Stockholm School of Economics
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# Does Auditor's Gender Impact Audit Fees?

## Empirical Evidence from Swedish Privately Held Companies

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# Abstract

The documented relationship between engaged auditors' gender and audit fees demonstrates that female auditors may receive a fee premium in listed companies' settings. However, the heterogeneity between public and private companies implies that previous findings in listed companies may not be generalizable to the private setting. Furthermore, additional gender-based behavioral and industrial attributes on audit fees might moderate the relationship between audit fees and auditors' genders, varying from previous findings. Therefore, this paper aims to examine whether the gender of engaged auditors affects the fees paid to external auditors in privately held companies. Using a set of archival data of Swedish private limited liability companies during fiscal year 2006 to 2009 and 2010 to 2015, we evidence that female auditors receive significantly lower audit fees than their male counterparts, which is divergent from the previous literature on listed companies. Besides, we examine and confirm the robustness of our results by conducting several additional tests. Although our study suggests an interesting finding, it should be interpreted with caution without sound theorical explanations supporting. Potential grounds have been developed in our paper to possibly expound the result.



**Key Words:** gender, audit fee, Swedish private firms

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# Contents

# 1. Introduction

## 1.1 Introduction and Motivation

Previous evidence documents that gender differences in labor market have shed importance to examine potential impacts of those divergences on individual behaviors (DeFond et al., 2005, Flabbi et al., 2016). In the field of accounting and audit, developing a comprehensive understanding of gender differences is considered vital (Khalifa, 2013). In the audit setting, gender diversity is also found to possibly exert effects on audit judgements, audit quality and in turn the setting of audit fees in listed companies (Gold et al., 2009; Ittonen et al., 2012; Hardies et al., 2014, 2015). Studies of gender-related attributes on audit fees are to examine to what extent the laboratory findings of gender diversification could be transformed into economic discrepancy (Hardies et al., 2015). And these studies could develop essential implications on auditor choice by clients, assignment of personnel to audit tasks by audit firms, and autonomy of quality control by individual auditors (Hardies et al., 2010). Although there is ample attention in academia devoted to the relationship between gender and audit fees in listed companies, there have been few studies on audit fees and gender of auditor specifically in privately held companies, mainly due to the restriction of data availability. In this view, the purpose of our study is to examine whether the gender of the auditor has an impact on fees paid by clients in privately held companies and whether the empirical results from listed firms would still hold in private companies under Swedish setting, where data of private companies are accessible. Thus, our research question is stated as follows:

*Whether or not there is a gender difference in the audit fees for individual engaged auditors in Swedish privately held companies?*

Previous literature studying audit fees has focused on the firm-level and office-level impacts from both clients' and audit firms' perspectives (DeFond et al., 2000; Moizer, 1997; Andrew, 2003). However, as discrepancies between the characteristics of individual auditors could potentially have an impact on the attributes of audit fees through audit planning and audit engagement (Emby et al. 2002; Ayers and Kaplan 2003; Gul et al., 2011), more researches have been conducted on relationships between audit fees and

auditors' individual characteristics. Ittonen et al. (2012) and Hardies et al. (2015) have examined whether and how the gender of auditor could have an effect on audit fees by using data of listed companies from three Nordic countries (Denmark, Finland and Sweden) and a combination of public and large-sized private observations in Belgium separately. More specifically, auditors of most of their studying observations are partners in their working audit firms. The empirical results of their studies show that firms with female audit engagement partners have significantly higher audit fees (7% in Hardies et al., 2015), which may be caused by the gender-based differences such as female auditors' higher diligence, lower overconfidence, and higher level of preparation. Despite of their favorable results for female auditors, one thing to note is that in the field of auditing, although the proportion of women has been increasing since the last quarter of the 20th century, auditing is still a male-dominated profession (Hardies et al., 2013; Khalifa, 2013). Additionally, studies on gender-based disparities imply that women have profounder communicative and teamwork skills and are generally more family-devoted, leading to higher worktime efficiency on audit engagement. Building on such profession setting, behavioral findings, and vast divergence between public and private companies, it is interesting to dig deeper into the potential relationship between auditor's gender and audit fees in private sector.

Many differences exist between listed and private companies, and the theory in the field of auditing in the public setting cannot be directly applied to private firms. There are three main dissimilarities between public firms and private firms. First, the disclosure requirements for listed firms and private firms are largely different. Public firms must disclose audited financial statements according to regulations worldwide, while for private firms, there is no such statutory auditing requirements in each country. For instance, in Sweden, before January 1, 2007, even firms with no sales need to prepare financial statements and after 2007, small firms with sales of maximum of 3 million SEK only need to prepare simplified annual reports (BFNAR 2006:1), while in China and the United States only listed companies need to publish their financial statements. On top of requirements on financial statements, auditing requirements set for public and private companies are different, which implies that there could be some differences when conducting auditing work between listed companies and private firms. Second, the

suppliers of audit services have different incentives and competences between public and private firms, which are caused by the imparity in the nature of the agency conflicts, reasons for requiring an external audit, and the concern in terms of the supply side (Langli and Svanström, 2014). To be specific, the private companies naturally have less agency conflicts (Hope et al., 2012). Besides, there are three main benefits for private companies to assign external audits, namely reducing risks and compensating for the loss of internal control (Hay and Davis, 2004), offering suggestions to improve internal control efficiency (Niemi et al., 2012), and providing in-house expertise in accounting, taxation and other business issues (Svanström and Sundgren, 2011). Third, the supply market of auditing service for listed companies is a highly oligopoly market with Big Four (Deloitte, Ernst & Young, KPMG and PwC) dominating. In most EU member states, the market share of Big Four in public firms is over 90 per cent (ESCP Europe 2011). In this sense, studies and theories on public firms may not be generalized to private firms due to these multi-dimensional differences. However, it is quite meaningful to dig deeper into private firms because of their economic importance and that auditors could play important advisory roles to them. Taking one type of private companies, SME as an example, it plays a significant role in the 'non-financial business economy' in the EU. In 2017, SMEs in the EU-28 generated EUR 4,156 billion of value added and employed 94.8 million people, accounting for two thirds of overall employment and 56.8 % of overall value added in the 'nonfinancial business economy' (EU-28 SBA Fact Sheet 2018).

Based on such differences between public and private companies, we found additional literature implicating that specific gender-related factors might influence the amount of audit fees in a contrast way with the results of previous studies (Ittonen et al., 2012; Hardies et al., 2015). Previous papers provide evidence that women possess comparable advantages on communicative skills over their male counterparts (Beattie et al., 2000; Bowles et al. 2005; Schubert, 2006). Accordingly, females' better communicative and teamwork skills may reduce the audit team efforts, and thus decrease the cost of the audit engagement (Wood et al., 1985; Blau and Kahn, 1992, 2000; Maznevski, 1994; Fondas, 1997; Schubert, 2006). Furthermore, previous study reveals that female auditors are exposed to greater impediments to practise and prove their compliance to the overworking culture in audit industry (Hardies et al., 2013), which is deemed as a means of masculinity

in audit industry (Lewis, 2007, Anderson-Gough et al. 2001, 2005; Kornberger et al. 2010). These unfavorable conditions in audit industry for female auditors are likely to lead to unfairly treatment for them and might lead to a discount on their audit fees. Additional behavioral findings also highlight a higher family-engagement level of women, usually resulting in a reduction of their working time, while men behave differently (Keloharju et al., 2016). In this sense, female auditors might optimize time efficiency on their responsible audit engagements in order to maintain required client portfolios in their audit firms (Hardies et al., 2013). Consequently, higher time efficiency of female auditors is associated with shorter audit efforts, and further a lower amount of audit fees.

We use the data specifically in Swedish privately held limited liability companies due to the data accessibility. Our sample is composed of 13,146 observations with two parts of archival data from fiscal year 2006 to 2009 and from 2010 to 2014 respectively. Data in Part 1 (2006-2009) specifically focus on small private companies who are small companies under 50-25-50 rule, while the data in Part 2 (2010-2014) emphasizes on companies satisfying 50-25-50 rule. The 50-25-50 rule is a term of Swedish regulatory criteria defining large companies, namely following at least two criteria amongst (1) number of employees over 50, (2) total assets over 25 million SEK, (3) sales over 50 million SEK for at least two conservative years. Two-way fixed effects regression models are developed for our empirical analysis.

The results of our study suggest that there may be a female discount on audit fees in private limited liability companies in Swedish setting. The finding contributes to audit study by conducting an empirical analysis specifically emphasizing on privately held clients, which indicates a result in stark contrast to those previous literature on listed companies (Ittonen et al., 2012, Hardies et al., 2015). Additionally, a larger set of data is utilized, and more robustness tests are conducted in our analysis to examine and verify the relation between auditor's gender and audit fees.

We utilize the data from Swedish private limited liability companies, thereby when exploring explanations for the results and generalize to other settings, it should be with caution owing to the specific regulatory and cultural settings in Sweden. On the other side,

there could be some self-selection biases in our sample. And due to the constraints with regard to time of collecting data, the size of our sample is limited. The changes in Swedish statutory audit fee disclosure requirements also limit the size of companies that we are studying. Omitted variable bias should be taken into consideration when interpreting our results. Variables such as auditor experience, specialization and tenure could impact audit fees but are not included in our model because of lack of accessibility.

The remainder of the paper is organized as follows: First, we introduce the institutional settings in Sweden with regard to the regulatory disclosing requirements in audit fees and general overview of the audit profession. In Section 2, we give an overview of previous literature and develop our hypothesis based on that. Section 3 displays the sample selection process and the methodology of our study. Section 4 includes descriptive statistics of our sample, regression results and seven additional robustness test results. We conduct our concluding analysis in Section 5. In Section 6, we conclude our contribution, claim the limitations of our study and give several suggestions for future researches.

## 1.2 Swedish Institutional Setting

*Statutory audit fee disclosure requirements in Sweden*

Swedish limited liability companies are regulatorily required to disclose their annual reports. According to ABL 2005:551, which contains the main audit laws in Sweden, companies registered as limited liability companies have to appoint an external auditor if they fulfill two of the following criteria in the past two consecutive fiscal years, which are having over 3 employees, having total assets over 1.5 million SEK, and having sales over 3 million SEK (3-1.5-3 rule). According to BFNAR 2008/2009: 135, from July 1st, 2009, only large companies that are public limited companies or limited trading companies shall report remuneration to auditor(s) in the annual report. Additionally, the auditing remuneration information provided should be broken down into audit services, auditing activities in addition to the audit assignment, tax advice, and other non-audit services. A limited trading company would be classified as a large company if it exceeds at least two of the following criteria for last two consecutive fiscal years: (1) number of employees over 50, (2) total assets over 25 million SEK, (3) sales over 50 million SEK,

which is also referred to as 50-25-50 rule. From January 1, 2014, a new 50-40-80 rule has been applied in Sweden in accordance with BFNAR 2012:1, meaning that only large companies meeting two of the three conditions ——having over 50 employees, over 40 million SEK of total assets, over 80 million SEK of sales—— are required to disclose audit fees paid in their annual reports.

*Women in Sweden society, and the audit profession*

According to The Gender Gap Index Report, since 2009, Sweden has maintained being ranked as the fourth most gender-equal country among over 140 countries around the world for eight years and then ranked as fifth and later third in the most recent past two years, with over 82% of its overall gender gap closed. The population sex ratio (female/male) is 1.00 and as to the labor force participation, 80.6% of female are having jobs while for the male group, the ratio is 84.3%, which implies that the labor force in Sweden is balanced in terms of gender participation. However, the gender distribution pattern is quite different in audit sector and there are twice as many male auditors as female auditors in 2018 (Revisorsinpecktionem, 2018) and before 2018, the proportion of female auditors is even smaller. The field of audit is still a male-dominated profession.

# 2. Literature Review and Hypothesis

## 2.1 Literature Review

*Heterogeneity in audit between private and public companies*

Private firms and public companies differentiate from each other in a wide range of aspects. Basically, the disclosure requirements largely differentiate (Hope et al., 2012; Langli and Svanström, 2014). Public companies are mandatorily asked to disclose audited financial statements all over the world, while there are no such statutory auditing requirements for private companies in every country worldwide. Aligning with divergent regulations on financial statements, auditing requirements set for public and private firms are also diversified, which implies that it is hard to get homogenous results when conducting auditing work between listed companies and private companies.

Building on the above, further differences between public and private companies can range from the nature of the agency conflicts to the reasons for requiring an external audit, and further to the concern in terms of the supply side. Specifically, the privates and publics are naturally diversified from the aspect of agency conflicts. Private companies normally have a more concentrated ownership where family ties between CEOs and shareholders and between CEOs and board members are much more common (Hope et al., 2012), and where the accounting information is generally shared in a poor environment (Sharma and Carney, 2012). External users are not relying on the information provided by financial statement as much as users of public companies. However, there are three main benefits that external audit could provide to private companies and make external audit significant for companies in private sectors. First, external audit plays a compensating role for internal control systems and reduces the potential risk of loss of control (Hay and Davis, 2004). Besides, through the results from external auditors, management team from the client companies could receive some suggestions or generate ideas to improve the efficiency of internal control systems and operations (Niemi et al., 2012). Further, private companies could get access to unavailable in-house expertise in accounting, taxation and other business issues (Svanström and Sundgren, 2012). These functional divergences that external audit has in different sectors make it quite distinct from the perspective of why public companies and private companies have demands for external audit.

In addition, an oligopoly BigN supply market for public companies has not been witnessed in the corresponding market for private companies (ESCP, 2011; Hope et al., 2012). In the private segment, instead, audit firms are majorly small with a local anchor and thus, market concentration is of less consideration (Langli and Svanström, 2014), leading to larger divergence of competence in supply market between public and private companies. Furthermore, whether these divergences increase or decrease the demand for auditing or make audits more or less significant, is not clear *a priori*. Nor is it certainly claimed that theories for public companies can be generalized to private ones (Hope et al., 2012). As a result, auditing may, to a larger degree, rely on the experience, competence, judgment and integrity of the individual auditor in charge of private firms' audit,

compared to those subject to public ones (Langli and Svanström, 2014), having a closer association with individual auditors' characteristics.

*Historical studies on audit fees and the responsibilities of engaged auditors*

According to previous literature, audit fees are a function of audit team labor hours, audit team labor costs per hour, and a risk component (Niemi, 2002). Most studies concerning audit fee settings are conducted on firm-level. Findings show that there is around a 20% audit fee premium of Big Four (DeFond et al., 2000; Moizer, 1997). However, later studies in the audit area suggest that specific office-level expertise would have more influence than firm-level factors (Andrew, 2003). As the studying focus continuously shifts to an individual level, the impacts of individual auditors' characteristics, such as gender, on audit fees have been more discussed. Several studies on gender and audit quality have found that female auditors have higher audit quality than males in public companies (Aldamen and Duncan, 2016), and the results still hold in privately held companies according to Hardies' study (2015). Nevertheless, there are other studies in Mainland China implying that the audit quality of male auditors exceeds female auditors (Yanga et al., 2018). With the motivation to dig deeper into individual gender effect on audit fees, Ittonen (2012) uses a small sample of listed companies in three Nordic countries and finds that in public firms, female auditors are charging higher auditor fees than male auditors. Empirical results of Hardies' study (2015) are consistent with this finding using a larger Belgian sample, with both public and large[1] private companies involved.

A typical audit is basically comprised of four phases: (1) planning, (2) fieldwork, (3) reporting, and (4) follow-up, among which, the first two phases are particularly essential to the decision of the size of audit fee. These phases illustrate certain procedures of discussion on the audit process, the scope and the objectives of the audit, concerns or suggested scope items, and risks inherent to the unit, gathering relevant information about the unit in order to obtain a general overview of operations and internal controls and performing transaction testing (FAR).

[1] A firm would be considered large if it can meet at least two of the following criteria: (1) number of employees (yearly average) >50; (2) Total Assets >€3,650,000; and (3) Net Sales >€7,300,000. Public firms and firms with more than 100 employees are always considered large.

In each audit process, engaged auditors are regulatorily subject to relevant ethical requirements, including those pertaining to independence, relating to financial statement audit engagements. The international standards of auditing (ISA) (ISA 200; ISA 220; ISA 300) claim that the engagement auditors shall take full responsibility for the quality control of engagement team, including planning the nature, timing, and extent of guidance and supervision of team members, and reviewing. The engagement auditors shall also ensure the required capabilities, competence, and time engaged by the team in accordance with the professional standards and regulatory requirements. Furthermore, the engagement auditors are required to take responsibilities of pricing audit fees at certain degree to which the amount of audit fees are able to justify the resources or the committed time to properly perform the audit.

*The effects of individual attributes on audit fees in private firms*

Present literature studying public companies indicates that characteristics of individual auditors, such as educational background, BigN audit firm experience, rank in the audit firm, political affiliation and gender, can have an impact on audit quality (Emby et al. 2002; Ayers and Kaplan, 2003; Gul et al., 2011). In a private setting, this influence might be greater imposed by individual characteristics of responsible auditors, compared to those of auditors subject to public companies (Langli and Svanström, 2014). Several follow-up studies on whether individual characteristics could affect audit fees have been conducted. Empirical study in Australian firms finds that homogeneity in audit quality and pricing cannot be achieved and further, the audit fee premiums or discounts that individual audit engagement partners earn are not fully explainable by the audit firms of which they are members (Taylor, 2011). With the firm-related factor being eliminated, Zerni's study (2011) finds that individual auditors who are in charge of audit engagement could have an impact on audit fees due to their high degree of autonomy with respect to the professional judgement of engagement. Zerni's argument goes aligned with the statement of the Code of Ethics for Professional Accountants (IESBA, 2009), which suggests that the audit engagement auditor is the one responsible for setting the audit fee at a level that allows a sufficient amount of resources to be invested in the engagement.

Besides, in the four processes of auditing, a lot of individual decisions and assessments are required. Davidson and Gist (1996) examine how audit planning can affect the labor component of audit fees and the findings of their study show that audit planning reduces the total audit efforts up to a certain degree, and thereafter decreases the audit hours spent on an engagement. In this sense, audit fees could be dependent on the engaged auditors' characteristics. Gender-based characteristics differences such as cognitive functioning, decision-making, leadership style, planning, group task management, communication and negotiation, overconfidence and risk preferences may attribute in a certain way (Hardies et al., 2015).

In addition to the characteristics of auditors, personal divergences also exist in the way by which individual frame interacts with the organizational frame (Ridgeway et al., 2009). This is consistent with what Hardies et al. (2013) has claimed that advancement of individual auditor relies not only on technical knowledge, but more profoundly on the adoption of professional behaviors and a sense of "fit" in the audit firm. Engaged auditors' adoption and compliance to their audit firms are of significant correlation to their autonomy, leading further to their professional judgement of how much audit engagement exercised (Zerni, 2011). As a result, the level of match between responsible auditors and their organizations might pose impacts on the assignment of invested resources in the audit engagement, and thereby, the amount of audit fees (Zerni, 2011, IESBA, 2009). And how much the matching degree between respective auditor and their firms might be determined by individual divergent features.

In a sense, as a primary cultural frame for organizing social relations (Ridgeway et al., 2009), gender could possibly serve as one determinant attribute to audit fees through divergent degree of commitments of individual auditors to employing firms. Although gender is not a consideration (IFAC) when chartering audit certificate candidates, previous literature implies that possibly existing effects of distinctive features related to gender characteristics might lead to divergent working behaviors between males and females. For instance, the planning of the audit engagement can increase the engagement-hour component of audit fees, and that clients with higher assessed riskiness require more planning (Davidson and Gist, 1996).

*The effects of gender-based attributes to audit fee premium to females*

Women in high positions are regarded to be better prepared for meetings than men (Huse and Solberg, 2006). Evidence shows that successful female leaders generally work hard (Eagly and Carli, 2003), indicating a likely tendency of heavier engagement in planning of female employees. Meanwhile, ample evidence suggests that women tend to be more risk-averse compared to their male counterparts (Byrnes, et al., 1999; Powell and Ansic, 1997; Chung et al., 2001; Schubert, 2006; Gold, et al., 2009; Birnberg, 2011). Their feature in risk tolerance may influence on how much efforts female auditors put in the planning phase, and thereby on the amount of audit fees. Except for audit planning phase, lower risk tolerance of women may also affect the amount of audit investment committed by the team in later phases (Hardies et al., 2013). Furthermore, lower risk preference of female auditors is more likely to lead to a higher risk premium, resulting in higher audit fees as well (Houston et al., 1999, 2005; Johnstone et al., 2001, 2003; Ittonen et al., 2011).

The level of overconfidence regarding self-perceived abilities in workplaces might also impact the early planning phase and the level of audit investment. Documented overconfidence of auditors is widely found at all levels of the audit team (Kennedy et al., 1997; Messier et al., 2008; Owhoso and Weickgenannt, 2009), but Hardies et al. (2011) prove that female auditors bear a relatively lower degree of overconfidence. The finding indicates a higher audit investment from female auditors, during not only the planning processes but later on the whole period of audit as well, leading to higher audit fees. Furthermore, additional literature suggests that the lower extent of risk tolerance and overconfidence of women (Ittonen et al., 2012, Hardies et al., 2013) might yield gender divergency in risk assessment process and adaptation of risk premium, which are likely to lift the risk premium component of the audit fees. However, one study instead finds that females actually do not have a lower degree of overconfidence than their male counterparts (Beckmann and Menkoff, 2008).

On the other hand, the client demand-related gender discrepancy, such as client satisfaction, may drive women more favorable in terms of the amount of audit fees. Women are confirmed to possess comparable advantages on communicative skills over their male counterparts, and they are generally considered more proficient in negotiation

than men (Beattie et al., 2000; Bowles et al. 2005; Schubert, 2006). Accordingly, women are more likely to generate favorable negotiation outcomes of the audit fees (Bowles et al. 2005) through developing a better audit-client working relationship with their clients (Behn et al., 1999). Furthermore, recent evidence posits that female auditors generally deliver a more advanced quality than males under either a private or a public company setting (Ittonen et al. 2012; Hardies et al. 2015). Aldamen and his colleague (2016) also find that female presence in audit engagement committee could strengthen the positive relationship between firm size and audit fees, and between risk and audit fees. Thereupon, if client firms are aware of this quality premium from female auditors, an audit fee premium for female auditors can be expected.

*The effects of gender-based attributes to audit fee discount to females*

Previous research has found that specific female-related factors might be of influence on the amount of their audit fees in a contrast way. Studies have confirmed that women are equipped with comparable advantages on communicative skills over their male counterparts and generally considered more proficient in negotiation than men (Beattie et al., 2000; Bowles et al. 2005; Schubert, 2006). Given that audit team effort is one of the most essential factors when deciding audit fees, the existing literature on females' better communication and teamwork skills may reduce the efforts needed and, as a result, decrease the cost of the audit engagement (Wood et al., 1985; Blau and Kahn, 1992, 2000; Maznevski, 1994; Fondas, 1997; Schubert, 2006).

Besides, from an audit industrial perspective, there might be gender divergency leading to discrepant amount of audit fees for different gender groups. Extra time commitment has deemed a well-known and well-understood significant issue within audit industry. And there is a widely available "cultural truth" to pursue long and over working hours in audit firms (Hardies et al., 2013). However, the qualitative study of Hardies (2013) highlights that female auditors are exposed to greater impediments in order to practise and prove their compliance to the overworking culture of audit industry, compared to their male counterparts. These impediments are mainly due to the gender-based disparities in time investment to work which is deemed a way to show one's degree of organizational commitment (Lewis, 2007; Anderson-Gough et al. 2001, 2005). Besides,

the study of Kornberger and his peers (2010) also evidences this gender disparity in time investment but regards it as one means of practising masculinity in order to retain gender domination and inequality in audit industry. Hardies thus concludes that audit firms cannot be considered as gender neutral workplaces (2013). Under such a situation where female auditors are standing in an inferior ground in audit industry, it might be assumed that female auditors are likely to receive a discount on their audit fees.

In addition, gender gaps in engaged degree to family might also pose impact on audit fees received by discrepant groups. Taking parenthood as an instance, the empirical finding of Keloharju (2016) testifies that women tend to be more engaged in family after parenthood than their male partners. Study shows that women in Sweden on average spend shorter working hours than men, and are generally more often absent from work primarily during the first five years following the birth of the first child (Keloharju et al., 2016). The behavioral finding highlights a higher family engagement of women, which might result in a reduction of working time. In this sense, female auditors might achieve an optimization of time efficiency on their responsible audit engagements, given that auditors regardless of their genders are required to handle certain number of clients and maintain a specific client portfolio in each respective audit firm (Hardies et al., 2013). As a consequence, higher time efficiency of female auditors might be associated with shorter audit efforts, and further with a lower amount of audit fees.

## 2.2 Hypothesis Development

As mentioned in the previous part, audit fees are a function of audit team labor hours, audit team labor costs per hour, and a risk component of client companies (Niemi, 2002). Thus, the amount of the fees is dependent on how many working hours the engagement auditors would input, which is claimed in the audit planning part and before the auditing work starts, unit labor cost of staff and risk assessment of client companies. Individual auditors could impact the three key factors mainly because of two reasons. First, engagement auditors have a high degree of autonomy when making professional judgments related to the time commitment and risk assessment, and it is likely that different gender groups make varied judgments due to several gender-based behavioral

differences. Second, the tension between individual auditors and their audit firms influences their commitment to the firms and further impacts their commitment to the clients. This tension may vary between female and male auditors.

Previous studies of public (and large private) companies evidence a positive effect existing between female auditors and the amount of audit fees they receive, possibly resulting from females' higher risk aversion, lower overconfidence degree, more diligent and normally better-prepared working behaviors, and higher audit quality (Ittonen et al., 2012; Hardies et al., 2015).

There could be a negative correlation between females and the amount of audit fees they receive in our small private limited liability company setting, primarily based on four grounds. First, women are generally regarded as more proficient in communication and negotiation than their male counterparts (Beattie and Brandt, 2000; Bowles et al. 2005; Schubert, 2006). As audit team effort is determinant on the amount of audit fees, better communicative and teamwork skills of female auditors may reduce the efforts they needed and, as a result, decrease the cost of the audit engagement. Second, existing literature suggests that female auditors are confronting greater impediments to comply with the cultural truth of long working hours in audit firms than males, indicating a gender non-neutral situation in audit industry (Lewis, 2007; Anderson-Gough et al. 2001; 2005; Kornberger et al. 2010; Hardies et al., 2013). Due to a masculinity workplace in audit, we assumed that female auditors are likely to receive a discount on their audit fees. Third, gender disparities in work-life time investment drives females to commit more into their families instead of work, compared to their male counterparts (Keloharju et al., 2016). Accordingly, female auditors might manage to optimize their time efficiency in audit engagements, to gain more lifetime and meanwhile comply with required client portfolios in audit firms (Hardies et al., 2013). And higher time efficiency of female auditors is associated to shorter audit efforts, and further to a lower amount of audit fees. Fourth, a similar degree of overconfidence between female auditors and male auditors has been evidenced by the study of Beckmann and Menkhoff (2008). The finding could possibly deny the assumption supporting female premium that females tend to invest more audit efforts due to lower overconfidence level than male auditors.

Given the facts that the characteristics and attributes of individual auditors have effects on audit fees and that there is gender-based differences between these characteristics, based on the discussion of potential gender-based differences, we thus develop our hypothesis as follows:

$H_1$: *There is an impact from the gender of individual engaged auditors on audit fees paid in Swedish privately held companies.*

# 3. Research Design

## 3.1 Data Collection and Sample

Data for our empirical analysis consists of two parts of data with divergent reporting durations. Part 1 includes data from fiscal year 2006 to 2009, and Part 2 contains data from fiscal year 2010 to 2015. The data were collected from credential database, by automated data capturing program and manually. Data regarding client firms were retrieved from the database Serrano, containing client firm names, operating regions, industries, annual report figures, and audit report outcomes. Further information concerning names of engaged auditors and audit firms as well as amounts of audit fees in Part 1, was obtained by the automated data capture program, originally from individual annual reports of clients. Afterward, individual information of engaged auditors in Part 1 was combined from database Serrano including genders, ages and auditors' status. Data in Part 2 regarding names of engaged auditors and audit firms, as well as the number of auditing fees and non-audit service fees, were manually collected from annual reports downloaded from Retriever. Gender of auditors in this part of data, however, was not captured by any database and is constructed manually based on their first names. In cases where the first name is not representative to imply gender, Ratsit has been utilized in order to assign a correct gender based on auditors' full names and their employers. Further information on individual auditors, including ages and auditors' status in Part 2, were also merged from Serrano.

The initial sample covering fiscal years from 2006 to 2009 were observations of Swedish private limited liability companies (aktiebolag in Swedish). Thereby, we filtered our raw data by organizational codes and only kept those whose organizational codes start with "5". We removed firms with amount of share capital above 50 million SEK (N= 1,316,490), which is the lowest share capital amount required to be listed companies, to eliminate public companies. For companies as part of a group, only group data were kept while all subsidiaries were excluded. This is due to the fact that individual auditors generally audit multiple companies within one same group, and that the group data are sufficient to represent the summation of fees charged by the auditor, averting double-counting errors. Besides, we intentionally dropped companies in the financial and real estate industry for the reason that companies in this industry disclose their financial statement information in a different way, and ruled out public administrations as well as firms with missing SNI code. Observations with 0 audit fee or insufficient financial figures were excluded. Meanwhile, we also eliminated observations with more than one engaged auditor signing the reports in order to merge individual auditors' information in our model. To develop a set of small-size private firms, we further chose client companies who complied with 3-1.5-3 rule but not with 50-25-50 rule. These processes resulted in a total amount of 11,796 observations in our sample Part 1.

In addition, to test the correctness of automatedly captured data, we hand-collected 53 companies' information from downloaded annual reports from Retriever and compared them with automatedly captured data. Results showed that 51 out of 53 were correct. Hence, we winsorized the data by the ratio of audit fee to total assets of respective observations and trimmed 5% extremely large or small observations (1,180), aiming to ensure the reliability of our data. The dropped observations are those who have ratios below 0.869‰ or above 10.151‰. The procedures result in 10,616 firm-year observations left in total, which contains 3,214 individual companies.

During our second sample selection procedure, the same vital principles were adopted as during the former one. The sample was developed beginning with audited private limited liability firms in Sweden from 2010 to 2015 (N= 1,852,270). Subsidiaries' data were then excluded. Meanwhile, organizations in financial and real estate industry as well as public

administrations were removed. The same rule was applied to observations with SNI code missing. We also only kept observations who have a single engaged auditor each reporting period, sufficient financial figures and audit fees above 0. We only selected clients aligning with the requirements of 50-25-50 rule in this part of data for our empirical analysis, due to the new regulatory requirements regarding financial disclosure in Sweden. Additionally, we winsorized the data by the amount of audit fees and truncated 2.5%[2] extremely large or small observations (133), aiming to reduce the impact of extreme values. The trimmed observations are those whose audit fees are lower than 40,140 SEK or above 1,804,000 SEK. The procedures resulted in a total amount of 2,530 firm-year observations in Part 2, in total 574 individual companies. After independent data selection for two parts, we appended data from Part 2 into Part 1 in order to integrate the ultimate set of data for our empirical analysis, with a total number of 13,146 firm-year observations of 3,788 individual companies. In addition, we also show the regression results without winsorization in Appendix A.

Our study is quantitative in nature, utilizing sets of archival data from year 2006 to 2009 and year 2010 to 2015. The number of years and the sample size in terms of individual auditors and client company observations were limited with regards to the requirement of manual data collection and the scope of this study. Additionally, due to the reasons that companies in our sample might not satisfy 50-25-50 rule in all fiscal years from 2010 to 2013 and that some companies satisfied 50-25-50 rule before 2013 but failed to do with 50-40-80 rule after 2014, the data we utilized in regression would be unbalanced panel data for Part 2.

[2] We apply different winsorization rules (5% for Part 1 and 2.5% for Part 2) for two different data set groups for the reasons that audit fees of distinct data set are selected from different sources and by different collection methods, which leads to different levels of accuracy and reliability. In this sense, we use divergent trimming benchmarks for two groups, ratio of audit fee to total assets for Part 1 and absolute value of audit fee for Part 2.

## Table 1. Derivation of Data Set Part 1

| Description | Sample Size |
|---|---|
| Client obervations during 2006-2009, limited liability companies | 1,316,490 |
| *Less observations as listed companies* | 224,762 |
| *Less observations as subsiduriaies of groups* | 263,402 |
| *Less observations operating in financail and real estate industry* | 87,095 |
| *Less observations as public administrations* | 8,367 |
| *Less observations with SNI code missing* | 16,482 |
| *Less observations with insufficent financial figures* | 80,842 |
| *Less observations with more than one engaged auditor signing the reports* | 560,198 |
| *Less observations with 0 audit fee* | 19 |
| *Less observations below 3-1.5-3 rule and observations satisfying 50-25-50 rule* | 63,527 |
| Number of observations in Part 1 | 11,796 |
| *Less observations with extremely large or small share of audit fees to total assets by 5%* | 1,180 |
| Final Number of observations in Part 1 | 10,616 |

Notes: The table presents the sample selection process consisting of 10,616 observations for the period 2006–2009.

## Table 2. Derivation of Data Set Part 2

| Description | Sample Size |
|---|---|
| Client obervations during 2010-2015, limited liability companies | 1,852,270 |
| *Less observations as listed companies* | 203,571 |
| *Less observations as subsiduriaies of groups* | 263,402 |
| *Less observations operating in financail and real estate industry* | 158,181 |
| *Less observations as public administrations* | 402,777 |
| *Less observations with SNI code missing* | 17,952 |
| *Less observations with insufficent financial figures* | 87,549 |
| *Less observations with more than one engaged auditor signing the reports* | 193,907 |
| *Less observations with audit fees unavailble** | 457 |
| *Less observations not satisfying 50-25-50 rule* | 521,811 |
| Number of observations in Part 2 | 2,663 |
| *Less observations with extremely large or small share of audit fees to total assets by 2.5%* | 133 |
| Final Number of observations in Part 2 | 2,530 |

Notes: The table presents the sample selection process consisting of 2,530 observations for the period 2010–2015.

## 3.2 Methodology and Regression Model

To examine the potential effects of engaged auditor's gender on audit fees, cross-sectional panel regressions have been employed. Two models have been utilized to test the existence of gender influence on audit fees which are developed based on Hardies' study (2015) with modifications, where the dependent variables are *LAF* defined as the natural logarithm of audit fees (SEK) (Model 1), and *AFTTA* donated as a ratio of audit fees (SEK) to total assets (thousand SEK), which is utilized as one of the benchmarks of audit fees (Model 2) respectively:

$$\begin{aligned} LAF_{i,t} = {} & \beta_0 + \beta_1 GENDER_{i,t} + \beta_2 TA_{i,t} + \beta_3 NSales_{i,t} + \beta_4 ROA_{i,t} \\ & + \beta_5 CapTurnover_{i,t} + \beta_6 CITCL_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 LEV_{i,t} \\ & + \beta_9 CATA_{i,t} + \beta_{10} IRTTA_{i,t} + \beta_{11} GROUP_{i,t} + \beta_{12} BUSY_{i,t} \\ & + \beta_{13} BIG6_{i,t} + \beta_{14} Status_{i,t} + \beta_{15} Age_{i,t} + \beta_{16} DataSet_{i,t} \\ & + \beta_{17} Trend_{i,t} + Fixed\ effect.Industry \\ & + Fixed\ effect.Region + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} AFTTA_{i,t} = {} & \beta_0 + \beta_1 GENDER_{i,t} + \beta_2 NSales_{i,t} + \beta_3 ROA_{i,t} \\ & + \beta_4 CapTurnover_{i,t} + \beta_5 CITCL_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 LEV_{i,t} \\ & + \beta_8 CATA_{i,t} + \beta_9 IRTTA_{i,t} + \beta_{10} GROUP_{i,t} + \beta_{11} BUSY_{i,t} \\ & + \beta_{12} BIG6_{i,t} + \beta_{13} Status_{i,t} + \beta_{14} Age_{i,t} + \beta_{15} DataSet_{i,t} \\ & + \beta_{16} Trend_{i,t} + Fixed\ effect.Industry \\ & + Fixed\ effect.Region + \varepsilon_{i,t} \end{aligned} \quad (2)$$

The test variable in our models is gender representation variable *GENDER*, a binary variable that equals 1 if the gender of the responsible auditor is female, otherwise equals 0. Building on previous studies of audit fees, our models contain several client-specific variables in order to control factors that have already been acknowledged as demand-side factors (Simunic, 1980; Abbott et al., 2001; Hay et al., 2006; Ittonen et al., 2012; Hardies

et al., 2015). *TA* represents the natural logarithm of total assets of the audited client companies; *NSales* indicates the natural logarithm of net sales of clients; *ROA* is the return on assets ratio of respective clients; *CapTurnover* stands for the client's capital turnover, computed by the amount of revenue to total equity; *CITCL* symbolizes the liquidity ratio as current assets less inventory to current liability in each audited company; *LOSS* is a dummy variable signing whether the specific client has negative net profit and experiences loss during the fiscal year; *LEV* represents the debt to equity ratio of each client; *CATA* denotes the share of current assets to total assets in each client capital structure; *IRTTA* is the ratio representing the share of inventory and receivables to total assets; *GROUP* is a dummy variable aiming to tell whether the audited company is a group company or is an individual company; *BUSY* is a binary variable showing whether the audit period is in busy season (December) or not; *BIG6* is designed as a dummy variable where 1 means that the client company has assigned one audit firm among KPMG, Deloitte, Ernst & Young, PwC, Grant Thornton and BDO. Furthermore, we also design variables to interpret the operating environment of clients. *Industry* is the industry-specific variable indicating which industry the client firm is involved in; and *Region* is the region-specific variable implying the region where the client operates.

According to previous literature regarding the pricing of an audit, higher audit fees are normally witnessed in observations with larger sizes (*TA, NSales*) or with poorer earnings performance (*ROA, CapTurnover*) (Simunic, 1980; Taylor et al, 2011). Moreover, there is an evidential coefficient between audit fees and clients' risk levels (*CITCL, LOSS*) and their financial difficulty (*LEV*, *CATA, IRTTA*) degrees in capital structure according to the finding of Simunic (1980). Since audits in busy seasons are more costly than normal seasons, whether or not a client is audited in a busy season (*BUSY*) might be necessary to take into account when deciding the amount of audit fees (Hardies et al., 2015). Whether or not the assigned audit firm is Big6 companies (*BIG6*) might also need to be considered as previous firm-level researches have suggested an audit fee premium for BigN firms (Francis, 2004; Ittonen et al., 2012; Hardies et al., 2015). To sum up, client-specific characteristics are essentially determinant on the amount of audit fees, and thus it is of importance to include them in an audit fee study.

Since our study examines on individual level, the models also include additional variables to capture attributes of engaged auditors. *Age* is the variable indicating the age of respective engaged auditor. We also develop a dummy variable, *Status,* to discern the title of responsible auditor individually, where 1 symbolizes an authorized auditor ('auktoriserad revisor' in Swedish), which is a superior status of registered auditor, and 0 as an approved auditor ('godkänd revisor' in Swedish). A larger amount of audit fees might be associated with an aged auditor (*Age*) who might possess a longer auditing work experience. And more proficient working techniques and longer professional experience normally relate to a higher charge of audit fees according to the study of Knechel (2013). And a discount of audit fees is expected when it comes to a younger auditor based on Glassdoor's Diversity & Inclusion Study (2019), which states that younger employees are more likely to experience or witness gender discrimination at workplaces than their older peers (Glassdoor, 2019). We also predict higher audit fees for an authorized auditor than an approved auditor due to their higher professional status.

We utilize fixed effects regression models in our panel data setting to solve the problem regarding the error term correlated with the explanatory variables and thus to improve the efficiency of our estimates. Our two-way fixed effects regression model contains regional (*Region*) fixed effects and industrial (*Industry*) fixed effects. This is due to the fact that we consider industrial and regional time-invariant unobserved characteristics correlated with the observed independent variables, and an industrial and regional fixed effects regression model is an estimating technique that allows to control for that issue. Additionally, we design a dummy variable, *Dataset*, to specify which original part of data each observation comes from, where 1 symbolizes that the observation is during year 2006 and 2009. Since the *Dataset* variable is perfectly collinear to a year fixed effect, we do not include year fixed effects, but instead create a time-specific variable, *Trend*, to involve time effects in our two regression models. The results of regression model without any fixed effect is included in the appendix (Appendix B).

**Table 3. Definitions of Variables – Regression Models**

| Variables | Definitions |
|---|---|
| LAF | The natural logarithm of audit fees (SEK) |
| GENDER | A binary variable that equals 1 if the gender of the responsible auditor is female, otherwise equals 0 |
| TA | The natural logarithm of total assets (SEK) of the audited client company |
| NSales | The natural logarithm of net sales (SEK) of the audited client company |
| ROA | The return on assets ratio of respective clients |
| CapTurnover | Stands for the client's capital turnover, computed by the amount of revenue to total equity |
| CITCL | The liquidity ratio as current assets less inventory to current liability in each audited company |
| LOSS | A dummy variable signing whether the specific client has negative net profit and experience loss during the fiscal year |
| Leverage | The debt to equity ratio of each client |
| CATA | The share of current assets to total assets in each client capital structure |
| IRTTA | The ratio representing the share of inventory and receivables to total assets |
| GROUP | A dummy variable aiming to tell whether the audited company is a group company or is an individual company |
| BUSY | A binary variable showing whether the audit period is in busy season (December) or not |
| BIG6 | A dummy variable where 1 means that the client company has assigned one audit firms among KPMG, Deloitte, Ernst & Young, PwC, Grant Thornton and BDO |
| Status | A binary variable discerning the title of responsible auditor individually, where 1 symbolizes an authorized auditor ('auktoriserad revisor' in Swedish) and 0 as an approved auditor ('godkänd revisor' in Swedish) |
| Age | The amount of age of respective engaged auditor |
| Dataset | A binary variable to specify the original part of data set the observation from |
| Trend | The year-specific variable refering the fiscal year of reporting |
| Industry | The industry-specific variable indicating which industry the client firm |
| Region | The region-specific variable implying the region where clients operate |

Note: The table illustrate the definitions of variables in regression models

# 4. Analysis

## 4.1 Descriptive Statistics

Table 4 illustrates the summary statistics for companies from 2006 to 2009. Panel A gives the information of all companies, and Panel B and Panel C display summary statistics for Female-audited companies and Male-audited companies separately. There are 13,146 observations in total. As mentioned before, in Swedish audit sector in 2018, there are only half as many registered female auditors as male ones and before 2018, the proportion of female auditors is even smaller. In our sample, only 2,104 of our observations have audit reports signed by female auditors, accounted to only 16% of the whole sample, much less than sex ratio of 1/3 in 2018, which we think is reasonable. When comparing audit fees between different genders, the amount received by female auditors shows slightly smaller mean value, minimum value and maximum value, while at the 1st percentile and 99th percentile, the amounts received by female auditors is larger than those of males.

With regard to the size of audited companies, we use total assets (*TotalAssets*) and net sales (*NetSales*) as two proxies. Client companies with female auditors have a smaller average of total assets (52.6 million vs. 63.0 million SEK) and also a smaller standard deviation, and they have a slightly lower mean value (84.7 million vs. 84.8 million SEK) in terms of their net sales. Concerning earnings performance, female-audited companies have a greater mean value of Capital turnover (*CapTurnover*) (12.762 vs. 10.657) and a slightly higher mean of *ROA* than male-audited clients (5.5% vs. 5.4%). Besides, clients with male auditors are deemed to bear more risks than those with females by comparing *CITCL* ratio and the dummy variable *LOSS*. On the other side, client companies of female auditors are confronting larger financial difficulties when contrasting ratios *Leverage* and *CATA*, though the comparison of *IRTTA* ratio shows an opposite result. When it comes to the dummy variables, the comparisons demonstrate that female auditors are less frequently assigned by group companies (*GROUP*) but their clients are more likely to be audited during busy seasons (*BUSY*). If a Big6 auditing firm is hired, male auditors are more likely to be chosen as the engaged auditor signing the audit report (*BIG6*).

In our observations, a larger majority of authorized auditors are male (*Status*) and male auditors' average age is higher than females (52 vs 49 years old). Although the disparities between distinct gender groups are not significantly huge, there is heterogeneity existing between divergent genders and between client companies audited by males and by females in our observations, thus it is necessary to include all of these control variables in our model.

**Table 4. Summary Statistics**

**Panel A: Summary statistics for companies from 2006 to 2009 and from 2010 to 2015 (n = 13,146 observations)**

| Variable Names | Mean | St.Dev | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|
| **AuditFee (in SEK)** | 65,134.21 | 156,000 | 2,000 | 12,000 | 17,800.00 | 33,200 | 1,974,000 |
| **AFTTA** | 3.296 | 2.138 | 0.038 | 1.636 | 2.77 | 4.448 | 16.843 |
| **TotalAssets (in SEK)** | 61,400,000 | 302,000,000 | 1,502,000 | 3,470,000 | 5,884,500 | 12,800,000 | 9,830,000,000 |
| **NetSales (in SEK)** | 84,800,000 | 351,000,000 | 3,005,000 | 7,042,000 | 11,600,000 | 27,300,000 | 18,600,000,000 |
| **ROA** | 0.055 | 0.09 | -1.035 | 0.008 | 0.044 | 0.095 | 0.703 |
| **CapTurnover** | 10.997 | 128.518 | -9356.467 | 3.594 | 6.902 | 13.671 | 2964.751 |
| **LEV** | 1.426 | 1.465 | 0.009 | 0.74 | 1.143 | 1.706 | 70.5 |
| **CATA** | 0.122 | 0.328 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **IRTTA** | 1.376 | 266.493 | -28440.000 | 1.088 | 2.190 | 4.770 | 705.374 |
| **CITCL** | 0.669 | 0.262 | 0.015 | 0.458 | 0.722 | 0.909 | 1.000 |
| **LOSS** | 0.392 | 0.254 | 0.000 | 0.179 | 0.357 | 0.581 | 1.001 |
| **GROUP** | 0.187 | 0.390 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **BUSY** | 0.532 | 0.499 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **BIG6** | 0.499 | 0.500 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| **Status** | 0.592 | 0.492 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **Age** | 51.804 | 8.534 | 27 | 45 | 53 | 58 | 83 |
| **GENDER** | 0.16 | 0.367 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |

**Panel B: Summary statistics for companies audited by female auditors from 2006 to 2009 and from 2010 to 2015 (n = 2102 observations)**

| Variable Names | Mean | St.Dev | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|
| **AuditFee (in SEK)** | 60,149.60 | 169,000 | 2,000 | 11,308 | 17,000.00 | 27,199 | 1,804,000 |
| **AFTTA** | 3.399 | 2.106 | 0.187 | 1.733 | 2.86 | 4.678 | 10.214 |

**Table 4. Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TotalAssets (in SEK)** | 52,600,000 | 291,000,000 | 1,535,000 | 3,343,000 | 5,536,500 | 10,000,000 | 8,030,000,000 |
| **NetSales (in SEK)** | 84,700,000 | 504,000,000 | 3,005,000 | 7,231,500 | 11,100,000 | 21,200,000 | 18,600,000,000 |
| **ROA** | 0.054 | 0.087 | -0.696 | 0.01 | 0.044 | 0.093 | 0.684 |
| **CapTurnover** | 12.762 | 27.773 | -427.923 | 3.995 | 7.746 | 14.699 | 342.423 |
| **LEV** | 1.358 | 1.171 | 0.009 | 0.714 | 1.117 | 1.633 | 18.044 |
| **CATA** | 0.114 | 0.318 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **IRTTA** | 4.404 | 11.598 | -226.923 | 1.281 | 2.326 | 4.963 | 192.387 |
| **CITCL** | 0.676 | 0.266 | 0.032 | 0.462 | 0.744 | 0.920 | 1.000 |
| **LOSS** | 0.389 | 0.264 | 0.000 | 0.165 | 0.346 | 0.586 | 0.981 |
| **GROUP** | 0.145 | 0.352 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **BUSY** | 0.557 | 0.497 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **BIG6** | 0.480 | 0.500 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| **Status** | 0.515 | 0.500 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **Age** | 49.377 | 8.468 | 28 | 42 | 49 | 57 | 74 |

**Panel C: Summary statistics for companies audited by male auditors from 2006 to 2009 and from 2010 to 2015 (n = 11044 observations)**

| Variable Names | Mean | St.Dev | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|
| **AuditFee (in SEK)** | 66,077 | 154,000 | 2,600 | 12,000.00 | 17,950 | 35,000 | 1,974,000 |
| **AFTTA** | 3.276 | 2.143 | 0.038 | 1.615 | 2.752 | 4.41 | 16.843 |
| **TotalAssets (in SEK)** | 63,100,000 | 304,000,000 | 1,502,000 | 3,496,000 | 5,972,000 | 13,800,000 | 9,830,000,000 |
| **NetSales (in SEK)** | 84,800,000 | 314,000,000 | 3,008,000 | 7,004,500 | 11,800,000 | 28,800,000 | 9,360,000,000 |
| **ROA** | 0.056 | 0.09 | -1.035 | 0.008 | 0.044 | 0.096 | 0.703 |
| **CapTurnover** | 10.661 | 139.69 | -9356.467 | 3.534 | 6.743 | 13.499 | 2964.751 |
| **LEV** | 1.439 | 1.514 | 0.015 | 0.747 | 1.149 | 1.721 | 70.5 |
| **CATA** | 0.124 | 0.329 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **IRTTA** | 0.800 | 290.705 | -28440.000 | 1.057 | 2.163 | 4.734 | 705.374 |
| **CITCL** | 0.668 | 0.261 | 0.015 | 0.458 | 0.718 | 0.907 | 1.000 |
| **LOSS** | 0.393 | 0.252 | 0.000 | 0.182 | 0.359 | 0.580 | 1.001 |
| **GROUP** | 0.195 | 0.396 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| **BUSY** | 0.527 | 0.499 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **BIG6** | 0.503 | 0.500 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **Status** | 0.606 | 0.489 | 0.000 | 0.000 | 1.000 | 1.000 | 1.000 |
| **Age** | 52.268 | 8.468 | 27 | 46 | 53 | 59 | 83 |

Note: The table presents the summary statistics for companies from 2006 to 2009 and 2010 to 2015. Panel A shows the summary statistics for companies from 2006 to 2009 and from 2010 to 2015 with both genders included. Panel B and Panel C present summarize statistics for companies audited by female auditors and male auditors respectively.

## Table 5. Data Distribution

**Panel A: Region Distribution**

| Region | Freq. | Percent | Cum. |
|---|---|---|---|
| Greater Stockholm | 2,371 | 18.04 | 18.04 |
| Malmö | 492 | 3.74 | 21.78 |
| Lund | 113 | 0.86 | 22.64 |
| Helsingborg | 237 | 1.8 | 24.44 |
| Halmstad | 166 | 1.26 | 25.7 |
| Växjö | 301 | 2.29 | 27.99 |
| Kalmar | 206 | 1.57 | 29.56 |
| Greater Gothenburg | 1,375 | 10.46 | 40.02 |
| Borås | 229 | 1.74 | 41.76 |
| Jönköping | 321 | 2.44 | 44.2 |
| Linköping | 242 | 1.84 | 46.04 |
| Norrköping | 181 | 1.38 | 47.42 |
| Eskilstuna | 114 | 0.87 | 48.29 |
| Karlstad | 211 | 1.61 | 49.9 |
| Örebro | 279 | 2.12 | 52.02 |
| Västerås | 233 | 1.77 | 53.79 |
| Uppsala | 276 | 2.1 | 55.89 |
| Gävle | 190 | 1.45 | 57.34 |
| Sundsvall | 205 | 1.56 | 58.9 |
| Umeå | 229 | 1.74 | 60.64 |
| Luleå | 177 | 1.35 | 61.99 |
| Others | 4,998 | 38.02 | 100 |
| Total | 13,146 | 100 | |

**Panel B: Industry Distribution**

| Industry | Freq. | Percent | Cum. |
|---|---|---|---|
| Energy & Environment | 110 | 0.84 | 0.84 |
| Materials | 387 | 2.94 | 3.78 |
| Industrial Goods | 2224 | 16.92 | 20.7 |
| Construction Industry | 2473 | 18.81 | 39.51 |
| Shopping Goods | 3215 | 24.46 | 63.97 |
| Convenience Goods | 813 | 6.18 | 70.15 |
| Health & Education | 396 | 3.01 | 73.16 |
| IT & Electronics | 333 | 2.53 | 75.7 |
| Telecom & Media | 123 | 0.94 | 76.63 |
| Corporate services | 2622 | 19.95 | 96.58 |
| Others | 450 | 3.42 | 100 |
| Total | 13,146 | 100 | |

Note: This panel displays the region distribution and industry distribution of data set

Panel A in Table 5 shows the geographical distribution of our observations. Over 18.0% of total observations are located in Stockholm region and about 62% are located in large cities in Sweden. And Panel B illustrates the industry distribution of the observations. The majority of companies in our observations are operating in Shopping Goods (24.46%), Corporate Services (19.95%), and Construction Industry (18.81%), amounted to 63.33% in total.

Table 6 shows the correlations between all variables. All control variables in Model 1 are significantly correlated with the dependent variable *LAF*, except for *CapTurnover* and *CITCL*. At the same time, in Model 2, all control variables are also significantly correlated with the dependent variable *AFTTA*, except for *Leverage*. The test variable in both models, *GENDER,* is correlated to all control variables. Considering the independent variables in our two models, the four highest correlations exist between *TA* and *NSales* (+0.919), *TA* and *GROUP* (+0.865), *NSales* and *GROUP* (+0.860), and *CapTurnover* and *Leverage* (+0.766). However, there is difference in the signs of the correlations between *GENDER* and two dependent variables (*LAF* and *AFTTA*). The sign of corr(*GENDER, LAF*) is negative, varied from that of corr(*GENDER, AFTTA*). This disparity might be resulted from the impacts of size (*TA*) since we include size-specific factor into the independent variables (*AFTTA*) in Model 2.

## Table 6. Correlations

| Variables | LAF | AFTTA | GENDER | TA | NSales | ROA | CapTurnover | CITCL | LOSS | LEV | CATA | IRTTA | GROUP | BUSY | BIG6 | Status | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAF | 1 | | | | | | | | | | | | | | | | |
| AFTTA | -0.144*** | 1 | | | | | | | | | | | | | | | |
| GENDER | -0.043*** | 0.021** | 1 | | | | | | | | | | | | | | |
| TA | 0.887*** | -0.547*** | -0.047*** | 1 | | | | | | | | | | | | | |
| NSales | 0.880*** | -0.404*** | -0.038*** | 0.919*** | 1 | | | | | | | | | | | | |
| ROA | -0.030*** | -0.040*** | -0.008 | -0.009 | 0.016* | 1 | | | | | | | | | | | |
| CapTurnover | -0.013 | 0.020** | 0.006 | -0.024*** | 0.005 | -0.013 | 1 | | | | | | | | | | |
| CITCL | 0.003 | -0.061*** | -0.020** | 0.038*** | -0.033*** | 0.236*** | -0.020** | 1 | | | | | | | | | |
| LOSS | 0.075*** | 0.096*** | -0.011 | 0.018** | 0.026*** | -0.531*** | -0.013 | -0.122*** | 1 | | | | | | | | |
| LEV | -0.025*** | 0.013 | 0.005 | -0.035*** | -0.024*** | 0.001 | 0.766*** | 0.001 | -0.026*** | 1 | | | | | | | |
| CATA | -0.046*** | 0.275*** | 0.012 | -0.177*** | 0.008 | 0.230*** | 0.028*** | 0.198*** | -0.056*** | 0.015* | 1 | | | | | | |
| IRTTA | 0.019** | 0.153*** | -0.005 | -0.069*** | 0.094*** | -0.074*** | 0.026*** | -0.206*** | 0.058*** | 0.013 | 0.646*** | 1 | | | | | |
| GROUP | 0.852*** | -0.345*** | -0.047*** | 0.865*** | 0.860*** | -0.003 | -0.017** | 0.020** | 0.053*** | -0.024*** | -0.068*** | -0.001 | 1 | | | | |
| BUSY | 0.200*** | -0.080*** | 0.022** | 0.201*** | 0.199*** | -0.033*** | -0.008 | 0.025*** | 0.055*** | -0.012 | 0.019** | 0.050*** | 0.191*** | 1 | | | |
| BIG6 | 0.257*** | -0.080*** | -0.017** | 0.247*** | 0.244*** | -0.014* | 0.01 | -0.008 | 0.033*** | 0.01 | -0.016* | 0.016* | 0.233*** | 0.075*** | 1 | | |
| Status | 0.333*** | -0.057*** | -0.068*** | 0.300*** | 0.312*** | 0.008 | 0.009 | 0.016* | 0.042*** | -0.007 | 0.033*** | 0.021** | 0.299*** | 0.071*** | 0.199*** | 1 | |
| Age | 0.015* | -0.050*** | -0.124*** | 0.041*** | 0.016* | -0.016* | -0.01 | 0.015* | -0.007 | -0.001 | -0.038*** | -0.028*** | 0.034*** | -0.008 | -0.182*** | -0.051*** | 1 |

Note: The table dispalys the correlations between different variables in models

## 4.2 Regression Results

The estimation results of our independent variable, the engagement auditors' gender (*GENDER*) and the regression results of Model 1 and Model 2 are displayed in Table 7, where other 16 and 15 control variables are also included in the models separately. For Model 1, the dependent variable is audit fees (*LAF*), which is regressed on engagement auditors' gender, client specific control variables with respect to size (*TA* and *NSales*), earnings performance (*ROA* and *CapTurnover*), risk degree (*CITCL* and *LOSS*), financial difficulty (*LEV*, *CATA*, and *IRTTA*), and general auditing information (*BUSY* and *BIG6*), auditors' individual control variables (*Status* and *Age*), year control variable (Trend), dataset control variable (*Dataset*) and additional controls for region and industry. As expected, the coefficient of gender representation variable (*GENDER*) is negative and different from the results of studies on public (and quite large private) companies, with a significance level of 10% in one-tailed test. Other control variables except for *BUSY* are significant at least at a 5% level in one-tailed test, which is consistent with the study of Ittonen (2012) that client specific factors and auditors' individual characteristics are associated with audit fees. Aside from *CITCL*, *IRTTA* and *Age*, other control variables have associations with audit fees with the same sign as previous studies. Client size, degrees of financial difficulty, risk and auditor's status have positive associations with audit fees while client's earnings performance has negative associations. Our model has a good explanatory power as R-squared is 85.29%, at a similar level with Ittonen (2012) and Hardies' (2015).

In Model 2, the dependent variable is the ratio of audit fees to total assets (*AFTTA*) and all the control variables are the same as in Model 1 with only total assets (*TA*) being excluded. The coefficient of gender is negative as our expectation and is statistically significant at the 5% level. All other control variables but leverage ratio (*Leverage*) and Dataset control variables are statistically significantly associated with audit-fee-to-total-assets-ratio. The explanatory power is 33.55%.

**Table 7. Regression Results**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0157 * | -1.48 | 0.0695 | - | -0.0846 ** | -1.99 | 0.0231 |
| TA | | 0.3150 *** | 36.35 | 0.0000 | | | | |
| NSales | | 0.1842 *** | 20.42 | 0.0000 | | -0.8796 *** | -36.08 | 0.0000 |
| ROA | | -0.363 *** | -6.69 | 0.0000 | | -1.2289 *** | -5.66 | 0.0000 |
| CapTurnover | | -0.0001 ** | -2.41 | 0.0160 | | 0.0004 * | 1.91 | 0.0560 |
| CITCL | | -0.0185 *** | -5.95 | 0.0000 | | -0.2034 *** | -16.75 | 0.0000 |
| LOSS | | 0.0923 *** | 6.63 | 0.0000 | | 0.4461 *** | 8.02 | 0.0000 |
| LEV | | 0.0000 ** | 2.11 | 0.0350 | | -0.0001 | -1.01 | 0.3120 |
| CATA | | 0.1980 *** | 7.92 | 0.0000 | | 2.5814 *** | 27.54 | 0.0000 |
| IRTTA | | -0.0661 *** | -2.75 | 0.0060 | | -0.2309 ** | -2.41 | 0.0160 |
| GROUP | | 0.4371 *** | 10.69 | 0.0000 | | 0.8369 *** | 5.13 | 0.0000 |
| BUSY | | 0.0030 *** | 0.37 | 0.7090 | | -0.0808 *** | -2.56 | 0.0100 |
| BIG6 | | 0.1113 *** | 13.12 | 0.0000 | | 0.2295 *** | 6.78 | 0.0000 |
| Status | | 0.0708 *** | 8.4 | 0.0000 | | 0.1834 *** | 5.45 | 0.0000 |
| Age | | -0.0010 ** | -2.2 | 0.0280 | | -0.0057 *** | -3.1 | 0.0020 |
| Trend | | 0.0114 *** | 3.54 | 0.0000 | | 0.0038 | 0.29 | 0.7720 |
| Dataset | | -0.2869 *** | -6.18 | 0.0000 | | 0.1155 | 0.63 | 0.5300 |
| Constant | | 1.9772 *** | 15.33 | 0.0000 | | 16.548 *** | 33.44 | 0.0000 |
| FE. Region | | Included | | | | Included | | |
| FE. Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13.146 | | |
| F stat | | 3994.79 | | | | 336.55 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.3378 | | |
| Adjusted R-squared | | 0.8529 | | | | 0.3355 | | |

Note: Table 7 displays the regression results of our two models. In Model 1, dependent varibale is LAF, the natural logrithm of Audit Fee(SEK) and in Model 2, dependent variable is AFTTA, calculated by dividing Audit Fee (SEK) to Total Assets(TSEK). *, ** and *** indicate one-tailed significance for independent variable GENDER and two-sided significance for other control varibales at the 10%, 5% and 1% level, respectively.

## 4.3 Robustness Tests

The results from our regression models evidence that female auditors charge lower audit fees than male auditors in Swedish private limited liability companies. In order to enhance the validity of our results, we conduct seven more regression analyses as robustness tests. The results of robustness tests for two regression models are presented in Table 8. Panel A shows robustness test results without industry fixed included (1). Panel B, Panel C and Panel D show robustness test results with interaction variable *IAge* (2), *ISize* (3), *IRisk* (4) included respectively. Panel E and Panel F present robustness test results with region (*Region*) (5) and firm id (*orgnr*) (6) clustered respectively. Panel G shows robustness test results with robust estimators (7).

With respect to Robustness test (1), we modify the fixed effects in the primary regression by eliminating the industrial fixed effects from our original models, so as to examine whether our results depend on the panel estimation specifications (Ittonen et al., 2012). The results of the test support the same results from our original regression models, with negative coefficients and R-squares of 85.21% for Model 1 and of 32.04% for Model 2 respectively.

To develop a more comprehensive understanding of audit pricing among divergent groups by auditors' genders, clients' sizes or risk levels, we devise three additional tests, as Robustness test (2), (3), and (4). Robustness test (2) is designed to identify and examine the interrelationship between auditors' ages and their genders. Therefore, an interaction terms between auditors' ages and test variables, *IAge* (*GENDER*×*Age*), is included in our model. According to Table 8, Robustness test (2) holds for the same results with Model 1, while for Model 2 the results lack statistical significance. Since we also expect an intra-interaction between client companies' sizes and auditors' genders, we further run Robustness test (3) where our regression specifications include an interaction term between the natural logarithm of clients' net sales and auditors' genders (*GENDER*×*NSales*), namely *ISize*. The results remain robust with negative coefficients and statistical significances at a 5% level for both Model 1 and Model 2. For Robustness test (4), a different interaction term *IRisk* (*GENDER*×*ROA*) is involved to re-estimate the models, indicating the intra-relation between risk levels of clients and auditors' genders.

The risk estimator utilized for this test model is the return on assets of clients (*ROA*) based on studies of Altman (1968) and Zmijewski (1984), which suggest that financial ratios as ROA have benefits to analyze the soundness of the company and the anticipated problems of financial difficulties in future. However, the results of Robustness test (4) lack significance for both Model 1 and Model 2.

To complete our robustness checks, we develop Robustness test (5) to adjust standard errors for heteroskedasticity, as our observations are not independent and identically distributed in nature. To accomplish that, we consider utilizing clustering since clustering is mandatory when using panel data and analyzing a regression model conceived for one-wave dataset. Since clustering shall be conducted at the most aggregate level of variation in covariates and most of our covariates only varies at industry or region level, we determine to cluster at either industry (*Industry*) or region (*Region*) level. However, the cluster robust estimator (vce cluster) only supports a number of simultaneous parameter estimates less than the number of cluster groups. Our models have at least 16 predictors but have only 11 industrial groups which is not sufficient, so the cluster method on industry id (*Industry*) is not feasible and we thus only conduct tests by clustering regional id (*Region*) for Robustness test (5). The results of Robustness test (5) are displayed in Table 8, but lack significance for Model 1. For Model 2, the results are one-tailed significant at 10% level. As firm id is usually deemed as panel id, we further conduct Robustness test (6) by clustering on our firm id (*orgnr*) and examine the results at a firm-specific level. The results are presented in Panel F, lacking significance for both Model 1 and Model 2.

In order to rectify the primary issue regarding heteroskedasticity error to avoid bias and inconsistence, we ultimately used robust estimators (vce robust) for our fixed effects regression models as our Robustness test (7) (White, 1980). The test also struts the same results as our primary regression models. In general, the five robustness tests provide the same conclusion as the previously tabulated results that there is evidence of a female audit fee discount.

## Table 8. Robustness Tests

**Panel A: Robustness Test Results with No Industry Fixed Effects Included (1)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0173 * | -1.62 | 0.053 | - | -0.0738 ** | -1.72 | 0.043 |
| TA | | 0.3203 *** | 38.62 | 0.000 | | | | |
| NSales | | 0.1758 *** | 20.47 | 0.000 | | -0.8270 *** | -34.00 | 0.000 |
| ROA | | -0.3465 *** | -6.36 | 0.000 | | -1.2078 *** | -5.51 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.37 | 0.018 | | 0.0004 * | 1.91 | 0.057 |
| CITCL | | -0.0184 *** | -5.89 | 0.000 | | -0.2153 *** | -17.63 | 0.000 |
| LOSS | | 0.0956 *** | 6.84 | 0.000 | | 0.4834 *** | 8.60 | 0.000 |
| LEV | | 0.0000 ** | 2.19 | 0.029 | | -0.0001 | -1.39 | 0.166 |
| CATA | | 0.2165 *** | 8.73 | 0.000 | | 2.7234 *** | 29.15 | 0.000 |
| IRTTA | | -0.0726 *** | -3.11 | 0.002 | | -0.4323 *** | -4.60 | 0.000 |
| GROUP | | 0.4444 *** | 10.85 | 0.000 | | 0.7315 *** | 4.44 | 0.000 |
| BUSY | | 0.0087 | 1.10 | 0.272 | | -0.0656 ** | -2.06 | 0.039 |
| BIG6 | | 0.1168 *** | 13.74 | 0.000 | | 0.2446 *** | 7.15 | 0.000 |
| Status | | 0.0710 *** | 8.42 | 0.000 | | 0.1630 *** | 4.80 | 0.000 |
| Age | | -0.0011 ** | -2.27 | 0.023 | | -0.0067 *** | -3.59 | 0.000 |
| Trend | | 0.0116 *** | 3.55 | 0.000 | | 0.0020 | 0.16 | 0.876 |
| Dataset | | -0.2896 *** | -6.22 | 0.000 | | 0.1777 | 0.95 | 0.340 |
| Constant | | 2.0196 *** | 15.66 | 0.000 | | 15.6822 *** | 31.61 | 0.000 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Not Included | | | | Not Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 4154.51 | | | | 344.05 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8521 | | | | 0.3204 | | |
| Adj R-squared | | 0.8516 | | | | 0.3185 | | |

## Table 8. Continued

**Panel B: Robustness Test Results with Interaction Variable IAge Included (2)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0981 * | -1.57 | 0.058 | - | -0.2005 | -0.80 | 0.211 |
| IAge | | 0.0017 | 1.34 | 0.181 | | 0.0023 | 0.47 | 0.638 |
| Age | | -0.0013 ** | -2.55 | 0.011 | | -0.0061 *** | -3.04 | 0.002 |
| TA | | 0.3151 *** | 36.35 | 0.000 | | | | |
| NSales | | 0.1842 *** | 20.42 | 0.000 | | -0.8797 *** | -36.08 | 0.000 |
| ROA | | -0.3640 *** | -6.70 | 0.000 | | -1.2300 *** | -5.67 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.42 | 0.016 | | 0.0004 * | 1.91 | 0.057 |
| CITCL | | -0.0186 *** | -5.95 | 0.000 | | -0.2034 *** | -16.75 | 0.000 |
| LOSS | | 0.0922 *** | 6.61 | 0.000 | | 0.4458 *** | 8.01 | 0.000 |
| LEV | | 0.0000 ** | 2.12 | 0.034 | | -0.0001 | -1.01 | 0.313 |
| CATA | | 0.1984 *** | 7.94 | 0.000 | | 2.5820 *** | 27.54 | 0.000 |
| IRTTA | | -0.0661 *** | -2.75 | 0.006 | | -0.2309 ** | -2.41 | 0.016 |
| GROUP | | 0.4369 *** | 10.69 | 0.000 | | 0.8366 *** | 5.12 | 0.000 |
| BUSY | | 0.0030 | 0.37 | 0.709 | | -0.0808 *** | -2.56 | 0.010 |
| BIG6 | | 0.1110 *** | 13.08 | 0.000 | | 0.2291 *** | 6.77 | 0.000 |
| Status | | 0.0712 *** | 8.45 | 0.000 | | 0.1839 *** | 5.46 | 0.000 |
| Trend | | 0.0115 *** | 3.54 | 0.000 | | 0.0038 | 0.29 | 0.770 |
| Dataset | | -0.2868 *** | -6.18 | 0.000 | | 0.1156 | 0.63 | 0.530 |
| Constant | | 1.99044 *** | 15.39 | 0 | | 16.5662 *** | 33.37 | 0 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 3773.18 | | | | 316.75 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.3379 | | |
| Adj R-squared | | 0.8529 | | | | 0.3355 | | |

## Table 8. Continued

**Panel C: Robustness Test Results with Interaction Variable ISize Included (3)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.2710 ** | -2.05 | 0.021 | - | -0.9402 ** | -1.78 | 0.038 |
| ISize | | 0.0153 * | 1.93 | 0.053 | | 0.0514 | 1.62 | 0.105 |
| TA | | 0.3154 *** | 36.39 | 0.000 | | | | |
| NSales | | 0.1814 *** | 19.84 | 0.000 | | -0.8883 *** | -35.60 | 0.000 |
| ROA | | -0.3635 *** | -6.69 | 0.000 | | -1.2298 *** | -5.67 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.37 | 0.018 | | 0.0004 * | 1.94 | 0.053 |
| CITCL | | -0.0186 *** | -5.96 | 0.000 | | -0.2034 *** | -16.75 | 0.000 |
| LOSS | | 0.0920 *** | 6.60 | 0.000 | | 0.4449 *** | 8.00 | 0.000 |
| LEV | | 0.0000 ** | 2.08 | 0.038 | | -0.0001 | -1.04 | 0.299 |
| CATA | | 0.1982 *** | 7.93 | 0.000 | | 2.5808 *** | 27.53 | 0.000 |
| IRTTA | | -0.0656 *** | -2.73 | 0.006 | | -0.2294 ** | -2.39 | 0.017 |
| GROUP | | 0.4343 *** | 10.62 | 0.000 | | 0.8277 *** | 5.07 | 0.000 |
| BUSY | | 0.0030 | 0.38 | 0.706 | | -0.0806 ** | -2.55 | 0.011 |
| BIG6 | | 0.1108 *** | 13.06 | 0.000 | | 0.2280 *** | 6.73 | 0.000 |
| Status | | 0.0706 *** | 8.38 | 0.000 | | 0.1826 *** | 5.42 | 0.000 |
| Age | | -0.0010 ** | -2.22 | 0.026 | | -0.0058 *** | -3.12 | 0.002 |
| Trend | | 0.0115 *** | 3.54 | 0.000 | | 0.0038 | 0.29 | 0.768 |
| Dataset | | -0.2915 *** | -6.27 | 0.000 | | 0.0992 | 0.54 | 0.590 |
| Constant | | 2.02401 *** | 15.43 | 0 | | 16.7095 *** | 33.11 | 0 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 3773.85 | | | | 316.95 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.338 | | |
| Adj R-squared | | 0.853 | | | | 0.3356 | | |

## Table 8. Continued

**Panel D: Robustness Test Results with Interaction Variable IRisk Included (4)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | 0.0005 | 0.04 | 0.485 | - | -0.0349 | -0.70 | 0.241 |
| IRisk | | -0.2982 ** | -2.52 | 0.012 | | -0.9154 * | -1.93 | 0.053 |
| ROA | | -0.3184 *** | -5.57 | 0.000 | | -1.0912 *** | -4.78 | 0.000 |
| TA | | 0.3151 *** | 36.36 | 0.000 | | | | |
| NSales | | 0.1843 *** | 20.44 | 0.000 | | -0.8793 *** | -36.07 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.43 | 0.015 | | 0.0004 * | 1.90 | 0.058 |
| CITCL | | -0.0186 *** | -5.97 | 0.000 | | -0.2036 *** | -16.76 | 0.000 |
| LOSS | | 0.0924 *** | 6.63 | 0.000 | | 0.4463 *** | 8.02 | 0.000 |
| LEV | | 0.0000 ** | 2.12 | 0.034 | | -0.0001 | -1.00 | 0.315 |
| CATA | | 0.1988 *** | 7.95 | 0.000 | | 2.5836 *** | 27.56 | 0.000 |
| IRTTA | | -0.0675 *** | -2.81 | 0.005 | | -0.2353 ** | -2.45 | 0.014 |
| GROUP | | 0.4358 *** | 10.66 | 0.000 | | 0.8328 *** | 5.10 | 0.000 |
| BUSY | | 0.0025 | 0.31 | 0.756 | | -0.0823 *** | -2.61 | 0.009 |
| BIG6 | | 0.1117 *** | 13.17 | 0.000 | | 0.2307 *** | 6.82 | 0.000 |
| Status | | 0.0707 *** | 8.39 | 0.000 | | 0.1829 *** | 5.43 | 0.000 |
| Age | | -0.0010 ** | -2.19 | 0.029 | | -0.0057 *** | -3.09 | 0.002 |
| Trend | | 0.0114 *** | 3.53 | 0.000 | | 0.0037 | 0.29 | 0.775 |
| Dataset | | -0.2879 *** | -6.20 | 0.000 | | 0.1123 | 0.61 | 0.542 |
| Constant | | 1.97344 *** | 15.31 | 0 | | 16.5362 *** | 33.42 | 0 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 3774.75 | | | | 317.04 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.338 | | |
| Adj R-squared | | 0.853 | | | | 0.3357 | | |

## Table 8. Continued

**Panel E: Robustness Test Results, Cluster (Region) (5)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0157 | -0.92 | 0.185 | - | -0.0846 * | -1.36 | 0.095 |
| TA | | 0.3151 *** | 20.19 | 0.000 | | | | |
| NSales | | 0.1842 *** | 17.86 | 0.000 | | -0.8797 *** | -23.08 | 0.000 |
| ROA | | -0.3632 *** | -6.00 | 0.000 | | -1.2289 *** | -4.78 | 0.000 |
| CapTurnover | | -0.0001 * | -1.81 | 0.086 | | 0.0004 | 1.19 | 0.249 |
| CITCL | | -0.0186 ** | -2.50 | 0.021 | | -0.2034 *** | -2.93 | 0.008 |
| LOSS | | 0.0923 *** | 7.22 | 0.000 | | 0.4461 *** | 7.00 | 0.000 |
| LEV | | 0.0000 ** | 2.27 | 0.035 | | -0.0001 | -0.96 | 0.350 |
| CATA | | 0.1980 *** | 6.49 | 0.000 | | 2.5814 *** | 10.79 | 0.000 |
| IRTTA | | -0.0661 | -1.44 | 0.165 | | -0.2309 | -0.96 | 0.348 |
| GROUP | | 0.4371 *** | 7.47 | 0.000 | | 0.8369 *** | 8.31 | 0.000 |
| BUSY | | 0.0030 | 0.22 | 0.826 | | -0.0808 * | -1.89 | 0.073 |
| BIG6 | | 0.1113 *** | 4.09 | 0.001 | | 0.2295 ** | 2.26 | 0.035 |
| Status | | 0.0708 *** | 6.04 | 0.000 | | 0.1834 *** | 3.41 | 0.003 |
| Age | | -0.0010 | -1.61 | 0.124 | | -0.0057 ** | -2.67 | 0.015 |
| Trend | | 0.0114 *** | 4.38 | 0.000 | | 0.0038 | 0.38 | 0.711 |
| Dataset | | -0.2869 *** | -5.38 | 0.000 | | 0.1155 | 0.94 | 0.358 |
| Constant | | 1.9772 *** | 12.31 | 0.000 | | 16.5476 *** | 24.50 | 0.000 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 2896.79 | | | | 1122.44 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.3378 | | |
| Adj R-squared | | 0.8529 | | | | 0.3355 | | |

## Table 8. Continued

**Panel F: Robustness Test Results, Cluster (Firm id) (6)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0157 | -0.90 | 0.185 | - | -0.0846 | -1.27 | 0.103 |
| TA | | 0.3151 *** | 18.90 | 0.000 | | | | |
| NSales | | 0.1842 *** | 11.00 | 0.000 | | -0.8797 *** | -20.15 | 0.000 |
| ROA | | -0.3632 *** | -5.07 | 0.000 | | -1.2289 *** | -3.95 | 0.000 |
| CapTurnover | | -0.0001 * | -1.84 | 0.066 | | 0.0004 | 1.22 | 0.222 |
| CITCL | | -0.0186 *** | -2.61 | 0.009 | | -0.2034 *** | -2.81 | 0.005 |
| LOSS | | 0.0923 *** | 5.44 | 0.000 | | 0.4461 *** | 6.41 | 0.000 |
| LEV | | 0.0000 ** | 2.23 | 0.026 | | -0.0001 | -0.87 | 0.386 |
| CATA | | 0.1980 *** | 4.60 | 0.000 | | 2.5814 *** | 9.93 | 0.000 |
| IRTTA | | -0.0661 | -1.58 | 0.115 | | -0.2309 | -0.87 | 0.384 |
| GROUP | | 0.4371 *** | 7.14 | 0.000 | | 0.8369 *** | 5.96 | 0.000 |
| BUSY | | 0.0030 | 0.22 | 0.824 | | -0.0808 | -1.52 | 0.129 |
| BIG6 | | 0.1113 *** | 8.08 | 0.000 | | 0.2295 *** | 4.28 | 0.000 |
| Status | | 0.0708 *** | 5.50 | 0.000 | | 0.1834 *** | 3.41 | 0.001 |
| Age | | -0.0010 | -1.40 | 0.160 | | -0.0057 ** | -2.04 | 0.041 |
| Trend | | 0.0114 *** | 4.00 | 0.000 | | 0.0038 | 0.35 | 0.725 |
| Dataset | | -0.2869 *** | -4.13 | 0.000 | | 0.1155 | 0.63 | 0.531 |
| Constant | | 1.9772 *** | 8.18 | 0.000 | | 16.5476 *** | 19.60 | 0.000 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 154.94 | | | | 145.14 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.4686 | | | | 0.3378 | | |
| Adj R-squared | | 0.4667 | | | | 0.3355 | | |

## Table 8. Continued

**Panel G: Robustness Test Results, VCE (Robust) (7)**

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0157 * | -1.48 | 0.069 | - | -0.0846 ** | -2.00 | 0.023 |
| TA | | 0.3151 *** | 30.21 | 0.000 | | | | |
| NSales | | 0.1842 *** | 17.09 | 0.000 | | -0.8797 *** | -28.63 | 0.000 |
| ROA | | -0.3632 *** | -6.24 | 0.000 | | -1.2289 *** | -4.70 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.13 | 0.033 | | 0.0004 | 1.59 | 0.111 |
| CITCL | | -0.0186 *** | -2.80 | 0.005 | | -0.2034 *** | -2.84 | 0.004 |
| LOSS | | 0.0923 *** | 6.36 | 0.000 | | 0.4461 *** | 7.27 | 0.000 |
| LEV | | 0.0000 *** | 2.56 | 0.010 | | -0.0001 | -1.16 | 0.248 |
| CATA | | 0.1980 *** | 6.18 | 0.000 | | 2.5814 *** | 11.15 | 0.000 |
| IRTTA | | -0.0661 ** | -2.26 | 0.024 | | -0.2309 | -0.99 | 0.321 |
| GROUP | | 0.4371 *** | 10.54 | 0.000 | | 0.8369 *** | 7.61 | 0.000 |
| BUSY | | 0.0030 | 0.38 | 0.705 | | -0.0808 ** | -2.38 | 0.017 |
| BIG6 | | 0.1113 *** | 13.30 | 0.000 | | 0.2295 *** | 6.77 | 0.000 |
| Status | | 0.0708 *** | 8.82 | 0.000 | | 0.1834 *** | 5.31 | 0.000 |
| Age | | -0.0010 ** | -2.26 | 0.024 | | -0.0057 *** | -3.15 | 0.002 |
| Trend | | 0.0114 *** | 3.40 | 0.001 | | 0.0038 | 0.29 | 0.772 |
| Dataset | | -0.2869 *** | -6.05 | 0.000 | | 0.1155 | 0.78 | 0.437 |
| Constant | | 1.9772 *** | 14.06 | 0.000 | | 16.5476 *** | 27.14 | 0.000 |
| FE.Region | | Included | | | | Included | | |
| FE.Industry | | Included | | | | Included | | |
| No. of Observations | | 13,146 | | | | 13,146 | | |
| F Stat | | 2908.49 | | | | 373.82 | | |
| Prob > F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8535 | | | | 0.3378 | | |
| Adj R-squared | | 0.8529 | | | | 0.3355 | | |

**Table 8. Continued**

Note: Table 8 displays the robustness test results of our two models. In Model 1, dependent variable is LAF, the natural logarithm of Audit Fee(SEK) and in Model 2, dependent variable is AFTTA, calculated by dividing Audit Fee (SEK) to Total Assets(TSEK). Panel A shows robustness test results without industry fixed included(1). Panel B, Panel C and Panel D show robustness test results with interaction variable IAge(2), ISize(3), IRisk(4) included respectively. Panel E and Panel F present robustness test results with region(5) and firm id(6) clustered respectively. Panel G shows robustness test results with robust estimators(7). *, ** and *** indicate one-tailed significance for independent variable GENDER and two-sided significance for other control variables at the 10%, 5% and 1% level, respectively.

# 5. Discussion

## 5.1 Concluding Analysis

The results of our regression models and additional robustness tests generally indicate that female auditors are statistically significantly associated with a lower amount of audit fees, which is consistent with our hypothesis. This finding is in stark contrast with previous literature studying auditors' gender and audit fees in public (and quite large private) companies which suggest a female premium for public (and quite large private) clients (Ittonen et al., 2012; Hardies et al., 2015). We try to discuss possibly sound grounds behind our findings and why there is a divergence between our findings and theirs.

Following previous literature regarding females' proficient communication and negotiation skills (Beattie and Brandt, 2000; Bowles et al. 2005; Schubert, 2006), it might indicate that this favorable communicative advantage enables females to accomplish responsible audit engagements more efficiently than their male counterparts. Given that audit efforts are one of determinant factors in the pricing of audit fees, we might imply that higher efficiency shortens the audit efforts female auditors' teams needed and further decreases the amount of audit fees they received. Additionally, evidential gender inequality in audit industry implicates greater obstacles for female auditors to practise the long-working-hour culture in audit firms (Lewis, 2007; Anderson-Gough et al. 2001, 2005; Kornberger et al., 2010; Hardies et al., 2013). In the light of the gender non-neutral audit industry, we may infer that female auditors are confronting an unfavorable working environment, thus obtaining a discount on their engagements. Besides, documented gender divergence in work-life time investment demonstrates that women tend to commit more time into their family rather than their work, compared with their male partners (Keloharju et al., 2016). In view of this reality, it is likely to assume that female auditors

might manage to optimize their time efficiency in audit engagements to earn more life time and accomplish required client portfolios at same time (Hardies et al., 2013). Consequently, higher time efficiency of female auditors might result in a reduction of their audit efforts, and further to a drop of audit fees they receive.

While there could also be several reasons behind that might explain why the results are different from previous findings in public client companies, we provide two possible arguments that might be reasonable. First, engagement auditors assigned by public companies are normally partners in their audit firms while the case is different in privately held companies. This fee premium or discount to female may be partially dependent on the position that female auditors are located within their audit firms. Second, for a vast majority of public firms, they normally pay more attention to sustainability issues and might prefer to hire female auditors out of gender equality consideration. Thus, from the demand side of auditing, fee premium for female might exist while for private companies, this effect merely exists.

# 6. Conclusion

## 6.1 Contribution

Our study suggests a female discount in audit fees in Swedish private limited liability companies, by developing two-way fixed effects regression models with a set of archival data from 2006 to 2009 and from 2010 to 2015. Our finding contributes to audit literature by conducting an empirical study in Swedish private setting, which is somewhat unsaturated researched area as we acknowledge. Notably, although Hardies and his peers' study (2015) on auditors' gender and audit fees in a Belgian setting also examines private companies, the sample they utilized has mixed public and private observations, and also the sizes of privately held companies are deemed quite large (satisfying at least two criteria: (1) number of employees (yearly average) >50; (2) Total Assets >€3,650,000; and (3) Net Sales >€7,300,000, or number of employees are above 100). Our study, instead, specifically focuses on smaller-size private clients, especially for data in Part 1 where observations are possessing sizes below 50-25-50 rule. This divergent set of data

for our empirical analysis might furnish the current audit study from a different perspective.

In addition, the archival data utilized in our analysis is provided with a more extensive size (13,146 observations in total), compared to previous study of Ittonen (2012) in a Nordic public company setting (715 observations in total). Sweden is one of the few jurisdictions regularly supports transparency on audit fees for privately held companies. And the given regulatory situation lends us supports on the feasibility of our study. And data in Part 2 derives from manual collection, which helps us to further conduct analysis with a more relevant data set from 2010 to 2015. Meanwhile, a larger number of robustness tests have been conducted in line with the one in Ittonen's study (2012), to sufficiently verify the results and redress unobserved errors. In conclusion, our study supplements previous audit study in Swedish or Nordic settings.

## 6.2 Limitation

When interpreting the results from our study, it is recommended to be in caution as there are three main limitations that should be considered. First, we utilized archival data of Swedish private limited liability companies. It is uncertain to what extent our results could be generalizable to other institutional settings, since audit is a regulated and cultural practice and there could be unsimilar regulatory and cultural settings.

Second, there are much likely some self-selection biases in our study since we have controlled some variables when conducting the sampling process. For instance, we have only chosen limited liability companies as our sample due to the constraint of disclosing requirements. Additionally, for small companies (data in Part 1), we merely have access with the amount of audit fees before July 1st, 2009, leading to a probable relevancy problem. We have only collected information of 13,146 observations in our sample and the sample size could be much larger considering the huge number of registered private companies. And the regression results may be more explanatory if employing a larger sample.

Third, omitted variable bias may exist in our study due to the restriction of data availability, such as information regarding auditor's experience, specialization, and tenure. Also, owing to the time constraints, we did not collect the non-audit service fees. These control variables might have an impact on the amount of audit fees and might necessary to be involved in audit study at an individual level.

## 6.3 Suggestions for Future Research

The amount of data with respect to audit fees are restrictive due to the Swedish disclosing regulations. However, if more relevant/recent data could be accessible from audit firms' recordings, additional studies are encouraged to be conducted to compare with our research. Besides, more individual control variables could be included as well if there is any accessibility, for instance, with regard to engaged auditors' experience, specialization, and tenure.

Furthermore, our study did not delve into *why* there might be a female discount in private companies and *why* the results differ from the findings of public companies, which might be an interesting topic to conduct further qualitative research on.

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# Appendix

***Appendix A*** **. Regression Results of Model 1 and Model 2 without Winsorization for Data Set**

| | | Model 1 LAF | | | | Model 2 AFTTA | | |
|---|---|---|---|---|---|---|---|---|
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | -0.0185 * | -1.51 | 0.066 | - | -0.1627 ** | -2.31 | 0.010 |
| TA | | 0.2406 *** | 25.45 | 0.000 | | | | |
| NSales | | 0.2272 *** | 22.28 | 0.000 | | -1.1287 *** | -29.28 | 0.000 |
| ROA | | -0.4602 *** | -8.08 | 0.000 | | -2.3874 *** | -7.33 | 0.000 |
| CapTurnover | | -0.0001 ** | -2.37 | 0.018 | | 0.0003 | 0.97 | 0.333 |
| CITCL | | -0.0281 | -7.85 | 0.000 | | -0.311 *** | -15.66 | 0.000 |
| LOSS | | 0.1183 *** | 7.46 | 0.000 | | 0.645 *** | 7.12 | 0.000 |
| LEV | | 0.0000 * | 1.83 | 0.067 | | -0.0001 | -0.44 | 0.660 |
| CATA | | 0.2662 *** | 9.32 | 0.000 | | 3.6925 *** | 24.19 | 0.000 |
| IRTTA | | -0.145 | -5.26 | 0.000 | | -0.6997 *** | -4.44 | 0.000 |
| GROUP | | 0.4472 *** | 9.26 | 0.000 | | 0.9433 *** | 3.42 | 0.001 |
| BUSY | | 0.0099 | 1.08 | 0.281 | | -0.0624 | -1.2 | 0.232 |
| BIG6 | | 0.1334 *** | 13.63 | 0.000 | | 0.2299 *** | 4.11 | 0.000 |
| Status | | 0.0851 *** | 8.76 | 0.000 | | 0.3458 *** | 6.22 | 0.000 |
| Age | | -0.0008 | -1.53 | 0.031 | | -0.0044 | -1.45 | 0.148 |
| Trend | | 0.0114 *** | 3.03 | 0.002 | | 0.0047 | 0.22 | 0.826 |
| Dataset | | -0.3605 *** | -6.62 | 0.000 | | -0.0845 | -0.27 | 0.785 |
| Constant | | 2.4811 *** | 17.38 | 0.000 | | 20.6764 *** | 25.99 | 0.000 |
| FE. Region | | Included | | | | Included | | |
| FE. Industry | | Included | | | | Included | | |
| No. of Observations | | 14459 | | | | 14459 | | |
| F stat | | 2922.47 | | | | 216.16 | | |
| Prob>F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.7970 | | | | 0.2366 | | |
| Adjusted R-squared | | 0.7963 | | | | 0.2341 | | |

Note: The table presents refression results of Model 1 and Model 2 without winsorization of our data set.

## *Appendix B* . Regression Results of Model 1 and Model 2 without Fixed Effects

| | | Model 1 | | | | Model 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | LAF | | | | AFTTA | | |
| **Variables** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** | **Expected Sign** | **Coef.** | **t** | **P>\|t\|** |
| GENDER | - | 0.0014 | 0.13 | 0.551 | - | -0.0043 | -0.1 | 0.922 |
| TA | | 0.3308 *** | 38.25 | 0.000 | | | | |
| NSales | | 0.1834 *** | 20.48 | 0.000 | | -0.7788 *** | -31.38 | 0.000 |
| ROA | | -0.3133 *** | -5.5 | 0.000 | | -1.1013 *** | -4.9 | 0.000 |
| CapTurnover | | -0.0001 | -1.59 | 0.112 | | 0.0005 ** | 2.37 | 0.018 |
| CITCL | | -0.0211 *** | -6.46 | 0.000 | | -0.2233 *** | -17.88 | 0.000 |
| LOSS | | 0.1192 *** | 8.17 | 0.000 | | 0.5605 *** | 9.75 | 0.000 |
| LEV | | 0.0000 | 1.58 | 0.113 | | -0.0002 * | -1.69 | 0.090 |
| CATA | | 0.3618 *** | 14.21 | 0.000 | | 3.1539 *** | 33.61 | 0.000 |
| IRTTA | | -0.1669 *** | -6.94 | 0.000 | | -0.7599 *** | -8 | 0.000 |
| GROUP | | 0.4342 *** | 10.13 | 0.000 | | 0.7314 *** | 4.33 | 0.000 |
| BUSY | | 0.0215 *** | 2.6 | 0.009 | | -0.0325 | -1 | 0.319 |
| BIG6 | | 0.0451 *** | 5.29 | 0.000 | | 0.0369 | 1.1 | 0.272 |
| Status | | 0.098 *** | 11.25 | 0.000 | | 0.2496 *** | 7.26 | 0.000 |
| Age | | -0.001 ** | -2.02 | 0.043 | | -0.0067 *** | -3.5 | 0.000 |
| Trend | | 0.0108 *** | 3.18 | 0.002 | | -0.0003 | -0.02 | 0.981 |
| Dataset | | -0.2956 *** | -6.06 | 0.000 | | 0.1676 | 0.88 | 0.380 |
| Constant | | 1.6771 *** | 12.47 | 0.000 | | 14.7488 *** | 29.11 | 0.000 |
| FE. Region | | Not Included | | | | Not Included | | |
| FE. Industry | | Not Included | | | | Not Included | | |
| No. of Observations | | 13146 | | | | 13146 | | |
| F stat | | 3973.23 | | | | 322.68 | | |
| Prob>F | | 0.0000 | | | | 0.0000 | | |
| R-squared | | 0.8372 | | | | 0.2821 | | |
| Adjusted R-squared | | 0.8370 | | | | 0.2813 | | |

Note: The table displays the regression results of Model 1 and Model 2 without both region and industry fixed effects.