The Impact of Non-Audit-Services on Audit Quality

Evidence from Swedish Private Firms

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Abstract

This paper investigates non-audit services (NAS) impact on audit quality, a topic that has garnered significant attention due to concerns about auditors' ability to maintain independence. The increasing prevalence of NAS, coupled with a series of accounting scandals, has intensified stakeholder concerns, yet the true effect of NAS on audit quality remains ambiguous. This is especially true in a Swedish private setting, where few studies within this field have been conducted and the specific regulatory environment creates reason to believe that audit-independence risks being jeopardized. For those reasons, this study employs logistic regression analysis to assess the association between NAS fees and the audit opinion to examine if the provision of NAS impairs audit quality in large Swedish private firms. The results of this study show no evidence for NAS to impair audit quality in terms of audit independence. Furthermore, the study finds no conclusive evidence that audit quality varies with the size of the audit firm. Ultimately, the study is able to strengthen regulators', as well as other stakeholders', trust in issued audit opinions and hence the accuracy of audits performed on Swedish private firms.

Keywords: Audit Quality, Audit Independence, Non-Audit-Services, Audit Opinion, Swedish Private firms

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1. Introduction

The initial section of this study provides the reader with an introduction to the subject matter, aiming to establish a foundational understanding and highlight the necessity of further research in this area.

1.1 Background

In 2022, as much as 58% of KPMG's total revenue was made up of fees stemming from advisory services. This implies that a majority of the audit firm's revenue stems from services other than auditing, for example, tax-related advisory services. The same is true for EY and PWC, two other "Big 4" firms, as about 50% of their total revenue is made up of non-audit services. However, non-audit services have not always taken such a central role in the performance of audit firms. In fact, the amount of revenue stemming from non-audit services relative to audit firms' total revenue has increased steadily throughout the years. This development implies a significant change in the industry climate and a growing importance of non-audit services for traditional audit firms' operations (see **Appendix A**).

This development has, however, not gone by without notice and response from industry actors. Most recently, EY announced "Project Everest" which aimed to separate the firm's audit services from its consultancy and non-audit-services to avoid any conflict of interest between the two divisions and to enable the consultancy branch to serve more clients and accelerate growth (O'Dwyer, 2022). The initiative had the potential to completely reshape the industry but was abruptly put to a halt as the US executive team decided to not move forward. The global team was nonetheless quick to communicate that they remain "committed to creating two world-class organizations that further advance audit quality, independence, and client choice" (O'Dwyer, 2023). EY's initiated project was on the other hand not the first attempt to strengthen the independence of audit firms and reduce the risk of a conflict of interest, as the debate about audit firms' independence has been ongoing for years(Hay et al., 2006a).

The primary catalyst for the debate and heightened pressure on auditors to address the issue stems from the numerous accounting scandals that occurred throughout the 21st century (Quick & Warming-Rasmussen, 2015). A notable example is the downfall of the American company Enron and its filing for bankruptcy in December 2001 which marked the largest

corporate bankruptcy to this date and resulted in widespread consequences. Enron created a complex and opaque organizational and financial structure that enabled them to conceal the true financial performance of the company and mislead investors. Arthur Andersen, Enron's auditor at the time, was later found guilty of destroying documents that were relevant to the Securities and Exchange Commission. Worth mentioning is that Arthur Anderson not only acted as Enron's auditor but also performed extensive consultancy services on behalf of the firm, and hence received significant financial compensation in return. The scandal caused a great loss of public trust in the corporate sector and raised serious concerns not only about the integrity of financial reporting but also about corporate governance and regulatory oversight (Bondarenko, 2001).

In order to prevent similar scandals, improve financial reporting and auditing standards, as well as to regain the trust of investors, the American Sarbanes-Oxley Act was implemented and became effective in 2002. As part of this act, a wide range of reforms, such as stricter financial controls, increased transparency in financial reporting, and penalties for corporate fraud were introduced. It also implemented more definite boundaries between audit and pure consulting services, prohibiting auditors from providing consultancy services to an auditee (Bondarenko, 2001). Nevertheless, certain circumstances still made the provision of non-audit services related to the audit allowed. Although not to the same extent as in the US, and a couple of years later, the European legislation also implemented stricter regulations to enhance audit independence (BDO, 2016). This was partially done through the EU Audit Reform enacted in 2016. The reform specifically applies to Public Interest Entities (PIEs) and these firms are, as a consequence of the reform, for example, required to rotate their external auditors every ten years and their internal auditors every five years. The reform and its regulatory restrictions are, however, not applicable to private entities, thus making the provision of non-audit services in a private setting less regulated.

Despite the legislative initiatives taken and a stricter regulatory environment both in Europe and the US, society has witnessed multiple accounting scandals in also more recent years. Project Everest is, for example, likely to be the aftermath of one of the most recent accounting scandals in which EY played a central role, namely the Wirecard scandal. Wirecard was a German fintech company that provided payment services, and although the company was backed by many supporters in Germany, some actors early on expressed their concerns about their accounting practices. Despite this, the fraud remained undiscovered until

June 2020 when Wirecard filed for bankruptcy after executives announced that €1.9bn of cash on the balance sheet was non-existent. Up until this point EY had been auditing Wirecard for several years and had issued no concerns or red flags associated with the company's financial statements, although industry experts say that numerous indicators of fraud should have triggered further audit acts (Storbeck, 2021). Instead, EY's employees relied on management representations and did neither independently verify Wirecard's assets nor its transactions (Meagher, 2023). This, combined with the significant financial compensation received from Wirecard in terms of audit and advisory fees, caused reason to question their independence (Storbeck, 2021). As a consequence, EY and its employees were punished with fines in early 2023, and banned from taking on new audit mandates for listed German companies for the upcoming two years (Manager Magazin, 2023).

1.2 Research Gap

Despite the considerable amount of research dedicated to examining the impact of non-audit services (hereafter denoted NAS) on audit quality, no official consensus regarding the precise nature of this relationship has been reached. Hence, more than 20 years after the Enron scandal and multiple regulatory enforcements, the answer to whether auditors are able to stay independent while offering NAS remains ambiguous. The discrepancy emerges as a result of the heterogeneous findings and contradictory interpretations put forth in different studies. A number of studies indicate that the provision of NAS enhances the audit quality and does not provide any conclusive evidence of compromising audit independence (e.g., Simunic, 1984; Craswell, 1999; Defond et al, 2002; Geiger & Rama, 2003; Robinson, 2008; Svanström, 2013; Zhang et al., 2016). At the same time, other studies propose that the provision of NAS is likely to impair the auditor's ability to remain unbiased and act independently (e.g., Wines, 1994; Firth, 2002; Frankel et al., 2002; Antle et al., 2006; Hay et al, 2006a; Francis & Ke, 2005). Hence, conflicting results require further research to elucidate this phenomenon.

Furthermore, only a handful of studies have been conducted in a private setting, specifically focusing on small- and medium-sized enterprises (hereafter denoted SMEs) that are not publicly owned or traded, despite their significant importance in the global economy (Svanström, 2013). It is also essential to highlight that the criteria for statutory audit firms are less stringent for private entities compared to public entities (§4(2), Regulation 537/2014/EC), thereby granting more flexibility in the supply of NAS. Furthermore, the

relationship between NAS and audit quality may be more significant in a private setting as indications suggest that auditors play a more prominent role in the operations of private firms, potentially taking on responsibilities similar to those of management executives. Hence, the characteristics of the audit-client relationship differ depending on the legal shape of the auditee and are likely to influence the relationship between NAS and audit quality (Svanström, 2013).

In addition, there is a lack of research conducted in the Swedish context. The majority of research focuses on firms in the US, UK, New Zealand, and Australia, where a distinct legislative framework, different from that of Sweden and slightly more strict, shapes the audit profession and industry climate. Thereafter, the litigation risk, which has been found to be crucial for ensuring high-quality audits, is notably lower in Sweden compared to countries like the US, where most of the studies on this topic have been conducted. (Antle et al., 1997; Svanström, 2013). Therefore, it is valid to question the relevance of international research findings and their implications for the audit market in Sweden. To conclude, the varying results from previous studies, combined with the lack of studies done in a Swedish setting and on private firms, portray a clear research gap to fill.

1.3 Purpose

In light of the research gap outlined above, this study's purpose is to investigate NAS' impact on audit quality in large Swedish private firms. The choice to focus on private firms is deliberate, aiming to shed light on the unique dynamics that may arise from a potentially stronger bond between auditors and their clients, as well as the nuances of a more lenient regulatory framework compared to public firms. The specific focus on the Swedish audit market, whose' legislative environment is slightly less strict than certain international markets, stresses the importance of the study. Furthermore, the volatile and constantly evolving industry environment resulting from advancements in the audit profession highlights the importance of this topic and the need for academic research to investigate this intricate relationship further.

1.4 Delimitations

Although a rise in NAS offered by traditional audit firms has occurred in most global markets, this thesis specifically concentrates on the private market in Sweden. The choice of this focus is driven by the limited research within the private domain. In Sweden, large

companies adopting the K3 framework are required to disclose audit and non-audit fees. Nevertheless, studies specifically addressing the Swedish market are few. These factors collectively justify the authors' decision to narrow the scope of the research to encompass only large Swedish private firms. This approach is not only relevant but also adds value for policymakers and industry stakeholders.

2. Theoretical Framework

The theories presented in this section serve as the foundation for achieving the purpose of the study and provide guidance in formulating the stated hypotheses.

2.1 Agency Theory

In their article "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure" published in 1976, Michael C. Jensen and William H. Meckling first introduced the Agency theory. The authors define an agency relationship as a contractual agreement in which one or more individuals (the principal(s)) engage another individual (the agent) to carry out a task on their behalf, which includes granting the agent some level of decision-making authority. Subsequently, it is presumed that if both the agent and the principal are utility maximizers, there is a strong probability that the agent will not act in the principal's best interest at all times, resulting in so-called agency costs. The theory is most commonly applied to a stakeholder and executive management context, where the stakeholder (the principal) provides the executive management (the agent) with resources and mandate. In light of the Agency theory, it has been argued that the demand for an external audit stems from a stakeholder request to monitor accounting practices performed by management (Wines, 1994). Thus, auditors are contracted to issue an opinion on the fairness of the financial statements that can act as an assurance for the stakeholders i.e., the principals (Ashbaugh, 2003).

Although the primary responsibility of the auditor is to thoroughly examine the client's financial statements and provide an unbiased assessment of their accuracy, there is a desire to cultivate client relationships and prevent the loss of audit fees (hereafter denoted AF). Therefore, agency costs are likely to arise also in this scenario, where the stakeholder of the audited firm assumes the position of the principal and the audit firm assumes the position of the agent. Within this context, an inherent conflict of interest arises due to the fact that the audit firm is chosen and remunerated by the very firm it is conducting an audit on. Consequently, there is a risk that the auditor prioritizes the desires of the client over providing an unbiased assessment for the benefit of the stakeholders (Gavious, 2007).

2.2 The Economic Model of DeAngelo

In her article “Auditor size and audit quality” from 1981, DeAngelo outlines an economic model to explain the dynamics of audit quality. DeAngelo defines audit quality as the likelihood that the auditor (1) detects an error in the client’s financial statements, and (2) the likelihood that the auditor reports the error. Thus, audit quality is the result of both the competence and the independence of the auditor. Moreover, DeAngelo asserts that there exists an adverse correlation between an auditor's ability to remain independent and their ability to retain the audited client. This arises primarily as a result of the auditor's incentives to offset initial "start-up costs" with new clients, such as gaining a thorough understanding of the client's business. These costs are not faced by auditors who have a long-standing relationship with clients, and the decision to terminate an audit assignment could therefore be used by the auditee as a means to pressure the auditor into issuing an unmodified opinion. On the other hand, DeAngelo also raises the argument that the perceived or observed lack of independence of an auditor will have a material effect on the audit firm’s reputation, which makes the auditor less likely to jeopardize its independence. She concludes her article by stating that bigger audit firms, having a weaker economic bond to every individual client and who are more cautious about their reputation, are less likely to issue a biased opinion than smaller audit firms. Other authors have extended the research by DeAngelo, by adding the concept of NAS. Beck et al. (1998) tap into the concept of knowledge spillovers and argue that NAS could lower audit costs, which in turn is likely to result in more audit services (hereafter denoted AS) being purchased. As a consequence, the economic bond between the auditor and the client is strengthened, which risks violating auditor independence (Beck et. al, 1998).

3. Literature Review

The following section covers previous studies and publications within the research domain. It starts by providing an overview and definition of audit quality and non-audit services, followed by an in-depth analysis of previous research conducted in this area. It concludes by elaborating on the development of the thesis hypotheses.

3.1 Audit Independence

3.1.1 Regulation

The auditor's independence is regulated by Swedish law and particularly by the Swedish audit law (SFS 2001:883). The law states that one of the auditor's obligations is to conduct "God revisionssed", in English translated to good audit practice (SFS 2001:883, 19§). In addition, paragraph 20 states that an auditor should "conduct their work with impartiality and independence while staying objective in its standpoints". This is further emphasized through regulation that determines under what circumstances an individual may act as an auditor in order to avoid the risk of biased opinions (SFS 1999:1079, 17§). To ensure this, the auditor shall, before every potential client involvement, assess whether there are certain circumstances that could jeopardize the confidence in their impartiality and independence. The law provides explicit guidance to auditors regarding services that are allowed, as well as circumstances in which the auditor must refuse or renounce their responsibility for an audit assignment. The provision of NAS for non-audit activities which to some extent also are covered by the audit assignment, is an example of such a situation (SFS 2001: 883, §21). The auditor would, for example, not be allowed to first perform tax-related advisory services for a client and later audit the same client's tax reporting, as this implicitly would imply auditing their own work and pose a so-called "Self-review threat" (IFAC, 2008).

Moreover, Sweden's legislation has been significantly influenced by European regulation following its entrance into the European Union in 1995, which necessitated the alignment of the country's national laws with EU regulations. Hence, the Swedish Annual Accounts Act from 1995 fully adheres to the 8th Council Directive 2014/56/EU. Furthermore, the concern for the auditor's ability to remain independent while also providing NAS is a central aspect of this regulatory framework. The directive emphasizes the potential threats to auditor independence when considerable compensation is received through NAS, underlining the

importance of auditor objectivity and the avoidance of conflict of interest. Worth noting is that the requirements for statutory audit firms are stronger for PIEs than for private entities. The Committee of European Auditing Oversight Bodies (CEAOB) has, for example, defined a fee cap for NAS provided to PIEs. Article 4(2) of Regulation 537/2014/EC states that an audit firm serving a client for three or more consecutive financial years may only provide NAS to the audited client that amounts to “no more than 70% of the average of the fees paid in the last three consecutive financial years for the statutory audit(s) of the audited entity”. This is, nevertheless, an example of a regulatory restriction that does not apply to audits performed on private entities.

3.1.2 Audit Independence Definition

As previously mentioned and defined by The Economic Model of DeAngelo in 1981, audit quality is commonly said to consist of two core elements, and their respective likelihood to take place: (1) the likelihood that the auditor detects an error, and (2) the likelihood that the auditor reports the error. Moreover, DeFond and Zhang (2014), define audit quality as “greater assurance of high financial reporting quality” and further identify the value of an audit to be the provision of an “independent assurance of the credibility of accounting information, which improves resource allocation and contracting efficiency”. Although independence evidently plays a central role in the audit profession, historical research shows that it has been a challenge to precisely articulate (Antle et al., 1997; Schuetze, 1994). However, several efforts to define audit independence were made in the 1980s, and these continue to influence scholarly discussions today. Some examples are (1) "The likelihood that, upon uncovering an inconsistency, the auditor will disclose it" (DeAngelo, 1981), (2) "The chance that an auditor will highlight identified deviations from agreements" (Watts & Zimmerman, 1983) and (3) "An auditor's capacity to stand firm in the face of client influences" (Knapp, 1985).

Furthermore, research emphasizes two types of audit independence: "independence in fact" (also referred to as independence in thinking) and "independence in appearance". The International Federation of Accountants defines “Independence in fact” as an environment that is (1) free from influences that could impair a professional opinion, and (2) that allows for an individual to “act with integrity and to exercise objectivity and professional skepticism (2005). Thereafter, the Federation defines “Independence in appearance” as avoidance of facts and circumstances that would make a third party question the auditor’s integrity,

objectivity or professional skepticism. Hence, independence in fact primarily pertains to whether the auditor is inclined to disclose all identified errors, whereas the latter definition pertains to how a third party perceives the auditor's independence (Church et al, 2015).

3.1.3 Audit Independence's Relevance

According to the International Standard on Auditing (hereafter denoted ISA) 200 (2016), independence "safeguards the auditor's ability to form an opinion without being affected by influences that might compromise that opinion". It plays a crucial role in enabling the auditor to stay objective, act with integrity, and pursue professional skepticism in its work—all three, ethical cornerstones in an audit commitment. ISA 200 (2016) further states that "the overall objective of the independent auditor is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatements in accordance with the auditor's findings". Moreover, an auditor must safeguard the market's confidence in their independence in order to generate a demand for AS and uphold the confidence in their contribution to external stakeholders and society as a whole (Wines, 1994). According to Wines (1994), an auditor that is proven to be less independent than what is expected, will see its reputation being harmed and the value of their AS decrease. In addition, he defines the audit opinion as a guarantee of the senior management's competence in fulfilling their assigned responsibilities and acting in the stakeholders' best interests. The accuracy of the audit opinion, which is highly influenced by the auditor's independence, is thus of imperative importance for the stakeholders of the firm, from which the demand for an external audit is thought to originate (Wines, 1994).

3.1.4 Measuring Audit Quality

Previous research provides multiple alternatives for measuring audit quality, but without any particular guidance on their applicability or suitability to different contexts (Defond & Zhang., 2014). The following metrics are, however, examples of data points that have been used to assess audit quality; *(1) the audit opinion* (e.g., Wines, 1994; DeAngelo, 1981; Craswell 1999; Craswell et al., 2002; Hope & Langli, 2009; Hay et al. 2006a; DeFond et al, 2006; Barkess & Simnett., 1994), *(2) earnings management* (e.g., Frankel et al., 2002; Ashbaugh et al., 2003; Antle et al, 2006; Lin & Li., 2005; Gul et al., 2007) and *(3) Capital market perception* (e.g., Dhaliwal et al., 2008, Brandon et al., 2004; Krishnan et al., 2005; Svanström, 2013). Due to the lack of consensus among researchers concerning the relevance and appropriateness of different measures for assessing audit quality, researchers have

employed various metrics when studying similar samples, which has left them with diverse results. An instance of this can be seen in the study carried out by Ashbaugh et al. (2003), which challenges the findings of Frankel et al. (2002). The authors propose that the findings of Frankel et al. (2002) are impacted by the decisions made in the research design and do not provide consistent proof to uphold the claim that auditors' independence is undermined when clients purchase a greater proportion of NAS.

The modified audit opinion as a proxy for audit quality is based on the fact that the ISA requires auditors to (1) form an opinion on the financial statements from an evaluation of audit evidence obtained; and (2) to express that opinion clearly through a written report. Furthermore, the task of the auditor is to form an unmodified opinion if it is possible to conclude that the client's financial statements are prepared in accordance with the applicable financial reporting framework. However, if the auditor detects that (1) the financial statements as a whole are not free from material misstatements, or (2) that the auditor is not able to obtain sufficient evidence to determine that the financial statements are free from material misstatements, the auditor should issue a modified opinion (ISA 700, 2016). Thereafter, the modified opinion should be issued in accordance with ISA 705 (2016), stating that the modified opinion can take the following shapes; (1) Modified Opinion, (2) Adverse opinion, and (3) Disclaimer of opinion, depending on the specific circumstances and weaknesses of the financial statements. In light of this, unmodified opinions are more likely to be issued by an auditor whose independence has reason to be questioned (Firth, 2002). This reasoning is used by Wines (1994), Craswell (1999), and Barkess & Simnett (1994) who all use the modified audit opinion as evidence for the auditor exercising independent work. The presumption in their studies being that an auditor whose independence is impaired is less likely to issue a modified opinion.

In addition, several studies use a going concern opinion as evidence for the quality of the work performed by the auditor (e.g., DeFond et al., 2002; Geiger & Rama (2003); Tagesson & Öhman, 2015). The going concern opinion aims to signal a concern for the firm's ability to continue operating in the near future as its financial health is deemed at risk (Tagesson & Öhman, 2015). Therefore, the main focus of these studies surrounds financially distressed firms and whether they accurately received a going concern opinion before eventually going bankrupt. The absence of a going concern opinion in a situation when it was deemed appropriate indicates both the auditors' ability to accurately evaluate the financial statements

and their level of independence. Hence, the strength of this metric is that it allows the researcher to evaluate both aspects of audit quality; (1) auditors' ability to detect material misstatements and (2) audit independence (DeAngelo, 1981).

Thereafter, the concept of earnings management is said to signal low-quality financial reporting but since earnings management per se is hard to study, proxies are used. Examples of these proxies are discretionary or abnormal accruals (Frankel et al., 2002; Aschbaugh et al., 2003; Antle et al., 2006; Habib, 2012; Svanström, 2013). Accruals are financial statement items that stem from an accrual accounting method in which earnings and expenses are recorded in the period they are realized but not necessarily when cash is exchanged. Discretionary accruals are defined as total accruals less the expected amount of accruals. In this context, a positive correlation between accruals and non-audit fees (hereafter denoted NAF) would imply a threat to audit independence. This measurement of audit quality has, however, received critique as it may be hard to accurately determine normal or expected accruals. Assumptions about what defines "normal" or "expected" accruals are required when estimating discretionary accruals and, consequently, different models may produce different estimations, making it difficult to acquire a consistent measure. Furthermore, there are various economic reasons unrelated to audit independence that can influence discretionary accruals. An entity's legitimate economic reasons for particular accruals may for example be misunderstood as an indication of weakened audit independence (Habib, 2012; Svanström, 2013). However, earnings restatements can also be used as a proxy for earnings management. In this case, a higher incidence of restatements indicates an impairment of audit independence as more audit failures are detected (Lin & Li., 2005).

Studies examining capital market perceptions analyze how the capital markets respond to the relationship between auditors and clients, specifically in relation to the provision of NAS. The assumption is that if the market perceives NAS to compromise audit independence, this could be reflected in the market's response to the company's financial disclosures (Lim & Tan, 2008). Studies in this area have looked at, for example, stock price reactions to earnings announcements and how NAS affects investor confidence in a company's financial statements (Habib, 2012). The studies have predominantly concentrated on PIEs or have been carried out utilizing survey data (e.g., Svanström, 2013).

3.2 Non-Audit Services

3.2.1 Definition

NAS encompasses a range of activities provided by audit firms that extend beyond the conventional scope of the audit process. According to the European Commission's 2017 definition, these services are distinct from tasks that are inherently included in standard audit assignments. The primary purpose of these services is to enhance the value for clients, without exerting direct influence on the audited financial statements. Within the Swedish regulatory framework, and more specifically in Chapter 5, 21§ of the Swedish Annual Accounts Act (Årsredovisningslag, SFS 1995:1554), NAS are systematically categorized into three main segments: (1) audit-related services, (2) tax-related services, and (3) other miscellaneous services.

3.2.2 Non-Audit-Services as a Proxy for Independence

The level of NAS is commonly used to evaluate the independence of the auditor as it may create certain conflicts of interest (e.g., Simunic, 1984; Antle et al., 2006; Svanström, 2013; DeFond & Zhang, 2014). Its mere presence implies that both social and economic bonding is increased between the auditor and the auditee, which risks jeopardizing the auditor's ability to remain independent (Svanström, 2013). Furthermore, Svanström describes social bonding as a familiarity threat. This relates to the idea that increased frequency of interactions between the parties involved promotes the development of mutual trust, which is often seen as beneficial for consulting services. However, potentially harmful to the quality of an audit as it poses a threat to the auditor's ability to remain independent to the client. Moreover, Bell et al. (2015) define economic bonding as "becoming financially dependent on multiperiod fees stemming from AS and NAS provided to the client". This dependence may create incentives for the auditor to act in a biased manner (Svanström, 2013). Further, Pott et al. (2009) explicate that the economic bond could impair the independence because (1) the audit firm is unwilling to criticize the work of its own department, (2) does not want to lose lucrative NAS engagements, and (3) does not want to lose the audit engagement. This situation is in general terms referred to as a "self-interest threat" and the magnitude of its implications is partly based on "The significance of the client qualitatively and/or quantitatively to the firm" (IFAC, 2008).

3.2.3 International Regulatory Differences

National, as well as international, legislative bodies, have expressed concern about NAS' potential negative impact on audit independence. Legislation concerning the provision of NAS combined with traditional AS does however differ between jurisdictions and are not seldom a result of historic audit scandals in the specific nation. The Sarbanes-Oxley Act (2002) was for example a direct response to the Enron Collapse, while the revised 8th Directive in the European Union was a result of various accounting scandals that occurred around 2001 (Pott et al., 2009). The Swedish legislation generally adheres to the 8th EU directive, the EU recommendation on auditor independence, and the IFAC's Code of Ethics. Nevertheless, it is comparatively less stringent than the laws in countries like the US, Germany, and France. In these countries, there are a greater number of situations in which auditors are prohibited from providing NAS for the audited client (Svanström, 2013). In Sweden, the law states that an auditor is allowed to provide audit-independent advisory services related to, for example, tax and accounting activities as long as it does not jeopardize the auditor's independence (SFS 2001:883).

3.3 Prior Research

The interplay between AS, NAS, and audit quality has been a central topic of scholarly discussion for decades. This section covers research, findings, and conclusions expressed within the academic domain.

3.3.1 Non-Audit-Services' Impact on Audit Quality

Any favorable association between NAS and audit quality is grounded in the potential benefits of a knowledge spillover from NAS to AS (Simunic, 1984; Svanström, 2013). Knowledge spillover implies that the additional insights gained from NAS can positively affect the efficiency and effectiveness of audit tasks, thereby potentially improving the auditor's ability to detect material misstatements in the auditee's financial report. Simunic's work (1984) was vital in shaping this discussion. The author highlighted that auditors' supply of NAS, provides them with a deeper understanding of the auditee's operations, industry nuances, and company-specific risk factors. This know-how has the ability to streamline the audit process and result in potential benefits for both the auditor and the auditee. Furthermore, when delving deeper into the economic implications, the concept of quasi-rents emerges. In the audit context, quasi-rents refer to the additional returns an audit firm can

capture thanks to its client-specific knowledge. Thus, by offering both AS and NAS, the auditor accumulates a vast amount of client-centered insights unavailable to other audit firms. These insights offer competitive advantages by allowing the auditor to potentially charge higher fees and hence earn quasi-rents (Simunic, 1984).

Defond et al. (2002) expand Simunic's conversation, emphasizing the economic auditor-client bond's implications. The authors hypothesize that an auditor's economic bond with a client, strengthened by quasi-rents, might threaten the auditor's independence and ability to remain objective, potentially decreasing audit quality. Hence, a paradox arises due to the fact that the knowledge spillover can enhance audit efficiency in terms of detecting misstatements at the same time as its economic implications can pose a threat to audit independence. Thus, the provision of NAS and quasi-rents may appear favorable for audit firms but is not without controversy.

Because of the financial attractiveness of quasi-rents, Hay et al. (2006a) find that auditors may be reluctant to give a modified audit opinion that could damage the client relationship, although it is deemed the appropriate choice of opinion. However, a plethora of studies demonstrates a lack of any significant relationship between NAS and audit quality (e.g., Craswell, 1999; Defond et al., 2002; Geiger & Rama, 2003; Robinson, 2008; Zhang et al., 2016; Hope & Langli, 2009). These scholars instead report a favorable relationship by stating that it only enhances the auditor's ability to detect material misstatements without posing a threat to their independence. Meanwhile, often cited work within the research domain includes Wines (1994), Firth (2002), Frankel et al. (2002), Antle et al. (2006), and Fargher & Jiang (2008). These authors did, in contrast, reach a consensus about the fact that the economic dependency and social bonding stemming from the provision of NAS pose a threat to the auditor's independence which consequently may impair audit quality. The attempts made to explain this lack of consensus among researchers generally highlight the choice of research method as the main reason for varying results (Hay et al., 2006b; Habib, 2012).

3.3.2 The Interplay between Audit Fees and Non-Audit Fees

The association between AF and NAF has also been at the center of academic research in the field of auditing for years, as evident from the extensive body of literature covering this relationship. Some argue that the "knowledge spillover" phenomena outlined above allow for cost and time savings in the audit work, which in turn can lead to a reduction in AF (Simunic,

1984). Moreover, the competitive landscape in which audit firms and audit clients operate plays an important role. In highly competitive markets auditors charge lower fees to stay competitive and audit clients demand more NAS to keep up with competitors. Hence, audit clients stand to benefit financially from both reduced AF and knowledge spillover cost efficiencies stemming from NAS. In contrast, in less competitive environments, auditors reasonably accrue maximum benefits, thereby, capitalizing on efficiencies achieved from the combined provision of AS and NAS (Hay et al., 2006b).

Another dimension of the research domain is the "loss leader effect", conceptualized by Hillison & Kennelley (1988). The authors argue that fierce competition among auditors renders AS less attractive than NAS which in general enjoys better profit margins. Consequently, the reduction in AF due to loss of market share in an increasingly competitive landscape could be offset by higher NAF. While knowledge spillovers may not directly challenge auditor independence, the 'loss leader effect' and growing proportion of NAS raise concerns about potential compromises, as highlighted by Hay et al. (2006b).

Yet, the academic domain is not one-sided. A notable proportion of studies emphasize a positive interplay between AF and NAF, meaning that higher AF are seen together with higher NAF. Palmrose (1986) found that the joint provision of AS and NAS is connected to increases in total compensation to audit firms. This is further underscored by Firth (2002), highlighting that events like mergers, share issuances, and the advent of new accounting systems can spike the demand for NAS, and consequently, magnify total audit expenses. Hay et al. (2006b) add a nuanced layer, underscoring that while synergies between AS and NAS could theoretically lead to fee reductions, empirical observations predominantly reflect the opposite. A compelling 84% of studies, as Hay et al. (2006b) note, evidence a positive association between NAF and AF. This signals a departure from the anticipated fee-cutting in the presence of NAS, albeit the underlying reasons for such dynamics remain intricate and multifaceted.

3.3.3 Audit Firm Characteristics' Impact on Audit Quality

Another aspect often studied in the context of audit quality and NAS is the overarching concept of the characteristics of the audit firm, and more specifically the size and reputation of the firm. These characteristics are distinguished primarily through the division of firms into Big 4 or non-big 4 firms. The Big 4 firms being (1) Ernst & Young (EY), (2) Klynveld

Peat Marwick Goerdeler (KPMG), (3) PriceWaterhouseCoopers (PWC), and (4) Deloitte. The distinction is important for understanding the dynamics of audit quality and the impact of NAS. Big 4 firms are globally recognized as synonymous with higher quality audits, a reputation supported by their extensive resources and expertise, and strong industry standing (DeAngelo, 1981; DeFond et al., 2002; Lin & Li., 2005; Eshleman & Guo, 2014). Significant research, particularly in the US, has confirmed the link between the size of an audit firm and the quality of its AS. According to Eshleman and Guo (2014), Big 4 firms generally deliver higher-quality AS than non-big 4 firms, owing to the former's ability to invest more heavily in training, hire highly qualified staff, and maintain stringent quality control standards.

Other studies confirm this view, pointing out that larger audit firms tend to exhibit a greater propensity to issue modified audit opinions and uphold higher levels of conservatism in their reporting decisions (Francis & Krishnan, 1999; Geiger et al., 1998; Carcello & Neal, 2003). Thus, implying a higher level of audit independence. Larger organizations are generally pushed to undertake more comprehensive auditing procedures due to the increased risks of litigation and potential reputational harm. In the US, the potential threat of litigation is a well-documented factor that influences auditor behavior (Antle et al., 1997; Palmrose, 1988). Non-big 4 firms, on the other hand, may be more exposed to individual client dependency, potentially jeopardizing audit independence.

However, the landscape surrounding the relationship between NAS and audit quality appears to shift in a European setting. Although research on European audit markets is limited, existing studies indicate a potentially less risky environment in terms of litigation for the audit firm, which may alter the relationship between auditor size, NAS, and audit independence (Vander Bauwhede & Willekens, 2004; Maijoor & Vanstraelen, 2006; Van Tendeloo & Vanstraelen, 2008). Bauwhede & Willekens (2004) and Bauwhede et al. (2003) are, for example, not able to find any evidence that the quality of the audit differs depending on the size of the audit firm in the Belgian private market. These studies were, however, conducted almost 20 years ago and the European audit market has since experienced substantial advancements, particularly in regards to the provision of NAS.

3.3.4 Contextual Specificities

Swedish setting

Schneider et al. (2006) highlight the importance of considering the circumstances under which services are provided when assessing the impact of NAS on audit quality. The authors identified the legislative environment and risk of litigation as two crucial factors that contribute to the concern about audit independence. Moreover, these factors can vary significantly across different countries. The majority of the research done on NAS' impact on audit independence originates from the UK, the US, New Zealand, and Australia, all of which have an Anglo-Saxon legal heritage (Zhang et al., 2016). Nonetheless, research in these jurisdictions provides conflicting results (Schneider et al., 2006), which creates reason to believe that the discrepancies may be even greater when investigating the subject in the context of a Roman law country like Sweden. Along with the regulatory environment, the size of the audit market is thought to have an impact on audit independence. Generally, the smaller the audit market, the stronger the observed audit independence. This comes as a consequence of mistakes and poor reputation of an auditor being given more attention in a smaller market and hence being more detrimental to the specific auditor than in a bigger market (Canning & Gwilliam, 1999). Therefore, it is reasonable to infer that the findings from numerous studies conducted in larger markets such as the US, UK, and Australia may not be directly relevant to less sizable jurisdictions where limited research has been conducted.

To this date, only a handful of studies within the research domain have been conducted in smaller markets such as Sweden (e.g., Tagesson & Öhman, 2015; Svanström, 2013; Svanström & Sundgren, 2014). Moreover, the scope of these studies primarily centers around either perceived independence or firms facing financial difficulties. Svanström (2013) examines the perception of audit quality in relation to the provision of NAS to private Swedish firms. Svanström employed a quantitative methodology, analyzing data obtained from surveyed individuals who were either employed in or closely associated with the AS and NAS supplied by an audit firm. Hence, the third-parties' perception of the auditor's ability to remain independent while offering advisory services was utilized as a proxy for audit independence. The results show no indications of audit independence being impaired by the provision of NAS. Tagesson & Öhman (2015) instead looked at audit firms' likelihood to

issue a going concern opinion, i.e., a concern about whether the firm is considered financially healthy enough to continue operating in the near future. The authors looked at financially distressed firms that later filed for bankruptcy and the provision of going concern warnings related to these firms' financial statements. The study showed that Swedish audit firms seldom issue going concern opinions, but that such opinions are positively correlated with AF. Hence, higher total AF, which are thought to increase fee dependence, are positive for an accurate assessment of the firm's chances of survival. Something that, according to the authors, overshadows higher AF's and, thus, fee-dependence's potential to negatively impact audit independence (Tagesson & Öhman, 2015).

Public setting vs. Private setting

It is essential to take into account whether the firms being studied are privately or publicly owned, as this can significantly impact the association between NAS and audit quality (Coffee, 2005). However, most published studies in this research space are conducted in a public setting, i.e., researching NAS' impact on audit quality by using data from publicly listed or publicly owned firms (e.g., Craswell, 1999; Firth, 2002; Hay et al., 2006a; and Wines, 1994). As highlighted by Hope and Langli (2009), only a limited number of studies have used data from firms in a private setting although a significant number of firms are private SMEs. Moreover, specific attributes that distinguish private firms from public may have a notable impact on the relationship between NAS and audit independence (Coffee, 2005).

Firstly, the dynamics of the auditor-client relationship differ significantly between a private firm and a public one. The rationale behind this is that the accounting expertise of management in a private firm often is insufficient, which creates a need for the auditor to assume a more prominent, and arguably more managerial, role. This aspect is likely to increase the likelihood of social bonding, which in turn could pose a threat to the auditor's independence (Svanström, 2013). Furthermore, the agency cost can be presumed to decrease in a private setting as there is no clear separation between ownership and control when management also is the owner of the firm. In the absence of agency costs and pressure from external stakeholders, it could be argued that the requirements and need to keep a high quality of the accounting practices diminishes. Hence, there is a chance that financial reporting quality in private firms is inferior to that in public firms, making the job of the auditor even more important (Hope et. al, 2013). Moreover, there is evidence indicating that companies

with lower agency costs are more likely to obtain NAS from their external auditor. This is due to their lower level of concern regarding the perception of the auditor's independence by external stakeholders (Firth, 1997).

Two of the few studies conducted in a Scandinavian private setting are (1) *"Non-audit services and audit quality: Evidence from private firms"* written by Svanström in 2013 and (2) *"Audit independence in a private firm and low litigation risk setting"* written by Hope and Langli in 2009. Similar to Svanström's study (as outlined above), Hope and Langli do not find any evidence speaking for auditors' independence being impaired by higher fee dependence as a result of NAS. This study is conducted in Norway, a jurisdiction that shares numerous traits with the Swedish audit market and is mostly attributed to the fact that it also is considered to be a low litigation environment. In light of this context, Hope and Langli argue that the results can be explained mainly as a consequence of the reputational threat. A concern that prevents them from compromising their independence although realizing higher fee dependency due to the provision of NAS (Hope & Langli, 2009).

3.4 Hypothesis Development

3.4.1 Non-Audit-Fees' Impact on Audit Quality

Although there are mixed results stemming from research on NAS' impact on audit quality, the authors of this study find a number of reasons to believe that NAS impairs audit independence in the context of Swedish private firms. First, by applying the Agency theory to the relationship between stakeholders and auditors, it is evident that the presence of NAS can compromise the independence of the audit. It is also possible to conclude that the majority of prior studies have been conducted in legal contexts where the provision of NAS activities is more heavily regulated than in Sweden. Moreover, it is worth noting that a significant amount of prior research was conducted prior to the year 2000. Since then, NAS services have realized steady growth, which enhances the importance of assessing NAS in relation to audit independence. Furthermore, private firms exhibit lower financial reporting quality due to inadequate internal accounting capabilities and limited public scrutiny, which presumably should result in more modified opinions being issued. Additionally, their potentially closer relationship with the auditor adds to the overall appeal of NAS. Together, the above factors urge the authors to formulate the following hypothesis:

H1: There is a negative relationship between non-audit-fees and modified audit opinions in the private Swedish market

3.4.2 Audit Firm Characteristics' Impact on Audit Quality

Big 4 firms, with their solid reputation and significant resources allocated to maintain high audit quality, are thought to be more resistant to the potentially damaging influence of NAS (Becker et al., 1998; Palmrose, 1988; Antle et al., 1997). Non-big 4 firms, on the other hand, may be more exposed to the influence of NAS due to their smaller resource pool and market position. Hence, the size of the audit firm is thought to play a decisive role in the audit quality. This susceptibility gives rise to the possibility that a higher share of NAF may be associated with a higher frequency of unmodified audit opinions produced by smaller audit firms. The rationale for this theory is based on the premise that smaller firms may rely more on NAF while encountering less scrutiny from regulators. As a result, these audit firms are presumed more likely to give unmodified audit opinions in conjunction with the provision of NAS. In addition, DeAngelo's economic model presumes that a heightened reputational concern among bigger firms reduces the likelihood of them issuing a biased opinion compared to smaller audit firms. The authors derive the following hypothesis from the combined findings and theories:

H2: Small Swedish audit firms are more likely to issue an unmodified audit opinion with the provision of non-audit services than big Swedish audit firms

4. Method

The following section covers the method employed to conduct this study. It starts by elaborating on the research strategy, followed by a description of the sample selection and data. Finally, it provides a depiction of the analysis conducted.

4.1 Research Design

The research question was addressed using a quantitative research methodology, which was considered the most appropriate approach to obtain reliable results and contribute to the research domain. This approach aligns with seminal works in the field (e.g., Craswell, 1999; Hay et al., 2006a; Wines, 1994), which have employed quantitative methods to elucidate the dynamics of audit quality and NAS. The preference for a quantitative over a qualitative approach stems from the latter's vulnerability to subjective biases and individual perceptions, which could potentially skew the understanding of audit quality (Svanström, 2013). While the quantitative approach has many benefits, it is imperative to acknowledge its limitations. Blumer (1956) contends that relying solely on statistical interpretations of social phenomena may neglect the impact of human cognition and subjectivity, which can result in an excessively rigid and objective perspective on social dynamics. Despite this critique, the quantitative approach remains the most suitable for this study, given its emphasis on empirical, generalizable findings that contribute to a clearer understanding of audit independence in the Swedish context.

The core of the methodology revolves around an archival research approach, systematically examining documents to extract pertinent data for analysis. The primary data sources used in this study were the Serrano database and annual reports of private Swedish firms. The key data points manually collected include the name of the auditor, the AF, and the NAF paid to the external auditor. Further, to assess the relationship between NAF and audit quality, this study employs a logistic regression analysis to understand the relationship between the variables of interest. This methodological choice is inspired by the works of Wines (1994) Craswell (1999), and Hay et al. (2006a), whose studies provide a robust foundation for the current study.

4.2 Data

4.2.1 Data Description

To answer the research question, data was collected from the Swedish database Serrano. The Serrano Database contains company-level financial information from 1997 and onwards. The financial information is derived from financial statements filed with the Swedish Companies Registration Office. Furthermore, historical information is provided through Bisnode's group register, bankruptcy data from the Swedish Companies Registration Office, and generic company data obtained from Statistics Sweden (SCB). The content of the Serrano Database is governed by the principle that a single data entry will be made per calendar year for each field in the database. This enables the relatively effortless monitoring of business groups, the description of business trends, and the application of statistical methods to the data (Weidenman, 2016).

The file "serrano.dta" from Serrano was utilized to gather firm-specific data, encompassing general company details (such as SNI-codes, municipality, and legal form), financial numbers from the three financial statements, and pertinent performance measures. The file "bokslut.dta" contains audit opinions for each firm-year observation, and it was later merged with the "serrano.dta" file. While the auditor report may contain various types of remarks, the Serrano database classifies the audit opinion into four categories: (1) *unmodified*, (2) *modified*, (3) *adverse*, or (4) *missing*. These classifications are consistent with the audit opinion classification outlined in ISA 705 and serve as the basis for the quantitative analysis.
In addition, corporate identity numbers for all Swedish firms listed during the specified period were obtained from the Retriever Business database in order to eliminate publicly traded companies from the dataset.

The dataset contains data over the period 2010-2021. The time frame and data structure in previous studies researching the relationship between NAS and audit independence is mixed. For example, cross-sectional data has been used in several prominent research publications by observing many subjects at a single point or period of time (e.g., Craswell, 1999; DeFond et al., 2002; Firth, 1997; Firth, 2002; Frankel et al. 2002; Geiger & Rama, 2003; Ashbaugh et al., 2003). Given that the debate about audit independence has been ongoing over a long time frame, it is deemed that a longer time frame is needed to draw relevant conclusions on the potential threat of NAS to audit independence. Moreover, previous studies have been

conducted mainly in jurisdictions with a far greater population of firms, e.g., the US, Australia, and UK. In light of Sweden's smaller population of firms, a panel data structure was deemed the most appropriate method for this research paper to obtain a sufficiently large sample size.

4.2.2 Sample Selection

Enterprises that satisfy two or all three of the subsequent criteria in each of the previous two fiscal years are classified as large by the Swedish Companies Registration Office and must adhere to the K3 framework; (1) An average of over 50 employees throughout the fiscal year, (2) A balance sheet exceeding 40 million SEK, (3) An excess of 80 million SEK in net turnover (Swedish Companies Registration Office, 2023). These entities are required to disclose the total amount paid to the audit firm during the fiscal year and specify AS and NAS remuneration. Specifically, the compensation associated with the audit assignment, audit activities that extend beyond the audit assignment, tax advice, and any other services rendered should be specified in the annual report (5 kap. 48§ ÅRL).

Because the scope of this paper intends to investigate Swedish private firms, state-owned entities and listed corporations are omitted from the sample. In addition, it is worth noting that a considerable proportion of registered limited liability companies are affiliated with larger corporate groups. Consequently, both Swedish group subsidiaries and subsidiaries of foreign organizations were omitted from the sample, leaving the dataset consisting solely of independent companies and parent companies that report consolidated financial statements. The choice to include only independent companies and parent companies, while excluding group subsidiaries, can be justified on several grounds. First, subsidiaries often engage in numerous inter-company transactions (Fujita & Yamada, 2022). By focusing on parent companies, the complexity introduced by these transactions is minimized. Second, independent companies and parent companies usually have more autonomy in their decision-making processes, including the selection of auditors and the determination of the scope of audit and NAS (Schüler-Zhou & Schüller, 2013). Third, parent companies are often the primary focus for regulatory scrutiny, making them more relevant subjects for studying the implications of NAS on audit quality (Murphy, 2023).

Furthermore, firms operating in the finance and real estate sectors have been deliberately excluded from the sample. This decision is based on the unique characteristics and regulatory

complexities of these industries, which differ from other sectors. The two are subject to a stringent regulatory environment, which greatly influences their financial reporting and auditing practices. Excluding these sectors from the study allows for a more generalized analysis of NAS' impact on audit quality, avoiding the effects of the specific regulatory and operational challenges inherent to the finance and real estate industries. The business models in these sectors, as noted by Francis et al. (2005), are distinct, with unique revenue generation methods and investment strategies. This results in different AF and NAF structures, further complicating a direct comparison with other industries. Thus, the heightened scrutiny from regulators and the public towards these industries necessitates an auditing process that may influence both the delivery and perception of NAS.

Using a stratified sampling technique, the firms were divided into "qualified" and "non-qualified" stratas following the methodologies of Simunic (1984), Wines (1994), and Svanström (2013). Qualified companies were those that, during the study period of 2010 to 2021, obtained at least one modified opinion of any kind. In light of the study's limited time frame and the need for manual data collection, it was crucial to restrict the overall number of firm observations. Although a random sample selection may appear sufficient, there was a risk that it would not ensure a comprehensive representation of both modified and unmodified audit opinions, which was essential for the purpose of the study. Moreover, this aspect appeared particularly relevant in this case as only a minority of the 14,965 firm-year observations contained a modified audit opinion. For that reason, this study applied a stratified random sampling approach to ensure a proportionate inclusion of firms with modified as well as unmodified audit opinions, resulting in a balanced representation. The sample selection process can be summarized as follows in **Table 1.**

Table 1: Sample selection (2010-2021)

Panel A: Data Screening	
	Observations
Sample selection	7,778,854
Eliminate non-LLC firms	-1,369,393
Eliminate state-owned firms	-25,722
Eliminate public firms	-8,825
Eliminate SMEs	-6,283,908
Eliminate subsidiaries in foreign groups	-44,971
Eliminate subsidiaries in Swedish groups	-29,456
Eliminate finance and real-estate firms	-1,614
Remaining observations	**14,965**
Number of firms in each group	Firm groups
Unmodified	2,392
Modified	496
Total	**2,888**

Panel B: Final Sample	
Number of observations by type	Observations
Unmodified	244
Modified	1,871
Total observations	**2,115**
Number of observations per group	Firm groups
Unmodified	684
Modified	1,431
Total	**2,115**

Table 1 illustrates the procedure of selecting the relevant firm-year observations for the sample.

In line with the approach of Lennox (2009), Geiger & Rama (2003), Carcello & Neal (2003), and Basioudis et al. (2008), observations were removed if the firm had received a modified opinion the year before. According to Carcello & Neal (2003), auditors face greater challenges when evaluating the appropriateness of issuing a modified audit opinion the first time compared to the second time. Hence the first received modified audit opinion is considered the most relevant for assessing audit quality. For the remaining firm-year observations within the group of 496 companies, data about the auditor, AF, and NAF was collected.

As far as the authors are aware, there is no database containing data regarding auditor compensation for private firms. This necessitated a manual collection of this data from the annual report of each company. Annual reports were collected from the Retriever Business, a database containing detailed company information on Swedish public and private organizations. Following the insertion of the auditor's name, AF, and NAF into an Excel

sheet, the data was converted to a.dta file for Stata analysis. Manual examination of the company filings for each of these firms revealed that 244 had disclosed information regarding AF and NAF compensation for a minimum of one year, amounting to 684 firm-year observations in total. Then, to ensure a balanced sample, the modified observations were matched with an equivalent amount of firms from the stratum with unmodified firms.

4.2.3 Delimitations of the Sample Selection

This study has purposely chosen to not investigate the influence of different types of NAS on audit independence. Although interesting to understand the impact on audit quality of different NAS (audit-related services, tax-related services, or other miscellaneous services), insufficient and diverse documentation of these in private firms' financial reports prevented the authors from doing so. During the data collection process, a great majority of NAF were categorized as "other services rendered", which would imply a significant dependence on this item and the assumption that the reporting of NAS was performed accurately.

Moreover, audit opinions have been classified into two primary categories in this paper: (1) unmodified and (2) modified. All audit opinions that include an audit remark that would result in either a qualified opinion, an adverse opinion, or a disclaimer of opinion are grouped and denoted as "modified." Therefore, the potential association between the different types of audit opinions with NAS cannot be distinguished. The final sample comprised merely five observations that contained an adverse or disclaimer of opinion. Therefore, it is statistically impossible to draw any conclusions regarding the relationship between these opinions and NAS.

4.3 Data Analysis

To address the outlined research question and accomplish the research objective, two types of quantitative tests are conducted: univariate and multivariate.

4.3.1 Univariate Tests

As a first analysis, univariate tests are conducted to compare the NAS ratio (NAF as a percentage of total fees) between the modified and the unmodified group in each year for the time period analyzed. Similar to Simunic (1984), and Wines (1994), this study applies a non-parametric Mann-Whitney U-test to the average NAS ratio of both groups. These two

studies were seminal in the research on the interplay between NAS and audit independence, which laid the foundation for the subsequent academic research within their respective jurisdiction; the US and Australia. Because this paper is novel in both its geographical scope and its focus on large private firms, univariate exploration serves as a help to provide valuable insights from the data and guide the formulation of more complex multivariate models.

4.3.2 Multivariate Tests

This study adopts logistic regression modeling as its core analytical approach, a decision grounded in the method's widespread recognition and proven efficacy within the existing body of literature (e.g., Wines, 1994; Lennox, 1999; Geiger and Rama, 2003; Basioudis et al., 2008; Craswell, 1999; DeFond et al. 2002; Hay et al. 2006a, Robinson, 2008; Hohenfels & Quick, 2020). Logistic regression analyses are adept at dealing with the binary nature of outcomes. Thus, this approach is particularly well-suited for comparing firms subjected to modified audit opinions with those receiving unmodified opinions.

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Dependent Variable

In the pursuit of assessing audit quality, this research used the audit opinion as a dependent variable. This choice was substantiated by the limitations and complexities associated with other commonly used dependent variables. Another example is earnings management, which is gauged through discretionary or abnormal accruals and the concept is steeped in subjective assumptions about what constitutes normal or expected accruals (see 2.1.4). The variable's sensitivity to assumptions implies potential inconsistencies in measurement, compounded by the lack of relevant studies in the context of private entities. The audit opinion, conversely, offers a more direct and objective reflection of audit quality. It provides a concise and binary assessment, either unmodified or modified, of how well the financial statements comply with prevailing accounting standards and regulations. The clarity and impartiality of this metric make it more appropriate and trustworthy for assessing audit quality in a meaningful way.

Independent Variables

Two predominant methodologies have been extensively employed in prior research for quantifying NAS and assessing its impact on audit quality in terms of audit independence, both of which were used in this study. The first and most widely embraced method involves calculating the percentage of total fees attributed to NAF (e.g., Reynolds et al 2004; DeFond

et al 2002, Ferguson et al 2004). The prevailing rationale is that a greater magnitude of NAF, or a significant proportion of NAF in relation to total fees, compromises the independence of the auditor.

In his meta-analysis, Habib (2012) examined the relationship between NAF and financial reporting quality. Out of 45 research studies published between 2002 and 2009, 38 of them used FEERATIO (denoted NAS ratio in this paper) as the main independent construct for NAF. This approach allows for the assessment of the comparative significance of NAF in relation to total audit compensation. The second possible method is to utilize the absolute values of NAF (e.g., DeFond et al., 2002; Geiger & Rama, 2003; Ashbaugh et al., 2003; Lim & Tan, 2008), based on the reasoning that incentives for auditors to compromise their independence ought to be more pronounced as the magnitude of NAF increases. In light of the skewness observed in the distribution of NAF, this study adopted the natural logarithm transformation of NAF (LnNAF) as an independent variable in the logistic regression. This methodical choice was grounded in prior research, where the logarithmic transformation has been effectively utilized to address issues of data skewness and outliers (Abbott et al., 2003; Hay et al., 2006b).

In this study, both NAS ratio and LnNAF were used as independent variables in two separate logistic regressions, thereby adhering to the methodological approach used by DeFond et al. (2002) and Lim & Tan (2008). By integrating these two recognized measures, this study established itself at the intersection of well-established research practices, thus bolstering the reliability and credibility of its results. By incorporating the NAS ratio, valuable insights can be gained regarding the proportionality of NAF. This provides a contextual comprehension of these fees in relation to the total costs associated with audits. Meanwhile, the application of LnNAF, which builds upon previous studies that corrected for data skewness via logarithmic transformation, offers a more nuanced understanding of the absolute financial incentives that could influence audit quality.

Control Variables

To ensure reliability and mitigate any disruptions to the relationship between the dependent and independent variables, control variables were incorporated into the analysis. Hay et al. (2006b) cite several client attributes that are commonly studied as control variables in audit fee research. These attributes include size, inherent risk, profitability, leverage, and industry

affiliation. Hay et al., (2006b) further define a specific group of auditor characteristics that have been examined in prior academic studies, which encompass auditor size, tenure and geographical location. In total, twelve multivariate regression models were developed to identify the model that offered the most accurate fit and the greatest explanatory power. The models included various indicators for auditee size, as previous research has yielded inconsistent results depending on the specific indicators employed. Furthermore, the size of the auditor was assessed through the use of three different metrics.

(i) Auditee Size

The rationale for incorporating size as a control variable in this research was based on its significant influence on AF, as consistently demonstrated in the relevant literature. It is deemed a critical determinant for variations in audit pricing, as a majority of previous research has proved a positive correlation between AF and size (DeFond & Zhang, 2014). The operationalization of this concept is often accomplished by employing revenues and total assets metrics; however, in audit fee research, the former metric is more commonly utilized (Habib, 2012). This study made use of both net sales and total assets to represent size, enabling a thorough evaluation of size effects. The application of this dual-measure approach eased the process of choosing which model was most appropriate for analysis and aimed to enhance the model's ability to explain and withstand external influences. For this study, the size variables were converted by applying the natural logarithm of the size determinants, total assets, and net sales (i.e., LnTA and LnNS).

(ii) Inherent Risk

Inherent risk is often cited in the literature as a control variable for assessing the operational dynamics and the financial stability of a business. In the context of auditing, inherent risk pertains to the susceptibility of a category of transactions or an account balance to material misstatement. Therefore, a greater degree of inherent risk may require a more rigorous audit process, which may be further complicated by the provision of NAS and potentially compromise the independence of the auditor. AF have shown to be positively correlated with the inherent risk of a corporation because specific audit components may entail a greater propensity for error and necessitate specialized audit approaches (Habib, 2012). When examining the correlation between audit quality and NAS, the variable INVREC was used as a proxy for inherent risk in this study. The selection of INVREC, which is the ratio of accounts receivable and inventory to total assets, was based on its empirical validation in the

existing body of literature. According to the meta-analysis conducted by Hay et al., (2006b) a significant positive correlation of 84% was observed between AF and the combined measure of inventory and receivables, as opposed to weaker correlations observed when examining these components separately. Hence, INVREC offers a thorough depiction of inherent risk, encompassing the audit challenge linked to both inventory and receivables.

(iii) Profitability

Client profitability is frequently regarded as an additional risk measure due to the fact that it indicates the auditor's potential exposure to financial loss should a client fail to be financially viable (Svanström, 2013). In general, as clients' performance deteriorates, the auditor assumes a greater degree of risk and anticipates a higher audit fee. ROA is widely acknowledged as a comprehensive metric that assesses the operational efficiency of a company and its ability to generate profits from its assets (Hay et al., 2006b). Consequently, a negative correlation between AF and return on assets (ROA) is expected. By incorporating ROA, which is calculated as the proportion of operating profit (EBIT) over total assets at the end of the prior fiscal year, as a profitability control variable, this analysis adhered to well-established methodological principles when investigating the correlation between audit quality and NAS (e.g., Wines, 1994; Craswell, 1999; DeFond et al., 2002; Hay et al., 2006b; Svanström, 2013).

(iv) Leverage

Higher levels of leverage signal a more substantial dependence on debt financing, which serves as an indicator of the financial pressures encountered by an entity. In addition, leverage serves as a determinant of the auditor's risk assessment strategy. A greater risk of material misstatement necessitates that companies with greater leverage typically undergo more rigorous audit procedures (DeFond & Zhang, 2014). The type of audit opinion issued may therefore be substantially influenced by the auditor's methodology, which may be more cautious in high-leverage situations. The differentiation between the impacts of NAS and those resulting from the underlying financial condition of the company is a critical aspect of audit research (Hay et al., 2006b; Defond & Zhang, 2014). Thus, the incorporation of leverage as an independent variable was a crucial element of the research design when examining the correlation between audit opinions and NAS. Leverage was in this study defined as the proportion of total debt to total assets (TD/TA).

(v) Age

Within the field of audit research, specifically when investigating a connection between NAS and audit quality, the inclusion of firm age as a control variable is common. It is supported by an extensive body of literature suggesting that firm age has significant effects on a multitude of facets pertaining to its financial reporting and auditing procedures. Younger organizations tend to have a shorter track record of regulatory compliance and less established internal controls (Defond et al., 2002; Hope & Langli, 2009). Naturally, this becomes especially pertinent in the analysis of NAS' impact on the audit opinion. This has been emphasized by DeFond et al. (2002), who observe that auditors may perceive younger firms as more precarious, which could potentially compromise their decision-making procedures. In addition, the development of financial reporting systems in younger companies can have a direct effect on the quality of audit-accessible information (DeFond & Zhang, 2014). In order to achieve a more intricate assessment, this study included the natural logarithm of firm age (LnAGE) as a control variable. This allowed the study to consider the varying degrees of influence that firm age can exert on the auditor-client dynamic and the audit process's integrity.

(vi) Industry Affiliation

The claim that certain sectors present greater audit challenges than others is a recurring one among auditors and researchers (Simunic 1984; Lim & Tan, 2008). Firms operating in the finance and real estate sector have been deliberately excluded from the sample. This decision is based on the unique characteristics and regulatory complexities of these industries as discussed in 3.2.2. This study used the Global Industry Classification Standards framework (GICS), developed in 1999 by Standard & Poor's (S&P) and Morgan Stanley Capital International (MSCI), to categorize industry affiliation (see **Appendix B**). Numerous SNI codes and industry affiliation classifications, with some containing hundreds of classes, comprised the initial Serrano dataset. Thus, by employing GICS identifiers, one can assess the generalizability of research findings across multiple studies while avoiding the risk of overfitting due to the usage of highly detailed industry classifications (Hastie et al., 2009).

(vii) Complexity

It is generally anticipated by researchers that auditing clients with greater complexity will entail greater difficulty and require more time (Simunic, 1984; Craswell et al., 2002; Hay et al., 2006b; DeFond & Zhang, 2014). Scholars have employed diverse methodologies to

quantify the overarching notion of complexity. Numerous attempts to quantify complexity have been undertaken in prior studies, with the following metrics being the most frequently employed: proportion of foreign assets, number of SIC codes, and the number of business segments (Hay et al., 2006b). In general, despite considerable variation in the definition of complexity among studies, the empirical evidence supports a robust and positive correlation between complexity and AF. The group relationship of the audit client is utilized as a complexity metric in this study (abbreviated SUB in the multivariate model; assigning a value of 1 to the parent company and 0 to the independent entity). Although a more precise indicator of complexity, such as the number of subsidiaries, would logically yield more profound insights, such information is not available in any public database. In light of the reasoning by Firth (1997), highlighting that different systems across subsidiaries increase the number of audit hours needed and that consolidating financial statements is a tedious process, using the group relationship was deemed adequate for assessing complexity.

(viii) Location

Firth (1997) highlights the impact of geographical factors on audit practices and fees. Firth's study found a direct correlation between audit reports submitted in London and higher AF and elaborates that this is indicative of the increased personnel and operational expenses in urban areas. This observation is applicable to the Swedish setting, where the concentration of business operations and the existence of prominent accounting firms in the three major cities - Stockholm, Gothenburg, and Malmö - may have a similar impact on audit-related fees and procedures. This study sought to capture any potential variations in AF and practices that may be attributed to the urban business environment by assigning the location variable (LOCATION) as 1 for firms based in major cities and ' for others.

(ix) Auditor Size

Due to their smaller market position and resource pool, non-Big 4 firms may be more susceptible to the impact of NAS on their audit choices. This vulnerability raises the possibility that a greater proportion of NAF could be linked to a greater frequency of unmodified audit opinions generated by non-Big 4 companies (see section 2.5.2). In the models, the control variable BIG N took the form of either BIG 4, BIG 5, or BIG 6. In accordance with the definition provided by FAR (2023), the big 4 firms consist of KPMG, EY, Deloitte, and PWC. Big 5 incorporates Grant Thornton, whereas Big 6 includes also BDO.

4.4 Model Selection

To perform the analysis, and conduct the tests outlined above, it is critical to select the most appropriate statistical model with the greatest explanatory power. This is especially true when investigating intricate and multifaceted relationships among variables (Lubotsky & Wittenberg, 2006). Hence, this study's use of a panel data structure and a binary dependent variable urges the authors to conduct a careful model selection to guarantee the strength and reliability of the findings. The following section is therefore devoted to laying out the reasoning, as well as the process, behind the model selection. It starts with addressing multicollinearity as a decisive factor for the choice of model, before diving into the overarching rationale behind the final choice of models.

4.4.1 Addressing Multicollinearity

In a regression analysis, multicollinearity, which occurs when predictor variables are highly correlated, presents certain challenges. Multicollinearity has the potential to introduce distortions in estimated coefficients, inflation of standard errors, and undermining of the model's inferences in logistic regression, specifically when panel data is involved (Senaviratna & Cooray, 2019). Therefore, the presence of multicollinearity may obscure the actual impact of NAS on audit opinions and result in incorrect conclusions being derived from the logistic regression outcomes. In order to address the challenge posed by multicollinearity, multiple regression models in which the combination of independent- and control variables were methodically different across models that were developed. By doing so, it was possible to observe the stability of coefficients which facilitated the identification of models that were less susceptible to multicollinearity. The assessment of multicollinearity was then done by observing the Variance Inflation Factors (VIF) and tolerance in the different regression models.

As indicated by the VIF results presented in **Table 2**, the VIF values of the key variables of interest, which are directly pertinent to the research question, remained within acceptable thresholds. A widely acknowledged criterion for VIF, as proposed by Blalock (1963), states that substantial multicollinearity is indicated by a VIF value exceeding 5. Although the sector dummy variables demonstrate elevated VIF values, it was crucial to situate these results within the broader context of the analysis. According to Allison (2006), multicollinearity is not a concern when the variables in question are control variables in a regression model and

their coefficients are not to be interpreted. Thus, the elevated inflation factors were regarded as non-alarming and were assumed to not impair the reliance of the multivariate regression.

Table 2: Collinearity statistics

Variable	VIF	Tolerance (1/VIF)
NASratio	1.53	0.6546
LnAF	2.9	0.3445
LnNAF	3.01	0.332
LnTA	2.73	0.3665
LnNS	2.04	0.4906
INVREC	1.29	0.7747
ROA	1.16	0.8608
TD/TA	1.34	0.7454
LnAGE	1.15	0.8732
SUB	1.22	0.8176
LOCATION	1.24	0.8067
BIG6	1.19	0.8392
sector_dummy1	5.40E+13	7.30E+06
sector_dummy2	2.98E+13	5.50E+06
sector_dummy3	1.95E+14	1.40E+07
sector_dummy4	9.95E+13	1.00E+07
sector_dummy5	1.92E+14	1.40E+07
sector_dummy6	9.66E+13	9.80E+06
sector_dummy7	8.67E+13	9.30E+06
sector_dummy8	7.30E+13	8.50E+06
sector_dummy9	3.63E+13	6.00E+06
sector_dummy10	2.53E+14	1.60E+07
sector_dummy11	1.01E+14	1.00E+07

Table 2 presents the collinearity statistics for the variables used in the logistic regression analysis. It includes the Variance Inflation Factor (VIF) and Tolerance for each variable.

4.4.2 Random Effects

This study utilized a panel dataset, comprising firm-year observations, which inherently consisted of both cross-sectional and time-series dimensions (Torres-Reyna, 2007). This dual nature of the data necessitated a modeling approach that could effectively account for the potential within and between variations. An essential consideration when dealing with panel data is the need to address endogeneity, which may result from omitted variable bias, measurement errors, or simultaneity. The presence of endogeneity can result in biased and inaccurate model estimates, thereby compromising the validity of the research findings. In order to account for potential endogeneity and the presence of unobserved heterogeneity, which refers to unmeasured factors that could impact the dependent variable, a random effects model was utilized. This model assumed that the effects specific to each firm were random and not related to the independent variables, helping to reduce the problem of endogeneity caused by unobserved differences between firms. However, it is important to

note that random effects models do not automatically correct for all forms of endogeneity, such as those arising from simultaneity or measurement errors (Guhl, 2019).

A critical step in confirming the suitability of the random effects model is the Hausman test, which checks whether the unique errors are correlated with the regressors (Hausman, 1978). The Hausman test yielded a p-value of 0.38, which is greater than the significance level of 0.05. Consequently, the null hypothesis that the unique errors are uncorrelated with the regressors was not rejected and the random effects model was chosen. Moreover, the sample for this paper consists of a heterogeneous group of audit clients, each possessing unique characteristics. The random effects model handles diversity well by accounting for random variation between entities and allowing for the estimation of the average effect of the independent variables on the dependent variable across all entities (Baltagi, 2008). This methodology proved particularly advantageous within the context of this research, as the objective was to comprehend the wider implications and trends affecting a wide range of audit clients, rather than focusing on specific sectors or groups of entities. Nevertheless, it is important to acknowledge that while the random effects model addresses certain aspects of endogeneity related to unobserved heterogeneity, other forms of endogeneity may still be present and should be considered when interpreting the results.

4.4.3 Model Selection Rationale

Model misspecification can result in endogeneity, wherein the estimated coefficients are distorted due to omitted variable bias or incorrect model structure. In order to reduce this risk, multiple logistic regression models were developed, with each model incorporating a distinct set of variables (Robers & Whited, 2012). Multiple regression analyses were conducted to choose the model that demonstrates the most accurate fit and the greatest explanatory capacity. By reviewing the analysis conducted in the preceding section, no potential issues related to multicollinearity were identified. Therefore, no modifications were made to the model variables; however, to ensure methodologically sound logistic regression models, the models were constructed using three distinct components: the proxy for auditor size (i.e., Big4, Big5, Big6), the measure of NAS (NAS ratio or LnNAS), and net revenue or total assets (LnAF or LnNS) as an indicator of audit client size. The model estimated across the panel data sample of audit clients was as follows:

$$OPINION_{i,t} = \beta_o + \beta_1 NASFEE_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 INVREC_{i,t} + \beta_4 ROA_{i,t} + \beta_5 TD/TA_{i,t} + \beta_6 AGE_{i,t} + \beta_7 SUB_i + \beta_8 LOCATION_{i,t} + \beta_9 BIGN_{i,t} + \beta_{10} INDUSTY_i + \varepsilon_{i,t}$$

The variable OPINION represented the type of audit opinion received by the client, with a value of 1 indicating a modified opinion and a value of 0 indicating an unmodified opinion. NASFEE refered to NAS ratio, which is the ratio of NAF to the auditor in relation to the total fees for both AS and NAS, or the natural logarithm of total NAF (LnNAF), expressed in kSEK; SIZE the natural logarithm of the total customer assets measured in kSEK (LnTA), or, the natural logarithm of an audit clients net sales in any given year (LnNS); INVREC the ratio of the sum of inventory and accounts receivable to total assets; ROA the ratio of operating profit/loss (EBIT) to total assets for the audit client; TD/TA the ratio of current and non-current liabilities to total assets for the client; AGE the number of years since start data according to Statistics Sweden (SCB); SUB the auditee client's group situation (1 = if parent company;0 = independent); LOCATION the location of the client (1 = big3city; 0 = non-big3city); BIGN the auditor quality as defined by (1) 1 = Big 6 auditor; 0 = Other or (2) 1 = Big 5 auditor; 0 = Other or (3) 1 = Big 4 auditor; 0 = Other; INDUSTRY a dummy variable for the client industry.

Model fitness was evaluated by assessing the Akaike information criterion (AIC) as well as the Bayesian information criterion (BIC). The AIC metric, which is founded on information theory, evaluates the compromise between the model's simplicity and suitability. As pointed out by Akaike (1974), a model with a lower AIC value is considered superior in terms of fit and model complexity. Similar to the AIC, the BIC penalizes models for their complexity and is a criterion for selecting models from a finite set. Further, it is based on the likelihood function. In contrast to AIC, BIC imposes a more severe penalty on models with a greater number of parameters, rendering it more stringent. **Table 3** provides a summary of the various goodness-of-fitness output measures.

Table 3: Overview binary logistic regression tests

	Test variables			Criterias for model selection					
Test	**NAS Measure**	**SIZE**	**BIGN**	**Wald Chi-Square**	**Log likelihood**	**AIC**	**BIC**	**Correct classifications**	**N**
(1)	NAS ratio	LnTA	Big4	93.60***	-632.3	1306.7	1425.1	89.60%	2,115
(2)	NAS ratio	LnTA	Big5	93.53***	-632.3	1306.7	1425.1	89.55%	2,115
(3)	NAS ratio	LnTA	Big6	93.54***	-632.0	1306.0	1424.4	89.46%	2,115
(4)	NAS ratio	LnNS	Big4	105.34***	-624.8	1291.6	1410.0	89.60%	2,115
(5)	NAS ratio	LnNS	Big5	105.24***	-624.8	1291.5	1409.9	89.65%	2,115
(6)	**NAS ratio**	**LnNS**	**Big6**	**105.47*** **	**-624.2**	**1290.5**	**1408.9**	**89.65%**	**2,115**
(7)	LnNAF	LnTA	Big4	52.39***	-381.5	807.0	922.1	90.23%	1,382
(8)	LnNAF	LnTA	Big5	52.39***	-381.5	807.0	922.0	90.30%	1,382
(9)	LnNAF	LnTA	Big6	52.65***	-381.2	806.5	921.6	90.30%	1,382
(10)	LnNAF	LnNS	Big4	58.43***	-379.8	803.5	918.6	90.44%	1,382
(11)	LnNAF	LnNS	Big5	58.46***	-379.6	803.3	918.4	90.52%	1,382
(12)	**LnNAF**	**LnNS**	**Big6**	**58.76*** **	**-379.4**	**802.8**	**917.9**	**90.52%**	**1,382**

Table 3 presents an overview of binary logistic regression tests conducted for different models. Each model is characterized by specific test variables: the measure of non-audit services (NAS), the size of the firm (SIZE), and the classification of the audit firm (BIGN).

By integrating net sales as a proxy for auditee size and Big6 as a control variable for auditor size, models 6 and 12 demonstrated superior fit in comparison to those constructed using total assets (LnTA) as a size control or the big4/big5 for auditor quality. Hence, in contrast to some previous studies this study used the big 6 to denote bigger audit firms, rather than the big 4. In addition, the NAS ratio model achieved a predictive accuracy value of 89.65%, while the LnNAS model showed an accuracy of 90.52%. Hence, these models were employed to evaluate hypotheses 1 and 2. The two models are outlined below:

$$OPINION_{i,t} = \beta_o + \beta_1 NAS\ ratio_{i,t} + \beta_2 LnNS_{i,t} + \beta_3 INVREC_{i,t} + \beta_4 ROA_{i,t} + \beta_5 TD/TA_{i,t} + \beta_6 LnAGE_{i,t} + \beta_7\ SUB_i + \beta_8 LOCATION_i + \beta_9 BIG6_{i,t} + \beta_{10} INDUSTY_i + \varepsilon_{i,t}$$

$$OPINION_{i,t} = \beta_{o+} \beta_1 LnAF_{i,t} + \beta_2 LnNAF_{i,t} + \beta_3 LnNS_{i,t} + \beta_4 INVREC_{i,t} + \beta_5 ROA_{i,t} + \beta_6 TD/TA_{i,t} + \beta_7 LnAGE_{i,t} + \beta_8 SUB_i + \beta_9 LOCATION_i + \beta_{10} BIG6_{i,t} + \beta_{11} INDUSTY_i + \varepsilon_{i,t}$$

5. Empirics

The following section presents the results from the analyses performed. It starts with a descriptive statistical summary of the data, followed by a Mann-Whitney U-test and the regression analyses done using a cross-sectional logistic model.

5.1 Sample Characteristics

The final sample comprises two matched groups, a group of 244 firms that received a modified audit opinion over the study period and a group of 244 large firms that only received unmodified opinions. In total, the sample contains 2,115 observations for the period 2010-2021. **Table 4** presents the descriptive statistics, which were divided into two panels: Panel A for continuous variables and Panel B for categorical variables. Over the study period, approximately 11.5% of the firm-year observations signified that the auditor had departed from the standard unmodified opinion in the audit report. Moreover, 1,403 observations (66.3%) were subjected to an audit by a Big 6 firm. Roughly 33.7% of the observations are headquartered in either Stockholm, Gothenburg, or Malmö, and slightly over half of the companies in the sample (61.2%) are parent companies of a Swedish group. The sample spans a broad spectrum of industries, with notable representation in corporate services (23.0%), industrial goods (17.0%), and shopping goods (16.4%). The least represented industries are materials (2.1%) and telecom & media (2.6%).

In Panel A of **Table 4**, the continuous variables of the model are presented, offering a depiction of the auditor compensation for AF and NAF, financial and operational metrics of the firms across the study period from 2010 to 2021. The NAS ratio, a key variable in the analysis, exhibits an average value of 0.195, with a standard deviation of 0.207 indicating some variability across the 2,115 firm-year observations. AF and NAF, both reported in thousands of SEK, show a considerable range. The median values for both AF and NAF are notably lower than the means, suggesting a concentration of higher values among fewer firms. Because of this, the natural logarithm of these two variables was used in the multivariate logistic regressions. The measures of financial performance and position, i.e., INVREC, ROA, and TD/TA, present a range of values, pointing to the diverse financial characteristics of the firms. Net sales also display a wide range, from below SEK 1m up to almost SEK 5bn, indicative of the varied sizes of the firms in the sample. The firms in the

sample vary widely in age, ranging from 3 to 162, contributing to further diversity of the sample.

Table 4: Descriptive statistics

Panel A: Categorical Variables

Variables	*No.*	%
OPINION	244	11.5%
BIG6	1403	66.3%
LOCATION	712	33.7%
SUB	1295	61.2%
INDUSTRY	2115	100.0%
Energy & Environment	*83*	*3.9%*
Materials	*45*	*2.1%*
Industrial gods	*360*	*17.0%*
Construction industry	*159*	*7.5%*
Shopping goods	*346*	*16.4%*
Convenience goods	*166*	*7.8%*
Health & Education	*137*	*6.5%*
IT & electronics	*116*	*5.5%*
Telecom & Media	*55*	*2.6%*
Corporate services	*487*	*23.0%*
Other	*161*	*7.6%*

Panel B: Continuous Variables

Variables	Mean	Median	Std. Dev.	Min	Max	N
NAS ratio	0.195	0.146	0.207	0	0.930	2,115
AF (kSEK)	303.6	140.0	630.3	3.1	10,000	2,115
NAF (kSEK)	125.3	25.0	362.9	0.0	6,000	2,115
Net sales	387.7	159.8	1680.0	721	4,608,466	2,115
INVREC	0.474	0.447	0.266	0	1	2,115
ROA	0.066	0.056	0.185	-3.161	1.041	2,115
TD/TA	0.633	0.662	0.244	0.003	1.868	2,115
AGE	37.9	33	22.8	3	162	2,115

Table 4 presents the descriptive statistics, divided into two panels: Panel A for categorical variables and Panel B for continuous variables.

Table 5 presents the Pearson correlation coefficients and significance levels for the continuous variables included in the logistic regression analysis. OPINION shows a weak negative correlation with the NAS ratio (-0.022), suggesting a marginal association between the type of audit opinion and the NAS ratio, though not statistically significant. Interestingly,

OPINION is positively correlated with LnAF (0.0427**) and LnNAF (0.053**), indicating that higher AF and NAF are slightly more common in firms receiving modified audit opinions. A significant negative correlation is observed for LnNS (-0.111***) and ROA (-0.242***), while a positive correlation is noted for TD/TA (0.179***), suggesting that firms with higher debt-to-asset ratios and lower net sales and profitability are more likely to receive modified opinions.

Table 5: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OPINION (1)	1.00								
NAS ratio (2)	-0.022	1.00							
LnAF (3)	0.0427**	0.147***	1.00						
LnNAF (4)	0.053**	0.669***	0.644***	1.00					
LnNS (5)	-0.111***	-0.014	0.244	0.152	1.00				
INVREC (6)	0.074	-0.017	-0.103**	-0.125***	0.222***	1.00			
ROA (7)	-0.242***	-0.031***	-0.145***	-0.09***	0.114***	0.02	1.00		
TD/TA (8)	0.179***	-0.03	-0.203***	-0.263***	0.051**	0.144***	-0.176***	1.00	
LnAGE (9)	-0.145***	0.046**	-0.041*	-0.069**	0.079***	-0.035	-0.032	-0.086***	1.00

*Table 5 shows the correlation matrix for the study, providing insights into the relationships between various variables. The Pearson correlation coefficient is presented and are marked with asterisks to denote their significance levels: * for 10% confidence, ** for 5%, and *** for 1%.*

The NAS ratio shows a strong positive correlation with LnNAF (0.669***), as expected, since it directly relates to NAF. However, its correlation with LnAF is modest but significant (0.147***). The NAS ratio appears to be the least correlated to firm size (LnNS) and financial indicators such as INVREC, ROA, and TD/TA. Both LnAF and LnNAF are significantly correlated with each other (0.644***), indicating that firms paying higher AF also tend to pay more for NAS. Both variables show a negative correlation with TD/TA, suggesting that firms with higher leverage ratios tend to have lower AF and NAF. LnNS shows a positive correlation with INVREC (0.222***) and a negative correlation with OPINION (-0.111***). This suggests that larger firms, as measured by net sales, tend to have a higher inventory and receivables ratio and are less likely to receive a modified audit opinion. ROA shows a negative correlation with OPINION, LnAF, LnNAF, and TD/TA, indicating that firms with higher profitability tend to have lower debt ratios and are less likely to receive modified audit opinions or pay high fees. Conversely, TD/TA is positively

correlated with OPINION and negatively with ROA, LnAF, and LnNAF. The age of the firm (LnAGE) shows a negative correlation with OPINION (-0.145***) and a positive correlation with the NAS ratio (0.046**). This points towards that older firms are less likely to receive modified audit opinions and tend to have a slightly higher NAS ratio.

5.2 Univariate Tests

Table 6 presents the results of the Mann-Whitney U-tests conducted to compare the differences in means of the NAS ratio, AF, and NAF between firms that received modified audit opinions and those that received unmodified opinions. The Mann-Whitney U-test was selected based on the assumption that the NAS ratio does not follow a normal distribution, as indicated by **Table 4**. In summary, the univariate analysis suggested that there are no statistically significant differences in NAS ratio, AF, or NAF between groups that received modified or unmodified audit opinions. This indicates that these variables do not vary significantly based on the type of audit opinion a firm receives, pointing to the possibility that other factors might be more influential in determining the type of audit opinion.

Table 6: Tests of differences in means

Variables	Modified (n=684)				Unmodified (n=1,431)				Mann Whitney U	
	Mean	Min	Max	SD	Mean	Min	Max	SD	z-score	p-value
NAS ratio	0.194	0.000	0.912	0.202	0.195	0.000	0.893	0.210	-0.218	0.828
AF (kSEK)	242.3	3.1	3,991	324.8	332.9	5.0	10,000	730.9	0.453	0.650
NAF (kSEK)	91.5	0.0	2,470	224.5	141.5	0.0	6,000	412.1	1.009	0.313

Table 6 presents the results of the Mann-Whitney U-tests conducted to compare AF, NAF and NAS ratios between firms with modified and unmodified groups.

The group with modified opinions, consisting of 684 firm-year observations, displays an average NAS ratio of 0.194, with a range from zero to 0.912 and a standard deviation of 0.202. The unmodified group, consisting of 1,431 firm-year observations, exhibits a nearly identical average NAS ratio of 0.195. The range in this group was similar, ranging from zero to 0.893, with a standard deviation of 0.210. The Mann-Whitney U-test underscores this similarity, yielding a z-score of -0.218 and a p-value of 0.828, indicating no statistically significant difference in the NAS ratio between the two groups.

The analysis of means for AF and NAF demonstrates a similar pattern. The modified group's average AF is 242.3 kSEK, ranging from 3.1 to 3,991, with a standard deviation of 324.8.

The unmodified group has a higher mean of 332.9 kSEK, with a range from 5 to 10,000 and a standard deviation of 730.9. The Mann-Whitney U-test for AF resulted in a z-score of 0.453 and a p-value of 0.650, indicating that there is no statistically significant difference in AF between the two groups. Similarly, for NAF, the modified group has a lower average NAF of 91.5 kSEK, ranging from zero to 2,470, with a standard deviation of 224.5. The unmodified group reports a higher average NAF of 141.5 kSEK, ranging from zero to 6,000, with a standard deviation of 412.1. However, as for the NAS ratio and AF, the Mann-Whitney U-test for NAF shows a p-value of 0.313, indicating that the difference in NAF between the modified and unmodified groups is not statistically significant.

5.3 Multivariate Tests

The logistic regression results are presented in **Table 7**. The model investigated the effect of the NAS ratio on the likelihood of a modified audit opinion being issued while taking into account other firm-specific and industry-related parameters. To enhance the interpretability of the coefficients, the continuous independent variables AF, NAF, NS, and AGE were converted by using the natural logarithm of their respective values. Therefore, these coefficients indicate the percentage change in the dependent variable when the independent variable increases by one unit. The variables presented in their natural form, in contrast, shall be interpreted as a change of one unit in the independent variable being associated with a specific change in the dependent variable, while holding other variables constant.

Table 7: Logistic regressions for determinants of auditors' opinion choices

$$OPINION_{i,t} = \beta_0 + \beta_1 NAS\ ratio_{i,t} + \beta_2 LnNS_{i,t} + \beta_3 INVREC_{i,t} + \beta_4 ROA_{i,t} + \beta_5 TD/TA_{i,t} + \beta_6 \text{LnAGE}_{i,t} + \beta_7 \text{SUB}_i + \beta_8 \text{LOCATION}_i + \beta_9 \text{BIG6}_{i,t} + \beta_{10} \text{INDUSTRY}_i + \varepsilon_{i,t}$$

Variables	Estimate	Std. Error	*p-value*
Constant	4.465	1.689	*0.008***
NAS ratio	-0.444	0.486	0.360
LnNS	-0.540	0.135	0.000***
INVREC	1.376	0.410	0.001***
ROA	-4.174	0.676	0.000***
TD/TA	2.311	0.499	0.000***
LnAGE	-0.689	0.200	0.001***
SUB	0.007	0.223	0.975
LOCATION	0.095	0.245	0.699
BIG6	0.285	0.248	0.249
Model Chisquare		105.47***	
Overall correctness		89.65%	
McFadden Pseudo R2		15.82%	
Number of obs.		2,115	

Table 7 presents the results of the logistic regression investigating the impact of the NAS ratio on the likelihood of a modified audit opinion, controlling for various firm-specific and industry-related factors.

The model demonstrates a significant overall fit, as indicated by the Model Chi-Square (105.47***), suggesting that the predictors, collectively, are effective in distinguishing between the outcomes of the dependent variable. The coefficient for the NAS ratio is -0.444 with a standard error of 0.486. This result, however, is not statistically significant (p-value = 0.360). This indicates that, within the context of this model, the NAS ratio does not have a statistically significant impact on the likelihood of a modified audit opinion. The negative sign of the coefficient suggests a potential inverse relationship, but given the lack of statistical significance, it is not possible to draw a definitive conclusion about the effect of the NAS ratio on audit opinions being issued by the auditor.

The control variables in the model show varying levels of influence. Size (Ln(NS)) and the ratio of leverage (TD/TA) both have significant positive coefficients, indicating that larger firms and firms with higher leverage are more likely to obtain a modified audit opinion. Furthermore, ROA and firm age have a significant negative coefficient, suggesting that older firms as well as those with higher profitability are less likely to receive a modified audit opinion. The INVREC variable demonstrates a notable positive correlation, suggesting that companies with a greater share of receivables and inventory to total assets are more prone to

get a modified opinion. Neither auditee group situation (SUB) nor headquarter location (LOCATION) shows a significant relationship, at a 5% confidence level, with the modified audit opinion. Notably, BIG6, a key variable of interest in this study, does not show significant associations, suggesting that these factors do not notably influence the likelihood of the audit opinion choice.

Table 8: Logistic regression (LnAF & LnNAF)

$$OPINION_{i,t} = \beta_o + \beta_1 LnAF_{i,t} + \beta_2 LnNAF_{i,t} + \beta_3 LnNS_{i,t} + \beta_4 INVREC_{i,t} + \beta_5 ROA_{i,t} + \beta_6 TD/TA_{i,t} + \beta_7 LnAGE_{i,t} + \beta_8 SUB_i + \beta_9 LOCATION_i + \beta_{10} BIG6_{i,t} + \beta_{11} INDUSTRY_i + \varepsilon_{i,}$$

Variables	Estimate	Std. Error	*p-value*
Constant	1.235	2.269	*0.586*
LnAF	0.718	0.245	0.003***
LnNAF	0.154	0.119	0.195
LnNS	-0.669	0.187	0.000***
INVREC	1.480	0.588	0.012**
ROA	-3.365	0.819	0.000***
TD/TA	2.972	0.753	0.000***
LnAGE	-0.559	0.276	0.043**
SUB	-0.639	0.327	0.051*
LOCATION	-0.148	0.336	0.659
BIG6	0.399	0.378	0.370
Model Chisquare		58.76***	
Overall correctness		90.54%	
McFadden Pseudo R2		15.87%	
Number of obs.		1,382	

Table 8 presents the results of the logistic regression investigating the impact of the LnAF and LnNAF on the likelihood of a modified audit opinion, controlling for various firm-specific and industry-related factors.

Table 8 presents the results of the logistic regression when using the natural logarithm of AF and NAF. It should be noted that the number of observations is 1,382, which is fewer than the 2,115 in the first model. This is because a significant proportion of the sample reported no NAF costs, resulting in their exclusion from the sample when applying the natural logarithm. The regression analysis reveals that the coefficient for the natural logarithm of AF is 0.718, with a p-value of 0.003. This indicates a statistically significant and positive association with the dependent variable OPINION, suggesting that when the logarithm of AF rises, the probability of a modified audit opinion similarly rises. The coefficient for LnNAF is 0.154, however, it has a p-value of 0.195 and is therefore not statistically significant. Additionally, The control variables in the model exhibit similar directions and magnitudes of coefficients as in the model that utilizes NAS ratio as a measure of fee dependence, suggesting consistency across the model configurations.

5.4 Sensitivity Tests

As shown in **Table 4**, there are extreme values for some variables which could affect the results. For example, ROA includes an observation with a value of -316% and some firm-year observations have net sales of roughly SEK 4bn. To ensure the robustness of the logistic regressions results and address potential endogeneity issues, two alternative sampling approaches are used; sample truncation and cross-validation. In Panel A of **Table 9,** robustness of the logistic regressions results are explored by trimming the sample at the 5th and 95th percentiles of each continuous variable (Hay et al., 2006a). In the first model (1), the NAS ratio shows an estimate of -0.970 with a standard error of 0.722 and a p-value of 0.178. Furthermore, the second model (2) shows a significant relationship for LnAF (p-value = 0.008***), but not for LnNAF. The trimming process reduced the sample size to 1,341 for the first model and 884 for the second. The consistency of the signs and significant levels across the main model and the trimmed sample suggests that the NAS ratio's influence is consistently limited, regardless of the presence of outliers.

In Panels B and C, cross-validation through the examination of subsamples is illustrated. This approach involved running the same regression models on different subsets of the data to check for consistency in the results (Craswell, 1999). Panel B focuses on a subset excluding non-Big 6 firms. Here, the NAS ratio shows an estimate of -0.200 with a p-value of 0.696, indicating no significant relationship in this subsample. In model (2), LnNAF show no significant relationship whereas LnAF show a significant positive relationship (p-value = 0.003***), suggesting that the effect of LnAF and LnNAF on the audit opinion is consistent even when focusing solely on Big6 firms. Panel C presents results from a sample that eliminates cases with auditor rotations. According to Simon & Francis (1988), auditor rotations result in reduced fees during the initial years of a new engagement when the auditors transfer. This approach is particularly relevant for ensuring that the results are not driven by changes in auditors, which could introduce bias. In total, 57 auditor rotations were observed over the study period. Neither the NAS ratio in model (1) nor LnNAF in model (2) shows a significant relationship. However, LnAF in model (2) remains significant (p-value = 0.003***), reinforcing the robustness of this variable's impact.

Table 9: Test of the sensitivty of the logistics results

Panel A: Trimmed at 5th and 95th percentiles				
		Estimate	Std. Error	*p-value*
(1)	NASratio	-0.970	0.722	0.178
	Big6	0.573	0.352	0.104
	N	*1,341*		
(2)	LnAF	0.623	0.357	0.008***
	LnNAF	-0.070	0.159	0.658
	BIG6	1.075	0.551	0.051*
	N	*884*		
Panel B: Eliminate non Big6				
		Estimate	Std. Error	*p-value*
(1)	NASratio	-0.200	0.513	0.696
	N	*1,402*		
(2)	LnAF	0.874	0.290	0.003***
	LnNAF	0.190	0.142	0.179
	N	*1,024*		
Panel C: Eliminate audit switches				
		Estimate	Std. Error	*p-value*
(1)	NASratio	-0.437	0.492	0.374
	Big6	0.282	0.250	0.260
	N	*2,048*		
(2)	LnAF	0.742	0.251	0.003***
	LnNAF	0.151	0.120	0.209
	BIG6	0.312	0.382	0.414
	N	*1,345*		
Panel D: Using Ln(NAF+1)				
		Estimate	Std. Error	*p-value*
(1)	LnAF	0.849	0.177	0.000***
	LnNAF	-0.054	0.124	0.169
	BIG6	0.049	0.282	0.861
	N	*2,115*		

Table 9 presents the results of sensitivity tests conducted on logistic regression models, divided into four panels, each representing a different approach to testing the robustness of the results.

This study not only performs sensitivity tests by modifying samples but also examines potential problems related to model misspecification. A portion of the dataset includes firm-year observations where NAF is zero. The natural logarithm of zero is undefined, which naturally excludes these observations from the analysis. By adding 1 to NAF before taking the logarithm (Ln(NAF+1)), the zero NAF observations are retained in the analysis. This approach aims to ensure that the entire dataset, including observations with zero NAF, is

considered, providing a more comprehensive view of the data. Panel D demonstrates that the variables' direction and significance remain consistent even when NAF is transformed into Ln(NAF+1). This indicates that the model is robust, as the findings are not influenced by the specific form of the variable used in the analysis.

6. Discussion

The following section discusses the results from the study in relation to established methodical theories as well as results from prior research. It starts with contrasting the results to the theories used as a theoretical framework and continues by elaborating on the authors' ability to confirm or reject the initial hypotheses and the results' consistency or divergence to prior research.

6.1 Research Results Oppose Anchoring Theories

The purpose of this study is to investigate if and to what extent NAS, as an indicator of audit independence, impacts audit quality. The authors were also eager to bring clarity into how NAS' potential impact on audit quality differs depending on the size and reputation of the auditor. Furthermore, the study is theoretically anchored in two well-known theories; the Agency theory and the Economic Model of DeAngelo. Multiple regression analyses were performed in order to accurately assess the research question. Based on the results, it is concluded that there is no evidence suggesting that NAS have a negative impact on audit quality in Swedish private firms.

Relying on the Agency theory's reasoning, the provision of NAS should reasonably pose a threat to audit quality as the auditor is assumed to be utility-maximizing and, hence, not always act in the best interest of other stakeholders. This implies that the auditor would prioritize nurturing the relationship to the client they are hired by, rather than ensuring the accuracy of the audit opinion, which is primarily intended for the benefit of the stakeholders. Thus, in a situation when the auditor is earning significant compensation from NAS, they will work to ensure continuous NAS assignments. This led the authors of this paper to expect firms with unmodified opinions to carry a higher NAS ratio. However, results show evidence for this claim to be false, as the NAS ratio for firms with a modified opinion versus firms with an unmodified opinion is almost identical. Moreover, the multivariate logistic regression analysis does not provide sufficient evidence to support the claim that the provision of NAS reduces the likelihood of issuing a modified opinion. Combined, these findings create reason to question the Agency theory's applicability and accuracy in this context. It is, however, possible that the theoretical mechanisms of the Agency theory are offset by other relevant factors.

The Agency theory encompasses all audit firms regardless of their reputation and size, whereas the Economic Model proposed by DeAngelo distinguishes between Big 4 firms and non-big 4 firms. Therefore, the theories tend to partially deviate from each other, as DeAngelo hypothesizes that Big 4 firms are inclined to maintain their independence due to a weaker economic bond with each client and a greater concern for their reputation compared to non-big 4 firms. This reasoning is a specific example that has the potential to offset the Agency theory's theoretical mechanisms in this context. Furthermore, it is particularly relevant in this study, as the majority of the audit observations in the sample are conducted by what is considered a big audit firm, as opposed to a smaller audit firm (1,413 vs. 702). In line with the Economic Model of DeAngelo, this would imply that the results of this study is moderated by the Swedish audit market's composition and the fact that a majority of audits performed are done by a bigger audit firm, whose independence is presumed more resilient.

6.2 No Evidence for NAS to Impair Audit Quality

Similar to Hay et. al (2006a) the results of this study state a negative but insignificant correlation between the NAS ratio and a modified opinion. Hence, the results suggest a potential for the provision of NAS to pose a threat to audit quality in terms of independence. As stated by previous studies, probable reasons for this are the economic and social bonding arising between the auditor and the client with the provision of NAS (e.g., Wines, 1994; Firth, 2002 Antle et al, 2006). However, looking at the absolute level of NAF, the results instead show a positive, yet insignificant, correlation between NAS and a modified opinion. These results confirm Simunic's (1984) reasoning that knowledge spillovers, as a consequence of the provision of NAS, actually have the potential to improve audit quality. Nevertheless, the regression coefficients for both variables are statistically insignificant, implying that the provision of NAS does not negatively affect audit quality in Swedish private firms. On the other hand, the results show that several variables related to the auditee's financial performance, as well as the age of the firm, are significantly correlated with a modified audit opinion.

The results are, however, in line with previous studies conducted on private firms in the Scandinavian market (e.g.; Svanström, 2013; Hope & Langli, 2009). Moreover, it is possible to argue that the lack of partiality and bias among Swedish auditors primarily is a consequence of reputational risk rather than litigation risk as stated by other international

studies. The underlying presumption for this being that litigation risk is assumed significantly lower in Sweden compared to, for example, the USA where the risk for litigation often is pointed out as a main driver for audit independence (Antle et al., 1997; Svanström, 2013; Hope & Langli, 2009).

Combined, the findings of this research and evidence from other studies conducted in Sweden (e.g. Svanström, 2013; Tagesson & Öhman, 2015), suggest that even though Sweden has a less stringent regulatory environment regarding NAS compared to e.g. the US, there is no apparent compromise on audit quality. Thus, the close relationship between private firms and auditors, due to their lower accounting capabilities and expertise, does not seem to strengthen the social bond between the auditor and the client enough to compromise audit independence, and consequently, audit quality. Concerns about NAS' potential to jeopardize audit firms' objectivity do therefore appear to exist without well-grounded reason and may relate more to independence in appearance rather than independence in fact.

6.3 No Audit-Quality Differences are Found

The positive, yet insignificant, correlation coefficient suggests that bigger audit firms potentially are more likely to issue a modified opinion than smaller audit firms are. Hence, the indicative results of this study are in line with international theories' reasoning about the audit firm's size and reputation working as moderating variables (DeAngelo, 1981; Francis & Krishnan, 1999; Geiger et al., 1998; Carcello & Neal, 2003). One could then argue that it is possible for previous studies' results to be true also for the Swedish private market, although audit firms' litigation risk is perceived low in Sweden. This fuels an interest in understanding the main drivers for Big 4 firms' independence in Sweden. Relying on DeAngelo's Economic Model (1981) it is likely to be a result of (1) lower economic dependency on each individual client and (2) greater reputational risk.

However, without a statistically significant relationship between auditor firm size and a modified opinion in any of the logistic regression models, the authors are unable to confirm that bigger audit firms are more likely to issue a modified opinion. This finding contradicts previous research that claims that Big 4 firms generally offer higher audit quality compared to non-big 4 firms. For this to be true also for Swedish private firms, it would require a positive and statistically significant correlation between the Big 6 variable and the dependent variable in the regression model. Similarly, the regression analysis on the subset of firms

audited by Big 6 auditors would reveal a stronger positive correlation or a weaker negative correlation between NAS and the dependent variable (DeAngelo, 1981; Francis & Krishnan, 1999; Geiger et al., 1998; Carcello & Neal, 2003). The result does, however, support Svanström's study (2013) that neither found a significant relationship between Big 4 firms and audit quality, proxied by discretionary accruals.

A potential explanation for why the results of this study deviate from the former mentioned studies, while it aligns with the latter, is the geographical focus. While the international studies conducted provide valuable insights, they are shaped by a distinct regulatory environment that differs from that of Sweden. Another common denominator between the present study and the one completed by Svanström is the private setting. Unlike most previous research, which primarily centers around publicly traded companies, the disclosure of financial information by large private firms in Sweden enables research to target these firms. Thereafter, similar results from studies conducted in the Belgian private market further strengthen the authors' suspicion that it is both the European setting and the private setting that are the decisive factors for the outcome of the results (Bauwhede & Willekens, 2004; Bauwhede, Willekens, & Gaeremynck, 2003). A potential explanation for the lack of audit-quality differences between bigger and smaller audit firms in the private setting is the presumed lower level of agency costs in this context, as well as the lower level of supervision from regulatory authorities. As discussed in the literature review, the main incentive for bigger audit firms to provide a higher audit quality is the fact that they have more to lose if an audit failure is detected. Hence, in a private environment without external stakeholders' demand for high-quality audits and the lack of public scrutinization of reports, the incentives for the bigger audit firms to supply higher audit quality than their smaller peers, are diminished. Thus, eliminating the audit-quality differences that otherwise arise in a public setting.

7. Conclusion

The following section summarizes findings, as well as insights and practical implications, resulting from this study. Furthermore, it includes the authors' recommendations for future research.

7.1 Conclusion from Findings

The purpose of this paper was to investigate NAS' impact on audit quality in large Swedish private firms, and in particular if its presence posed a threat to audit independence. It was driven by the aspiration to uphold and reinforce trust in the audit market, and ultimately the audit opinion, as multiple accounting scandals have put the trust at risk and the provision of NAS continues to increase. Additionally, the heightened regulatory focus on the provision of NAS, reflecting a growing concern among policymakers about the potential implications for auditor quality, served as a justification for conducting this study. Furthermore, this study addresses a current gap in this research field, as previous studies in the Swedish private setting have been limited in number, and to the best of the authors' knowledge, none have used a quantitative approach that employs the audit opinion as a proxy for audit quality.

The result does not provide any evidence that the provision of NAS impairs audit quality. However, it indicates partial support to previous studies stating a negative relationship between NAS and the propensity to issue a modified opinion, which could imply a threat to audit independence. However, the correlation appears insignificant and thus not enough to support such an argument. Nor does it find any quality differences between big and small audit firms. Ultimately, the results turned out to oppose both the Agency theory and the Economic Model of DeAngelo, which were the anchoring theories of the study and laid the foundation for the hypothesis development. The results are, however, consistent with the limited research conducted on private firms in Europe. This leads the authors to assume that there are certain unique characteristics in the delivery of NAS to private firms in the European legislative environment. These are likely to involve differences in terms of the auditor-client relationship, litigation risk, and regulatory supervision.

7.2 Contribution

The results of this study can be of use to a number of different actors. First, it adds to the material on which regulatory decisions are based. In this case, it enhances confidence in

allowing the provision of NAS, as it does not appear to compromise audit independence and, consequently, audit quality. Second, it could enhance stakeholders' and other third parties' confidence in the auditor's issued audit opinion also when NAS are provided. Third, it has the potential to guide audit firms in their decision to provide NAS alongside their traditional AS. As seen from EY's Project Everest, this is currently a major concern for the Big 4 audit firms. It consumes a significant amount of time and resources, which could otherwise be utilized more efficiently to accurately evaluate financial reports and identify material misstatements likely to have a significant effect on stakeholders and society at large.

In addition to its practical implications, this study also makes several methodological contributions. Firstly, this study contributes to the existing body of research in the field by examining audit clients in a private environment and in a geography that has received limited research attention. Furthermore, the study was carried out on a sample consisting of 2,115 observations, which is significantly larger than the samples used in previous research conducted in similar settings. This was made possible through a comprehensive manual data collection process. In addition, the selection of the audit opinion as a dependent variable in the quantitative methodology contributes to existing research by employing an alternative measure for assessing audit quality. Therefore, this study provides additional assurance to the previous research's assertion that NAS does not compromise the quality of audits conducted on Swedish private firms.

7.3 Limitations and Future Research

7.3.1 Limitations

Researchers have questioned the effectiveness of the audit opinion as a measure of audit quality in terms of independence. The critique towards the metric mainly concerns the fact that a threat to independence can be observed first when it is possible to say that an incorrect opinion has been issued. Hence, without a rigorous approach that allows the researcher to determine that an unmodified opinion actually should have been a modified opinion, it is uncertain if the audit opinion is able to completely capture audit independence in fact. This implies that endogeneity remains a concern in the context of this study and particularly in relation to the unobservable aspects of the audit process. The Big 6 variable used in this study is, however, thought to work as a good control variable for audit ability, thereby increasing the reliability of the results (Bauwhede et al., 2004). On the other hand, the logistic regression

models fail to consider the quality of the internal controls within the audited firms, which also can have a significant impact on the probability of detecting errors. Thus, the current study may not fully account for unobservable factors, such as auditor competence and internal control robustness, which can complicate the study's findings and potentially introduce endogeneity issues.

Furthermore, additional proxies for audit quality could have been used in order to boost confidence in the results. For example, this study could have included analyses using earnings management or going concern opinions as measures for audit quality. This was, however, not deemed a priority as this was done in the Swedish market fairly recently (e.g. Svanström, 2013; Tagesson & Öhman, 2015). Additionally, it would have been advantageous for the study to consider auditor tenure, as it is believed to influence the auditor's independence and, consequently, the quality of the audit (Craswell et al., 2002; Hay et al., 2006b). Unfortunately, the unavailability of the necessary data hindered the authors from incorporating this variable. A final limitation pertains to the gathering of data. Due to the necessity of manually collecting AF and NAF data for private firms, the potential for human error becomes inevitable, resulting in possible errors in the data entry process. Nevertheless, this approach was considered the most optimal choice due to the characteristics of the study.

7.3.2 Suggestions for Future Research

Svanström's (2013) research, which assessed the perceived quality of audits in private firms in Sweden, made use of information gathered from surveys of relevant professionals. In contrast, audit quality was proxied for in this study through the use of the audit opinion as the dependent variable. Despite the fact that the methodologies employed in the two studies differed, neither revealed any indication of NAS compromising the quality of audits in Swedish private firms. Future research could benefit from additional methodological approaches. This could for example include the consideration of several measures of audit quality in order to triangulate the results and further enhance the reliability of the findings.

Furthermore, the authors of this study initially aimed to examine the relationship between NAS and various types of audit opinions. More specifically, if there is a difference in the relationship between NAS and a modified audit opinion, disclaimer of opinion, or an adverse audit opinion. There may, for instance, be a negative correlation between NAS and a disclaimer of opinion, as a disclaimer of opinion arises when the auditor lacks sufficient

information to form an opinion. This is presumably less likely to occur in a situation where a lot of NAS are performed. Unfortunately, the sample of this study entailed too few observations with a disclaimer of opinion for it to be included in the analysis. Lastly, future research should consider investigating different types of NAS' impact on audit quality. Different NAS categories may have varying degrees of influence on the auditor-client relationship and, consequently, on the auditor's independence. By dissecting the broad category of NAS into specific service types and examining their individual impacts, future studies could provide more targeted insights and recommendations for both practitioners and regulators in the field of auditing.

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Appendix

Appendix A: Development of NAS

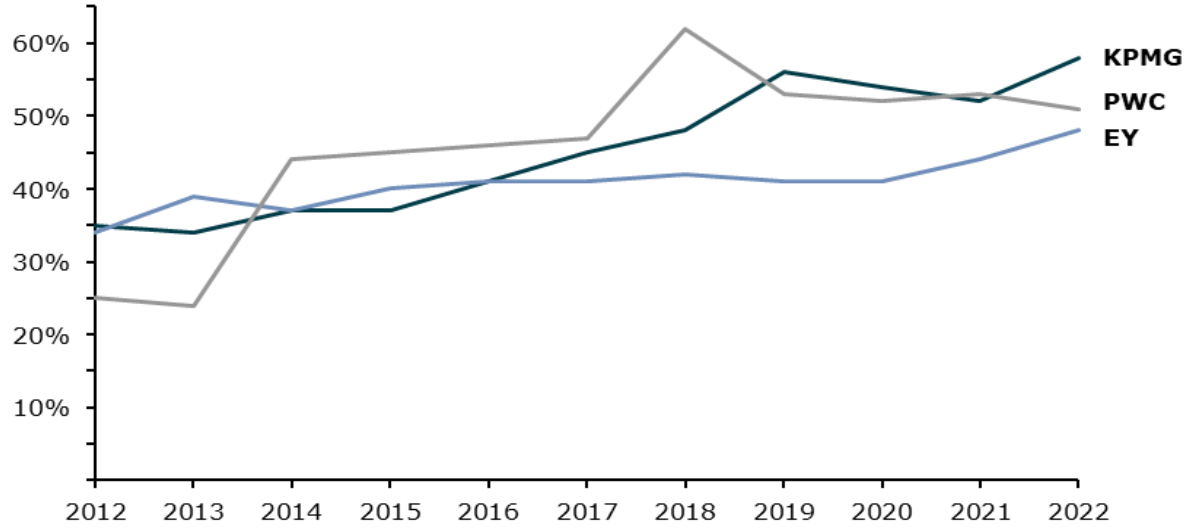

Exhibit 1 excludes data for Deloitte, the fourth Big 4 firm, as no information concerning its revenue composition is available in the firm's financial reports (Retriever, 2023).

Appendix B: Industry Classifications

Appendix B: Industry classification

	Industry	*N*
(1)	Energy & Environment	83
(2)	Materials	45
(3)	Industrial gods	360
(4)	Construction industry	159
(5)	Shopping goods	346
(6)	Convenience goods	166
(7)	Health & Education	137
(8)	IT & electronics	116
(9)	Telecom & Media	55
(10)	Corporate services	487
(11)	Other	161

Appendix C: Hausman Test

Appendix C: Hausman test

Test Statistic	Value
Chi-square	9.57
Degrees of Freedom	20
p-value	0.386

p-value = 0.3863 > 0.05, implying the random effects model is the most suitable for the study's purpose.