence of small profits is seen as income-increasing earnings management (Gul, Wu, & Yang, 2013). Firms have an incentive to avoid the reporting of losses. This might be due to regulation or due to reputation loss after reporting a loss (Burgstahler & Dichev, 1997). Hayn (1995) reports that there is a discontinuity around zero, where there is a concentration just above, but fewer cases just under zero. And although earnings management is not necessarily seen as fraud, aggressive earnings management is often seen as evidence for low audit quality (Gul, Wu, & Yang, 2013).

### Audit Fees

Audit fees can be used as a proxy because they are expected to measure audit effort (DeFond & Zhang, 2014). Audit effort is an input in the audit process, which can determine the audit quality. Because of the fact that not only the auditor decides on the audit fees charged, but also the client's demand for audit services, makes that this is a proxy for either the supply as the demand side of the audit process. However, a disadvantage of using audit fees is that it captures more than only the audit effort, whereas it also includes a premium and efficiency.

## 2.4   Final Framework.

In order to answer the research question, it is important to understand the theoretical constructs and relations belonging to the central concepts of importance in this thesis. This has led to a final framework, which is presented in this section.
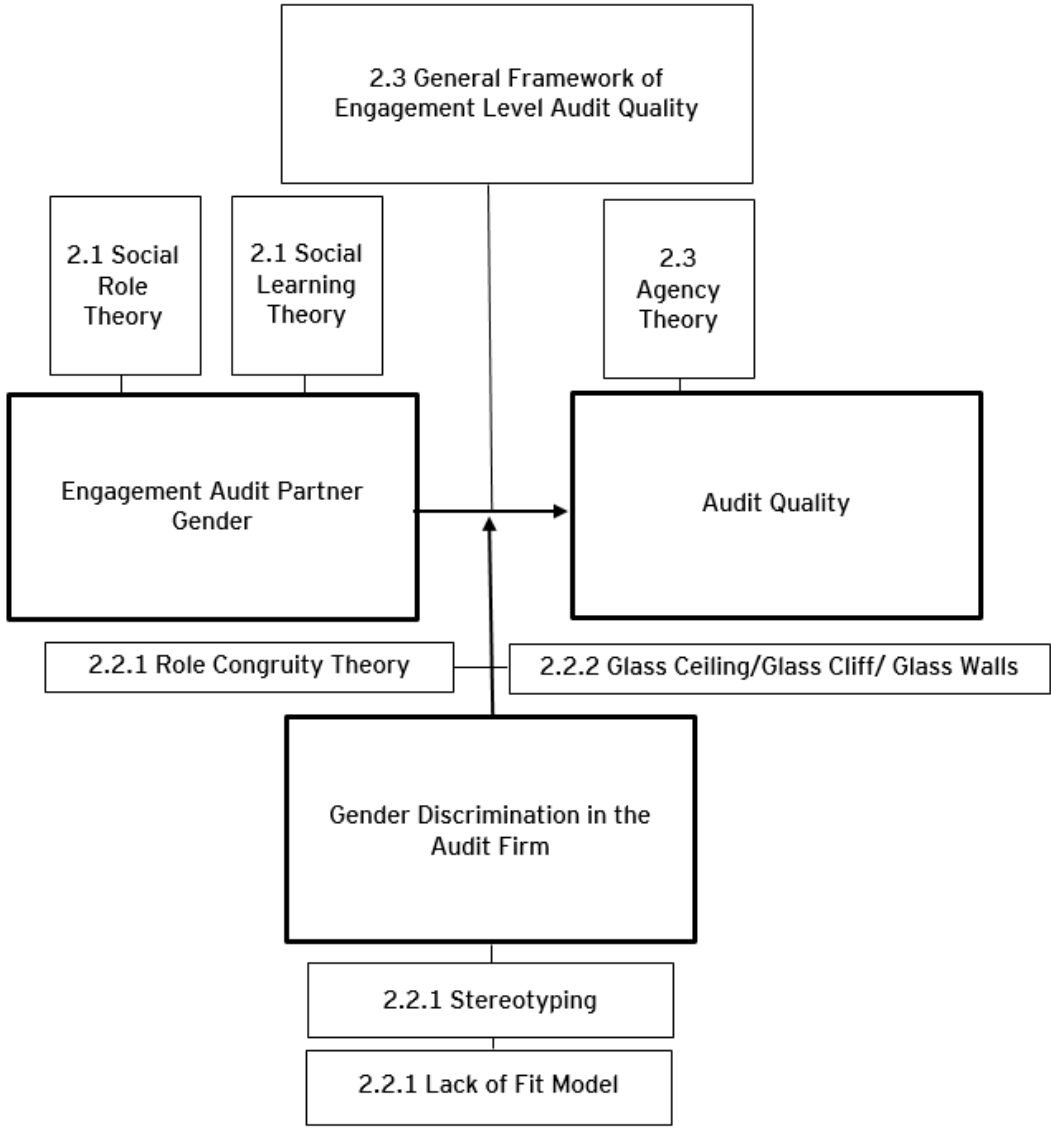


*Figure 2 - Final Framework*

As learned from the social role and the social learning theory is the gender of an audit engagement partner more than just being male or female. It is a package of characteristics that is given to a person, most of the time related to being male or female. These characteristics are not only used for people, but also for other social roles like jobs. However, these concepts are pure theoretical and not seen by most of

the people in the outside world, and gender is most of the time interchangeably used for sex and vice versa.

Audit quality is the output of the audit process and according to the general framework of engagement level audit quality for a large part dependent on the people working on the audit report. And the final person to check this report is the engagement audit partner.

Following the characteristics learned and given to people and jobs, stereotyping can lead to discrimination for some stereotypes, like gender, but also religion or race. This is elaborately explained by the lack-of-fit model. If a stereotype does not link to the stereotype you have in mind, that person is thought not to be suited for the job. However, the role congruity shows that if experience shows that other types also suit the job, discrimination will this appear.

In this thesis, I will link the role congruity theory to the effect of audit partner gender and audit quality as explained by the general framework of engagement level audit quality.

## 3    Literature Review.

This chapter will link the theoretical concepts from the theoretical overview, by examining prior literature. First, a review of prior literature about the audit engagement partner's gender and audit quality is given in section 3.1. In section 3.2, the results of studies examining the effects of gender discrimination on the gender effect from section 3.1 are discussed.

### 3.1    Audit Partner Gender and Audit Quality.

From the definition described in section 2.3 can be derived that audit quality is a result from the audit process, with as observable outcome the audit report. The people working on this report are determinative for the quality of this report. Due to the effect of the phenomenon stereotyping, as explained in section 2.2.1, there might be a difference between male and female audit partners. Several studies have examined the effect of individual characteristics on audit quality and some of them focused on the effect of the audit partners' gender.

#### 3.1.1 Individual Characteristics and Audit Quality.

The first relevant study for the effect of individual characteristics is the study of Gul et al. (2013). This research tests the relation between individual audit partner characteristics and audit quality in China. The researchers expect that individual characteristics of audit partners matter, because regardless the fact that auditors need to fulfill the audit firm's procedures, they still have some own responsibility in decision making.

They test this by using the following proxies for audit quality: aggressiveness, abnormal accruals, below-the-line-items and small profits. The individual characteristics are measured using auditor fixed effects. The results indicate that individual characteristics do affect audit quality, and is increasing the $R^2$ from 7% to 34%.

Another study focusing on individual characteristics is the study of Cameran et al. (2017). These authors investigate the partner fixed effects on audit quality in the United Kingdom. Audit quality is measured as discretionary accruals, total accruals and restatements. This study is more generalizable since this study is developed in

the UK which setting is more typical for countries with developed economies than China.

In this study, the authors find a significant inter-partner variation and that the partner effects explain more of the overall variation in audit outcomes than the effects of audit firms or audit offices. This is in line with the findings of Gul et al. (2013) and shows that individual partner characteristics are a part of the audit quality delivered.

### 3.1.2  Gender as Characteristic and Audit Quality.

Some studies have focused more in detail on the effects of the gender of the audit partner on audit quality. Breesch and Branson (2009) theoretically explain the effect that gender might have on audit quality. The authors argue that, based on the women stereotype, women are more careful and conservative. It is expected that female audit partners work more efficiently in complex decision making and are more accurate in explaining their decisions.

In a laboratory setting, the authors examine mandatory written exams from auditor trainees in Belgium. By examining these exams using an independent-sample t-test, the authors find that female auditors detect on average more misstatements than men, but this difference is not significant. The explanation for this might be, according to the authors, the fact that men work better under time pressure than women. However, in a laboratory setting people might behave differently than in the real world.

A study that examines the gender effect on audit quality in the real world, is the study of Ittonen et al. (2013). In this paper, the authors examine the association between accruals quality and the gender of the audit engagement partner in Finland and Sweden. Ittonen et al. (2013) expect that client firms with a female audit partner have higher accruals quality. This because the gender stereotype of women is more in favor of processing cognitive information, and therefore women are expected to be better monitors.

Based on a regression with abnormal accruals as dependent variable, and either a female dummy or a female ratio as independent variable and firm-specific control variables, the results are in line with the expectations.

The follow-up study by Hardies, Breesch and Branson (2015) examines the gender effect on audit quality on archival data in Belgium. More specifically, this research tests the relation between audit partner gender and audit quality, measured by audit fees. The authors expect that gender has a positive effect on audit fees, which is based on the assumption that female audit partners deliver higher audit quality, from putting more time and effort in an audit.

The results from univariate tests show that the clients of female audit partners are smaller, and less likely to be listed. The female auditors themselves show to be less experienced and less specialized in comparison with their male counterparts. The multivariate analysis on audit fees result in a significant audit fee premium of almost 7% for female audit partners, which can be seen as a higher quality delivered by female audit partners.

All of these studies are researched outside the United States. Until this time, there are only two studies examining the gender effect in the United States. The first study is the study of Lee et al. (2017). In this research, the authors examine the effect of audit partner gender on audit quality using a sample of Big4 audit partners.

In contrast with prior literature, the authors expect to find no association between gender and audit quality. This is investigated by performing ordinary least squares and probit regressions, whereas audit quality is measured by signed abnormal accruals.

Using a two-stage least squares regression on audit quality measure as signed abnormal accruals and restatements. In contrast to their expectations, they find a significant and negative coefficient, which shows that female audit partners are associated with a higher level of audit quality.

Another study focusing on the gender effect in the United States is the study of Burke et al. (2017). This research is twofold. First, they examine the effect of the new mandatory disclosure on audit quality. And afterwards they examine the effect of partner gender on audit quality. For this thesis, the interesting part is the part on the effect of gender.

In this paper, the authors expect to find a positive association between female audit partners and audit quality. This because females will avoid risk by giving more audit effort. The authors only find consistent results for either Big4 and non-Big4

female audit partners. Female audit partners are associated with discretionary accruals 4.4 percent lower than their male counterparts.

## 3.2   Gender Discrimination and the Gender Effect.

All in all, prior literature shows a positive gender effect for female audit partners. An explanation for this effect can be the fact that audit firms might discriminate women. The auditing profession is stereotyped as a profession with lots of male characteristics and is therefore dominated by men for many years (Kornberger, Carter, & Ross-Smith, 2010). This may result is a lack-of-fit for female auditors, and hinder their career path to audit partner.

A study that shows that females might be discriminated in audit firms is the study of Huang et al. (2015). In their research, the authors try to investigate whether the client pays a lower audit fee when it is audited by a female audit partner. If this is the case, it is arguable that discrimination against women in relation to audit fees may partially explain why women face unequal pay or opportunities for promotion in audit firms.

Using a sample of publicly listed firms in Taiwan, Huang et al. (2015) find, in contrast with other literature, that female audit partners are related to significantly lower audit fees than their male counterparts.

A study not related to audit partners, but showing that gender discrimination might affect the gender effect from section 3.1.2., is the study of García Lara et al. (2017). In this research, the authors examine the moderating effect of gender discrimination on the effect of female presence in the board of directors. Based on the upcoming literature that there are no differences in behavior between men and women at the leadership level, the authors expect that gender discrimination against women can create an association between the accounting quality and presence of female board members. If better governed firms are less likely to discriminate, and higher quality boards positively influence accounting quality, then gender biases may create a positive association between gender diversity and accounting quality. So, without discrimination, this association would not exist.

The authors examine this by including a discrimination dummy is the regression of presence of female board members and accounting quality. These regressions show that the financial reporting quality is lower for discriminating firms.

## 3.3   Summary of the Literature Review.

The final framework presented in section 2.4 shows the two important relations examined in this thesis:

1. The effect of audit partner gender on audit quality
2. The effect of gender discrimination on the gender effect on audit quality.

Several authors have examined these relations and all conclude in the same direction. Being female as an audit partner delivers a higher audit quality, except when measured as audit fees.

| Author(s) and Year | Relation Examined | Sample | Methodology | Results |
|---|---|---|---|---|
| Gul, Wu & Zhang (2013) | Do individual auditors affect the delivered audit quality? | 878 Chinese Auditors, 14,802 firm-year observations | Regression Analysis | The inclusion of audit firm indicators improves the explanatory power of audit-quality models and individual auditors do affect audit quality |
| Cameran, Campa & Francis (2017) | Is partner identification useful in explaining the audit outcomes? | 5,413 firm-year observations from 463 clients, 82 audit offices and 666 signing partners in the U.K. | Incremental $R^2$ test | There exists a inter-partner variation for all audit firms. The partner effects explain more of the audit outcome than the firm or office effects |
| Breesch & Branson (2009) | What are the potential effects of auditor gender on the contents of audit report | 20 female and 20 male auditors | Laboratory experiment | Female auditor do not discover significantly more misstatements than male auditors. Female auditors analyze the misstatements less accurate than male auditors. |
| Ittonen, Vähämää, Vähämää (2013) | The association between accruals quality and the gender of the audit engagement partner | 770 firm-year observations for Finnish and Swedish firms over the fiscal years 2006 & 2007. | Cross-sectional panel regressions | The gender of the audit engagement partner is associated with the quality of financial reporting. |
| Hardies, Breesch & Branson (2015) | The existence of a female audit fee premium | 57,723 firm-year observations from Belgian firms with 93 female and 599 male audit partners in the period 2008-2011 | Propensity score-matching, Heckman two-stage model and difference-in-difference | There exist a female audit fee premium of 7%. |

| | | | | |
|---|---|---|---|---|
| Lee, Nagy & Zimmerman (2017) | Are audit partner gender and experience associated with the gender diversity of the board of directors and the audit quality | U.S. Big4 audit partners | Probit regression models | Audit partner gender is significantly positively associated with audit quality. |
| Burke, Hoitash & Hoitash (2017) | The impact of mandatory disclosure and the effect of audit partner gender on audit fees | 2.133 U.S. Audit Partners | Regression Analysis | Due to the mandatory disclosure audit quality increased. Audit quality varies over audit partner gender. |
| Huang, Chiou, Huang, Chen (2015) | Do women audit partners earn lower audit fees? | 2002-2011 fee data for audit engagement in Taiwan | Regression Analysis | Female audit partners are related to significantly lower audit fees |
| García Lara, Garcia Osma, Mora & Scampin (2017) | The effect of gender discrimination on the gender effect of female directors and accounting quality | 4,785 firm-year observations for the period 2003-2012 | Regression Analysis | The relation between female directors and accounting quality disappears after controlling for gender discrimination |

*Table 1 - Summary Literature Review*

## 4    Hypotheses Development.

The hypotheses of this thesis are built on the conclusions from the theoretical overview and literature review. The hypotheses are testable statements, which reflect the current thoughts on the direction of the implied association.

The theoretical overview described the theoretical constructs underlying the main concepts of this thesis. Different roles for men and women have created stereotyping. The lack-of-fit model and the role congruity theory both predict that with the evaluation of a job candidate and the gender stereotype there is a biased evaluation towards a female applicant, especially in male dominated jobs, such as leadership positions. With auditing being a traditionally male dominated job, the prediction from the role congruity theory may hold. These negative implications may result in the fact that women have the feeling that they have to work harder and better to get the same rewards as their male counterparts, accompanied by the phenomenon of the glass ceiling. This may result in a better audit quality when women, at the end, end up in a partner position. Previous literature, described in the literature review, argue in line with this theoretical implication and show a significant gender effect on audit quality. The first hypothesis for this thesis will therefore be in the alternative form and in a positive direction:

*H1: Female engagement audit partners have a positive association with audit quality.*

However, the stereotypes of gender may change after having experience working with the other, as described by the social learning theory. Working with female audit partners might change the perception that only masculine characteristics fit to the job stereotype of the audit engagement partner. This way, women will more easily fit to the job stereotypes and the inequality between male and female auditors will decline and discrimination might disappear. If men and women are treated the same, there is no incentive for women to work harder or perform better than their male counterparts and the gender effect due to discrimination will disappear. The second hypothesis will therefore be written in the alternative form:

*H2: The association between female audit partners and audit quality is weaker in non-discriminating offices.*

These two hypotheses will be used to answer the final research question of this thesis as presented in the introduction. A quantitative research is conducted to test the relations in the hypotheses. This research will be described in the next chapter, together with the used variables and the statistical techniques.

# 5    Research Design.

This section presents the research design used in this thesis. First, the research method used in this thesis, including the basic regression equation and the definitions of the variables. The Libby boxes to the hypotheses from chapter 4 are presented in section 5.2. The sample selection and data collection are discussed in section 5.3 and the section 5.4 will describe the statistical methods used to test the different hypothesis.

## 5.1   Research Method.

### 5.1.1  Regression Equation.

In order to answer the research question, I perform an OLS-regression analysis. In particular, the following OLS-regression model is used to answer hypothesis 1: *Female engagement audit partners have a positive association with audit quality.*

$$AUDIT\ QUALITY\ =\ \alpha + \beta_1 * GENDER +\ \beta_2 * CONTROLS +\ \varepsilon$$

*Equation 1 - Basic OLS-regression Hypothesis 1*

In order to test hypothesis 2:*The association between female audit partners and audit quality is stronger in discriminating offices*, the regression will be extended with an interaction term for discrimination in the audit firm. The interaction term will be further described in section 5.1.2.3. The basic regression for this hypothesis will be:

$$AUDIT\ QUALITY$$
$$=\ \alpha + \beta_1 * GENDER + \beta_2 * (GENDER * NODISCRIMINATION) +\ \beta_3$$
$$* CONTROLS +\ \varepsilon$$

*Equation 2 - Basic OLS-Regression Hypothesis 2*

### 5.1.2  Variables .

#### 5.1.2.1 Dependent Variable.

The dependent variable in this thesis is audit quality, which, as seen in chapter 2, can be measured by different proxies. In this thesis, the absolute value of discretionary accruals and audit fees will be used. These proxies are widely used in the literature

and measure different sides of audit quality. Discretionary accruals and zero-profit benchmark measure the financial performance side of audit quality, whereas audit fees are also seen as a proxy of audit effort.

### Discretionary Accruals

Discretionary accruals is a proxy for audit quality that is highly used in previous research on audit quality (Burke, Hoitash, & Hoitash, 2017) (Cameran, Campa, & Francis, 2017) (Lee, Nagy, & Zimmerman, 2017). Earnings can be managed upward by using discretionary accruals when the earnings are poor, but earnings can also be managed downward to reserve some earnings for the next year when the forecast for performance is less than this year. So, a higher absolute value of discretionary accruals implies poor audit quality.

   To measure the discretionary accruals, the modified Jones model will be used (Dechow, Sloan, & Sweeney, 1995). The starting point for this model is calculating the total accruals using this formula:

$$TA = (\Delta CA_t - \Delta CL_t - \Delta Cash_t - Depreciation_t)/(A_{t-1})$$

*Equation 3 - Calculation Total Accruals*

Where,

$\Delta CA_t$ = the change in current assets;

$\Delta CL_t$ = the change in current liabilities;

$\Delta Cash_t$ = the change in cash and cash equivalents;

$Depreciation_t$ = the depreciation and amortization costs

$A_{t-1}$ = the total assets.

   After calculating the total accruals, the accruals can be divided in two part: non-discretionary accruals and discretionary accruals. The Jones model (Jones, 1991) assumes that non-discretionary accruals are constant calculated by this formula:

$$NDA_t = \alpha_1 \left(\frac{1}{A_{t-1}}\right) + \alpha_2 \left(\frac{\Delta REV_t}{A_{t-1}}\right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}}\right)$$

*Equation 4 - Calculation Non-Discretionary Accruals - The Jones Model*

Where,

$\Delta REV_t$ = the change in revenues;

$PPE_t$ = the change in gross property plant and equipment;

$A_{t-1}$ = total assets; and

$\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters.

However, in this model, the total revenues are implied to be non-discretionary. the modified Jones model (Dechow, Sloan, & Sweeney, 1995), recognizes the fact that part of the revenues may be discretionary. In this modified model the non-discretionary accruals are calculated by using the following formula:

$$NDA_t = \alpha_1 \left(\frac{1}{A_{t-1}}\right) + \alpha_2 \left(\frac{(\Delta REV_t - \Delta REC_t)}{A_{t-1}}\right) + \alpha_3 \left(\frac{PPE_t}{A_{t-1}}\right)$$

*Equation 5 - Calculation Non-Discretionary Accruals - The Modified Jones Model*

Where,

$\Delta REC_t$ = the change in net receivables.

Finally the discretionary accruals are calculated as the remaining part of the total accruals:

$$DA_t = TA_t - NDA_t$$

*Equation 6 - Calculation Discretionary Accruals*

In this thesis, I will use the absolute value of the discretionary accruals because both downgrading accruals as upgrading accruals are of interest for audit quality. A higher absolute value implies lower audit quality.

**Audit Fees**

The second proxy used is the natural logarithm of audit fees (Ittonen & Peni, 2012). Audit fees can be used as either a proxy for audit quality as for audit effort. Rajgopal et al. (2015) state that audit fees are a proxy the level of effort that the auditor puts into a client. Ittonen & Peni (2012) state that if audit fees are higher, this indicates a more thorough preparation, lower level of overconfidence and the higher risk aversion, which leads to a higher audit quality.

In this thesis, the audit fees will be used because it is a proxy that could be relies more on the behavior and choices of the auditor than on the audited firm, which is the case with discretionary accruals.

### 5.1.2.2 Independent Variables.

In order to measure if the gender of an audit partner affects the audit quality, I create a dummy variable GENDER. GENDER indicates whether the audit partner is female (1) of male (0). Based on hypothesis 1, I expect a positive coefficient regarding this independent variable. This because women are implied to need to work harder and better to pursue the partner position by the glass ceiling resulting in a higher audit quality.

For the second hypothesis, I expect this independent variable to be less positive and insignificant. This because, if discrimination disappears, there is no need to work harder and better than their male counterparts, resulting in a same level of audit quality.

### 5.1.2.3 Interacting Variable.

To test the effect of discrimination on the gender effect of hypothesis 1, an interacting variable "discrimination" is included in the second regression. This interaction term will be measured in three different ways (Garcia Lara, Garcia Osma, Mora, & Scapin, 2017). First, the naïve identification, is a dummy variable that gets the number 1 if the audit office has one female audit partner in a year.

However, these strategy might misclassify offices as discriminating. To control for this, I will also include a second identification strategy followed from Garcia Lara et al. (2017). With this strategy, I will adapt the model used by Garcia Lara et al. (2017) to audit partners to model the number of female audit partners using the predictors of firm size, number of partners and country. Larger offices with more partners in the sample are more likely to have at least one female audit partner than the offices with less partners. Also country might have an effect on the determination of hiring a female as a partner. I will use the following logit model:

$$PREDICTED\ NUMBER\ OF\ FEMALE\ AUDIT\ PARTNERS$$
$$= \alpha + \beta_1 * BIG4 + \beta_2 * NUMBER\ OF\ PARTNERS + \beta_3$$
$$* MARKET\ TO\ BOOK\ RATIO + \beta_4 * COUNTRY + \varepsilon$$

*Equation 7 - Predicted Number of Female Audit Partners*

With this model, I estimate the office-year predicted amount of females in the office, using two variables for the size of the audit office (BIG4 and NUMBEROFPARTNERS) and controlling for MTB-ratio and the country of the audit office. I control for market to book as the "glass cliff" phenomenon shows that women are more likely to be appointed in less profitable times. For the second identification strategy, I qualify offices as non-discriminating if the office has at least one female audit partner in that year, or the predicted amount of female audit partners is zero. This way I control for the small offices that have less opportunities to diversify.

However, in this second identification strategy, I do not control for the offices that have a large number of audit partners, but a low percentage of female audit partners. Therefore, I include a third identification strategy. With this strategy, an office will be qualified as non-discriminating if the office has at least the predicted amount of female audit partners in their office. This way I also control for the large offices with a relatively low amount of female audit partners.

### 5.1.2.4 Control Variables.

Several control variables are included in this study. These are included in a regression analysis to decrease the omitted variable bias. A good control variable affects both the dependent and the independent variable, in this case audit quality and the gender effect.

**Auditor Size**

Auditor Office Size is chosen as a control variable because of the relationship between auditor size and audit quality. Theoretically, a larger firm has more resources, either in people, but also in capabilities to train those people, this may result in a higher quality.

The relationship between auditor size and audit quality. DeAngelo (1981) found a positive relation between those two variables and more recently Burke et al. (2017)

also found a higher audit quality for Big4-firms when audit quality is measured by audit fees. However, they find no differences for discretionary accruals.

Another reason to include auditor size in the regression is their effect on auditor gender. An auditor in a large firm has a larger probability of being a female, because of the fact that if you have more people, there is a higher probability of someone being female.

The variable auditor size will be used as a dummy variable. When the related audit firm is a Big4 audit firm, this variable will get the number 1, and 0 otherwise.

### Client Size

Besides controlling for auditor characteristics, it is also needed to control for client characteristics. This because large companies are more financially stable and have more resources for sophisticated systems. On the other hand, large companies are also more complicated and are therefore in need of more knowledge.

Prior research has examined the effect of client size on audit quality. Dechow and Dichev (2002) found evidence for the assumption that large clients are more financially stable and have a positive effect on the audit quality. Reynolds and Francis (2001) examined whether auditors made more valuable decisions for large clients. However, they did not find any evidence for this assumption and therefore did not find any positive relation between client size and audit quality.

Lee et al. (2017) also argue that larger firms can also increase the probability of signing a female audit partner. This way client size may also affect the effect between the dependent and independent variable.

Client size can be measured in various ways. The most common, and therefore used in this thesis, is the natural logarithm of total assets of the client firm. I expect that this proxy with result in a positive parameter.

### Foreign Operations

The existence of foreign operations can tell something about the complexity of a firm (Burke, Hoitash, & Hoitash, 2017). A more complex firm is harder to audit and therefore may affect audit quality. A more complex audit is expected to be audited

more thoroughly and therefore expected to lead to a higher audit quality. The expected coefficient is therefore positive.

### Inventory and Accounts Receivable to Total Assets

Inventory and accounts receivable to total assets is also a proxy for the complexity of a firm (Huang, Chiou, Huang, & Chen, 2015). As said with foreign operations, I also expect a positive coefficient for this variable.

### Loss

Another client characteristics control variable used is the financial performance of the firm. Controlling for this variable is necessary because the financial performance of the firm may push management towards using more accruals or seducing the auditor to accept less reliable information. Especially a loss can give management an incentive to manage the earnings upward.

Kothari et al. (2005) have investigated the relation between firm performance and audit quality and discretionary accruals. Their results show that firm performance has an impact on audit quality. In recent studies on audit quality and auditor gender (Burke, Hoitash, & Hoitash, 2017) (Lee, Nagy, & Zimmerman, 2017), they also control for firm performance.

In this thesis, the variable loss will be included as one of the control variables for firm performance. This variable will be measured as a dummy variable that gets the number 1 is the firm has made a loss in this fiscal year and 0 otherwise. For this variable I expect a positive coefficient.

### Cash Flow from Operations

Whereas the loss variable controls for the financial firm performance, I also include the cash flow from operations as a control variable for operational firm performance (Johnson, Khurana, & Reynolds, 2002). Where financial performance has a positive relation to the accruals, operational performance have an opposing effect. Higher operational cash flows therefore imply low absolute accruals (Burke, Hoitash, & Hoitash, 2017). Therefore, I expect a negative coefficient for cash flow from operations.

## Market-to-Book Ratio

The market-to-book ratio is also a control variable for firm performance. A higher market-to-book ratio implies that investors value the firm more than the book value is. To enhance this ratio, managers have the incentive to manipulate the earnings more. Therefore I expect this variable to have a positive coefficient.

## Leverage

According to the debt covenant hypothesis, a high leverage can lead to financial distress in a firm, this can give management the incentive to make income-decreasing discretionary accruals and can therefore lead to lower audit quality (Burke, Hoitash, & Hoitash, 2017). Leverage is measured as total liabilities divided by total assets.

In this thesis, I expect a negative association between leverage and audit quality.

## Growth Opportunities

Accruals are seen to be correlated with a company's growth opportunities. Easton & Zmijewski argue that since it is hard to observe the business activities firms with high growth, it is easier for these firms to engage in aggressive earnings management than for other companies. This is also shown by the research of Myers et al. (2003).

The growth opportunities of a firm are measured as the net sales growth over the previous year. For this variable, I expect the coefficient to be negative.

### 5.1.3 Summary of Variables.

| Variable | Description |
|---|---|
| ABSOLUTEDA | The measure of the absolute value of the discretionary accruals |
| AUDITFEES | The natural logarithm of the audit fees |
| GENDER | Dummy variable for auditor gender, 1 = female, 0 = male |
| BIG4 | Dummy variable for the size of the audit firm, 1 = Big4, 0 otherwise |
| SIZE | The natural logarithm of total assets of the client firm |
| FO | Dummy variable for business complexity, 1 = existence of foreign operations, 0 otherwise |
| INVREC | (Inventory + Net Receivables) / Total Assets |
| LOSS | Dummy variable indicating the loss of a company in the previous year, 1 = loss, 0 otherwise. |
| CFO | Operating cash flow divided by the lagged value of total assets |
| MB | Market-to-book ratio |
| LEVERAGE | Financial leverage (Total Liabilities / Total Assets) |
| SALESGROWTH | Sales growth (sales in year t/sales in year t-1 – 1) |

*Table 2 – Variables*

## 5.2   Libby Boxes.

Figures 3 and 4 present the theoretical constructs and operational proxies belonging to hypothesis 1 and 2 in a Libby box (Philips, Libby, & Libby, 2008). A Libby box presents the conceptual items and relations from the research model and shows the used operational items for those concepts.
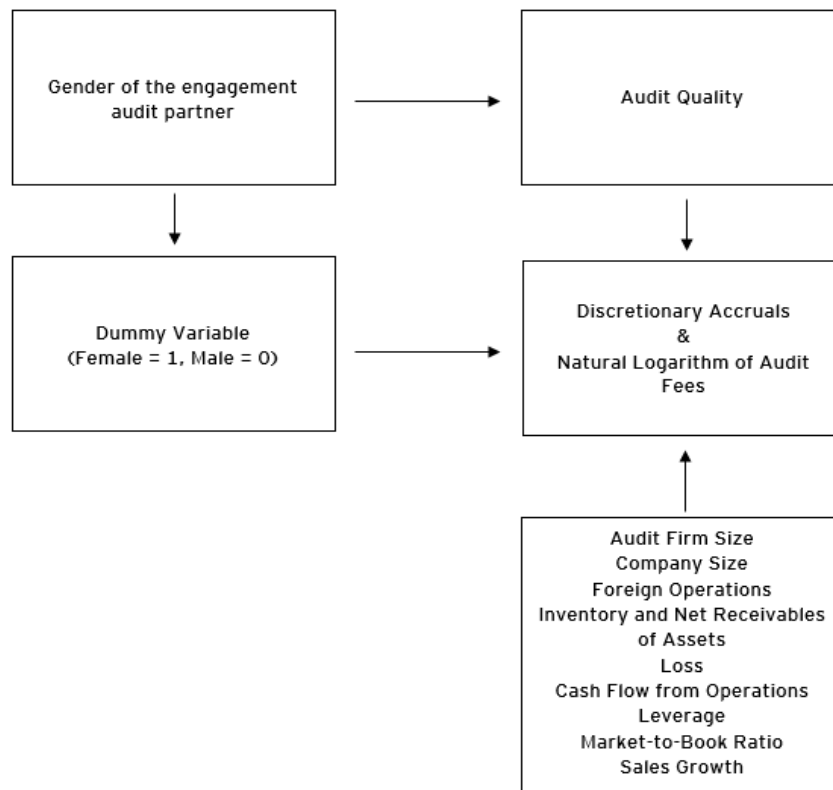


*Figure 3 - Hypothesis 1*
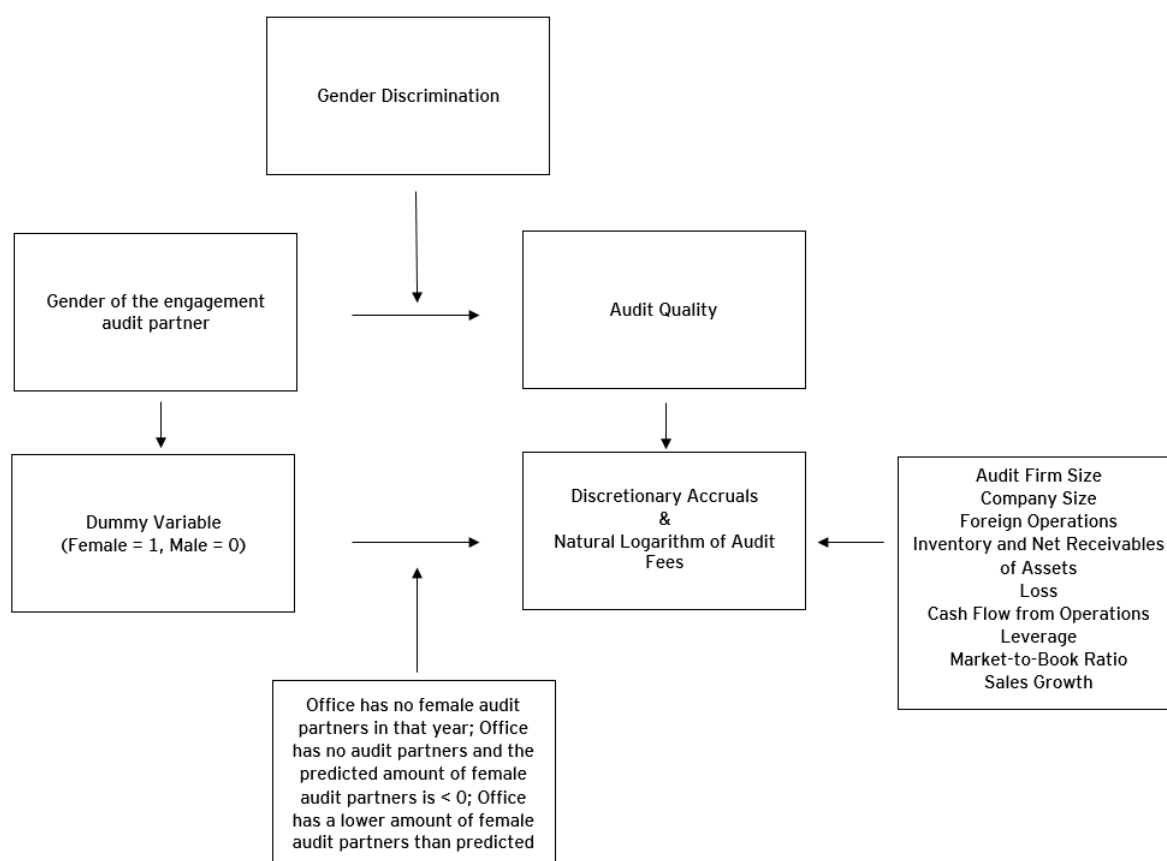
*Figure 4 - Hypothesis 2*

## 5.3   Sample Selection and Data Collection.

### 5.3.1  Sample Selection.

The sample used in this thesis consists of engagement partners that filed an annual reports in the United States between March 2017 and March 2018, including files over fiscal years 2015, 2016 and 2017. I have chosen to include these filings because these are the first filings to disclose the audit partners' name.

The starting sample consists 16,600 filings. However, these filings were also filings about employee benefit plans or retirement plans. Because this thesis only includes annual reports, these filings were deleted. The same holds for firms with missing CIK-numbers. This left a final sample of annual filings of 13,398. Merging the data with the Compustat Fundamentals Annual and the Audit Analytics database and excluding missing data leaves a sample of 2,525 filings, 2,503 clients, 674 audit offices and 1,797 audit partners.

| | |
|---|---|
| Dataset AuditorSearch | 13,398 filings |
| Dataset Compustat | 47,740 observations |
| Dataset Audit Analytics | 21,794 observations |
| Merged Dataset | 5,189 filings |
| Exclude missing data in variables | |
| **Final Sample** | **2,525 filings** |

*Table 3 - Sample Selection*

### 5.3.2 Data Sources.

The audit partner data is obtained from the AuditorSearch Database from the PCAOB. This provides the auditor names and firms of the AP-form filings, the issuing firm, the filing date and the fiscal year end date. With these names it has been possible to derive the gender of the audit partners through LinkedIn. The names from the AuditorSearch Database were the input for the LinkedIn website and based on the pictures on their LinkedIn profile, people are categorized as male or female.

The financial information about the client firms is obtained from the Compustat Fundamentals annual database. This database provides all the financial information provided in the financial statements of public firms in the United States.

The information about the audit fees is obtained for the Audit Fees Database from AuditAnalytics. This database contains all information about the audit fees paid by the clients.

## 5.4   Statistical Methods.

### 5.4.1 Univariate tests.

The univariate test is a simple test and a good starting point for the analysis. It starts with the descriptive statistics, which summarizes the features of the sample. This means that it does not test for causality or a relationship between variables, it describes the data and tries to find a pattern (Moore, McCabe, Alwan, Craig, & Duckworth, 2011). This part focuses on the mean, standard deviation, minimum, and maximum of the variables in the sample. This analysis can also be used to analyze mean differences between groups.

To statistically test the mean differences, I make use of the independent t-test. With this test, I use, as I will for all statistical tests, the significance levels: 10%, 5%

and 1%. To each significance level, there is a critical t-statistic: 1.647, 1.963 and 2.581 respectively. When the t-statistic exceeds the critical value, the coefficient is significant at the corresponding significance level and the p-value is smaller than the significance level (Moore, McCabe, Alwan, Craig, & Duckworth, 2011). This will be shown using stars, *, ** and *** respectively.

This analysis is an important first step in the whole analysis. However, it does not incorporate correlations and nor does it control for external effects (year-, country- or industry-effects).

### 5.4.2 Multivariate tests.

In contrast with an univariate test, a multivariate test measures in what extent a dependent variable is affected by changes in an independent variable. An example of a multivariate test is a regression. A regression predicts the value of the dependent variable for a given value of the independent variables  (Moore, McCabe, Alwan, Craig, & Duckworth, 2011).

For this thesis, I use an OLS-regression analysis. The OLS-regression is a line that makes the sum of the squares of the error term as small as possible. This minimizes the prediction errors.

With the variables explained in section 5.2, the following OLS-regression will be the starting point for the analysis of hypothesis 1:

$$
\begin{aligned}
AUDIT\ QUALITY &= \alpha + \beta_1 * GENDER + \beta_2 * BIG4 + \beta_3 * CLIENTSIZE + \beta_4 \\
&\quad * FOREIGN\ OPERATIONS + \beta_5 \\
&\quad * INVENTORY\ AND\ ACCOUNTS\ RECEIVABLE\ TO\ TOTAL\ ASSETS + \beta_6 \\
&\quad * LOSS + \beta_7 * CASHFLOW\ FROM\ OPERATIONS + \beta_8 \\
&\quad * MARKET\ TO\ BOOK\ RATIO + \beta_9 * LEVERAGE + \beta_{10} * SALESGROWTH \\
&\quad + \beta_{12} * INDUSTRY + \varepsilon
\end{aligned}
$$

*Equation 8 - OLS-Regression Hypothesis 1*

For hypothesis 2, I will include an interaction term that will explain the effect of gender discrimination:

$AUDIT\ QUALITY$

$$= \alpha + \beta_1 * GENDER + \beta_2 * (GENDER * NODISCRIMINATION) + \beta_3$$
$$* BIG4 + \beta_4 * CLIENTSIZE + \beta_5 * FOREIGN\ OPERATIONS + \beta_6$$
$$* INVENTORY\ AND\ ACCOUNTS\ RECEIVABLE\ TO\ TOTAL\ ASSETS + \beta_7$$
$$* LOSS + \beta_8 * CASHFLOW\ FROM\ OPERATIONS + \beta_9$$
$$* MARKET\ TO\ BOOK\ RATIO + \beta_{10} * LEVERAGE + \beta_{11}$$
$$* SALESGROWTH + \beta_{12} * INDUSTRY + \varepsilon$$

*Equation 9 - OLS-Regression Hypothesis 2*

However, because both GENDER and NODISCRIMINATION are dummy variables, there is a multicollinearity problem. To control for this, I will only look at the sample where NODISCRIMINATION = 1 and check if the gender effect has changed.

# 6    Results.

This chapter will describe the results of the different tests performed. The first section will present the results of the test for the assumptions of the OLS-regression. Section 6.2 will present the descriptive statistics. Section 6.3 will present the hypothesis testing, with for both hypothesis 1 and 2, univariate and regression analyses. Finally, section 6.4 will present an overview of the tested hypotheses and their results

## 6.1    Regression Assumptions Tests.

In this section, the results of the tests for the assumptions of the OLS-regression will be discussed. These assumptions are: normality; no multicollinearity; no heteroscedasticity;

### 6.1.1  Normality Test.

Before starting with describing the data, the normality of the distribution of the different variables is determined. In order to do this, histograms will be used. The histograms are presented in Appendix A. Histograms make clear if a certain distribution is normal or skewed. In addition, it is also possible to see if there are any problems due to outliers.

An outlier is an observation that is outside the overall pattern of the data (Moore, McCabe, Alwan, Craig, & Duckworth, 2011). Outliers can skew the data and therefore make the statistical analysis less accurate. To overcome this data problem, you can winsorize the data. Winsorizing the data is a method that replaces extreme values in the dataset. In this thesis, outliers will be winsorized at the $1^{st}$ and $99^{th}$ percentiles.

The histograms in Appendix A show that all control variables have a deviation from a normal distribution. However, relying on graphics is not enough. Therefore, the normality test: Shapiro-Francia W test will be performed (table 4). This because this test is suitable for sample between 5 and 5000 observations. The main value of this test, W, is a number between 0 and 1. A small value indicates a non-normal distribution of the variable.

Both the graphics as the Shapiro-Francia test show that the variables CFO, MB, LEVERAGE and SALESGROWTH are not normally distributed and should therefore be winsorized, the variables SIZE and INVREC are normally distributed and not winsorized. The histograms of the winsorized variables are shown in Appendix B.

Although the variables CFO, LEVERAGE and SALESGROWTH are still not perfectly normally distributed after winsorizing, the problem is already a lot smaller and will disappear due to the large sample size (2,525 observations).

| Variable | W | Z | P-value |
|---|---|---|---|
| SIZE | 0.972 | 9.192 | 0.000*** |
| INVREC | 0.903 | 12.188 | 0.000*** |
| CFO | 0.012 | 17.822 | 0.000*** |
| MB | 0.006 | 17.836 | 0.000*** |
| LEVERAGE | 0.033 | 17.771 | 0.000*** |
| SALESGROWTH | 0.011 | 17.589 | 0.000*** |

*Table 4 - Shapiro-Francia W Test*

### 6.1.2 Correlation Analysis for Multicollinearity.

In Appendix C the correlations among the variables of interest are given. A correlation matrix is used to test for possible multicollinearity in the dataset. Multicollinearity means that two variables are highly correlated (Moore, McCabe, Alwan, Craig, & Duckworth, 2011). Looking at the table in Appendix C there is no problem with multicollinearity in this dataset. This is confirmed by the variance inflation factor (VIF) analysis. The VIF method compares the situation without correlation and the VIF. When the VIF is higher than ten, there is high multicollinearity. In this dataset, all variables have a VIF score under 10.

The correlation coefficients in the correlation matrix have the expected signs. However, the correlation with GENDER is not significant. Interesting is the fact most control variables are highly significant on both independent variables.

### 6.1.3 Heteroscedasticity Test.

The third assumption of an OLS-regression is that there is no heteroscedasticity in the variances. To check for homoscedasticity, the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity is used. This test performs a score test of the hypothesis that there is a constant variance in the model. A significant score implies heteroscedasticity. For the standard regression in this thesis, the Breusch-Pagan /

Cook-Weisberg test is significant, implying heteroscedasticity (Chi$^2$=123,142.05 p=0.000). To control for this problem, I will include robust standard errors in the regression.

## 6.2  Descriptive Statistics.

This section contains the descriptive statistics of the variables in the dataset. As stated in section 5.3, the final sample consists of 2,525 filings. Table 5 provides information about the deviation of the filings over the fiscal years. This table shows that most of the filings in the sample are from the fiscal year 2016. This is the case because of the fact that the AuditorSearch Database only includes filings filed after March 2017.

| Year | # of Filings | # of Partners | Percentage Female |
|------|--------------|---------------|-------------------|
| 2015 | 33 | 33 | 15.2% |
| 2016 | 2,231 | 1,631 | 17.3% |
| 2017 | 261 | 133 | 21.8% |

*Table 5 - Number of Filings per Year*

In the sample, some firms have non-US audit partners. These are included in the final sample, this deviation is shown in figure 5. This table shows that 82.65% of the filings in the sample are filed by an US audit partner, which leaves 17.35% of the filings done by non-US audit partners from all over the world.



*Figure 5 - Auditor Nationality*

Table 6 shows that on average 17.2% of the filings was audited by a female audit partner and almost 64% of the filings were audited by a big4 office. This can be explained by the fact that the Compustat and the AuditAnalytics database consist of public companies and that smaller audit firms have on average smaller engagements.

| Variable | Mean | Std. Dev | Minimum | Maximum |
|---|---|---|---|---|
| ABSOLUTEDA | 2.301 | 20.297 | 0.000 | 557.922 |
| AUDIT FEES | 13.626 | 1.529 | 7.824 | 17.726 |
| GENDER | 0.172 | 0.378 | 0 | 1 |
| BIG4 | 0.637 | 0.481 | 0 | 1 |
| SIZE | 5.997 | 2.913 | -6.908 | 12.927 |
| LOSS | 0.467 | 0.499 | 0 | 1 |
| FO | 0.385 | 0.487 | 0 | 1 |
| INVREC | 0.193 | 0.180 | 0 | 0.989 |
| CFO | -0.167 | 0.921 | -7.031 | 0.438 |
| MB | 0.324 | 1.320 | -8.705 | 4.773 |
| LEVERAGE | 1.203 | 3.744 | 0.043 | 31.219 |
| SALESGROWTH | 0.262 | 1.473 | -1 | 11.538 |

*Table 6 - Descriptive Statistics: Whole Sample*

Looking at the unreported descriptive statistics of the sample of audit partners, it shows that 17,6% of the auditors is female. This is a little bit higher than the 16.1% from Burke et al. (2017) and the 14.9% from Lee et al. (2017). This might probably be due to the fact that in the sample in this thesis, the extra year of 2017 is included in the sample and the fact that Lee et al. (2017) focuses on Taiwan and not on the U.S.

## 6.3   Hypothesis Testing.

In this section, the hypotheses will be tested using univariate analysis and OLS-regressions. First, hypothesis 1 will test if there is a significant gender effect on audit quality in this sample. Afterwards, hypothesis 2 will check if there is a significant difference between discriminating and non-discriminating offices.

### 6.3.1 Hypothesis 1.

#### 6.3.1.1 Univariate Analysis.

For the univariate analysis, the complete dataset is used. The results of the univariate test in Table 7 show that there is a significant difference between GENDER and ABSOLUTEDA, BIG4, CFO and LEVERAGE. This shows that firms audited by Big4

offices have a greater probability of being audited by a female audit partner and that there might be a gender effect in the dataset.

The results also show that firms with higher leverage and therefore more risky firms are often audited by a male audit partner in this sample. These results do not support the fact that there is something like a significant gender effect in this sample, when looking at audit quality measured as audit fees.

| | Male | Female | | | |
| | Mean | Mean | Difference (mean) | T-statistic | P-value |
| --- | --- | --- | --- | --- | --- |
| *ABSOLUTEDA* | 2.544 | 1.132 | 1.412 | 2.601 | 0.009*** |
| *AUDIT FEES* | 13.613 | 13.691 | -0.078 | -1.028 | 0,304 |
| *BIG4* | 0.628 | 0.683 | -0,055 | -2.172 | 0.030** |
| *SIZE* | 5.988 | 6.044 | -0.056 | -0.404 | 0.686 |
| *LOSS* | 0.467 | 0.471 | -0.004 | -0.181 | 0.857 |
| *FO* | 0.385 | 0.381 | 0.004 | 0.139 | 0.890 |
| *INVREC* | 0.194 | 0.187 | 0.007 | 0.730 | 0.466 |
| *CFO* | -0.181 | -0.098 | -0.083 | -2.186 | 0.029** |
| *MB* | 0.306 | 0.414 | -0.108 | -1.563 | 0,118 |
| *LEVERAGE* | 1.258 | 0.940 | 0.318 | 2.224 | 0,026** |
| *SALESGROWTH* | 0.251 | 0.316 | -0.065 | -0.809 | 0.418 |

*Table 7 - Independent t-test Hypothesis 1*

### 6.3.1.2 Regression Analysis.

Table 8 presents the results of the OLS-regression concerning hypothesis 1. To test this hypothesis, I first perform a regression analysis without control variables (columns 2 and 3). The results in these columns indicate that there is a significant and negative gender effect. This indicates that female audit partner deliver higher audit quality. The same holds for the effect on audit fees, however this is not significant. The adjusted $R^2$ is 0.0003 and 0.0004, which means that only 0,3% and 0,4% of the variance is explained by the audit partners gender.

In addition, I include control variables in column 4 and 5, which increases the explanatory power of the model. With these control variables, the adjusted $R^2$ has increased to 18.7% and 80.5%. However, gender loses its significance but is still negative for absolute discretionary accruals and positive for audit fees. This indicate that I reject Hypothesis 1, but the sign of the coefficients is in line with the expectation.

With regard to the control variables in columns 4 and 5, it is shown that being a Big4 office significantly increases the delivered audit quality for both absolute

discretionary accruals as for audit fees. Client size is only significant for audit fees, this implies that bigger clients pay significantly larger audit fees. However, for absolute discretionary accruals, bigger clients also enhance more absolute discretionary accruals. The client firm making a loss in the year before also significantly enhances the audit quality. The existence of foreign operations significantly increases the audit fees, this might be due to the fact that firms with foreign operations are more complex than firms without. This might also be why it has a positive coefficient for absolute discretionary accruals. The same holds for inventory and accounts receivable to total assets, which was also a proxy for firm complexity. Firm performance (CFO and MB) has a positive effect on audit quality, with the market-to-book ratio significantly positively associated with audit fees. More risky firms also have a higher audit quality, whereas growing firms have lower audit quality.

In the final models (column 6 and 7), I included industry fixed effect for the industry of the client firm. This increases the adjusted $R^2$ even more to 19.7% and 81.9%. In this model, the coefficient for gender to absolute discretionary accruals flips from a negative sign to a positive sign, but it remains insignificant.

| | ABSOLUTE DA | AUDIT FEES | ABSOLUTE DA | AUDIT FEES | ABSOLUTE DA | AUDIT FEES |
|---|---|---|---|---|---|---|
| GENDER | -1.411 | 0.078 | -0.147 | 0.025 | 0.045 | 0.009 |
| | (-2.60)*** | (0.97) | (-0.50) | (0.69) | (0.15) | (0.27) |
| BIG4 | | | -1.297 | 0.609 | -0.993 | 0.563 |
| | | | (-1.72)* | (16.99)*** | (-1.68)* | (16.05)*** |
| SIZE | | | 0.441 | 0.446 | 0.357 | 0.469 |
| | | | (1.36) | (51.34)*** | (1.31) | (54.88)*** |
| LOSS | | | -1.375 | 0.210 | -1.228 | 0.204 |
| | | | (-1.91)* | (7.11)*** | (-1.79)* | (7.05)*** |
| FO | | | 0.196 | 0.093 | 0.322 | 0.046 |
| | | | (0.34) | (3.32)*** | (0.56) | (1.63) |
| INVREC | | | 1.297 | 0.704 | 2.415 | -0.476 |
| | | | (1.21) | (8.43)*** | (1.70)* | (5.42)*** |
| CFO | | | -7.365 | -0.015 | -7.704 | -0.012 |
| | | | (-1.75)* | (-0.5) | (-1.78)* | (-0.41) |
| MB | | | -0.294 | -0.067 | -0.347 | -0.058 |
| | | | (-1.05) | (-4.61)*** | (-1.17) | (-4.36)*** |
| LEVERAGE | | | -0.057 | 0.304 | -0.139 | 0.036 |
| | | | (-0.19) | (4.08)*** | (-0.42) | (4.77)*** |
| SALESGROWTH | | | 1.877 | -0.007 | 1.913 | -0.010 |
| | | | (2.22)** | (-0.85) | (2.22)** | (-1.21) |
| Industry fixed effects | No | No | No | No | Yes | Yes |
| Constant | 2.544 | 13.613 | -0.950 | 10.279 | -0.881 | 10.227 |
| | (5.24)*** | (406.44)*** | (-0.69) | (168,09)*** | (-0.67) | (166.65)*** |
| Adjusted $R^2$ | 0.0003 | 0.0004 | 0.1873 | 0.8045 | 0.1968 | 0.8194 |

Table 8 - OLS-Regression Hypothesis 1

### 6.3.2  Hypothesis 2.

In this section, I will include a interaction effect of gender and the existence of gender discrimination into the regression equation. First, the identification strategies will be described and used to determine the samples of discriminating and non-discriminating offices. Afterwards, the regression results for the non-discriminating sample will be presented.

#### 6.3.2.1 Identification Strategies.

In this thesis, I use three different identification strategies for qualifying the office as non-discriminating. With the first strategy, gender discrimination is determined by the presence of female engagement partner in the office. If an office has at least one female in a year, then the office will be categorized as non-discriminating. This leaves a sample with 1,083 discriminating and 1,442 non-discriminating offices.

However, there are also offices with no female engagement audit partners but not because they discriminate, but because they are too small to diversify. For this, I

include an ex-ante probability of the presence of female, which I can compare to the actual presence.

The results of this estimating model are presented in table 9. This model shows that both the size of the audit firm (big4 or non-big4) and the number of partners in the audit office have odds ratios above 1, and have significant coefficients. It is interesting to see that the market-to-book ratio has a negative coefficient. This is consistent with the "glass cliff" phenomenon from chapter 2, whereby women have greater probability to be appointed to engagements with poor performing firms.

| Variable | Coefficient (Z-stat) | Odds Ratio |
|---|---|---|
| BIG4 | 0.235** (2.11) | 1.265** |
| NUMBER OF PARTNERS | 0.437*** (19.88) | 1.547*** |
| MB | -0.043 (-1.20) | 0.857 |
| Constant | -1.783*** (-17.75) | 0.168*** |
| Country Indicators | Yes | Yes |

*Table 9 - Estimation Model: Predicted Number of Female Audit Partners*

From this table, it can be concluded that the predicted number of female audit partners can be calculated with:

$$PREDICTED\ NUMBER\ OF\ FEMALE\ AUDIT\ PARTNERS$$
$$= -1.783 + 0.235 * BIG4 + 0.437 * NUMBER\ OF\ PARTNERS - 0.043$$
$$* MARKET\ TO\ BOOK\ RATIO$$

*Equation 10 - Predicted Number of Female Audit Partners*

For the second identification strategy, offices are determined as non-discriminating if the office has at least one female audit partner, or when the predicted number of females in the office is zero. This leaves a sample of 210 discriminating and 2,315 non-discriminating offices.

However, this identification strategy does not incorporate the large offices with a small amount of female audit partners. The third identification strategy therefore qualifies all offices with more female audit partners than predicted as non-discriminating. This leaves a sample of 578 discriminating and 1,947 non-discriminating offices.

| Identification Strategy | Discriminating Sample | Non-discriminating Sample |
|---|---|---|
| 1 | 1,083 | 1,442 |
| 2 | 210 | 2,315 |
| 3 | 578 | 1,947 |

*Table 10 - Identification Strategies*

## 6.3.2.2 Univariate Analysis.

Table 11 show the three univariate analyses for the three different identification strategies. These independent t-test show that for all three samples, audit quality, measured as either the absolute value of the discretionary accruals and the audit fees, are significantly different between discriminating and non-discriminating offices. The table also shows significant differences in the control variables. However, looking at the signs of the differences between the variables, it is to note that the sign for most of the variables swap between sample I and sample II. This might be a result of controlling for small audit offices in the sample.

| | Sample I | | | Sample II | | | Sample III | | |
|---|---|---|---|---|---|---|---|---|---|
| | Discr. | Non-discr. | | Discr. | Non-discr. | | Discr. | Non-discr | |
| | Mean | Mean | Diff. (mean) | Mean | Mean | Diff. (mean) | Mean | Mean | Diff. (mean) |
| ABSOLUTE DA | 3.241 | 1.594 | 1.647* | 1.245 | 2.396 | -1.151** | 0.820 | 2.740 | -1.921*** |
| AUDIT FEES | 13.255 | 13.906 | -0.652*** | 13.851 | 13.606 | 0.245** | 14.196 | 13.458 | 0.738*** |
| GENDER | 0 | 0.302 | -0.302*** | 0 | 0.188 | -0.188*** | 0.106 | 0.192 | -0.087*** |
| BIG4 | 0.475 | 0.759 | -0.285*** | 0.729 | 0.629 | 0.010*** | 0.860 | 0.571 | 0.289*** |
| SIZE | 5.385 | 6.457 | -1.072*** | 6.359 | 5.965 | 0.394* | 6.851 | 5.744 | 1.106*** |
| LOSS | 0.494 | 0.447 | 0.047** | 0.462 | 0.468 | -0.006 | 0.478 | 0.464 | 0.013 |
| FO | 0.365 | 0.399 | -0.035* | 0.419 | 0.381 | 0.037 | 0.426 | 0.372 | 0.053** |
| INVREC | 0.208 | 0.182 | 0.026*** | 0.170 | 0.195 | -0.025** | 0.166 | 0.201 | -0.034*** |
| CFO | -0.266 | -0.092 | -0.173*** | -0.157 | -0.168 | 0.011 | -0.062 | -0.198 | 0.135*** |
| MB | 0.288 | 0.352 | -0.064 | 0.256 | 0.331 | -0.074 | 0.371 | 0.311 | 0.060 |
| LEVERAGE | 1.492 | 0.987 | 0.505*** | 0.827 | 1.237 | -0.411** | 0.631 | 1.373 | -0.743*** |
| SALES GROWTH | 0.295 | 0.237 | 0.058 | 0.378 | 0.252 | 0.127 | 0.252 | 0.265 | -0.012 |

*Table 11 - Independent t-test Hypothesis 2*

## 6.3.2.3 Regression Analysis.

Table 12 presents the results of the OLS-regressions for the non-discriminating sample based on the three identification strategies. GENDER remains not significant in all three subsamples, while most control variables remain significant and with the same sign in all subsamples.

Looking at the coefficient for GENDER in the subsamples for the association with absolute discretionary accruals. It is shown that the gender effect, in contrast with hypothesis 2, has increased for two of the three subsamples. This is

inconsistent with the role congruity theory and indicates that women deliver better audit quality, even after controlling for discrimination. These results remain the same after controlling for client industry fixed effects (untabulated), therefore hypothesis 2 should be rejected.

| | Sample 1 | | Sample 2 | | Sample 3 | |
| | Non-discriminating | | Non-discriminating | | Non-discriminating | |
| | ABSOLUTE DA | AUDIT FEES | ABSOLUTE DA | AUDIT FEES | ABSOLUTE DA | AUDIT FEES |
|---|---|---|---|---|---|---|
| GENDER | -0,014 | -0.001 | -0.225 | 0.028 | -0.300 | 0.042 |
| | (-0.07) | (-0.03) | (-0.72) | (0.78) | (-0.81) | (1.04) |
| BIG4 | -0.161 | 0.587 | -1.353 | 0.607 | -1.56 | 0.543 |
| | (-0.73) | (11.96)*** | (-1.71)* | (16.05)*** | (-1.73)* | (12.98***) |
| SIZE | 0.013 | 0.456 | 0.469 | 0.443 | 0.498 | 0.444 |
| | (0.19) | (40.12)*** | (1.34) | (47.89)*** | (1.36) | (43.43)*** |
| LOSS | -0.109 | 0.185 | -1.424 | 0.202 | -1.693 | 0.224 |
| | (-0.54) | (4.85)*** | (-1.90)* | (6.55)*** | (-1.96)* | (6.35)*** |
| FO | 0.049 | 0.086 | 0.194 | 0.098 | 0.349 | 0.071 |
| | (0.25) | (2.47)** | (0.31) | (3.33)*** | (0.46) | (2.13)** |
| INVREC | 1.778 | 0.939 | 1.258 | 0.684 | 1.122 | 0.595 |
| | (3.42)*** | (8.57)*** | (1.06) | (7.98)*** | (0.84) | (6.30)*** |
| CFO | -1.378 | -0.091 | -7.561 | -0.007 | -7.680 | -0.002 |
| | (-1.00) | (-1.52) | (-1.73)* | (-0.23) | (-1.77)* | (-0.06) |
| MB | 0.223 | -0.106 | -0.278 | -0.072 | -0.348 | -0.069 |
| | (1.28) | (-5.28)*** | (-0.91) | (-4.72)*** | (-1.07) | (-4.19)*** |
| LEVERAGE | 0.386 | 0.017 | -0.096 | 0.029 | -0.058 | 0.028 |
| | (1.76)* | (1.46) | (-0.33) | (3.79)*** | (-0.19) | (3.67)*** |
| SALESGROWTH | 0.437 | -0.002 | 2.156 | -0.005 | 2.555 | -0.006 |
| | (1.05) | (-0.16) | (2.21)** | (-0.54) | (2.23)** | (-0.55) |
| Industry fixed effects | No | No | No | No | No | No |
| Constant | 0.176 | 10.252 | -1.036 | 10.302 | -1.119 | 10.33 |
| | (0.30) | (123.80)*** | (-0.68) | (160.55)*** | (-0.70) | (146.63)*** |
| Adjusted $R^2$ | 0.1399 | 0.7875 | 0.1947 | 0.8027 | 0.2111 | 0.7957 |

*Table 12 - OLS-Regression Hypothesis 2*

## 6.4   Summary of the Results.

Overall, the results show that both hypotheses should be rejected. However, the results of hypothesis 1 show a negative coefficient for the absolute discretionary accruals and a positive coefficient for audit fees. This implies that women do deliver better audit quality. For hypothesis 2, the results are not significant and do not support hypothesis 2. The coefficients imply that in non-discriminating offices the gender effect is even stronger than in discriminating offices.

# 7    Conclusion, Limitations and Suggestions for Further Research.

In this final chapter, the results of this thesis are discussed and the research question is answered. Section 7.2 will present a discussion about the given answer to the research question. Finally, this thesis ends with its limitations and recommendations for further research.

## 7.1   Conclusion.

This thesis focuses on the association between gender and audit quality showing that discrimination in some way affects the proposed gender effect.

The research question "To what extent does gender discrimination affect the gender effect on audit quality?" is examined by testing two hypotheses:

Hypothesis 1: Female engagement audit partners have a positive association with audit quality.
Hypothesis 2: The association between female audit partners and audit quality is weaker in non-discriminating offices.

Gender discrimination and the chances for women in business are a large topic of attention these days. Diversification helps to decrease the barrier of discrimination in a firm. This thesis provides evidence that even without discrimination women provide better audit quality, with a note that this association is not significant.

Within previous research there is a lot of discussion about the gender effect on audit quality, with most researchers showing a positive effect for female audit partners. By using a sample of U.S. filings over the fiscal years 2015-2017, the hypotheses were tested using OLS-regressions. These regressions estimated the effect of gender on audit quality, which can be influenced by the different control variables.

The results in this thesis show a negative not significant association between having a female audit partner and audit quality measured as absolute discretionary accruals and a positive not significant coefficient for  audit fees. Therefore I reject hypothesis 1, but the audit quality delivered by female audit partners is higher,

measured by two different proxies. This gender effect is strengthened after controlling for non-discriminating offices, which results in a rejection of hypothesis 2. This implies that female audit partners deliver higher audit quality, whatever the diversification situation in the audit office is. This result is in contrast with the role congruity theory, but in line with the social role theory. Women have some stereotypes that may enhance audit quality as explained by Breesch and Branson (2009). They will be more thorough and risk-averse and thereby increase the audit quality. This is further discussed in section 7.2.

## 7.2  Discussion.

As shortly discussed in the previous section, the results of the regression analysis are not in line with the expectation based on theory. In this section, I will extend my research by discussing some explanations for these contrasting results.

One possible explanation might be the fact that experience of working with women does not change the women stereotype. When both men and women try to perceive managerial jobs like an audit partner, it is likely that these jobs are still seen as inappropriate for women and women have to be more qualified than men to be accepted. This is in contrast with the role congruity theory from chapter 2.

Another explanation might be found in the women stereotype itself. You et al. (2011) have shown that women generally have higher moral sensitivity than men regardless their level of education and Ameen et al. (1996) stated that women are less tolerant. Other studies also show that women prepare their work more thoroughly (Huse & Solberg, 2006) and want to show their extra capabilities to reach top positions (Eagly & Carli, 2003). These are key characteristics of an audit partner that could affect the delivered audit quality (Hardies, Breesch, & Branson, 2015).

These two explanations can be found in the differences between the gender differences approach and the structural approach (Nasution & Jonnergard, 2017). While the gender differences approach start at the assumption that women and men respond differently in the same situation. The structural approach acknowledges that gender differences exist because of the different roles they acquire in the early stages of life and that these differences might be overruled when acting in professional roles.

This thesis provides evidence that the structural approach does not hold for the audit profession.

Another explanation for differences in the delivered quality between men and women is the fact that the way people look at their work is different (Feldberg & Glenn, 1979). For men, people look first at their accomplishments in their professional life, whereas for women people most of the time ignore their professional life and look more to the personal characteristics and relationships to family. This might always trigger women to show their best work to get the rewards they deserve.

All in all, there is a lot to explain and verify about the gender differences and the existence of gender discrimination. This leads to some suggestions for further research in the next section.

## 7.3   Limitations and Suggestions for Further Research.

This thesis contributes to prior literature by including discrimination into the equation of the gender effect on audit quality. But, this thesis has still some limitations. This section will describe these limitations and possibly give some suggestions to decrease these limitations in further research.

First, there are some problems in the sample. This thesis used filings from public U.S. firms for the sample over the fiscal years 2015-2017. But, because these firms had to file their annual reports with the PCAOB, a lot of companies had to be dropped from the sample. It is therefore hard to generalize a conclusion about all audits in the U.S. This because these firms are the largest firms in the U.S. and the sample does not include the private firms or small public firms. Second,  not all auditors from an office are included in the sample. This has consequences for the establishment of the non-discriminating sample. Some office might have been qualified as discriminating while they have female audit partners, but not in the large client firms. This might be a possibility to increase the reliability of the study in further research. Finally, it would be good to extend the PCAOB AuditorSearch Database with more audit engagement partner specific data. Due to all new privacy rules, it is and would be harder to find partner specific data and this might bind the possibilities for audit partner research.

Second, to test the hypothesis, OLS-regressions with control variables are used. These regressions result in a gender effect on audit quality which is strengthened if a firm is non-discriminating. This might be due to the sampling limitation stated above. Looking at the Adjusted $R^2$ of the regressions, it is seen that a large portion of the variance for the absolute discretionary accruals is not explained by the control variables used. With that, it is always hard to determine the control variables that have an influence and should be included. Therefore, the model might be subject to omitted variable bias.

Another limitation regarding the regressions is the fact that because both gender and discrimination where dummy variables, it was not possible to include an interaction effect in the equation which might have led to a conclusion about the significant differences between those two samples. For further research it might be possible to calculate some kind of discrimination score instead of a dummy variable.

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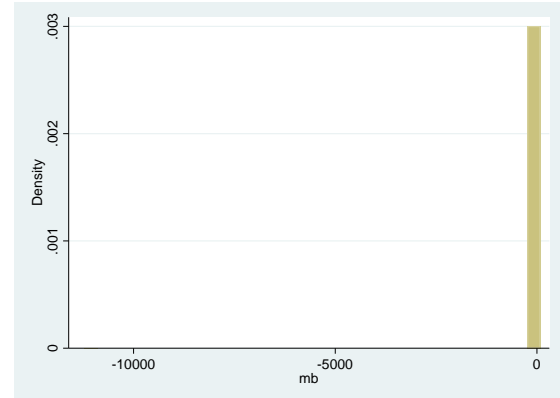
# 9    Appendices.

## Appendix A – Histograms Before Winsorizing.
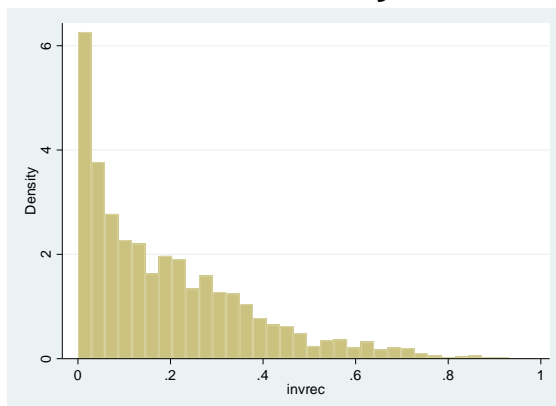
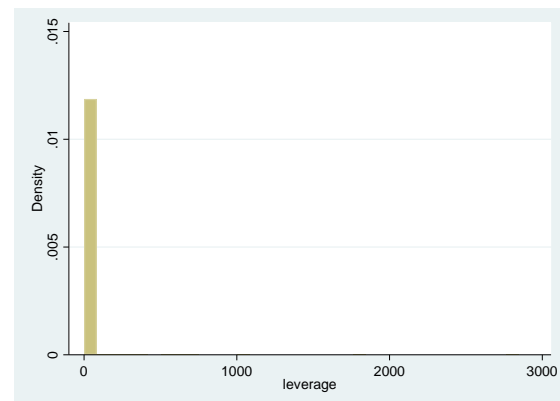Histogram of variable SIZE before winsorizing
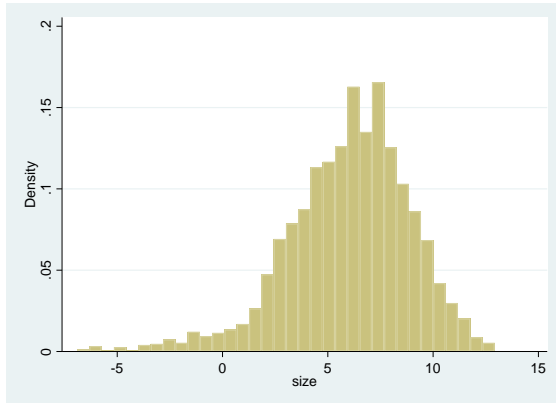


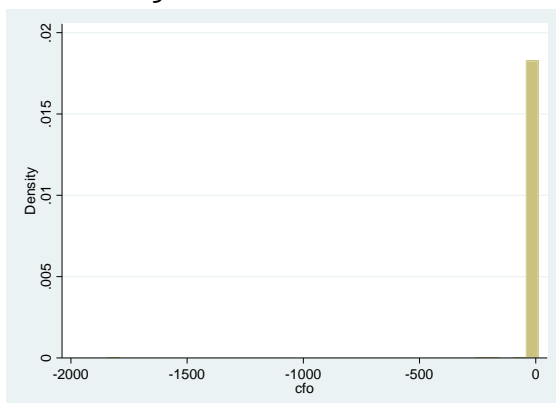Histogram of the variable MARKET TO BOOK RATIO before winsorizing



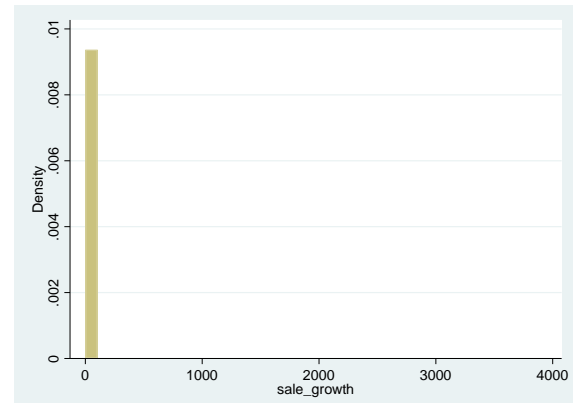Histogram of variable INVENTORY AND ACCOUNT RECEIVABLE TO TOTAL ASSETS before winsorizing



Histogram of the variable LEVERAGE before winsorizing



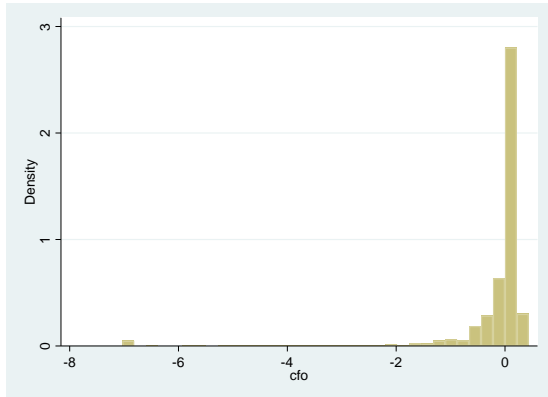Histogram of variable CASHFLOW FROM OPERATIONS before winsorizing



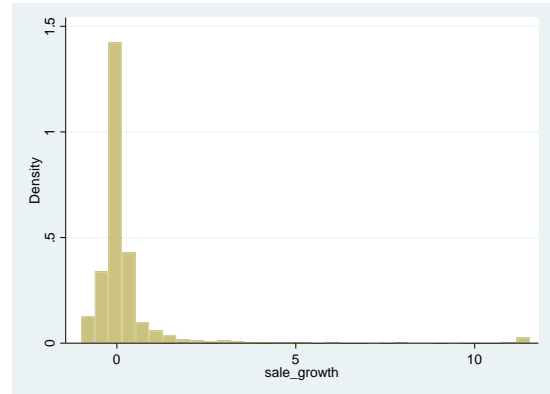Histogram of the variable SALESGROWTH before winsorizing

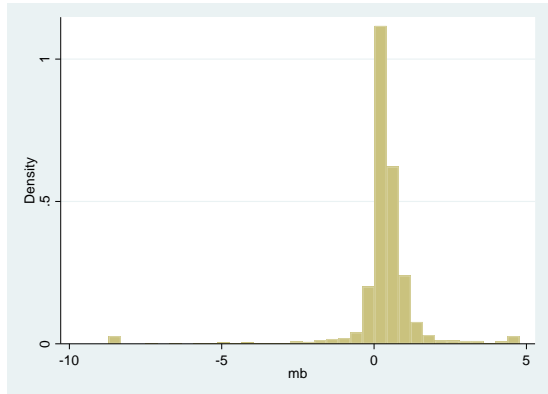## Appendix B - Histograms After Winsorizing.

Histogram of the variable CASHFLOW
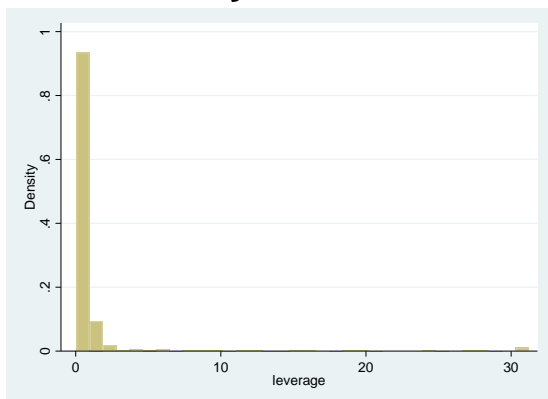FROM OPERATIONS after winsorizing

Histogram of the variable
SALESGROWTH after winsorizing



Histogram of the variable MARKET TO
BOOK RATIO after winsorizing



Histogram of the variable LEVERAGE
after winsorizing

## Appendix C – Correlation Matrix.

| | ABSOLUTEDA | AUDIT FEES | GENDER | BIG4 | SIZE | FO | INVREC | LOSS | CFO | MB | LEVERAGE | SALESGROWTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABSOLUTEDA | 1.000 | | | | | | | | | | | |
| AUDIT FEES | -0.131*** | 1.000 | | | | | | | | | | |
| GENDER | -0.018 | 0.020 | 1.000 | | | | | | | | | |
| BIG4 | -0.100*** | 0.671*** | 0.043** | 1.000 | | | | | | | | |
| SIZE | -0.161*** | 0.877*** | 0.007 | 0.626*** | 1.000 | | | | | | | |
| FO | -0.035* | 0.197*** | -0.003 | 0.133*** | 0.201*** | 1.000 | | | | | | |
| INVREC | -0.027 | 0.004 | -0.015 | -0.119*** | -0.064*** | 0.065*** | 1.000 | | | | | |
| LOSS | 0.079*** | -0.380*** | 0.004 | -0.262*** | -0.467*** | -0.104*** | -0.159*** | 1.000 | | | | |
| CFO | -0.380*** | 0.380*** | 0.034* | 0.245*** | 0.480*** | 0.108*** | 0.133*** | -0.302*** | 1.000 | | | |
| MB | -0.084*** | 0.134*** | 0.031 | 0.122*** | 0.257*** | 0.100*** | -0.012 | -0.131*** | 0.188*** | 1.000 | | |
| LEVERAGE | 0.224*** | -0.315*** | -0.023 | -0.221*** | -0.470*** | -0.089*** | -0.054*** | 0.166*** | -0.486*** | -0.441*** | 1.000 | |
| SALESGROWTH | 0.292*** | -0.118*** | 0.017 | -0.072*** | -0.120*** | -0.015 | -0.064*** | 0.149*** | -0.201*** | 0.005 | -0.037* | 1.000 |