

THE EXAMINATION OF AUDIT SERVICE PRICING IN SWEDEN

An empirical study on credence attributes of audit pricing and
the impacts on audit fees of audit reforms in Sweden

HE YAMENG

WU ZIYANG

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Abstract:

The pricing of the audit services has always been a popular topic, and even now, as audit reforms are happening, new insights are being brought to this topic. Several studies have shown that the audit service exhibits credence attributes, but there has not been much exploration of the effect of credence characteristics on the pricing process. The statutory audit exemption in 2010 and the regulation requiring disclosure of key audit matters (KAMs) in 2016 provide us opportunities to analyse what drives audit fees from a more comprehensive perspective. Our data sample consists of (1) 982 observations of Swedish companies from 2008 to 2012 and (2) 850 observations of Swedish public interest entities (PIEs) from 2014 to 2018. Using this sample, we analysed (1) the potential opportunistic pricing effects behind audit service pricing and (2) the effects on audit fees of the two different audit reforms, respectively. Our result shows (1) observable credence characteristics of audits, (2) significant effects on audit fees from statutory audit exemption for small and medium-sized entities (SMEs) and (3) insignificant effects on audit fees from disclosure of KAMs. These findings contribute to previous studies suggesting consideration of credence characteristics of audits by showing that opportunistic pricing does exist in negotiating audit service prices.

Keywords:

Audit pricing, credence good, statutory audit exemption, KAMs

Authors:

He Yameng (41359)

Wu Ziyang (41355)

Tutors:

Kenth Skogsvik, Professor, Department of Accounting

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Stockholm School of Economics

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1 Introduction and Background

1.1 Introduction

There have always been voices from the public questioning the necessity, price and other aspects of assurance services. Common questions vary from “Why are audits so expensive?” and “Has auditing become inefficient?” to “What is the cost of an audit and how much time does it take to complete?” Customers of assurance services are often surprised by the high level of audit fees. As stated in AS1001¹, PCAOB², “*The objective of the ordinary audit of financial statements by the independent auditor is the expression of an opinion on the fairness with which they present, in all material respects, financial position, results of operations, and its cash flows in conformity with generally accepted accounting principles.*” This statement of the ordinary audit of financial statements makes customers of assurance services even more curious about what is behind the audit service’s price. On the other hand, some auditors argue that audit fees are inadequate, considering their efforts in performing audits. These opposing views of audit prices may complicate negotiation of audit services between audit firms and clients.

To date, many studies examine determinants of audit fees within different countries. Although a majority of determinants play similar roles in audit fees, some have very different implications. For instance, the audit fee premium arising from Big N auditors varies from country to country as does how litigation risk affects audit fees (Craswell et al., 1995; DeFond et al., 2000; Chan et al., 1993; Pong and Whittington, 1994; Chaney et al., 2004; Seetharaman et al., 2002; Simunic and Stein, 1996; Francis and Stokes, 1986; Beatty, 1993; Craswell and Francis, 1999).

Although the aforementioned studies shed light on the determinants of audit fees from different empirical evidence, few studies have investigated the credence attributes of audits, in which auditors have the information advantage and the incentive to act strategically to set prices for contracts. To maximize profits and facilitate growth, audit firms provide both audit and non-audit services to their clients. However, both the public and regulators are concerned that this joint provision of services could impair the independence of the auditor. To alleviate this hazard, restrictions on provision of Non-Audit Service (NAS) and its pricing (EU³ Regulation No 537/2014⁴) were put into effect in 2016, forcing audit firms to re-contemplate their pricing strategy for audit services and NAS. The personnel doing the negotiating will also affect the price set for audit services and NAS. It is the board directors or board members who appoint external auditors; therefore, an exploration of their characteristics might help us gain a better understanding of audit service pricing.

¹ [AS 1001: Responsibilities and Functions of the Independent Auditor](#)

² Public Company Accounting Oversight Board

³ European Union

⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0537&from=EN>

Continually updated audit regulations play a critical role in determining audit fees as their implementation can affect auditor efforts and litigation risk. In Sweden, a law that exempts SMEs from statutory external audit came into effect in 2010, and disclosure of KAMs was introduced to auditor reports in 2016. These two policies are worth investigating to see what kind of impact they have on audit pricing in Sweden. Therefore, this study is going to first test the credence attributes of audit services and then examine how the adoption of these two specific pieces of audit-related legislation has affected audit pricing in Sweden.

1.2 Thesis Scope and Research Question

Since Simunic (1980), numerous studies have examined audit fee determinants. The main task of this paper is not to repeat these examinations. Instead, this thesis seeks to identify the credence attributes of audit services and to investigate the reaction of audit pricing to the aforementioned policies. Our study aims to answer the following primary research questions:

1. *How do credence attributes help explain audit service pricing?*
2. *What are the impacts on audit fees of the statutory audit exemption for SMEs and the requirement for KAMs disclosure in Sweden, respectively?*

These research questions are explored in two general steps. First, an estimation equation for audit fee pricing, including the credence indicators, is built upon previous literature. Second, after a reliable audit fee estimation is completed, we explore the impacts of government policies on audit fees. Referring to other studies, our method is to add one extra dummy variable *POST* to the estimation equation to observe the sign and t-value of it and then make our conclusion. Analysing audit fees helps to examine the cost structures of accounting firms, to estimate future fees, to measure audit efficiency, and to investigate pricing policies.

1.3 Swedish Institutional Background

1.3.1 External audit exemption for SMEs in Sweden

In 2010, a law change was introduced in Sweden according to which SMEs are no longer obliged to have an external auditor (SOU, 2008:32⁵). The law change implies that the companies that fulfil at least two of three requirements (more than three employees, total assets over 1.5 million SEK and net sales over 3 million SEK) in two consecutive financial years are obliged to have external auditing.

⁵ <https://www.regeringen.se/49bb8e/contentassets/053cd8567e8e4f9eb722ba734d0186c8/avskaffande-av-revisionsplikten-for-sma-foretag-del-1-av-2-inledning-och-kapitel-1-6-sou-200832>

The EU and the Swedish government have tried to relieve the burden on SMEs, which are the “backbone” of the EU economy. Removing the statutory audit from SMEs is part of this process and has consequences for a large number of companies as SMEs play a critical role in Sweden’s economy. Some facts about Sweden’s SMEs are presented as follows. Sweden’s SME sector is, even more than in most EU countries, dominated by the smallest segment, microenterprises. The average size of Swedish SMEs is substantially below the EU average: they employ only 3.0 people on average compared to the EU average of 4.2. Small businesses help create value in Sweden to about the same extent that they do in the rest of the EU. Although Sweden has a small, open economy heavily dependent on external trade, it is dominated by the services sector, which accounts for 54% of all SMEs (EU average: 44%). Nevertheless, the sector’s contribution to employment (41%) and value creation (44 %) in Sweden is more than the EU average. In total, 75% of SMEs are affected by this regulation (SBA Fact Sheet, Sweden, 2010/11).

According to the plan behind the new legislation, as time passed, SMEs would no longer perform external audits, and the demand for them would decrease. As the demand decreased, the industry would essentially be reshaped as some audit firms would transform their core business from assurance services to accounting, but these changes would take some time. From surveys conducted in the UK and Denmark (Collis, 2010), in both countries more than half of the sample companies would choose voluntary audits even if eligible for audit exemption. It was reasonable to assume a similar result in Sweden. Over the first couple of years after the new regulation became effective, it was highly likely that some SMEs would choose voluntary audit so it was uncertain whether audit fees would drop on average due to oversupply.

1.3.2 Audit report reform

The traditional audit reporting model is highly standardized and therefore frequently perceived as insufficiently useful, informative and transparent (IAASB⁶, 2011). In the aftermath of the financial crisis of 2008, regulators, standard setters and the investment community started seriously questioning the informative value of the auditor’s report. In order to enhance the value of auditor reporting, on 15 January 2015, the IAASB concluded its project with the release of the final version of the new and revised International Standard on Auditing (ISAs) including the requirement to disclose KAMs in the auditor’s report of public entities (IAASB 2015a, ISA 701).

The European Commission aspires to improve audit reporting in a similar way. According to EU Regulation No 537/2014, the auditor’s report must provide (1) a description of the most significant assessed risks of material misstatement, (2) a summary of the auditor’s response to those risks and (3) where relevant, key observations arising with respect to those risks. The EU Regulation is

⁶ The International Auditing and Assurance Standards Board

directly applicable in all member states and has been effective for audits of public interest entities from 17 June 2016 (European Parliament and European Council of the European Union, 2014). As a member state of the European Union, Sweden was obliged to incorporate the new regulation into its national legislation.

Once KAMs were declared to be included in the auditor report, several debates occurred highlighting similarities and differences among Swedish stakeholders. The Big 4 firms generally supported KAM disclosure as a complement to improve the usefulness of the audit report. However, numerous parties expressed concern that KAMs would increase auditor legal liability (Gaetano, 2014; Katz, 2014; Tysiac, 2013). KAMs, as part of auditors' documentation presented in the auditor report, impact both auditors' efforts and litigation risk at the same time, so it is worth exploring how the disclosure of KAMs is going to affect audit service pricing in Sweden.

The rest of the paper is organized as follows. Section 2 reviews literature, including sampling previous papers and equations for audit fees, and discusses phenomenal factors of audit fee pricing. Section 3 formulates empirical hypotheses. Section 4 develops a theoretical audit fee model, describes our sample and specifies empirical models for hypothesis testing. Section 5 presents descriptive statistics, reports our main empirical results and presents additional robustness tests. Section 6 concludes our findings and makes suggestions for future study.

2 Literature Review

Since Simunic (1980), many researchers have studied determinants of audit fees charged to auditees by audit firms based on signed engagement. Previous studies all categorize determinants into client size, audit effort required and potential legal liability, that is, litigation risk (e.g., Craswell et al., 1995; Simunic and Stein, 1996). Some studies shed light on institutional features of different countries, including legal environments and local GAAP features. Since our study focuses on Swedish companies only, cross-country variants were not explored. The literature review helps us gain a better understanding of the phenomenal factors behind audit service pricing.

This section starts with summarizing the determinants of audit fees from previous papers. Then we discuss how two significant phenomenal factors—audit effort and litigation risk—impact audit service pricing, especially how those two factors are affected by KAMs disclosure. Next, we discuss what a credence good is, why audit services exhibit some credence attributes and finally how these attributes affect auditors' behaviours. Following the above discussion, we explore what drives companies that are exempted from statutory audit to choose voluntary audit to help us gain a deeper insight into the second research question.

2.1 Determinants of Audit Fees

Extensive studies have developed models using least-square regression analysis to find and explain the determinants of audit fees paid by companies in different countries. The research conducted by Simunic (1980) laid a foundation in this area, especially providing insights into crucial factors explaining audit fees. Simunic classified these factors into three categories: loss exposure proxied by size, complexity and principal industry of the clients; assessed loss sharing ratio proxied by profit level, prior loss and subject opinion; and auditor production functions proxied by the number of years the firm has used the current auditor. According to Simunic (1980), company size and business complexity were found to associate very positively with audit fees in US companies; this finding also applies to Taylor's (1981) and Francis's (1984) studies, which took British and Australian companies as samples. Simon (1985) replicated Simunic's study in the United States in a later year. These three studies essentially support Simunic's conclusion on the association of audit fees with client company size and complexity. A similar result was found in the study carried out in New Zealand by Firth (1985), but Big N is not a significant factor in the Australian context. To determine if price-cutting systematically occurs on initial audit engagements, Simon and Francis (1988) used a larger sample in the US, finding that there is significant fee reduction in the initial engagement year but that by the fourth year the fee increases to normal level. Detailed descriptions about the primary variables and data are listed in *Table 1*.

Table 1: Summary of research on audit fees⁷

| Study | Data | Big N | Total ASSETS | No. Sub-sidiaries | Receive & Inventory | Foreign Operations | Operating Losses | Audit Opinion | ROA | Asset Turnover |
|----------------------------------------|------------------------|-------|--------------|-------------------|---------------------|--------------------|------------------|---------------|-----|----------------|
| Simunic (1980) | US 1976 | *** | *** | ** | ** | ** | ** | | NS | |
| Taylor & Baker (1981) | UK 1967-1977 | | *** | *** | | | | | | |
| Francis (1984) | Australia 1974-1978 | *** | *** | *** | | | NS | NS | | |
| Simon (1985) | US 1978-1983 | | | ** | ** | ** | | NS | | |
| Firth (1985) | New Zealand. 1981&1983 | NS | ** | NS | ** | | NS | | | |
| Simon & Francis (1988) | US 1984 | *** | *** | *** | *** | ** | | | | |
| Chaney et al. (2004) | UK 1994-1998 | *** | *** | | | *** | NS | | *** | *** |
| Sankaraguru swamy & Raghunandan (2003) | US 2001 | NS | *** | *** | *** | *** | *** | NS | *** | |
| Choi et al. (2010) | US 2000-2003 | *** | *** | *** | *** | *** | *** | *** | *** | |

⁷ Note: (1) NS: Non Significant (2) three stars $p < 0.01$; two stars $p < 0.05$

2.2 Audit Effort

With regard to auditor effort, the more information that is to be delivered to the client, the higher the cost in terms of resources and time required for the audit. Such an increase in auditor effort may arguably cause an increase in audit fees (Hay et al., 2006). Especially in the first year of implementing a new audit reporting regime, firms are likely to incur additional costs, such as professional development training to ensure that employees (auditors) are proficient in the new requirements. Therefore, it is reasonable to expect an increase in auditor effort arising from both professional knowledge development and audit procedures performed following the adoption of a new audit reporting regime.

Following the Sweden Audit Reform that came into effect in June 2016, which requires a section for disclosure of KAMs in the auditor report, audit effort may be considered to have increased. However, some evidence shows audit effort is not affected by reporting a KAM (Asbahr and Ruhnke, 2017). The additional information required under the new standards may be information that the auditors have already examined or collected under existing professional guidance and, because the new requirements will not increase the workload of auditors substantially, a significant increase in audit fees may not necessarily be observed following the adoption of new reporting standards (Mock et al., 2013). From another perspective, auditing may be considered a service that exhibits attributes of a credence good (Causholli and Knechel, 2012), as discussed later in the literature review. As such, it is possible that auditors will charge higher fees even if the additional disclosure requirements may not require a substantial amount of extra audit effort.

In the French setting, disclosures of Justification of Assessments (JOA), which are close to KAMs, have attracted more attention. Negative effects on efficiency (i.e., longer audit report lag and increased audit fees) have been found in the first year of disclosure, but not in subsequent years (Bédard et al., 2018). JOAs should require additional audit effort by the most senior members of the engagement team for the determination, preparation, documentation, and reviewing of the JOA section of the audit report (IAASB, 2012; PCAOB, 2013); so, likewise, should the KAMs section. While this finding is inconsistent with the results reported by Reid et al. (2018) and Gutierrez et al. (2018), they argue that this difference can also be explained by the fact that clients for whom JOAs are disclosed are subject to accounting information that is more difficult to audit, and therefore more efforts from auditors are required.

Audit effort following the adoption of a new audit reporting regime cannot be isolated from auditors' documentation of KAMs. Not only audit effort but also litigation risks of auditors are conditional on KAMs documentation. In the following section, we discuss the auditors' litigation risk.

2.3 Auditors' Litigation Risk

In the event of a detected misstatement in an audit, jurors are going to judge if the auditors were negligent in the conduct of the audit. Auditors' negligence directly gives rise to auditors' liabilities to reimburse clients' losses; thus, it is important to analyse how the litigation risk forms. A model of jurors' perception of auditors' negligence is introduced first, and then we proceed with KAMs documentation's effect on auditors' litigation risk.

A model for auditors' negligence liability. The Culpable Control Model of blame attribution (Alicke, 2000) indicates that one of the predictors of blame assessments is the perceived personal control over harmful outcomes, which consists of three elements: causation, foreseeability and intention. Causation refers to the auditors' causal control over the adverse outcome that derives from the misstatement; foreseeability refers to the extent to which the auditor can foresee the misstatement given the facts available at the time of the audit and intention refers to auditors' intent to conduct a quality audit.

Jurors either have no appreciation for, or simply reject, the notion of reasonable assurance. When the level of assurance provided by auditors fails to meet the expectations of jurors, they perceive auditors as being negligent (Backof et al., 2018).

KAMs documentation may increase auditors' litigation risk. In absence of clarification of auditors' responsibilities for reasonable assurance, jurors perceive auditors as being more negligent when the audit report includes a related KAM disclosure than when it does not. This is because jurors perceive the undetected misstatement as being more foreseeable at the time of the audit, and they expect that auditors should have detected this misstatement (Backof et al., 2018).

Importantly, previous auditor negligence research finds that auditors are often penalized for performing work in an area where a material misstatement is identified after the audit is completed. Jurors are more likely to hold auditors liable for failing to detect fraud when auditors identified the perpetrated fraud as a fraud risk at the time of the audit than when they did not (Reffett, 2010). Identifying and documenting areas of concern (e.g., fraud risks or possible alternative accounting methods) in the audit workpapers increases auditor liability by jurors' judgments when auditors fail to detect misstatements related to areas of concern (Reffett and Backof, 2015). Thus, when auditors disclose KAMs related to a subsequently revealed misstatement, it is easy to envision plaintiffs and triers of fact reasoning that, "if auditors had such concerns about the company, why didn't they carry through?" (Katz, 2014, p.1).

In a setting where judgement is required and the accounting is ambiguous, auditors disclosing a related KAM face a higher litigation risk than auditors who make no such disclosure when the limitations of reasonable assurance are not clarified. The strength of the audit work performed to

address the critical area does not significantly affect jurors' perceptions of auditors' negligence, despite clarifying language (Gimbar, 2016).

The former head of legal affairs at a Big 4 firm argues that disclosing KAMs will put auditors in a "devil position," leading to a "wave of litigation" (Katz, 2014, p.1). Similarly, the chair of the New York State Society of Certified Public Accountants' litigation services committee contends that KAMs will result in auditors "sitting in a courtroom being asked, 'Shouldn't you have done this or that?'" (Gaetano, 2014, p.1).

Even though, as discussed above, auditors' litigation risk may be increased, KAMs documentation may reduce auditors' litigation risk in other ways, such as by clarifying what is meant by "reasonable assurance."

Clarification of definition of reasonable assurance. "With clarification of meaning of reasonable assurance, jurors' expectations of auditors' causal control over the misstatement at the time of the audit will be reduced" (Backof et al., 2018, p.27).

The newly adopted international audit reporting model requires that every audit report explain that reasonable assurance means a high level of assurance but does not guarantee that every material misstatement will be detected. The following is an example of the clarification of reasonable assurance that is provided in audit reports in Sweden: "*Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs and generally accepted auditing standards in Sweden will always detect a material misstatement when it exists*" (Essity, 2018 Annual Report, p. 127).

Uncertain measurement of complex accounts. When KAMs disclosure involves measurement uncertainty instead of categorical determinations, KAMs disclosure contributes to mitigating the responsibility of auditors. KAMs disclosures in financial statement areas are characterized by high measurement uncertainty and can partially shield the auditor from responsibility for related misstatements (Kachelmeier, 2018).

For a less complex account, it seems beneficial for firms to report a KAM in the first year, with no subsequent difference in the risk of guilty verdicts if the KAM is continuously reported or removed in a subsequent year. For a more complex account, there appears to be no consequence for firms to report a KAM in the first year; however, subsequently removing the KAM after multiple years can be harmful in terms of increasing guilty verdicts. Accordingly, audit firms might have less incentive to report KAMs for more complex accounts, or audit firms might not remove such KAMs even if it is appropriate to do so, both of which actions are inconsistent with the goal of the new standard (Jeremy et al., 2018).

2.4 The Credence Good Attributes of Audit Services

According to the theory of Monika Causholli and W. Robert Knechel, auditors are economic agents who provide a valuable service and can be expected to behave rationally to maximize their own interests. Considering the nature of audit services, they are believed to exhibit some degree of credence good attributes, which refers to the information advantage that arises from information asymmetry as it is basically the auditor who determines how much effort and time are required to satisfy the standards, given the characteristics of the clients. Under this condition, it is possible for audit firms to have incentives to act strategically and opportunistically (Causholli and Knechel, 2012).

Economists define a credence good as one that meets three conditions: (1) the seller is an expert who both recommends and provides a level of service to a buyer; (2) buyers of credence services cannot ascertain how a service is delivered and, unavoidably, must rely on a seller's recommendation and (3) buyers cannot assess how well the service was performed even after it is conducted (Darby and Karni, 1973; Dulleck and Kerschbamer, 2006). The severity of information asymmetry between buyers and sellers gives rise to these conditions. It is important to distinguish the information asymmetry because different degrees of information asymmetry can enable the seller to act strategically (Causholli and Knechel, 2012). As the above standards imply, professional services, especially audit services, may exhibit some significant credence attributes from two aspects. First, the actual level of assurance achieved can never be known (O'Keefe et al., 1994; Knechel et al., 2009). Second, the idiosyncratic and uncertain nature of the audit process means that only the auditor can decide how much effort to exert and evidence to gather to satisfy professional auditing standards. The auditor sets the plan and performs the necessary procedures to provide reasonable assurance on financial statements. Although clients may have some insight into their own risk of material misstatements, it is the auditor who establishes the audit scope based on professional judgment (O'Keefe et al., 1994; Knechel et al., 2009). It is difficult to assess the quality of an audit precisely unless a significant misstatement is detected or other financial scandals are uncovered. Essentially, audit services are characterized by their credence characteristics, which can be reflected in high information asymmetry and perceived risk and often require the provider to determine the needs of the customer. In this case, auditors have the incentives and opportunities to act strategically. They may choose to over-audit, under-audit or overcharge, which would be unobservable by clients in many circumstances. However, whether or not an auditor is able and willing to act strategically depends on the market environment and financial incentives. In most cases, only partial information asymmetry exists between auditors and clients. Other factors such as reputation, regulation and competition work to limit the space of strategic action. In short, credence attributes are important in negotiating audit fees (Causholli and Knechel, 2012).

2.5 Voluntary Demand for Audits and the Signalling Effect of Fees

The abolishment of statutory audits for SMEs does not necessarily mean an immediate and drastic drop in audit demand. Some companies that are eligible for audit exemptions continue to undertake voluntary audits, as evidenced by research in the UK and Canada that found that more than half of private companies would keep the audit on a voluntary basis (Collis et al., 2004; Rennie et al., 2003). From the perspective of business owners, a positive relation between the willingness to conduct voluntary reporting and the existence of agency problems and information asymmetry has been observed by several previous studies (Deumes and Knechel, 2008; Collis et al., 2004; Senkow et al., 2001; Chow, 1982). The main reason is that an external audit on financial statements provides a partial solution to the agency costs arising from the separation of ownership and control in organizations (Jensen and Meckling, 1976). The independent audit takes on the role of monitoring the firm's financial performance, attaining credibility and helping solve the agency problem (Seow, 2001). From the point of view of the creditor, investors such as banks want to be sure that their investments are safe and that the borrower is financially sound to pay back the loan with interest, so ensuring that the business is a going concern is important to lenders (Collins and Jarvis, 2002). For this purpose, creditors use audited financial information, assuming that it is reasonably complete, accurate and unbiased. In general, banks demand audited financial statements before granting loans to private companies (Haleym and Palepu, 2001).

It is significant to identify whether an audit is mandatory or voluntary when studying audit fees. As discussed above, companies that audit voluntarily believe they will benefit from the audit and generally value the audit compared to those who regard it as just a legal obligation and costly burden. The main feature of voluntary audits is their signalling effect, which mandatory audits do not possess (Lennox and Pittman, 2011). Companies that choose voluntary audits send a signal to their stakeholders about their commitment to high accounting quality. In addition, the companies obtaining an audit significantly increase their debt, investment, and operating performance and become more responsive to their investment opportunities when external financiers observe their choice for voluntary audit (Kausar et al., 2015). However, as was discussed above, audits are a form of credence good (Knechel et al., 2008; Hay and Knechel, 2010). Due to information asymmetries, the price and reputation of the provider might be the most intuitive indicators of quality on credence goods. The stakeholders may not trust the accounting quality commitment if the companies spend little on auditing because they cannot verify whether the auditors provide sufficient and appropriate service. Therefore, as the signalling effect is valued by the companies and other stakeholders, and previous literature states that credence goods, such as audit services, use pricing to signal quality (Knechel et al., 2008), we can expect a premium audit fee to be associated with voluntary audits. This corresponds with the observation that premium fees are linked to high quality audits (Hay et al., 2006; Clatworthy et al., 2009) as long as companies that voluntarily purchase an audit want to signal their commitment with accounting quality.

3 Hypothesis Development

In addition to traditional audit fee determinants, we are trying to gain insights into the credence aspects of auditing. A credence perspective calls into question the assumption that audit fees are just a function of auditor effort and litigation risks because variations in fees can be idiosyncratic and strategic rather than directly attributable to the production of the audit. Davis et al. (1993) conducted a study indicating that companies buying NAS from their auditors pay a larger amount for audit services in comparison to companies that do not buy NAS from their auditors. To maximize profits, audit firms have opportunities to switch the fee from audit to consultancy. The audit contracting can also be conditional on characteristics of the personnel doing the negotiating (Causholl and Kenchel, 2012). These personnel are usually the board directors or board members. Thus, we assume that provision of NAS and group executives play a powerful role in explaining the audit fee. Our first hypothesis (H1) is as follows:

H1: Audit service pricing exhibits credence characteristics conditional on NAS and the client's executives.

In addition to credence attributes, we expect the audit fee to be affected by the legislation changes for a few reasons. The Swedish government implemented the regulation of audit exemption on SMEs in 2010. After this date, the mandatory audit applied only to companies meeting at least two of the three following criteria: 3 million Swedish Kronor in turnover, 1.5 million Swedish Kronor in balance sheet total assets and three employees (FAR Press Release, 2010-11-01). This new legislation has made only 25% of the companies in Sweden still qualify for mandatory statutory audit, which means the remaining 75% have an option not to perform audits. Although some SMEs that are even below these thresholds continue to undertake voluntary audits, the total audit demand was expected to decline after the year 2010. Therefore, we assume a disequilibrium in the audit market did exist until 2014 as the number of CPAs decreased after 2010 and has been observed to be stable since 2014. Given the law of supply and demand, the reduction in demand enhances competition within the audit industry and the excess supply exerts a downward pressure on the pricing of audit services; therefore, it is reasonable to assume that the increasing competition pressure would drive audit firms to lower their prices to retain and acquire clients. The above discussion leads to our second hypothesis:

H2: The statutory audit exemption for SMEs in Sweden since 2010 has led to an observable drop in audit fees on average in the market.

In an effort to make audit reports more informative to users, the extended audit report that discloses more entity-specific information was introduced in 2016. There is debate about whether or not the audit report evolution affects the audit effort and litigation risk, thereby affecting audit fees. It is likely to incur additional costs, such as professional development training to ensure that employees

(auditors) are proficient in the new requirements. However, the audit procedure is not supposed to change significantly because audit procedures on KAMs have already been performed and documented, so it is natural to assume the workload of auditors has not increased significantly. The documentation of KAMs could increase the auditors' litigation risk because jurors perceive the undetected misstatement as being more foreseeable at the time of the audit, thereby heightening jurors' expectations regarding auditors' responsibility for detecting the misstatement (Backof et al., 2018). From another perspective, the clarification of the definition of reasonable assurance is more intuitive to make clients aware that the audit does not guarantee that every material misstatement will be detected, which could relieve the litigation liability to some extent. Also, the forewarning effect of the measurement uncertainty of complex accounts could alleviate perceived auditor responsibility for KAM-related material misstatement. Taking all this into consideration, we developed our third hypothesis as follows:

H3: The introduction of KAMs since 2016 has not led to an observable impact on audit fees.

4 Research Design

4.1 Data Collection and Sample

For each fiscal year between 2008 and 2012, we obtained audit fees, non-audit fees and CEO compensation manually from annual reports available on Retriever and other financial data from the Serrano database. The sample meets the following criteria: (1) observations are for the time period 2008-2012; (2) the fiscal year ends in December; (3) the sample firms are Swedish limited companies, (4) audit fees are disclosed in annual reports from Retriever and (5) only consolidated data are included.

Because the abolishment of statutory audits for SMEs in Sweden (SOU 2008:32) came into effect in November 2010, we set the financial year as 2010 and filtered out unconsolidated-level observations in the Serrano database. We then ranked the firms in order of book value of total assets in descending order and selected the first 600 Swedish limited companies. An initial sample of 3,000 observations resulted from our primary screening criteria. As we manually obtained audit fees, non-audit fees and CEO compensation from annual reports on Retriever, we removed items meeting the following criteria: (1) firms that were owned by state, county, council, municipal and other government, (2) observations that were not on a consolidated level, that is, firms that were subsidiaries and (3) audit fees were not disclosed in the "Notes" section following financial statements; this reduced observations by 1,959 to 1,041. Only the closing balances of group financial data are available in Serrano so, in order to obtain opening balances of group financial data for variables in Equation, financial data of observations [t-1] were set as the opening balance of observations [t], so that observations for 2007 were also referred to. Financial data of certain companies for 2007 was not complete, so we further reduced observations by 59 to 982. The final

treatment sample consists of 982 firm-year observations for Sweden if we include adoption year t , and the treatment sample consists of 782 firm-year observations if we exclude adoption year t .

For each fiscal year between 2014 and 2018, we obtained audit fees, non-audit fees and CEO compensation manually from annual reports available on Retriever and other financial data from the Amadeus database. In the Amadeus database, we selected companies meeting the following criteria: (1) the country was Sweden; (2) the last available year was 2018; (3) the consolidation code was C2 [Consolidated] and (4) they were public, listed companies. Amadeus displayed 647 Swedish limited companies. We sorted these companies in order of book value of total assets in 2016 in descending order and selected the first 200 companies. As we collected audit fees for each observation, we noticed some observations for one company over five years were incomplete and the opening balance was unavailable in this case. Additionally, we reduced observations by 150 to 850 due to incomplete financial data over five years, from 2014 to 2018.

4.2 Method and Regression Model

To study the first research question, we employed the ordinary least square model controlling the industry, year and region fixed effect. The dependent variable was defined as the natural logarithm of audit fees in thousand SEK. Most of the control variables were based on previous research on audit fees (Simunic, 1980; Choi et al., 2010). The form of the model is as follows:

$$LNAF = \alpha_0 + \alpha_1 NAFRATIO + \alpha_2 CEORATIO + \alpha_3 EMPLOYEE + \alpha_4 ASSET + \alpha_5 RECEIV + \alpha_6 INVEV + \alpha_7 INTANGIBLE + \alpha_8 PFAIL + \alpha_9 LEVE + \alpha_{10} ISSUE + \widetilde{industry} + \widetilde{region} + \widetilde{year} + \tilde{u}$$

The test variables in the first model are *NAFRATIO*, defined as the ratio of non-audit service fees to total fees paid, and *CEORATIO*, defined as the ratio of CEO compensation to net income. Auditors sell non-audit services to auditees in order to maximize total profits, and the pricing strategy of non-audit service can be leveraged to maximize economic benefits of the audit firms. Therefore, *NAFRATIO* was included as the proxy of credence characteristics of audit services. Meanwhile, the nature of audit contracting appears to be conditional on characteristics of the personnel doing the negotiating. Since external auditors are appointed by the directors of companies, characteristics of the directors play a critical role in negotiating audit fees and non-audit fees to be paid to auditors. Another possible factor in audit pricing is the ability of the company to bear costs: audit firms may charge low fees when their client is going through difficult financial times or vice versa (Taylor and Baker, 1981). Board members are more willing to sign a higher-priced contract when they themselves are treated well by their companies. The compensation of the CEO and other executives is observable and not hard to obtain, so we also included *CEORATIO* in our regression model to test the credence attributes of audit fees. Other observable client-specific variables were included to help explain how audit pricing is determined.

The design of our model is also consistent with the view that audit fees reflect both the amount of audit evidence collected and an additional premium to cover litigation risk, suggesting that auditors may be charging clients to insure against future litigation losses (Pratt and Stice, 1994). First, the quantity of hours and effort is likely to increase with the size of the client, leading to a positive association between company size and audit fee. To proxy the size of the client, we included total assets (*ASSET*) and the number of employees (*EMPLOYEE*). In addition, receivables, inventories and intangible assets are complex accounts for auditors, which require specific and time-consuming auditing procedures (confirmation and observation). For instance, a company may intentionally inflate the receivables to boost revenues, and it is important for auditors to be able to distinguish earnings management from accounting fraud. Moreover, the measurement of these items is a complex task requiring a forecast of future events. Thus, litigation liability exposure is expected to vary cross-sectionally with the relative size of receivables, inventories and intangible assets in different companies, so *RECEIV*, *INVENTORY* and *INTANGIBLE* were included in the model. In addition, it is reasonable to assume that auditors charge higher fees for risky clients; therefore, we employed *PFAIL* (Skogsvik, 1987), the probability of bankruptcy in a one-year horizon to proxy the insolvency risk. A detailed calculation for *PFAIL* is listed in the appendix. These factors affect the level of effort an auditor must expend in order to produce a desired level of audit assurance. In addition, more highly levered firms face a higher risk of bankruptcy and have a larger number of creditors relying on financial statements. Firms with high leverage can have incentives to boost reported earnings due to their concerns over debt covenant or private lending agreement violations (Becker et al., 1998; DeFond and Jiambalvo, 1994) so we included leverage (*LEVE*) to proxy the audit control risk as well. Reynolds et al. (2004) argued that firms involved in equity and debt offerings are in greater need of audit services. The expected liability cost arising from audit failure is likely to be greater for clients who have recently obtained external financing by issuing new equity shares or bonds in the capital market. Thus, we put *ISSUE* as a variable, defined as 1 if the sum of long-term debt issued during the last year is more than 5% of the total assets and 0 otherwise.

To determine the potential effect of legislation changes on audit fees in the Swedish setting, we introduced *POST* in Model 2, a binary variable 1 for the post-change period and 0 for the pre-change period. In the second hypothesis we classified 2008, 2009 and 2010 as pre-change years, and 2011 and 2012 are labelled as post-change because the negotiation of audit fee happens in the early stage of the year. In the third hypothesis, 2014, 2015 and 2016 are classified as pre-change, and 2017 and 2018 are labelled as post-change for the same reason. The coefficient α_1 captures the impact on audit fees from the implementation of new audit regulations in 2010 and 2016, respectively. Other control variables are consistent with Model 1.

$$LNAF = \alpha_0 + \alpha_1 POST + \alpha_2 NAFRATIO + \alpha_3 CEORATIO + \alpha_4 EMPLOYEE + \alpha_5 ASSET + \alpha_6 RECEIV + \alpha_7 INVEN + \alpha_8 INTANGIBLE + \alpha_9 PFAIL + \alpha_{10} LEVE + \alpha_{11} ISSUE + \widetilde{industry} + \widetilde{region} + \tilde{u}$$

5 Analysis

5.1 Descriptive Statistics and Correlation

5.1.1 Data Distribution

As presented in *Table 2*, Panel A displays the geographical distribution of our observations over the years 2008-2012. The majority of observations (54.85%) are located in Stockholm County. Another 15.15% of observations are located in Västra Götaland and the number of observations located in Skåne follows right after those in Västra Götaland. Generally, the locations of companies tend to be in urban areas. The top three most populated urban areas in Sweden are Stockholm, Gothenburg and Malmö, in line with the regional distribution of our observations—Stockholm, Västra Götaland and Skåne.

Panel B displays the industry distribution of our observations. In our sample, 31.77% of the total observations are in the finance and real estate industries. In the finance industry, the leverage ratio can be extremely high, and certain balance sheet items such as inventory may not be available in those observations. Observations in industrial goods comprise 15.99% of the total observations, and observations in corporate services comprise 14.56%. The high concentration in finance and real estate indicates the need to exclude this category for a robustness check.

Table 2: Data distribution for Sample 1 (Year 2008 – 2012)

| Panel A: Regional Distribution | | | |
|---------------------------------------|-------|---------|-------|
| County | Freq. | Percent | Cum. |
| Blekinge | 4 | 0.41 | 0.41 |
| Dalarna | 10 | 1.03 | 1.44 |
| Gävleborg | 5 | 0.52 | 1.96 |
| Halland | 7 | 0.72 | 2.68 |
| Jämtland | 10 | 1.03 | 3.71 |
| Jönköping | 35 | 3.61 | 7.32 |
| Kalmar | 10 | 1.03 | 8.35 |
| Kronoberg | 10 | 1.03 | 9.38 |
| Norrbotten | 13 | 1.34 | 10.72 |

| | | | |
|-----------------|------------------|--------|--------|
| Skåne | 119 | 12.27 | 22.99 |
| Stockholm | 532 | 54.85 | 77.84 |
| Södermanland | 5 | 0.52 | 78.35 |
| Uppsala | 8 | 0.82 | 79.18 |
| Västerbotten | 5 | 0.52 | 79.69 |
| Västernorrland | 5 | 0.52 | 80.21 |
| Västmanland | 20 | 2.06 | 82.27 |
| Västra Götaland | 147 | 15.15 | 97.42 |
| Östergötland | 25 | 2.58 | 100.00 |
| Total | 970 ⁸ | 100.00 | |

Panel B: Industry Distribution

| Industry | Freq. | Percent | Cum. |
|-----------------------|-------|---------|--------|
| Construction industry | 44 | 4.48 | 4.48 |
| Convenience goods | 18 | 1.83 | 6.31 |
| Corporate services | 143 | 14.56 | 20.88 |
| Energy & Environment | 35 | 3.56 | 24.44 |
| Finance & Real estate | 312 | 31.77 | 56.21 |
| Health & Education | 36 | 3.67 | 59.88 |
| IT & Electronics | 30 | 3.05 | 62.93 |
| Industrial goods | 157 | 15.99 | 78.92 |
| Materials | 60 | 6.11 | 85.03 |
| Other | 47 | 4.79 | 89.82 |
| Shopping goods | 60 | 6.11 | 95.93 |
| Telecom & Media | 40 | 4.07 | 100.00 |
| Total | 982 | 100.00 | |

⁸ Note: For Sample 1, regional information for some samples was lost.

As presented in *Table 3*, Panel A displays the geographical distribution of our observations over the years 2014-2018. Of these observations, 54.12% are located in Stockholm County. Another 16.47% are located in Västra Götaland and observations located in Skåne follow right after those in Västra Götaland, in the same way as Empirics 1.

Panel B displays the industry distribution of our observations. In our sample, 44.12% of the total observations are in finance and real estate. Other observations are spread evenly throughout other industries and are not highly concentrated in one specific industry. Our observations are Swedish public limited companies and are ranked by total assets in adoption year 2016 so it is reasonable that observations are slightly concentrated in finance and real estate.

Table 3: Data distribution for Sample 2 (Year 2014 – 2018)

| Panel A: Regional Distribution | | | |
|---------------------------------------|-------|---------|--------|
| County | Freq. | Percent | Cum. |
| Dalarna | 10 | 1.18 | 1.18 |
| Gävleborg | 5 | 0.59 | 1.76 |
| Halland | 10 | 1.18 | 2.94 |
| Jönköping | 30 | 3.53 | 6.47 |
| Kalmar | 5 | 0.59 | 7.06 |
| Kronoberg | 15 | 1.76 | 8.82 |
| Skåne | 95 | 11.18 | 20.00 |
| Stockholm | 460 | 54.12 | 74.12 |
| Södermanland | 5 | 0.59 | 74.71 |
| Uppsala | 10 | 1.18 | 75.88 |
| Västerbotten | 10 | 1.18 | 77.06 |
| Västmanland | 20 | 2.35 | 79.41 |
| Västra Götaland | 140 | 16.47 | 95.88 |
| Örebro | 10 | 1.18 | 97.06 |
| Östergötland | 25 | 2.94 | 100.00 |
| Total | 850 | 100.00 | |

Panel B: Industry Distribution

| Industry | Freq. | Percent | Cum. |
|-----------------------|-------|---------|--------|
| Construction Industry | 55 | 6.47 | 6.47 |
| Convenience goods | 25 | 2.94 | 9.41 |
| Corporate services | 45 | 5.29 | 14.71 |
| Energy & Environment | 65 | 7.65 | 22.35 |
| Finance & Real estate | 375 | 44.12 | 66.47 |
| Health & Education | 15 | 1.76 | 68.24 |
| Health & Environment | 20 | 2.35 | 70.59 |
| IT & Electronics | 75 | 8.82 | 79.41 |
| Industrial goods | 50 | 5.88 | 85.29 |
| Materials | 20 | 2.35 | 87.65 |
| Other | 80 | 9.41 | 97.06 |
| Shopping goods | 15 | 1.76 | 98.82 |
| Telecom & Media | 10 | 1.18 | 100.00 |
| Total | 850 | 100.00 | |

5.1.2 Descriptive Statistics

Sample 1 consists of 982 observations of Swedish companies at consolidation level over each fiscal year between 2008 and 2012. The policy year is included in the sample for our regression model to predict the effects on audit fees before and after the year when the policy went into effect.

Descriptive statistics for the variables used in our audit fee model are presented in *Table 4*. As shown in *Table 4*, the median of *POST* is 0.397, which is reasonable as we denote the policy year 2010 as 0. With regard to credence characteristics, *NAFRATIO* has a mean of 0.283 and a median of 0.276, while *CEORATIO* has a mean of 0.105, which is much higher than its median, both reflecting a right-skewed distribution.

The distribution of *CEORATIO* is not even, which can be explained by its varying denominator—net income. On the subject of size, the variable *ASSET* has a mean higher than its median and also has a standard deviation that is about 20% of its mean, reflecting that distribution is skewed to the

right. The variable *EMPLOYEE* shows the same distribution, which is skewed to the right. This is reasonable and in line with expectations since we selected Swedish companies from the list ranking by total assets at the end of 2010. The considerable assets and employees of top ranking companies skew the distribution to the right. The variable *RECEIV* has a mean of 0.185, which is higher than its median of 0.139. This right-skewed distribution can be explained in the same way as *ASSET* and *EMPLOYEE*. Likewise, *INVENTORY* and *INTANGIBLE* have means even higher than their medians. Regarding going concern risk, the median of *LEVE* is 0.604, which is almost equal to its mean. Even though our sample covers quite a lot of companies in the financial industry, as mentioned above in Data Distribution, the high leverage ratio in the financial industry does not skew the distribution. *PFAIL*, as a proxy to insolvency, has a median of 0.007, which is close to 0, indicating a very low level of insolvency for the sample overall. Its maximum is 0.663, meaning that some companies may face serious financial stress.

Table 4: Summary statistics for Sample 1 (n = 982)

| | Mean | St. Dev | min | p25 | Median | p75 | max | t-value |
|-----------|--------|---------|--------|--------|--------|-------|---------|---------|
| LNAF | 8.124 | 1.424 | 4.382 | 7.004 | 7.937 | 9.167 | 13.84 | 178.558 |
| POST | .397 | .49 | 0 | 0 | 0 | 1 | 1 | 25.422 |
| NAFRATIO | .283 | .179 | 0 | .156 | .276 | .4 | .935 | 49.569 |
| CEORATIO | .105 | 1.68 | -15 | 0 | .017 | .072 | 42.188 | 1.951 |
| ASSET | 23.183 | 1.339 | 20.931 | 22.022 | 22.987 | 24.17 | 26.643 | 537.315 |
| EMPLOYEE | 54.256 | 58.937 | 0 | 12.45 | 35.199 | 69.34 | 311.496 | 28.848 |
| RECEIV | .185 | .199 | .001 | .035 | .139 | .251 | .998 | 28.816 |
| INVEN | .086 | .116 | 0 | 0 | .023 | .142 | .637 | 23.186 |
| NTANGIBLE | .143 | .211 | 0 | 0 | .021 | .235 | .827 | 21.042 |
| PFAIL | .046 | .107 | 0 | .001 | .007 | .038 | .663 | 13.237 |
| LEVE | .6 | .221 | .066 | .468 | .604 | .745 | 1.089 | 85.26 |
| ISSUE | .253 | .435 | 0 | 0 | 0 | 1 | 1 | 18.068 |

Note: Sample 1 covers observations between the years 2008 and 2012.

Sample 2 consists of 850 observations of Swedish public limited companies at group level for each fiscal year between 2014 and 2018.

Descriptive statistics for the variables used in our audit fee model are presented in *Table 5*. As shown in *Table 5*, the median and mean, standard deviation of *POST* are all less than 0.5, reflecting inclusion of the policy year 2016.

NAFRATIO has a mean of 0.272 and a median of 0.25, both of which are close to the observations in Sample 1. The variable *CEORATIO* ranges from -0.657 to 3.205, arising from the varying denominator, net income. In terms of greatest size, the variable *ASSET* has a median of 15.364 and a mean of 15.444. With a maximum of 19.595 and a minimum of 11.996, the minor difference

between median and mean indicates a nearly even distribution. The mean of *EMPLOYEE* is much higher than its median, indicating a right-skewed distribution. This is in line with our expectation, since these Swedish companies are public limited, and top-ranked companies hire many more employees. As proxies to complexity, the means of *RECEIV*, *INVENTORY* and *INTANGIBLE* are all higher than their medians on a significant level (0.144 vs 0.104, 0.083 vs 0.021, 0.218 vs 0.095), indicating right-skewed distributions. The variable *LEVE* ranges from -1.857 to 8.844. The negative minimum can arise from share buyback, share cancellation and so forth. *PFAIL*, as a proxy to insolvency, ranges from 0 to 1 and has a mean of 0.038, indicating that the sample companies are not prone to going concern issues. *ISSUE* has a mean of 0.319 and a maximum of 1, varying according to industry.

Table 5: Summary statistics for Sample 2 (n = 850)

| | Mean | St. Dev | min | p25 | Median | p75 | max | t-value |
|------------|--------|---------|--------|--------|--------|--------|---------|---------|
| LNAF | 7.832 | 1.36 | 5.165 | 6.908 | 7.601 | 8.7 | 11.112 | 166.349 |
| POST | .4 | .49 | 0 | 0 | 0 | 1 | 1 | 23.791 |
| NAFRATIO | .272 | .189 | 0 | .125 | .25 | .395 | .8 | 41.531 |
| CEORATIO | .13 | .41 | -.657 | .005 | .03 | .132 | 3.205 | 9.205 |
| ASSET | 15.444 | 1.693 | 11.996 | 14.047 | 15.364 | 16.596 | 19.595 | 265.97 |
| EMPLOYEE | 45.897 | 55.947 | 1.414 | 12 | 26.589 | 57.489 | 351.117 | 23.634 |
| RECEIV | .144 | .143 | .003 | .053 | .104 | .179 | .853 | 29.28 |
| INVEN | .083 | .114 | 0 | 0 | .021 | .139 | .535 | 21.099 |
| INTANGIBLE | .218 | .242 | 0 | .001 | .095 | .418 | .766 | 26.24 |
| PFAIL | .038 | .173 | 0 | 0 | 0 | 0 | 1 | 6.281 |
| LEVE | 1.045 | 1.368 | -1.857 | .474 | .73 | 1.112 | 8.844 | 22.192 |
| ISSUE | .319 | .466 | 0 | 0 | 0 | 1 | 1 | 19.859 |

Note: Sample 2 covers observations between years 2014 and 2018.

Table 6 presents Pearson correlation coefficients between key independent variables. We expect logged audit fee and independent variables in our audit fee estimation model to be correlated, with the predicted sign. With regard to logged audit fees, almost all independent variables are correlated to logged audit fee on a significant 10% level. *NAFRATIO* is significantly correlated to *ASSET*, *EMPLOYEE*, *INTANGIBLE* and *ISSUE*. The variable *CEORATIO* is correlated to *INTANGIBLE* at a 10% level. The variable *ASSET* is correlated to *EMPLOYEE* and *PFAIL* at a significant 10% level, in line with our expectation that a considerable amount of assets leads to significant economic benefits inflow and therefore much lower probabilities of loss. *INVENTORY* is correlated to *LEVE* on a significant 10% level. *PFAIL*, as a new variable added to our regression model compared to previous audit fee models, is correlated to *ASSET* and *INTANGIBLE* at a significant

10% level. As Swedish companies experience loss for consecutive years and record complex asset accounts such as intangible assets, we predict a higher probability of insolvency.

Table 6: Correlation Table

| | LNAF | POST | NAFRATIO | CEORATIO | ASSET | EMPLOYEE | RECEIV | INVEN | INTANG~E | PFAIL | LEVE | ISSUE |
|------------|-----------|----------|----------|----------|-----------|----------|----------|---------|----------|----------|---------|-------|
| LNAF | 1 | | | | | | | | | | | |
| POST | -0.004 | 1 | | | | | | | | | | |
| NAFRATIO | 0.064** | 0.048 | 1 | | | | | | | | | |
| CEORATIO | 0.033 | -0.051 | -0.026 | 1 | | | | | | | | |
| ASSET | 0.596*** | 0.026 | 0.076** | -0.005 | 1 | | | | | | | |
| EMPLOYEE | 0.794*** | 0.007 | 0.085*** | 0.023 | 0.530*** | 1 | | | | | | |
| RECEIV | 0.157*** | 0.011 | -0.003 | -0.02 | 0.082** | 0.153*** | 1 | | | | | |
| INVEN | 0.269*** | 0.001 | -0.011 | 0.037 | -0.088*** | 0.270*** | 0.177*** | 1 | | | | |
| INTANGIBLE | 0.361*** | 0.028 | 0.137*** | 0.056* | -0.004 | 0.346*** | 0.0140 | 0.017 | 1 | | | |
| PFAIL | -0.157*** | 0.098*** | 0.024 | 0.011 | -0.089*** | -0.060* | -0.007 | -0.026 | 0.175*** | 1 | | |
| LEVE | -0.149*** | -0.017 | -0.032 | -0.010 | -0.057* | -0.051 | 0.267*** | -0.059* | 0.054* | 0.481*** | 1 | |
| ISSUE | 0.004 | -0.008 | 0.075** | -0.003 | 0.036 | 0.009 | -0.077** | -0.036 | -0.028 | 0.030 | 0.066** | 1 |

Note: Sample 1 covers observations between years 2008 and 2012.

Table 7 presents Pearson correlation coefficients between key independent variables. We expect logged audit fee and independent variables in our audit fee estimation model to be correlated, with the predicted sign. With regard to logged audit fees, most independent variables are correlated to logged audit fee on a significant 10% level. Regarding variables as proxies to litigation risk, the results are mixed. *ISSUE* is not correlated to logged audit fees on a significant level, but *PFAIL* and *ISSUE* are correlated to logged audit fee on a significant 5% level. *PFAIL*, as an indicator of bankruptcy, is expected to play a significant role in contributing to explanatory power in our regression model. *NAFRATIO* is correlated to *ASSET*, *EMPLOYEE* and *INTANGIBLE*. *CEORATIO* is correlated significantly to most of the other independent variables, the results of which differ from those of Empirics 1. This difference regarding *CEORATIO* between the two sets of samples may arise from more performance-based compensation for Swedish public companies between the years 2014 and 2018. The variable *ASSET* is correlated to *EMPLOYEE*, *RECEIV*, *INVEN*, *INTANGIBLE* and *PFAIL* at a significant 1% level, and correlated to *LEVE* at a 5% level. Referring to *Table 4* Panel B, our observations are slightly concentrated in finance and real estate. *ISSUE* and *LEVE* are not significantly correlated to other variables, which may be biased because of observation concentration in finance and real estate. We will do a robustness check excluding finance and real estate.

Table 7: Correlation Matrix

| | LNAF | POST | NAFRAT IO | CEORATI O | ASSET | EMPLOYEE E | RECEI V | INVEN | INTANG ~E | PFAIL | LEVE | ISSUE |
|----------------|----------|-----------|--------------|--------------|-----------|---------------|-------------|--------|--------------|----------|-------|-------|
| LNAF | 1 | | | | | | | | | | | |
| POST | 0.091*** | 1 | | | | | | | | | | |
| NAFRATIO | 0.063* | -0.155*** | 1 | | | | | | | | | |
| CEORATIO | -0.057 | -0.012 | 0.008 | 1 | | | | | | | | |
| ASSET | 0.690*** | 0.100*** | 0.069** | -0.199*** | 1 | | | | | | | |
| EMPLOYEE | 0.761*** | 0 | 0.113*** | -0.080** | 0.545*** | 1 | | | | | | |
| RECEIV | -0.023 | 0.030 | 0.016 | 0.076** | -0.278*** | 0.045 | 1 | | | | | |
| INVEN | 0.209*** | -0.025 | -0.003 | -0.015 | -0.077** | 0.208*** | 0.069* * | 1 | | | | |
| INTANGIBL E | 0.282*** | 0.014 | 0.177*** | 0.124*** | -0.097*** | 0.242*** | -0.009 | 0.006 | 1 | | | |
| PFAIL | -0.086** | 0.022 | 0.030 | -0.085** | -0.141*** | -0.101*** | -0.001 | 0.014 | 0.048 | 1 | | |
| LEVE | -0.077** | -0.091*** | -0.009 | 0.038 | -0.084** | -0.049 | -0.058* | -0.048 | -0.023 | 0.116*** | 1 | |
| ISSUE | -0.052 | -0.049 | 0.007 | -0.076** | -0.039 | -0.128*** | 0.076* * | -0.053 | -0.102*** | 0.044 | 0.046 | 1 |

Note: Sample 2 covers observations between the years 2014 and 2018.

5.2 Regression Results

In response to our research questions, we used regression models to examine the strategic pricing of audit services and the overall effect of the two legislative changes on audit fees. The estimation results of our regression model are displayed in the *Tables 8, 9 and 10*, respectively. All regressions are estimated after removing outliers; as a result, the actual sample size varies slightly across regressions. The dependent variable is audit fees (*LNAF*), which is regressed on client-specific control variables with respect to company size (*ASSET* and *EMPLOYEE*), complexity (*RECEIV*, *INVEN* and *INTANGIBLE*) and risk level (*PFAIL*, *LEVE* and *ISSUE*).

With respect to the first research question, the coefficient of *NAFRATIO* is significantly negative at the 5% level with Sample 1 and at the 1% level with Sample 2, supporting the argument that companies purchasing more non-audit services pay a lower audit fee, as was expected. However, *CEORATIO* is not a significant determinant with the two samples, indicating that there is no proof regarding the association between audit fees and compensation level. Other control variables, including *ASSET* and *EMPLOYEE*, are significant at 1% in a two-tailed test, which confirms the finding of previous studies (Simunic, 1980; Choi et al., 2010) that the client size has a positive association with audit fees. We also find that the risky balance sheet components such as *INVENTORY*, *RECEIV* and *INTANGIBLE* are positively associated with audit fees, in line with the notion that specific audit conduct is required for these accounts. *PFAIL* is found to be negatively associated with audit fees with Sample 1 at the 1% level and positively at the 10% level with Sample 2, which could be explained by the bias that the probability of bankruptcy is calculated based on inventory, while many companies in the sample are in the finance industry and have no inventory in their balance sheets. *LEVE* also plays a different role in the two samples, but both of them contradict the previous finding that *LEVE* is positively associated with audit fee (Choi et al., 2010; Becker et al., 1998). This is also due to our sample selection as the high leverage that the finance industry takes does not necessarily mean high risk exposure as it would with other industries. In Sample 2, *ISSUE* is found to be positively associated with audit fee, which is consistent with the noting that companies involved in financing have issues with higher risk. Overall, the results indicate that the model has a reasonable explanatory power, with the adjusted R-squared ranging from 77.5% to 80.2%.

Regarding our second research question, as shown in *Table 9*, Column (2), the coefficient of *POST* is negative and significant at the 5% level. This suggests that the audit fees experience a decrease from the [t-2, t] year period to the [t+1, t+2] year period. The result is consistent with our expectation that audit fees decline during the post-regulation period. The results about other control variables are the same as the first model, and the adjusted R-squared is 77.50%, the same as the first model without introducing *POST*. With respect to Policy 2, the coefficient of *POST* is positive but not significant at the 5% level, as shown in *Table 10*. The result indicates that audit fees may not vary greatly during the [t-2, t] year period to the [t+1, t+2] year period, suggesting that no effect of the new auditing report on audit fees is observed. Other determinants regarding client size, business complexity and risk level have the same effect on audit fees as they do in the

first model. The explanatory power is reasonable as well, with a slightly higher R-squared at 80.5%, suggesting that our model taken as a whole explains a significant portion of the variations in audit fees.

Table 8: Result of Model 1

| VARIABLES | Sample 1 | | | Sample 2 | | |
|--------------------|----------------------|-------|-----------|----------------------|-------|-----------|
| | Coef. | P> t | Std. Err. | Coef. | P> t | Std. Err. |
| NAFRATIO | -0.277** (-2.06) | 0.040 | 0.135 | -0.663*** (-5.33) | 0.000 | 0.124 |
| CEORATIO | 0.113 (1.60) | 0.111 | 0.071 | 0.073 (1.27) | 0.203 | 0.057 |
| ASSET | 0.392*** (16.38) | 0.000 | 0.024 | 0.466*** (22.15) | 0.000 | 0.021 |
| EMPLOYEE | 0.010*** (17.80) | 0.000 | 0.000 | 0.008*** (14.11) | 0.000 | 0.000 |
| RECEIV | 0.327*** (2.64) | 0.008 | 0.124 | 1.474*** (7.79) | 0.000 | 0.189 |
| INVEN | 0.997*** (3.52) | 0.000 | 0.283 | 1.720*** (7.43) | 0.000 | 0.232 |
| INTANGIBLE | 1.130*** (8.04) | 0.000 | 0.140 | 1.653*** (14.67) | 0.000 | 0.113 |
| PFAIL | -1.005*** (-3.71) | 0.000 | 0.271 | 0.258* (1.80) | 0.072 | 0.143 |
| LEVE | -0.627*** (-4.64) | 0.000 | 0.135 | 0.015 (0.93) | 0.350 | 0.016 |
| ISSUE | 0.034 (0.65) | 0.519 | 0.053 | 0.151*** (3.09) | 0.002 | 0.048 |
| Constant | -1.338** (-2.44) | 0.015 | 0.549 | -0.348 (-1.03) | 0.302 | 0.337 |
| Industry FE | Included | | | Included | | |
| Region FE | Included | | | Included | | |
| Year FE | Included | | | Included | | |
| Observations | 938 | | | 772 | | |
| R-squared | 0.785 | | | 0.812 | | |
| Adjusted R-squared | 0.775 | | | 0.802 | | |
| F stat | 194.95 | | | 236.18 | | |
| Prob > 0 | 0.0000 | | | 0.0000 | | |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Result of Model 2 for Policy 1

| VARIABLES | Coef. | Std. Err. | t | P> t | 95% Conf. | Interval |
|--------------------|----------------------|-----------|--------|-------|-----------|----------|
| POST | -0.109** (-2.41) | 0.045 | -2.410 | 0.016 | -0.197 | -0.020 |
| NAFRATIO | -0.298** (-2.22) | 0.134 | -2.220 | 0.027 | -0.562 | -0.035 |
| CEORATIO | 0.113 (1.60) | 0.071 | 1.600 | 0.109 | -0.025 | 0.251 |
| ASSET | 0.392*** (16.39) | 0.024 | 16.390 | 0.000 | 0.345 | 0.439 |
| EMPLOYEE | 0.010*** (17.82) | 0.000 | 17.820 | 0.000 | 0.009 | 0.012 |
| RECEIV | 0.329*** (2.66) | 0.124 | 2.660 | 0.008 | 0.086 | 0.572 |
| INVEN | 1.016*** (3.59) | 0.283 | 3.590 | 0.000 | 0.461 | 1.571 |
| INTANGIBLE | 1.123*** (8.00) | 0.140 | 8.000 | 0.000 | 0.848 | 1.399 |
| PFAIL | -0.970*** (-3.59) | 0.270 | -3.590 | 0.000 | -1.500 | -0.440 |
| LEVE | -0.627*** (-4.65) | 0.135 | -4.650 | 0.000 | -0.892 | -0.362 |
| ISSUE | 0.041 (0.80) | 0.052 | 0.800 | 0.424 | -0.060 | 0.142 |
| Constant | -1.292** (-2.36) | 0.548 | -2.360 | 0.019 | -2.367 | -0.217 |
| Industry FE | Included | | | | | |
| Region FE | Included | | | | | |
| Observations | 938 | | | | | |
| R-squared | 0.784 | | | | | |
| Adjusted R-squared | 0.775 | | | | | |
| F stat | 176.98 | | | | | |
| Prob > F | 0.0000 | | | | | |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Result of Model 2 for Policy 2

| VARIABLES | Coef. | Std. Err. | t | P> t | 95% Conf. | Interval |
|--------------------|----------------------|-----------|--------|-------|-----------|----------|
| POST | 0.013 (0.28) | 0.045 | 0.280 | 0.780 | -0.076 | 0.102 |
| NAFRATIO | -0.648*** (-5.24) | 0.124 | -5.240 | 0.000 | -0.891 | -0.405 |
| CEORATIO | 0.074 (1.31) | 0.057 | 1.310 | 0.190 | -0.037 | 0.185 |
| ASSET | 0.468*** (22.50) | 0.021 | 22.500 | 0.000 | 0.427 | 0.509 |
| EMPLOYEE | 0.008*** (13.85) | 0.001 | 13.850 | 0.000 | 0.007 | 0.009 |
| RECEIV | 1.473*** (7.85) | 0.188 | 7.850 | 0.000 | 1.104 | 1.841 |
| INVEN | 1.732*** (7.52) | 0.230 | 7.520 | 0.000 | 1.280 | 2.184 |
| INTANGIBLE | 1.632*** (14.53) | 0.112 | 14.530 | 0.000 | 1.411 | 1.852 |
| PFAIL | 0.256* (1.80) | 0.142 | 1.800 | 0.072 | -0.023 | 0.535 |
| LEVE | 0.020 (1.25) | 0.016 | 1.250 | 0.211 | -0.012 | 0.052 |
| ISSUE | 0.145*** (3.01) | 0.048 | 3.010 | 0.003 | 0.050 | 0.239 |
| Constant | -0.385 (-1.16) | 0.332 | -1.160 | 0.246 | -1.036 | 0.266 |
| Industry FE | Included | | | | | |
| Region FE | Included | | | | | |
| Observations | 772 | | | | | |
| R-squared | 0.814 | | | | | |
| Adjusted R-squared | 0.805 | | | | | |
| F stat | 213.87 | | | | | |
| Prob > F | 0.0000 | | | | | |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3 Robustness Checks

As discussed above, companies purchasing more non-audit services pay a lower audit fee, and the audit fees are found to decline after the audit exemption in 2010 and stabilize after the audit report reform in 2016 with our model. To test the robustness of these findings, we performed another three sensitivity analyses with different subsamples.

With respect to the first robustness test, we used alternative measurements regarding the level of non-audit service fees and executives' compensation. *NAFAF*, defined as non-audit fee on audit fee, and *CEONS*, defined as CEO compensation on net sales, are used in the two models to replace *NAFRATIO* and *CEORATIO*. As shown in *Table 11*, the coefficients of *NAFAF* in Model 1 are significantly negative at the 1% level while other variables have the same results. In regard to the second model, the results for *POST* are also consistent with the primary regression model. Similar adjusted R-squared range is shown in the table. Changing the measurement does not impair the result.

With the intention to examine the overall effect of these legislation changes on audit fees, 12 industries are included in our sample, excluding the finance and real estate industries. To some extent, the finance and real estate industries have different operational business models and special balance-sheet structures, and previous research usually excluded these industries; therefore, in the second robustness test, we eliminated these two industries to make our results comparable to previous research on audit fees. This action reduced our samples to 507 observations and 454 observations, respectively. The test variables *NAFRATIO*, *CEORATIO* and *POST* have the same effect on audit fees with this subsample. The adjusted R-squared range is from 79.5% to 85.0%, higher than that in the main model. Most of the other control variables remain the same, while the only difference is that now *ISSUE* becomes statistically insignificant, as shown in *Table 12*.

To further examine the effect of legislative changes on audit fees, we excluded the adoption year t regarding the two regulations in Model 2 (2010 in Policy 1 and 2016 in Policy 2, respectively) in *Table 13*. This can help to alleviate any potential concern that our results are driven by temporary effects. Regarding Policy 1, it is worth noting that after excluding the adoption year, the coefficient of *POST* is strengthened, significant at the 1% level rather than the 5% level.

Finally, we use the robust estimator of variance to solve the heteroskedasticity issue (White, 1980). As shown in *Table 14*, *NAFRATIO* is less significant in Model 1 with the first sample, while other variables are not sensitive to this action. The above robustness tests show that our results basically hold with different measurement and subsamples and are not materially affected by heteroskedasticity.

Table 11: Robustness test with alternative measurement

| VARIABLES | Model 1 | | Model 2 | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| | Sample 1 | Sample 2 | Policy 1 | Policy 2 |
| POST | | | -0.105** (-2.34) | 0.016 (0.35) |
| NAFAF | -0.178*** (-4.06) | -0.193*** (-7.50) | -0.184*** (-4.22) | -0.243*** (-6.79) |
| CEONS | 0.662 (0.41) | -0.013 (-0.37) | 0.633 (0.39) | 0.351 (0.29) |
| ASSET | 0.397*** (16.27) | 0.455*** (22.20) | 0.397*** (16.27) | 0.460*** (22.07) |
| EMPLOYEE | 0.010*** (17.70) | 0.008*** (14.32) | 0.010*** (17.72) | 0.008*** (13.98) |
| RECEIV | 0.328*** (2.65) | 1.465*** (7.74) | 0.330*** (2.68) | 1.444*** (7.50) |
| INVEN | 1.045*** (3.68) | 1.526*** (6.63) | 1.061*** (3.74) | 1.610*** (6.93) |
| INTANGIBLE | 1.154*** (8.32) | 1.654*** (15.03) | 1.148*** (8.27) | 1.630*** (14.73) |
| PFAIL | -0.955*** (-3.61) | 0.233 (1.63) | -0.923*** (-3.50) | 0.211 (1.44) |
| LEVE | -0.613*** (-4.55) | 0.016 (0.99) | -0.613*** (-4.55) | 0.022 (1.36) |
| ISSUE | 0.048 (0.91) | 0.140*** (2.94) | 0.054 (1.06) | 0.135*** (2.84) |
| Constant | -1.442** (-2.55) | -0.222 (-0.68) | -1.398** (-2.48) | -0.278 (-0.83) |
| Industry FE | Included | Included | Included | Included |
| Region FE | Included | Included | Included | Included |
| Year FE | Included | Included | | |
| Observations | 940 | 772 | 940 | 772 |
| R-squared | 0.787 | 0.818 | 0.786 | 0.818 |
| Adjusted R-squared | 0.777 | 0.809 | 0.777 | 0.809 |
| F stat | 197.59 | 246.54 | 179.52 | 220.06 |
| Prob > F | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12: Robustness test excluding Finance & Real Estate Industry

| VARIABLES | Model 1 | | Model 2 | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| | Sample 1 | Sample 2 | Policy 1 | Policy 2 |
| POST | | | -0.143** (-2.32) | 0.005 (0.09) |
| NAFRATIO | -0.505*** (-2.76) | -0.810*** (-5.32) | -0.555*** (-2.89) | -0.750*** (-5.03) |
| CEORATIO | 0.017 (1.22) | -0.036 (-0.67) | 0.018 (1.26) | -0.036 (-0.68) |
| ASSET | 0.523*** (12.95) | 0.582*** (22.34) | 0.524*** (12.37) | 0.577*** (22.72) |
| EMPLOYEE | 0.008*** (9.01) | 0.004*** (8.79) | 0.008*** (8.79) | 0.004*** (8.55) |
| RECEIV | 1.442*** (4.93) | 1.334*** (5.13) | 1.462*** (4.77) | 1.299*** (5.12) |
| INVEN | 0.649** (1.99) | 1.573*** (5.13) | 0.643** (2.04) | 1.508*** (5.03) |
| INTANGIBLE | 1.406*** (7.38) | 1.172*** (7.60) | 1.394*** (6.94) | 1.019*** (6.59) |
| PFAIL | -0.692** (-2.05) | 0.119 (0.61) | -0.644* (-1.81) | 0.101 (0.53) |
| LEVE | -0.664*** (-3.40) | 0.001 (0.06) | -0.654*** (-3.16) | 0.016 (0.78) |
| ISSUE | -0.029 (-0.40) | 0.091 (1.42) | -0.016 (-0.22) | 0.089 (1.46) |
| Constant | -4.206*** (-4.58) | -1.592*** (-3.92) | -4.193*** (-4.35) | -1.485*** (-3.76) |
| Industry FE | Included | Included | Included | Included |
| Region FE | Included | Included | Included | Included |
| Year FE | Included | Included | | |
| Observations | 507 | 454 | 507 | 454 |
| R-squared | 0.824 | 0.856 | 0.808 | 0.862 |
| Adjusted R-squared | 0.810 | 0.843 | 0.795 | 0.850 |
| F stat | 145.67 | 174.75 | 121.24 | 156.62 |
| Prob > F | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 13: Robustness test without adoption year

| VARIABLES | Model 2 | |
|--------------------|----------------------|----------------------|
| | Policy 1 | Policy 2 |
| POST | -0.152*** (-2.99) | 0.034 (0.67) |
| NAFRATIO | -0.190 (-1.24) | -0.605*** (-4.33) |
| CEORATIO | 0.057 (0.98) | 0.075 (1.18) |
| ASSET | 0.377*** (13.91) | 0.462*** (19.74) |
| EMPLOYEE | 0.011*** (16.02) | 0.008*** (12.46) |
| RECEIV | 0.291** (2.07) | 1.357*** (6.67) |
| INVEN | 0.916*** (2.99) | 1.722*** (6.63) |
| INTANGIBLE | 1.138*** (7.10) | 1.631*** (12.90) |
| PFAIL | -1.051*** (-3.52) | 0.265* (1.65) |
| LEVE | -0.615*** (-4.00) | 0.005 (0.26) |
| ISSUE | 0.009 (0.16) | 0.145*** (2.66) |
| Constant | -0.925 (-1.49) | -0.294 (-0.79) |
| Industry FE | Included | Included |
| Region FE | Included | Included |
| Observations | 747 | 615 |
| R-squared | 0.782 | 0.816 |
| Adjusted R-squared | 0.770 | 0.804 |
| F stat | 136.75 | 170.00 |
| Prob > F | 0.0000 | 0.0000 |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14: Robustness test with vce robust

| VARIABLES | Model 1 | | Model 2 | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| | Sample 1 | Sample 2 | Policy 1 | Policy 2 |
| POST | | | -0.112** (-2.54) | 0.009 (0.22) |
| NAFRATIO | -0.281* (-1.88) | -0.697*** (-4.73) | -0.302** (-2.01) | -0.710*** (-4.85) |
| CEORATIO | 0.110 (1.31) | 0.071 (1.25) | 0.110 (1.31) | 0.071 (1.26) |
| ASSET | 0.395*** (11.85) | 0.471*** (22.02) | 0.395*** (11.91) | 0.474*** (22.26) |
| EMPLOYEE | 0.010*** (13.22) | 0.008*** (13.11) | 0.010*** (13.29) | 0.008*** (13.15) |
| RECEIV | 0.336* (1.81) | 1.669*** (8.31) | 0.336* (1.82) | 1.679*** (8.40) |
| INVEN | 1.006*** (3.72) | 1.711*** (7.54) | 1.027*** (3.82) | 1.716*** (7.56) |
| INTANGIBLE | 1.143*** (8.69) | 1.639*** (14.44) | 1.137*** (8.68) | 1.646*** (14.58) |
| PFAIL | -1.006*** (-3.19) | 0.040 (0.28) | -0.975*** (-3.10) | 0.052 (0.36) |
| LEVE | -0.651*** (-4.44) | 0.711*** (5.18) | -0.648*** (-4.44) | 0.706*** (5.15) |
| ISSUE | 0.013 (0.25) | 0.127*** (2.59) | 0.019 (0.37) | 0.129*** (2.62) |
| Constant | -1.531* (-1.91) | -0.603 (-1.63) | -1.558* (-1.95) | -0.602 (-1.63) |
| Industry FE | Included | Included | Included | Included |
| Region FE | Included | Included | Included | Included |
| Year FE | Included | Included | | |
| Observations | 938 | 772 | 938 | 772 |
| R-squared | 0.786 | 0.819 | 0.785 | 0.819 |
| Adjusted R-squared | 0.774 | 0.811 | 0.776 | 0.810 |
| F stat | 205.53 | 153.94 | 236.66 | 175.55 |
| Prob > F | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6 Conclusions and Implications

6.1 Conclusions

Our study mainly focuses on investigating the credence aspects of audit services within Swedish settings and explores the effects on audit fees of two audit reform policies. The first step was to build an effective regression model to explore credence aspects. Based on a feasible regression model, we moved to answer the second research question regarding the effect of legislation changes on audit fees.

The results of the primary regression models and robustness tests normally indicated that companies purchasing more NAS from their auditors pay lower audit fees in the Swedish context. This negative relationship could result from the knowledge spillover effect, that any concomitant increase in client knowledge may “spill over” from one service to another, leading to cost reductions. The general belief is that if the cost savings pass on to clients, it is via a lower audit fee rather than a lower consulting fee (Simunic, 1984). However, considering the credence attribute of professional services from another perspective, CPA firms might use audit as a loss leader to retain clients and obtain the more lucrative consulting services (Hillson and Kennelly, 1988). The decreasing audit fees used to procure clients do not directly mean lower total fees. Auditors could recover the losses incurred on the audit by earning “excess” returns from consultancy fees intentionally, according to the information asymmetry. The price switch could also stem from the strategic role of consulting services in CPA firms, including growth opportunities, talent attraction and retention and satisfying clients’ needs.

This negative correlation between *NAFRATIO* and audit fees can also be explained the other way around. When auditors provide both audit and non-audit services, they may have the intention to keep NAS fees low in order to meet the threshold set by the EU Commission. In 2014, the EU audit legislation introduced Regulation (EU) 537/2014, which contains additional requirements relating specifically to statutory audits of PIEs in addition to the ones stated in Directive 2014/56/EU. The Regulation became applicable on 17 June 2016. As written in the guidance on non-audit services and fee cap from PricewaterhouseCoopers, “A cap on permissible NAS of maximum 70% of the average of the fees paid in the last three consecutive financial years for the statutory audit(s) of the audited entity and, where applicable, of its parent undertaking.” (PricewaterhouseCoopers, 2016, p.03). In order not to breach the Regulation, audit firms will control ratios of non-audit fees to total fees beneath the 70% threshold when they negotiate prices with PIEs. Indeed, from our regression results for the second research question, the t-statistic value of *NAFRATIO* of Policy 1 is higher than that of Policy 2. *NAFRATIO* is correlated negatively at a significant 5% for Policy 1, while it is correlated negatively at a significant 1% for Policy 2. This is exactly in line with our prediction that, due to restrictions on provision of NAS and NAS ratios, *NAFRATIO* should contribute more explanatory power to audit fees. *CEORATIO*, as another proxy

to credence attributes of the audit, tells a different story. The regression results of both Policy 1 and Policy 2 show that *CEORATIO* is not significant, and we cannot see any explanatory power from *CEORATIO* to audit fees. The audit contracting could be conditional on characteristics of the personnel doing the negotiating (Causholli and Kenchel, 2012), but from our regression results, at least from compensation of the executives, *CEORATIO* does not indicate a credence aspect of the audit.

It is intriguing to investigate what impacts on audit fees these two policies will bring about. After considering credence aspects, we expect the explanatory power to audit fees from our independent power would be stronger.

After immediate implementation of the statutory audit exemption in Sweden in 2010, a drop in demand for external audit for SMEs was noticed in Sweden. Due to the sudden decreased demand, audit firms lost some SME customers who met criteria for audit exemption. Whether from an increased competition perspective or from audit firms' attempt to keep customers, cutting audit service prices may be the most common practice for audit firms. The negative coefficient confirms our prediction that on the audit market, audit firms offered lowered audit fees to their clients on average.

The introduction of KAMs complicates auditors' litigation and auditors' efforts. While some scholars and practitioners argue that this additional disclosure would increase auditors' litigation risk, others hold the opposite opinion. Since auditors are required to document what audit procedures they have performed in the process of an audit for specific accounts, the introduction of KAMs will not double auditors' efforts. As for auditors' litigation risk, in the event of material misstatement, auditors' negligence will be judged by jurors from a number of dimensions. From our regression results, there is no spike in audit fees on average after the introduction of KAMs, comparing period 2017-2018 to period 2014-2016.

6.2 Contribution

Since Simunic (1980), a lot of research has been done investigating what drives audit fees. Causholli and Knechel (2012) suggested that future research would benefit from considering credence aspects of audits. We operationalized credence aspects of the audit into *NAFRATIO* and *CEORATIO*, and investigated whether there was any opportunistic pricing phenomenon in audits. Especially after the regulation effective since 2016, the restrictions on provision of NAS boost the interlink between pricing of audit services and pricing of NAS. *NAFRATIO*, as a credence characteristic, brings us new insight into determinants of audit pricing and helps us answer questions from those clients wondering "why audit service is so expensive."

Every couple of years, a new audit regulation will be introduced and applied. Our study combines previous studies with what happened in Sweden regarding the audit market to explore how the audit market will react to future regulation changes.

6.3 Limitations

First, we only used quantitative indicators, such as the ratio of NAS fees to total fees and the ratio of executive compensations to net income, as proxies to examine the credence attributes of audits, but some qualitative information may provide more insights when it comes to characteristics of the company executives, such as gender, age, tenure, race and nationality. Second, almost half of the observations in our sample are finance and real estate companies; even though we have done a relevant robustness test, the results are not totally comparable to previous studies. Additionally, the observations in our sample are relatively large companies because SMEs do not disclose audit fees after 2009. On top of that, most of the companies employ Big 4 as their external auditors, so this study does not investigate the smaller segment and the effect of Big 4 premium issues. Last, other issues might have occurred in the relevant years that have some impact on audit fees in an unobservable way. For instance, our result regarding the statutory audit exemption on audit fees could possibly be biased due to the aftershock of the world financial crisis in 2008.

6.4 Suggestion for Future Studies

Future study might consider carrying out some qualitative research regarding the credence attributes of audits by taking interviews or questionnaires anonymously to gain more insights about the price negotiation process. In addition, further study could analyse these correlations from different dimensions, such as the relationship between the incremental change of audit fee, non-audit fee and the total fee. Regarding the effect of legislative changes, a difference in approach could yield more accurate results if all the information needed is available.

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8 Appendices

8.1 Definitions of Variables

| Variables | Definitions |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| POST | 0 if the year is before the policy implementation, 1 otherwise |
| NAFRATIO | The ratio representing NAS fees (KSEK) to sum of audit fees and NAS fees (KSEK) |
| NAFAF | The ratio representing NAS fees (KSEK) to audit fees (KSEK) |
| CEORATIO | The ratio representing the executives compensation (KSEK) to net income (KSEK) |
| CEONS | The ratio representing the executives compensation (KSEK) to net sales(KSEK) |
| ASSET | The natural logarithm of total assets (KSEK) of the audited company |
| EMPLOYEE | The square root of employee amount of the audited company |
| RECEIV | The ratio as average total receivables (KSEK) to average total assets (KSEK) |
| INVEN | The ratio as average total inventory (KSEK) to average total assets(KSEK) |
| INTANGIBLE | The ratio as average total intangible (KSEK) to average total assets (KSEK) |
| PFAIL | Please see Appendix7.4 detailed calculation method |
| LEVE | The ratio as average total liabilities (KSEK) to average total assets (KSEK) |
| ISSUE | 1 if the sum of long-term debt (KSEK) or equity (KSEK) issued during the last year is more than 5 percent of the total assets (KSEK), and 0 otherwise |

8.2 Calculation of Probability of Failure (Pfail)

The definition of business failure in Skogsvik (1987) includes bankruptcy or composition agreement, voluntary shut-down of industrial activity, and substantial subsidies from the Swedish state. We use the multivariate prediction model to determine the probability of failure, which is one of the variables *PFAIL*. Considering the prediction error, we calculated the value based on 1 year horizon. Below table illustrates the coefficients in different horizons and average prediction error.

| Table 15: Coefficients and intercepts in estimated probit regressions in Skogsvik (1987) | | | | | | |
|-------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|
| Financial ratio | 1 | 2 | 3 | 4 | 5 | 6 |
| R _A | -4.3 | -3.8 | | | | |
| R _L | +22.6 | +14.5 | +13.2 | +16.1 | +13.5 | +17.5 |
| t (1) | | | +0.2 | | | |
| TIV | +1.6 | +0.7 | +1.3 | +0.8 | +0.9 | +1.0 |
| LI | | | -0.5 | -0.8 | -1.0 | -0.4 |
| ER | -4.5 | -2.9 | -3.3 | -2.5 | -1.8 | -1.5 |
| E' | +0.2 | | | | | |
| Diff(R _L) | -0.1 | | | | | |
| Constant | -1.5 | -1.1 | -1.1 | -1.0 | -1.1 | -1.4 |
| Average prediction errors | 16.7% | 21.6% | 25.3% | 26.1% | 25.4% | 26.7% |

Please see below the definitions of financial ratios:

$$R_A = \frac{\text{Earnings before taxes and interest costs}}{\text{Average of assets}}$$

$$R_L = \frac{\text{Interest cost}}{\text{Average of company liabilities}}$$

$$t(1) = \frac{\text{Tax cost}}{\text{Earnings before tax cost}}$$

$$TIV = \frac{\text{Average of inventory}}{\text{Sales revenues}}$$

$$LI = \frac{\text{Cash assets (Closing Balance)}}{\text{Current liabilities (Closing Balance)}}$$

$$ER = \frac{\text{Owners' equity (Closing Balance)}}{\text{Assets}}$$

$$E' = \frac{\text{Change in owners' equity}}{\text{Owners' equity (Opening Balance)}}$$

8.3 Regression Result without Data Winsorization

Table 16: Regression results without data winsorization

| VARIABLES | Model 1 | | Model 2 | |
|--------------------|----------------------|----------------------|----------------------|----------------------|
| | Sample 1 | Sample 2 | Policy 1 | Policy 2 |
| POST | | | -0.120** (-2.57) | -0.014 (-0.31) |
| NAFRATIO | -0.328** (-2.40) | -0.824*** (-6.50) | -0.349** (-2.56) | -0.833*** (-6.59) |
| CEORATIO | 0.004 (0.29) | -0.006 (-0.18) | 0.005 (0.38) | -0.005 (-0.14) |
| ASSET | 0.399*** (16.15) | 0.513*** (26.03) | 0.400*** (16.17) | 0.515*** (26.31) |
| EMPLOYEE | 0.010*** (17.37) | 0.006*** (12.29) | 0.010*** (17.37) | 0.006*** (12.26) |
| RECEIV | 0.374*** (2.94) | 1.818*** (9.71) | 0.373*** (2.94) | 1.826*** (9.79) |
| INVEN | 0.961*** (3.51) | 1.896*** (8.44) | 0.981*** (3.59) | 1.899*** (8.46) |
| INTANGIBLE | 1.156*** (7.99) | 1.759*** (15.53) | 1.149*** (7.94) | 1.763*** (15.60) |
| PFAIL | -0.998*** (-3.66) | 0.017 (0.11) | -0.967*** (-3.55) | 0.025 (0.16) |
| LEVE | -0.700*** (-5.31) | 0.575*** (5.44) | -0.695*** (-5.28) | 0.575*** (5.46) |
| ISSUE | 0.021 (0.39) | 0.140*** (2.80) | 0.025 (0.48) | 0.141*** (2.85) |
| Constant | -1.447** (-2.57) | -1.319*** (-4.01) | -1.406** (-2.50) | -1.348*** (-4.14) |
| Industry FE | Included | Included | Included | Included |
| Region FE | Included | Included | Included | Included |
| Year FE | Included | Included | | |
| Observations | 938 | 772 | 938 | 772 |
| R-squared | 0.776 | 0.806 | 0.775 | 0.806 |
| Adjusted R-squared | 0.766 | 0.796 | 0.766 | 0.797 |
| F stat | 185.99 | 226.95 | 168.78 | 210.32 |
| Prob > F | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1