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Master Thesis

The association between non-audit services and accrual quality in EEA countries (2015-2017)

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SUMMARY

The main purpose of this study is to examine whether there is a relationship between accrual quality and non-audit services for medium and large listed companies in EEA countries from 2015 to 2017. The further tests are conducted based on the sample of the Nordic region and 4 individual countries such as Norway, Sweden, Denmark and Finland. The dataset included 3,648 medium and large listed companies with their available financial information in the selected period. Accrual quality is measured by using discretionary accrual which is calculated following the Modified Jones Model (1995). The high accrual quality (i.e. low discretionary accrual) indicates a low level of Earning Management and high audit quality. We choose non-audit fees ratio (NAF ratio) which is the ratio of the current year's NAF to the average of prior three years audit fees to investigate the correlation between this indicator and absolute discretionary accrual, income-increasing accrual and income-reducing accrual.

We found the strong positive association between NAF ratio and absolute discretionary accruals and income-increasing accruals but, negative relationship with income-reducing accrual. Additional tests show the positive connection between using non-audit service in company and accrual quality. The test of limitation cap on non-audit service fees according to the EU Regulation No 537/2014 indicates that the total fees for non-audit services shall be limited to no more than 70% of the average audit fees in last three consecutive financial years that can increase the quality of audit (accrual). Furthermore, investigating detailed Nordic groups provide the same results, except we found no significant relation between NAF ratio and income-increasing accrual. Followed by this, we also found no relation in Norway and Sweden, but the evidence of a positive relationship can be found in Denmark and Finland.

In short, when a company uses non-audit services and limits the NAF ratio up to an acceptable level of 70% of the average audit fees in the last three years, it will increase the audit (accruals) quality. However, due to some limitations, further tests should be conducted to get the correct implication about this relation to specific objects and contexts.

PREFACE

This master thesis represents the final part of Master of Science in Business with a major in Accounting and Business control at BI Norwegian School in Oslo. The thesis consists of 30 ECTS credits and is written during the last semester of the study program, the spring of 2020.

It has been a very gratifying and educational journey. In the process of writing our thesis, we have been able to use a great deal of the knowledge that we have acquired as business students.

We would like to extend our gratitude and appreciation towards our supervisor, Tobias Svanström for his advice, guidance and feedback during the research and writing of this project. We are grateful for the time and effort Mr Svanström has put into guiding us. Finally, we want to thank our respective families for their moral support.

Hand in, 1st July, 2020

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TERMS AND ABBREVIATIONS

Terms	Abbreviations
AEM	Accrual-based earnings
BIG 4	Four largest international audit firms: EY, PwC, KPMG, Deloitte
CCGR	Centre for Corporate Government Research
CFO	Cash Flow from operating activities
CLRM	Classical linear Regression Model
CMA	Competition and Markets Authority
CPA	Certified Public Accountants
DACC	Discretionary Accruals
EEA	European Economic Area
EFTA	European Free Trade Association
EQDD	Earnings Quality
EU	European Union
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
LEV	Leverage debt ratio
NAF	Non-audit service fees
NAS	Non-audit services
NCGB	The Norwegian Corporate Provide Governance Board
NDACC	Non-Discretionary accrual
P/E	Price-earnings ratio
PCAOB	Public Company Accounting Oversight Board
PIEs	Public Interest Entities
PPE	Property, Plant and Equipment
PPE/TA	Capital intensity
REC	Account Receivable
REM	Real Earning management

REV	Revenue
ROA	Return on assets
SALEG	Sale growth
SOX	Sarbanes Oxley Act, from 2002
TA	Total Asset
TACC	Total accruals
WC	Working capital

1 INTRODUCTION

1.1 Background

In January 2018, the Carillon Group - the second-largest construction company of the UK - declared bankruptcy, leaving about 20,000 people at risk of losing their jobs. Following this event, KPMG and Deloitte, who have been involved in internal audits and independent audits for Carillion for the past 19 years, were severely criticized (Richard Brooks, 2018; Jasper Jolly, 2019; Financial Reporting Council, 2018; Mark Taylor, 2020). Meanwhile, EY and PwC act as consultants. This scandal has raised a big question about the quality of the audit industry. In 2010, Kim Klarskov Jeppesen studied about the recent developments in auditing, how and why auditing is currently being "reinvented", as taking KPMG's "business measurement process" as its example. As Auditing is largely treated as a black box (Hopwood, 1996), or a politically neutral technique of verifying the accounts (Flint, 1998: 31; Ruud, 1989), this paper raised concerning discussion between professional firms in introducing the new audit approaches or integrating with other services such as consulting.

A UK Financial Reporting Council (FRC) report shows the majority of non-audit services fees in total revenue of the firms, meanwhile the audit work occupies a small part. Competition and Markets Authority (CMA) also noted that "at least" 75% of the big four's revenue comes from other services such as consulting. Moreover, Levitt (2000) has raised concerns regarding the provision of non-audit services by the same accounting firm. Hoogendoorn (2006) emphasized that auditors had the key role in the transition period training activities and that they ran the risk of becoming overly involved in the process of preparing the financial statements for the companies they were required to audit. In this case, Hay, Knenchel, and Wong (2006) argued that independence may be compromised when auditors offer an audit discount to secure lucrative consulting or non-audit services. As a consequence, the audit quality may also be affected since, auditor independence and competence are the determinants of audit quality (Gaynor et al, 2015). The fierce debate has led to the introduction of legislation No. 537/2014 in the EU, regarding the restriction on the types of consulting services provided by auditing companies

to customers. Not only limiting the type of service (Article 5), Article 4 of EU Regulation No. 537/2014 also specifies the limit for consulting service fees, specifically no more than 70% of the average of audit fees in the last 3 consecutive financial years. "Big Four", has recently proposed a plan to split their audit and consulting as two separate companies in the UK, which has been politicized by politicians (Tabby Kinder, 2020; Rob Davies, 2019; Natasha Landell-Mills and Jim Peterson, 2018). Regulatory agencies urge to take action to address the ongoing conflict of interest in the audit industry. However, the leaders of the companies also expressed deep concern that the splitting could cause a big disturbance for both business and customers. David Sproul, CEO of Deloitte, said that creating companies with only an audit segment would be "a big step back for the capital market". Politicians, shareholders and academics all support the split to reduce the dominance of the Big Four. Rachel Reeves MP, Chair of the BEIS Committee, said that the break-up of the Big Four accountancy firms, not only support for the independence of an auditor to increase the audit quality, but also increase the competition to deal with conflict of interests (From the Economic Times, 2018). There are many factors affecting the audit quality, however, within the scope of this study, we will focus on finding the relationship between non-audit services and audit (accrual) quality.

There is a body of literature that examines whether providing non-audit services can affect audit quality (Frankel, Johnson, and Nelson, 2002; Krishnan, Su, and Zhang 2011b; Habib, 2012). The result in this area is mixed. The study of Bjørndalen, S., & Kim-Rafiq, A. L (2017) has shown the significant relationship between non-audit services and audit quality with the sample of 3235 companies in 30 European countries from 2009 to 2014. Also, another study by Svanström (2013) at Swedish private companies, gave similar results to accounting consulting services while for investment advisory, results does not seem to be associated with quality of audit.

Gaynor et al (2015) indicated that audit quality is associated with financial reporting quality. Meanwhile, providing non-audit services might create incentives for auditors to allow earnings management to occur, resulting in lower reporting quality. Some studies found a negative relationship between

non-audit services fees and quality of report (Frankel, Johnson, and Nelson, 2002; Krishnan, Su, and Zhang, 2011b; Habib, 2012), but others fail to find a strong relation between non-audit fees and reporting quality (Ashbaugh, LaFond, and Mayhew, 2003; Chung and Kallapur, 2003; Reynolds, Deis, and Francis, 2004; Ruddock, S. J. Taylor, and S. L. Taylor, 2006; Huang, Mishra, and Raghunandan, 2007). Therefore, mixed results are found. However, most investors and creditors emphasize that the higher non-audit fees result in lower quality of financial report (Schneider et al., 2006).

DeFond and Zhang (2014) mentioned multiple methods to measure audit quality, in which financial reporting quality method is measured by accrual quality. Therefore, with the motivation from prior research, we decided to test the hypothesis regarding whether there is an association between non-audit services/ fees and accrual quality in EEA countries from 2015 - 2017. Together with prior research results of Bjørndalen, S., & Kim-Rafiq, A. L (2017), this topic is an updated and continuous assessment with a broader scope and detailed tests from the group of countries to an individual country, such as the Nordic region and its members which include Norway, Sweden, Denmark, Finland and Iceland. Considering the EU directives and EU Regulation No 537/2014 about limiting consulting fees no more than an appropriate level (70%), we are expecting that non-audit service/ fees have no more negative impact on audit quality at this time. The limitation on non-audit service fees and separation of service types could increase audit quality and reduce the effect of non-audit services on the company's earning management in comparison with the previous time.

1.2 Research purpose and research question

In general, the purpose of this study is to examine the relationship between non-audit services in terms of non-audit service fees and audit (accrual) quality in EEA countries from 2015 to 2017. The research question is

What is the association between non-audit services and audit (accrual) quality in EEA countries from 2015 to 2017?

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The differences in accounting regimes and social context among the countries motivated us to expand the testing of models and the hypothesis in different countries and regions in order to answer the assumption that whether the findings in EEA countries represent the result for the whole population. The previous research of Bjørndalen, S., & Kim-Rafiq, A. L (2017) conducted tests in five main regions which include Nordic, Latin, Germanic, Anglo-American and Ex-communist but lacked testing for individual countries. The result found that there is a significant relationship between non-audit service and audit quality in Nordic and Latin.

Some nations belonging to the Latin American region are characterized as having little or no law enforcement (Beslic, Jaksic, & Andric, 2015, p.75). Therefore, we decided not to test this region since we want to test the effect of NAS regulation on the company's performance. We also decided not to test Germanic, Anglo-American and Ex-communist regions since prior research found no relation between Non-audit service and audit quality. Furthermore, in some countries such as the U.S, China, Japan, Mexico, Germany and France, the audit firms are not allowed to provide certain types of non-audit services to their audit clients (Svanström, 2013; Tafara, 2006). Nordic region is a group of developed countries (Norway, Sweden, Denmark, Iceland and Finland) with uniformity of economic development, following the EU Regulation but still have local accounting regimes and are less restrictive in the rule of providing NAS compared with other regions and countries. However, for listed companies they all follow IFRS. The similarities and differences between each country in this group motivated us to conduct the detailed test in Nordic area and five countries inside this region. Especially, since there is no prior study in Denmark and Finland about the relationship between non-audit service/ fees and accrual quality, our findings can be considered as reference literature and also motivate for further research in future.

Finally, we will examine the appropriate level of non-audit fees restriction retrieved from EU Regulation No 537/2014, Article 4. We will test with different thresholds of restriction such as 60%, 70%, 80% and 90% to conclude whether the limitation of 70% according to the EU Regulation No

637/2014 is appropriate or not. The study will use an estimated discretionary accrual as a measure of accrual quality from the Modified Jones model of Dechow et al. (1995).

1.3 Structure

The study comprises eight chapters in total. Chapter 2, the EU regulation includes the discussion on EU legislation and the audit reforms following EU Regulation No 537/2014. Chapter 3 presents a literature review, with an introduction to non-audit service and summary of prior studies. Following the review of NAS, the hypothesis design is represented. Earning management and accrual quality and its relation with audit quality are also mentioned. The parameter to measure accrual quality, named discretionary accrual is also stated in detail in this chapter. Five commonly used models for measuring discretionary accruals are discussed. Chapter 5, we specify the further test in the Nordic region with its five-member countries. Chapter 6 is presented with the Methodology of research design and data selection process. Finally, we present the empirical findings in Chapter 7, before presenting conclusions as well as limitations in chapter 8.

2. THE EU REGULATION

2.1 Legislative amendment

In recent times many researchers believe that the accounting firms are prioritizing non-audit services instead of auditing services. The main reason for these might be that the non-audit service is less risky for the audit firms and the fees of these services are higher than auditing. As Wyatt, 2003 states,

> ".... greed appears to have been the driving force …greed became a force to contend with in the accounting firms….the cultures of the firms had gradually changed from a central emphasis on delivering professional services….an emphasis on growing revenues and profitability"

Moreover, many accounting scandals arose around the world which affected the regulators, users and stakeholders and they became worried about the

situation and immediately the reforms were needed to tackle those problems. As a result, the new legislation came around the world.

European Union (EU) Audit Legislation was adopted in April 2014, in order to reform the statutory audit market or statutory audit of public listed companies (and other entities). The legislation applies to the 28 Member States and subsequently to the three European Economic Area (EEA) countries (Iceland, Liechtenstein and Norway) comprising a regulation and a directive which generally becomes effective from 17 June 2016. Similarly, the Sarbanes-Oxley Act in the United States also prohibits the auditors from providing non-audit services, but that no cap on fees from non-audit services has been introduced (Langli & Willekens, 2018). Furthermore, in some countries such as the U.S, China, Japan, Mexico, Germany, Australia and France, the audit firms are not allowed to provide certain types of non-audit services to their audit clients. Whereas in countries like the UK, EU (except France and Germany) and Hong Kong has no prohibition on specific NAS (Tafara, 2006).

2.1.1. The EU Legislation: Directive and Regulation

The new European Union (EU) statutory audit legislation has two following components.

· A Directive

· A Regulation

As the Directive includes a number of requirements governing every statutory audit in the EU and amends the previous Statutory Audit Directive of 2006. Whereas regulation contains a number of additional requirements such as statutory audits of public interest companies, firm rotation and prohibition of non-audit services.

Directive

The Directive is needed to be transposed by the respective member states into their national laws in order to be incorporated into respective national laws. Furthermore, the Directive requires minimum harmonization at the European

level. Moreover, it is up to each member state to design their own national laws which enable them to meet these requirements. Unlike regulations, the Directive does not automatically apply.

Regulation

A Regulation is an EU legislative instrument which is directly applicable and enforceable in the EU Member States. Regulations always have supremacy over national law and so may require the Member States to change their national law in order to be consistent with the Regulation. Furthermore, a Regulation is a binding law for all EU member states which means that all regulations that are published in EU legislation constitute national law.

2.1.2 Reforms

In Europe, the financial crisis highlighted a deficiency in the European audit system. In the response, the council of European Union (2010) published a Green Paper on the role and scope of the audit and how the audit function could be enhanced to reform the audit industry in the EU in order to contribute to increased financial stability.

The provision of non-audit services may compromise an auditor's independence; regulatory reforms such as Sarbanes-Oxley Act (SOX) in US have prohibited accounting firms from providing certain non-audit services (Reynolds, Deis Jr and Francis, 2004). In 2003 and 2005, the Financial Supervisory Authority of Norway and the Norwegian Ministry of Finance introduced stricter rules on what type of consulting services auditors were able to provide (Hope and Langli, 2010). In addition, The Norwegian Corporate Provide Governance Board (NCGB 2018) issues codes of best practice, with the Auditing and Auditors Act, setting out requirements for independence, objectivity and ethics for the auditing profession.

In the past, the audit firms were subject to self - regulation, which was replaced by Sarbanes–Oxley Act of 2002 (SOX) by requiring the independent inspection of Audit films by the Public Company Accounting Oversight Board (PCAOB) in the United States (Lennox & Pittman, 2010). Similarly, in

order to secure and strengthen the auditor's independence, the EU legislators also introduced the new audit rules for the large companies through the Audit Reform regulation which came to effect from 2016. The legislation applied to the 28 EU member states and subsequently to the three EEA countries (Norway, Iceland and Liechtenstein). The audit reform legislation proposal immediately reflected a positive impact in the stock market and was quite beneficial for the investors in firms with low earnings quality (Horton, Tsipouridou & Wood, 2018)

To strengthen the independence of auditing, the 2014 EU Legislative requirements covering EU Public Interest Entities (PIEs) and their statutory auditors includes major changes to the roles and duties of audit committees, introduction of new auditor reporting requirements, mandatory audit firm rotation, restrictions on the types of non-audit services for PIE clients performed by statutory auditors and cap on the amount of fees permitted on the provision of non-audit services. The emphasis mostly given on three new features such as mandatory firm rotation, restrictions on non-audit services and cap on fees for the provision of non-audit services. However, mandatory firm rotation is not relevant for our study. Thus, we describe the two features as below.

Restrictions on non-audit services

The regulation 2014, article 5 comprises of services that cannot be provided (prohibited services) by a statutory auditor on their PIE clients include a) tax-related services (including preparation of tax form, payroll tax, tax advice and calculation of deferred taxes), b) corporate finance services, c) bookkeeping and financial statement preparation, d) the design and implementation of internal control or risk management procedures or financial IT systems and f) valuation services etc. However, the tax services at (a) (i), (iv), (v), (vi) and (vii) and (f) as shown in table 1 may still be provided in certain cases, i.e., where the Member State does not have an immediate (or have only an immaterial) consequence on the audited financial statements. Furthermore, Member States may place the prohibition on more non-audit services than

those mentioned in EU Regulation 537/2014 or allow the services quoted in

Article 5.1 of the Regulation.

Table 1 Prohibition of certain non-audit services (NAS) to PIEs (Article 5.1
of the Regulation)

Prohibited non-audit services	
a. Tax and tax compliance services:	i. Preparation of tax forms
	ii. Payroll tax
	iii. Custom duties
	iv. Identification of public subsidies and tax incentives unless support from the statutory auditor or the audit firm in respect of such services is required by law
	v. Support regarding tax inspections by tax authorities unless support from the statutory auditor or the audit firm in respect of such inspections is required by law
	vi. Calculation of direct and indirect tax and deferred tax
	vii. Provision of tax advice
b. Services that involve playing any part in the management or decision-making of the audited entity	
c. Bookkeeping and preparing accounting records and financial statements	
d. Payroll services	
e. Designing and implementing internal control or risk management procedures related to the preparation and/or control of financial information or designing and implementing financial information technology systems	
f. Valuation services, including valuations performed in connection with actuarial services or litigation support services	
g. Legal services, with respect to	i. The provision of general counsel
	ii. Negotiating on behalf of the audited entity
	iii. Acting in an advocacy role in the resolution of litigation

h. Services related to the audited entity's internal audit function	
i. Services linked to the financing, capital structure and allocation, and investment strategy of the audited entity, except providing assurance services in relation to the financial statements, such as the issuing of comfort letters in connection with prospectuses issued by the audited entity	
j. Promoting, dealing in, or underwriting shares in the audited entity	
k. Human resources services, with respect to	i. Management in a position to exert significant influence over the preparation of the accounting records or the financial statements subject to statutory audit, where such services for such position involve a). Searching or seeking for candidates b). undertaking reference checks on candidates)
	ii. Structuring the organization design
	iii. Cost control

Cap on fees for the provision of non-audit service

The other fees received from audited entities can threaten the independence of a statutory auditor or an audit firm. Thus, it is important to assure that audit fees are not based on any form of contingency and when the audit fees from a single client including its subsidiaries are significant, a particular course of action involving the audit committee is established to assure the quality of the audit. Article 4 states that the fees for such services might not exceed 70% of the average of fees paid for the latest three consecutive years for the statutory audit. However, the prohibition of certain non-audit services does apply at the network level. Thus, Individual member states may place an upper bound on fees for allowable non-audit services if the fees are below 70%. We will apply and investigate the effect of the fee cap rule into the model to test in detail on how it can affect the audit quality in chapter 7.

3. LITERATURE REVIEW

3.1. Non-Audit Services (NAS)

Non-audit service is the provision of non-audit services to the audit client (Svanström, 2013). Purcell and Lifson (2003) state non-audit services refers to the traditional CPA works such as assurance, investment assurance, commerce registration and accounting affairs as well as includes tax advisory services. Similar definition of non-audit service is provided by both the Sarbanes-Oxley and EU law. According to the Financial Reporting Council (2010) "*Any engagement in which an audit firm provides professional services to an audited entity, its affiliates or another entity in respect of the audited entity, other than the audit of financial statements*".

Audit firms can offer more than audit revision for their clients and these services are the so-called non-audit services (NAS). The NAS provided by auditors to their audit clients such as management advisory services, tax services, accounting services, corporate finance services and assurance services have been regarded by regulatory authorities in the world, as hindrance to auditors' independence that can increase the risk of conflicts for statutory auditors and audit firms (Craswell, 1999, p.30). While auditors enriched themselves by providing these services to their clients, regulators consider it as an act that impairs auditor's independence. For instance, many researchers argue that independence can be threatened by the relationship between the auditor and the audited client when providing non-audit services (Schneider, Church, & Ely, 2006). This is because consulting services can strengthen the economic bond with the client, increasing the auditors' incentives to allow earnings management (Simunic, 1984 and Beck et al., 1988). As a result, the new audit framework presents a blacklist of non-audit services that audit firms cannot provide to the audited PIE, to its parent undertaking and to its controlled undertakings within the Union (European Commission, 2014). The EU Directive (2014/56/EU), article 5 clearly defines the prohibited non-audit services that include accounting and bookkeeping- and taxation and legal services, corporate finance and business recovery and business and management consultancy[1]. However, it is possible for Member

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[1] see more detailed information of prohibited NAS in table 1

States to refrain from the blacklist to provide specific tax and valuation services, the criteria is that these must be irrelevant and have no direct impact on the audited financial statements. Further, the Member States can also prohibit more non-audit services than the ones presented in the list (European Commission, 2014). Generally, studies from both previous and after the Enron scandal imply that perceptions of independence can differ due to the extent of non-audit service bond between auditor and audit client, and also the kind of NAS offered (Schneider, Church, & Ely, 2006). Practically, NAS can harm the "perception" of auditors' independence (Bogle, 2005).

There had been strong growth in accounting firm's provision of counseling services to their clients in the 1980s. Firth (1997) contends that a growing percentage of revenue in the accounting firms is coming from non-audit services, such as tax advisory, information systems design and installation, management functions and human resources. Such a tendency has also been confirmed by several scholars since 1980 (Palmrose 1986; Abdel-khalik 1990; Barkess and Simnett 1994). This increase reflects an absolute growth in non-audit activities and a stagnation in the audit services market. Thus, many firms, regardless of their size, concentrated towards non-audit services in order to gain a competitive advantage in a saturated market.

However, the Enron scandal 2001, exposed the problem of audit independence, and the demand for audit and non-audit services (NAS) ignited debate amongst investors, regulators and accounting professionals in recent time. The debate regarding it was concerned about whether auditors could perform both audit and NAS to audit clients without impairing their independence. Thus, regulatory reforms such as the Sarbanes-Oxley Act (SOX), 2002 was proposed. One of the key elements was the prohibition on the provision of joint audit and non-audit services to their client. Moreover, large audit firms were obliged to separate audit activities from non-audit operations considered also in the final proposal of the European Commission, 2001. Furthermore, the financial crisis in 2008 induced reactions on EU level and resulted in further restrictions regarding the provision of NAS to their audit clients. The new regulation, (2014/56/EU) introduced prohibition on the

provision of specific NAS and set a cap for non-audit fees at 70% of audit fees, based on a 3-year average.

Thus, after the commencement of various accounting scandals around the world has led to the increased awareness of auditor's independence and quality of audits for corporate earning management. One of the issues that was pointed out was the relationship between consulting services and audit quality. Since audit quality is associated with accrual quality, therefore consulting service will also affect the accrual quality. Therefore, audit quality has received much attention in the wake of several high-profile accounting scandals around the world (Knechel et al., 2013). There has been a longstanding debate on whether the provision of NAS to clients by audit firms may compromise the auditor independence (e.g. Alexander & Hay, 2013; Wines, 2012; Zerni, 2012).

On one hand, it is argued that providing non-audit services increases the economic bonding between the auditor and the client, and there is a widespread belief that auditors might sacrifice independence so as to retain clients who are paying a large sum in non-audit fees (DeFond, Raghunandan, & Subramanyam, 2002). As a consequence of such an auditor-client relationship, the clients gain more opportunities to conduct opportunistic earning management (Krauss, P., & Zulch, H., 2013), suggesting with the possibility of weakening the audit quality and thus affecting the accrual quality (Kinney et al. 2004; Francis, 2006). Moreover, the regulators are also concerned that NAS threatens auditor independence by putting auditors in management roles and by making them financially dependent on their clients (De Fond & Zhang, 2014). Also, offering advisory services and other non-audit services to the audit clients can create a conflict of interest (Craswell, 1999, p.30), especially in cases where the auditor is in danger of auditing his own work (Simunic, 1984, p. 679). Kinney et al. (2004); Francis (2006) proposed that provision of NAS may lead to economic bonding between the auditor and the auditee, with the possibility of weakening the audit quality and thus affecting the accrual quality.

Whereas, on the other side of the debate, some argue that non-audit services are beneficial and improve audit quality. Arrunada (1999) asserts that

provision of NAS can enhance audit effectiveness in terms of knowledge spillover, as knowledge gained from consulting services might be transferred to audit (economies of scale). Hence, this contributes to minimizing transaction cost of the audit firms (Simunic, 1984) and such provision creates "reputational capital", which acts as an incentive for independent behaviour (DeAngelo, 1981). Quick and Warming-Rasmussen (2009) document that the perceived threat to auditor independence is lessened if NAS is supplied by a separate department within the audit firm. Furthermore, Hay, Knechel, and Li (2006) presented the loss leader argument, suggesting that auditors increase the sale of consultancy services by reducing the audit fee as a loss leader and justified by arguing that cost saving can be done due to knowledge spillovers between audit and non-audit services.

There are both positive and negative aspects of NAS which are being discussed among the researchers. While talking about the positive aspects, knowledge spillover is positively associated with NAS whereas, economic and social bonding cause serious threat towards the independence of auditors, thus suggesting negative effects. These two aspects, positive and negative, are related to NAS and are further discussed below.

3.1.1 Knowledge spillover

Cahan et al. (2008), Simunic (1984) found significant advantages of auditing firms providing non-audit service to their clients. According to Cahan et al. (2008), since auditors have extensive knowledge about their clients, therefore, the knowledge spillover obtained might put the auditing firms in a better position in providing these services cheaper as compared to other firms. As the provision of NAS improves audit effectiveness due to knowledge spillover effects, those positive effects might arise from the use of same client-specific information (Arruñada, 1999) which further assists the auditor in developing a better understanding the client's business operations and therefore, is more likely to understand the client's procedure and controls, in order to assess the client's business and financial risks (Simunic, 1984).

Previous research on knowledge spillovers presume that audit quality is constant but few studies test the validity of this assumption. As a result,

Knechel and Sharma (2010) conduct their tests where they consider both audit quality and audit efficiency. They find that auditor-provided NAS do not compromise the quality of the audit but rather enhances the efficiency of the audit (measured as audit report lag). In particular, non-audit services are thought to have a ''knowledge spillover'' effect whereby the provision of NAS allows the auditor to develop better expertise about a client. Thus, the application of client-specific expertise improves the quality of the audit (e.g., Simunic, 1984; Lai and Krishnan, 2009; Knechel and Sharma, 2011; Krishnan and Yu, 2011; Svanström and Sundgren, 2012).

The knowledge spillover flows from non-audit to audit side as stated by Krishnan & Yu (2011). According to them, when the same audit firms perform both audit and non-audit services, synergies are created, which means the insights learned from performing one function helps the other. In this context, some studies indicate that auditor-provided tax services (ATS) are related to higher financial reporting quality and audit quality (Robinson, 2008; Gleason and Mills, 2011; Krishnan and Visvanathan, 2011).

However, while NAS may weaken the independence, it may also create "knowledge spillovers" that improve auditor's competency and efficiency (Simunic, 1984). If the benefits of improved competency exceed the costs of reduced independence, restricting NAS may reduce audit quality and efficiency (Beck and Wu, 2006; Lu and Sapra, 2009). Furthermore, higher audit effectiveness achieved by knowledge spillover effects in turn might result in higher audit quality as auditor's competence increases (Joe and Vandervelde, 2007) enabling the auditor to execute the audit engagement at lower audit costs (Antle et al., 2006).

3.1.2 Economic and social bonding

Economic and social bonding between auditors and their client are considered threats to independence. Economic and social ties are inherent and are already present from the time the auditor is elected. Simunic (1984) and Ashbaugh et al. (2003) stated that the provision of NAS by the audit firms to their clients can lead to economic bonding between the audit firm and their clients.

When audit firms provide NAS to their clients, as it offers higher margin than audit services, it can lead to social and economic bonding between audit firm and the client and are further increased with the lucrative consulting opportunities (Ferguson et al., 2004; Antle et al., 2006; Svanström, 2013). However, in empirical studies, it is difficult to distinguish between these two forms of bonding (Svanström, 2013). According to Tsipouridou & Spathis, (2012), the economic bonding between auditors and large clients is even stronger, encouraging auditors to act less conservatively, and report more favourably, in an effort to retain their influential clients. The economic bonding will provide the audit firms with lower motives to stop management from adjusting the accounts (earning management) due to fear of losing audit fees. In this context, the auditor might allow a firm's accountant to manipulate their earnings or assist management in overriding the boundaries proposed by Generally Accepted Accounting Principles (GAAP) (Simunic, 1984 and Ashbaugh et al., 2003). Defond et al. (2002) stated that, by the provision of non-audit services such as management advisory services to their clients, puts the auditor in a management position, hence clouding their judgments.

Several studies have suggested that NAS contributes to an economic relationship between the client and the auditor, which may lower auditors' objectivity in an adverse manner (Schneider, Church, & Ely, 2006). According to DeAngelo (1981), when the economic connection between the auditor and audit client grows, the auditor's incentives to jeopardize independence also increases. As the economic bond between the auditor and his client is increased due to provision of NAS. This bond could lead to the perception of impaired auditor independence (Beck, Frecka, and Solomon, 1988, Deberg, Kalpan and Pany, 1991) due to two reasons. Firstly, the audit firm is reluctant to "criticize" the work done by its consulting division, and secondly, the audit firm does not want to lose lucrative consulting services provided to the audit client and is, therefore, more resistant to disagree with management's interpretation of accounting matters. Similarly, Simunic (1984) asserts that increased economic bonding between the auditor and his client resulting from the joint provision of NAS may induce the auditor to resolve disputes in the client's favour in order to maintain incumbency.

Social bonding between the consulting services providing the auditor and the client arises from trust between them where trust plays an important role in their well-functioning relationship (Bennett and Robson, 2005). However, a higher level of trust may result from the frequent interaction between the audit firms and their clients by the joint provision of audit and NAS. It is also highlighted that the large portion of revenue is generated by providing consulting services, thus increasing the dependency on the client. As a result, the accountant gets too close to management, thus eroding professional skepticism (Beattie & Fearnley, 2002)

Moreover, regulators at both national and international level are concerned that the provision of NAS will endanger the independence and credibility of auditors, given that it further increases the economic bonding between auditor and client. However, the documented evidence on the potential negative effects of economic bonding arising from auditor- provided NAS is mixed. Bedard et al. (2008) in their literature on the impact of non-audit fees, concluded that there is a lack of evidence to support the claim that auditor independence is compromised by the provision of NAS. This is also supported in earlier studies of NAS (e.g. Lennox, 1999; Frankel et al., 2002; DeFond et al., 2002; Ashbaugh-Skaife et al., 2003; Larcker and Richardson, 2004; Gul et al., 2006 and Kinney et al., 2004 and Gul et al., 2006. Nevertheless, prior research also identifies different factors like reputation risks (Watts & Zimmermann, 1983; Johnson et al., 2002) and litigation concerns (Palmrose, 1988; Shu, 2000), which can help to restrain the negative economic bonding effects.

Furthermore, economic bonding is thus unlikely to have a major impact on audit quality in private firms (characterized by low reputation risk and litigation risk), as suggested by Hope and Langli (2010).   Similarly, Svanström (2013) asserts that due to the absolute level of fees being lower and distributed among a larger portfolio of clients, the economic motives are lower in private firms as compared to the public firms. However, social bonding might create an independent risk due to its close relationship between auditor and manager in a private firm. This finding is supported in the study conducted in Germany by Daniela Hohenfels & Reiner Quick

(2018) that the strong relationship between audit firms and its clients might harm the auditor's professional independence.

3.1.3 Review of prior studies on NAS

There have been a number of studies that investigated the debate around provision of NAS. The discussion about counselling services and whether it has a positive relationship or negative has been going on for several years. Therefore, research in this area is characterized by the fact that there is no clear consensus on whether consulting services have a positive or negative effect on audit quality. Empirical studies in the field are mixed (Knechel, Krishnan, Pevzner, Shefchik, & Velury, 2013, p. 401). Below, we present a table of previous related studies, based on highly cited papers on the provision of NAS and summarize its effect. Geographically, these studies are mainly centered in the US, UK, Germany, Norway, Sweden, Asia, and Australia and have incorporated the studies from 1999-2020. The wide range of literature from different time periods and geographical locations can support our study in gaining a clearer picture regarding the relationship between NAS and accrual quality.

Table 2 Review of previous NAS study

No	Research topic	Author	Year	Area	Results
1	Non-audit services and audit quality: Blessing or Curse? (A study period 2004-2011)	Patrick Krauss &Henning Zulch	2013	Germany	In general, NAS fees and audit-related fees are negatively related to audit quality, whereas the provision of tax and other advisory services have an insignificant impact on audit quality. Furthermore, provision of tax and other advisory services by statutory auditors neither leads to decline in auditor independence nor creates substantial knowledge spillover effects.
2	Does non-audit service compromise audit quality? (Study period: 2003-2014)	Hong-jo Park, Jeong-un Choi & Joonhei Cheung	2017	Asia	Before controlling the endogeneity, NAS affects audit quality. However, after controlling endogeneity, even when the same independent auditor providing audit and NAS together did not affect the accounting quality. Furthermore, the result was consistently based on all audit compensation variables of audit quality, abnormal accruals and audit time variable.
3	Non-audit services and audit quality: evidence from private firms.	Tobias Svanström	2013	Sweden	The positive association between management's perception and audit quality supported i). The proportion of NAS fees to total fees and ii) advisory services in accounting, tax and law. Whereas negative association were found between discretionary accruals in terms of i, ii and iii) accounting services. Similarly, a positive association was found between discretionary accruals and legal services implying knowledge spillovers effects and indicates the auditor's independence is not impaired as a result of NAS and shows that NAS can have a positive effect on audit quality.

4	Auditor Independence in a Private Firm and Low Litigation Risk Setting.	John Christian Langli & Ole-Kristian Hope	2010	Norway	Despite low litigation risk and the reduced reputation risk, results provide no proof that auditors compromise their independence through fee dependence. Also, reputation risk is considerably lower for auditors for private than public clients firms and found no association between auditors' fees and the propensity to issue a going concern opinion.
5.	Non-audit services and financial reporting quality: evidence from 1978 to 1980	Kevin Koh, Shiva Rajgopal & Suraj Srinivasan	2013	U.S	Provision of NAS, especially those related to information services resulted in improved earning quality. Hence, consistent with better audit quality that results from knowledge spillovers due to the joint offering of audit and consulting services. Furthermore, data drawn from the past propose that auditors' reputational incentives, possible synergies and knowledge transfers imply that NAS offered by audit firms can be related with improved audit and reporting quality in client firms.
6.	Audit Quality: Insights from the Academic Literature	W. Robert Knechel, Gopal V. Krishnan, Mikhail Pevzner, Lori B. Shefchik, & Uma K. Velury	2013	U.S.A	Based on the primary attributes of an audit (incentives, uniqueness, process, uncertainty, and judgment), as well across the different aspects of the audit (inputs, process, outcomes, and context specifies that incentives related to auditor tenure, non-audit services, internal firm pressures, and partner compensation can influence auditor decisions both in a positive or negative way.

7.	Non-audit Service Fees and Audit Quality: The Impact of Auditor Specialization.	Chee Yeow Lim & Hun-Tong Tan	2008	U.S.A	Results provide some evidences, using going-concern opinions, propensity to avoid missing analysts' forecasts, and ERCs (earning return coefficient), that industry-specialist auditors are more likely than non-specialists to provide higher audit quality when they provide NAS to clients, suggesting NAS can be attributed to their greater independence both in fact and in appearance, and/or their greater ability to benefit from knowledge spillovers.
8.	Characteristics of auditor's non-audit services and accruals quality in Malaysia.	Wahab Effiezal. Abdul et al.	2020	Malaysia	Non-audit services are associated with lower accruals quality. Both recurring and non-recurring non-audit service fees are harmful to the quality of accruals. Results demonstrate that offering of non-audit services create economic bonding, and thus a threat to auditor independence
9.	Non-audit Services Fees and Auditor Independence: Empirical Evidence from Oil and Gas Industry	Santanu Mitra	2007		The study does not find evidence that the relative level of non-audit service fees in the oil and gas firms impairs auditors' objectivity in assurance functions and also no connection between DACC and NAS.
10.	Are Auditors Compromised by Non-audit Services? Assessing the	Jere r. Francis	2006	Australia	The result shows that NAS has no unfavourable effect on audit quality. While this result may not generalize to the U.S. setting due to institutional difference between the two countries (including the fact that Australian NAS fees are about half the level of U.S. NAS fees)

	Evidence (study period: 1990)				
11.	Non-audit fees, disclosure and audit quality	Clive S. Lennox	1999	United Kingdom	Results provide unreliability on the view that voluntary revelation of non-audit fees was used to signal audit quality. The evidence also indicates a positive weakly significant relationship between disclosed non-audit fees and audit qualifications. This implies that when non-audit fees are disclosed, the provision of non-audit services does not lower audit quality.
12.	Non-audit services and audit quality: evidence from Germany Study period(2006-2013)	Daniela Hohenfels & Reiner Quick	2018	Germany	Higher levels of NAS fees have a negative effect on audit quality. However, separating different types of NAS especially other assurance and other consultancy services have a negative impact on audit quality, whereas the level of tax services has no impact on audit quality. Furthermore, cap on NAS fees at 70% of averaged three prior years audit fees imposed by the EU fails to prevent the reduce audit quality, whereas an average level of NAS does not result in lower audit quality as compared to audit quality of auditors providing no NAS.

In the below, we have divided prior literature into three categories based on their findings which are positive, negative and no-effect relationship between NAS and audit quality. The result with positive effect means that the audit quality of the firm can increase if they use non-audit service. In contrast, the negative relationship shows that using non-audit services might harm the audit quality. And the rest of the researchers find no relationship between non-audit services and audit quality.

Positive relationship between NAS and audit quality

There are several researches which show the positive relationship between NAS and audit quality, which means that using non-audit services might increase the quality of audit. According to the study conducted by Koh, Rajgopal, and Srinivasan (2012) in U.S. companies comprising of S&P 500 firms concluded that providing NAS does not automatically lead to weaker audit quality and audit quality increases for those companies that have a higher proportion of NAS compared to total audit fees.

Lim & Tan (2008) finds that audit quality is less likely to be impaired with the provision of non-audit services in case of specialist compared to the non-specialist, suggesting that the likelihood of issuing a going concern opinion to the financially distressed firm is higher when NAS acquired from industry specialist increases. Similarly, Robinson (2008) reports a positive relationship between tax service fees and the likelihood of correctly issuing a going concern opinion prior to the bankruptcy, suggesting the potential benefits of providing tax services to audit clients.

An empirical study conducted on Sweden private firms by Svanström (2013) to investigate the relationship between NAS and audit quality finds that higher NAS fees result in lower-earning management. Furthermore, he analyzes the effect of different types of NAS with regards to accounting support, tax services, investment services and legal services. Overall, his findings do not indicate that the auditor's independence is impaired as a result of NAS, but rather NAS can have a positive effect on audit quality. Also, he finds that accounting advice reduces audit quality and legal assistance produces mixed results, while investment advice does not produce significant

results, but tax advice is found to increase the perceived audit quality. There are also studies which indicated that tax consultancy might boost the quality of the audits (Kinney Jr., Palmrose, & Scholz, 2004). This argument was grounded on the idea that offering non-audit services permits auditors to better understand their clients, resulting in an improvement in the financial audit (Simunic, 1984).

Negative relationship between NAS and audit quality

There are some recent studies suggesting that non-audit services are indeed associated with lower audit quality (Firth, 1980; Beattie and Fearnley, 2002; Healy and Papelu, 2003; Frankel et al., 2002 and Ferguson et al., 2004). However, the findings of Frankel et al. (2002) have been criticized by subsequent studies, stating that by controlling for firm performance, they no longer find a positive relationship between consulting services and discretionary accruals (Ashbaugh et al., 2003; Reynolds, Deis, & Francis, 2004).

The study of Quick and Warming-Rasmussen (2009) conducted in Germany context where they find that NAS from management consultancy, internal audit and tax advisory services appear to have the most serious threats on the auditor independence.

No relationship between NAS and audit quality

DeFond, Raghunandan and Subramanyam (2002) could not find indication of any correlation between non-audit services and audit quality, using going concern opinion as a measurement parameter. Similarly, Hope and Langli (2010) conducted a study on Norwegian private firms failed to find any association between (abnormal) NAS fees and auditor's propensity to issue a going concern opinion. Mitra's (2007) study on the oil and gas industry finds no connection between Discretionary accrual (DACC) and NAS. Furthermore, Krauss & Zulch (2013) found that provision of tax and other advisory services by statutory auditors neither leads to decline in auditor independence nor creates substantial knowledge spillover effects.

Hypotheses development

Overall, there are several research approaches to find the correlation between non-audit services and accrual quality. Most of the research uses discretionary accrual to measure audit (accrual) quality. High accrual quality also means low discretionary accrual which indicates low level of Earning Management and high audit quality. We consider it relevant to use a well-established method within the field of expertise when measuring audit quality. This allows us to compare our results more easily with previous research and gives us greater assurance that the theory behind the method has been tested and discussed. Although there is criticism of using discretionary accrual as a measure of audit (accrual) quality, we consider it as the best option to consider with our large sample of data.

Some of the projects mentioned above indicate that there is an association between NAS and discretionary accruals which indicated using non-audit services might or might not harm the accrual quality since it increases/decreases the discretionary accrual. Meanwhile, some studies report that there is no relationship between non-audit services and accrual quality or using non-audit services have no effect on quality of accrual. From a theoretical point of view, a positive connection between non-audit service and discretionary accruals can relate to the literature on social and economic bonding. Economic bonding will make the auditor more financially dependent on the clients, which weakens the auditor's independence. Social bonding means that there is a close relationship between clients and auditor, which can weaken the auditor's professional skepticism and independence. We expect a negative relationship in cases where the auditor has not prevented the company from making aggressive accounting choices. A positive relationship could indicate the presence of knowledge spillover or knowledge transfer. As the accounts are conservative in nature, one of the auditor's tasks is to ensure that their client prepares the financial accounting accounts within the framework. We expect a positive relationship in cases where the auditor has prevented aggressive accounting.

Overall, there is no clear evidence about the transparent correlation between non-audit services (NAS) and audit (accrual) quality or discretionary accrual

(DACC), relying on the difference of industry, business sectors, countries to countries or different accounting regimes. With the dataset of companies in EEA countries, we will conduct a regression test to find out whether or not there is an association between NAS and audit (accrual) quality or DACC in the selected sample. Based on the above discussion, the following hypothesis was formulated:

H1: There is an association between NAS and audit (accrual) quality

Since there is a relationship between audit (accrual) quality as the high accrual quality (i.e., low discretionary accruals) indicates low level of Earning Management and high audit quality. Then we can state the relationship between non-audit services and discretionary accrual (DACC) in our testing model.

Furthermore, in accordance with previous research, we believe it is appropriate to test income-increasing and income-decreasing discretionary accruals separately. We have observed cases where this has yielded results other than by only testing at absolute level. When testing only at absolute level, there is a risk that one can offset the other. By dividing into income-increasing and income-decreasing discretionary accruals, we have the opportunity to see its effect separately and compare with the results with only an absolute level of discretionary accrual. Therefore, with our main hypothesis H1, we build up six models to test the relationship between non-audit service fees ratio and absolute (DA), income-increasing DA and income-decreasing DA.

3.2. Earning Management

Earnings management is a widely researched topic in the world (Singh, H., & Khoo, M. S., 2012; Mechelli, A., & Cimini, R., 2013; Kapoutsou, E., Tzovas, C., & Chalevas, C., 2015; Kang, H., Leung, S., Morris, R. D., & Gray, S. J., 2013; Bao, B.-H., Chung, R., Niu, Y., & Wei, S., 2013; Raoli, E., 2013; Ebner, G., Hottmann, J., & Zülch, H., 2017). Although the definitions of earnings management are still inconsistent, they share the identical intrinsic meaning considering that earning management's purposes is to misinterpret a firm's performance. According to Schipper (1989), earning

management is a deliberate direct intervention in providing financial information to achieve personal goals. According to Healy and Wahlen (1999), earnings management occurs when "managers use judgments when preparing and presenting financial statements or changing the structure of business operations to mislead the users regarding information of the company's performance" (Frees, E.W., 2004, p. 368). According to Watt and Zimmerman (1990), the motive of earning management behaviour may stem from the need to raise capital (financial statements need to be beautified to attract investors), possibly by management who wants to promote or increase bonuses from shareholders due to good business results. And also companies can manage the reported profits to avoid the intervention of government or tax incentives. Therefore, the stakeholders find it hard to trust the reported value of a firm, as financial reporting quality is low and do not reflect the actual performance of businesses.

According to agency theory perspective, management might not act in the best interests of stakeholders when a conflict of interest occurs between them. Gaynor et al (2015) stated the three main determinants of management that affect the financial reporting quality includes characteristics, task characteristics and environmental characteristics. Firstly, management expertise (Aier et al. 2005; Huang, Rose-Green, and Lee 2012; Demerjian, Lev, Lewis, and McVay 2013) and management style (Ge, Matsumoto, and Zhang 2011) positively influence reporting quality. Moreover, the study indicates the negative relationship with financial reporting quality when the managers have the incentive to manage earnings for compensation or bonus schemes (Watts and Zimmerman 1986) and motivation to avoid disclosing the important and proprietary information (Verrocchio 1983). Secondly, the complexity of transactions and reporting quality (Dechow and Dichev 2002; Ge and McVay 2005; Doyle, Ge, and McVay 2007a; Bratten, Jennings, and Schwab 2016b) have negative association when the manager can use complex estimates to manage earnings, which decrease the quality of reported financial statement. Finally, the involvement of internal control (Doyle, Ge, and McVay 2007b; Myllymaki 2014), audit committee (McMullen, 1996) or independent external auditor (Dechow et al. 1996; Carcello and Neal 2000; Klein 2002; Abbott, Parker, and Peters 2004) act according to accounting

standard and legal regime (Barth et al., 2008) is associated with greater financial reporting quality (Gaynor et al, 2015). Thus, an independent auditor and auditing procedures are required to detect earning management incentives of managers and also the material misstatements of financial statements in order to provide a true and fair audit opinion thereby protecting the interest of the stakeholders.

High-quality auditors are more likely to report the misstatement and errors when implementing audit procedure work to detect doubtful accounting transactions. The study of Gaynor et al. in 2015 provides an insight into the relationship between financial reporting quality and audit quality as well as the financial reporting process and the audit process, which resulted in audited financial reporting performances. The audit process emphasizes that a high-quality auditor should be able to make their client adjust the reported figures. The pre-audit financial report will be examined through audit procedures and tasks such as, when material errors are detected, high-quality auditor will convince their customers to adjust the accounting and try to avoid earning management actions (Gaynor et al., 2015, Figure 1-The path to Financial Reporting and Audit Outcomes, pp. 3). Besides, Yu (2011) emphasizes that audit quality occurs when an auditor issues a report at an appropriate level. Suseno (2013) accentuates that audit quality is ordinarily reflected by the ability of the auditor to define material misstatement or errors in the financial reports to disclose an unbiased audit report based on the result of audit work. Therefore, according to Johl et al (2003), an external auditor with expertise and a high level of independence is considered to have a positive impact on reducing earnings management. Gul et al. (2009) identify audit quality as the auditor capability to notice and rectify misstatements. Gaynor et al (2015) also refer to the complexity of audit tasks and environmental characteristics such as culture as one of the determinants of auditor quality to reporting quality. However, the choice of the auditor of management generates complex issues and uncontrollable factors to the financial reporting quality since managers who have incentive with the low-quality financial statement also have the incentive to hire low-quality auditors.

3.3 Accrual quality and auditors

Managers have several decisions for the accruals and can use that decision to communicate their vision for the timing of costs and revenues. If they do so, the cumulative amounts (accruals) are likely to be realized in the future cash flow (Beaver, 1989; Dechow, 1994; Dechow and Dichev, 2002). However, Dechow and Dichev (2002) defined in their study, that accrual quality can be impaired by intentional or unintentional earning management of managers in terms of estimation errors. The accruals are less likely to match cash flow if the manager distorted the information in a financial report, manipulated the financial statement by using discretionary opportunity without any consideration of errors. Therefore, matching accruals and cash flows provide a direct measure of accrual quality (Srinidhi, Bin N, & Gul, Ferdinand A, 2007).

Audit quality is reflected in the role of auditors in detecting and reducing the material misstatement errors in accruals. Auditor knowledge, experience (Frederick and Libby, 1986; Bonner and Lewis, 1990) and ability (Tan and Libby, 1997; Bierstaker and Wright, 2001) enable the auditors to notice the mistakes and make the adjustment of accrual estimated errors. Besides, auditor incentives and motivation found both positive and negative relationships to the auditor decision (Gaynor et al, 2015). Furthermore, ethics and company reputation are also considered as the motivation for auditors to detect the misstatement and issue the true and fair opinion. However, many factors affect the independence of auditors such as time pressure (McDaniel, 1990; Coram, Ng, and Woodliff, 2004), fee pressure (Houston, 1999), bargaining power of big clients such as the risk of losing customers (Libby and Kinney, 2000). Falk et al. (1999) found that the biggest threat to independent behaviour is the risk of losing a client. This is consistent with Beattie et al. (1999) who find, from a questionnaire survey of UK AEPs and FDs, that the two most frequently cited factors which are perceived to undermine auditors' independence are: 'partner's income which depends on the retention of a specific client' and '10% or more of the firm's total revenues come from one client'. Truly independent and competent auditors will require management to correct its estimates and modify its accounting

methods to improve accrual quality (Srinidhi, Bin N, & Gul, Ferdinand A, 2007). However, lacking independence will increase the incentive for earnings management.

Economic bonding has a negative relationship with accrual quality since it increases the threat to the independence of auditors. The higher level of independence between auditor and client is associated with the higher quality of financial report and higher quality of accrual. Economic bonding allows earning management incentive to occur even if the auditors have competency to detect the errors (Srinidhi, Bin N, & Gul, Ferdinand A, 2007). Therefore, the large provision of non-audit service in total audit fees might harm the accrual quality. In this study, we use the accrual method to test whether there is a relationship between non-audit services fees and quality of accruals.

According to Francis et al. (2004), there are seven commonly used accrual quality measures which are classified into two categories, accounting-based or market-based, depending on basic assumptions about the feature of preparing the financial statements. Accounting-based measures include Accruals Quality, Persistence, Predictability and Smoothness. These measures refer to the firm's profitability and the way to use its assets to generate income. Market-based metrics, meanwhile, are less subject to manipulation of managers than accounting-based metrics (Richard J. Gentry, & Wei Shen, 2010). These measures are mostly used by the potential investors of a firm (Masa'deh et al., 2015). Francis et al (2005) suggest that the uncertainty in the accrual account is best captured by accruals quality measures of Dechow and Dichev (2002). Another measure which can be referred to is the relationship with the earning management. If there is a low earning management incentive, the quality of accrual is increased. Many recent researches has indicated the auditor's role as a mechanism in reducing earning management incentives of the firm (Kim et al, 2003; Chen et al., 2008; Gul, Fung, and Jaggi, 2009; Boone, Khurana, and Raman, 2010; Choi et al., 2010; Ahsen, 2011). According to Gonthier-Besacier, et al (2012), auditor competence and auditor independence are two central concepts of traditional research on quality of audit. The literature of auditing shows that auditors attribute two roles to guarantee financial reporting quality (Kim et

al., 2011; Cano and Sanchez, 2012). Firstly, an information role, the auditor helps reduce the misunderstanding asymmetric information problems. They also contribute to ensure the reliability, integrity and quality of public financial information to the users. Secondly, through the examination of the accounting information, auditors will reduce the incentive of earning management, accounting manipulation or management's behaviors to protect the interest of general users. Generally, with a monitoring role, auditors help to reduce the agency conflict of interests between management and firm's stakeholders.

Besides, Gaynor et al. (2015) in their study provide an insight of the financial reporting process and the audit process in detecting earning management behavior of the firm as well as increasing the quality of audited financial reports. A high-quality auditor should be able to convince their clients to adjust and correct the reported figures within the accounting framework. The pre-audit financial report will be examined through audit procedures and tasks. And when material errors are detected, high-quality auditors will try to avoid earning management actions and convince clients to correct the financial misstatement in financial reports (Gaynor et al., 2015, Figure 1-The path to Financial Reporting and Audit Outcomes, pp. 3). The audit role in reducing earning management and audit process results in audited financial reporting performances that provide greater insights into the relationship between financial reporting quality and audit quality. That is, audit quality is considered as an environment feature that affects pre-audit financial reporting quality, and reporting quality is considered as a task feature that affects audit quality. A well-known method of measuring financial reporting quality is using discretionary accruals. A detailed investigation of this model will be explained in the next section.

3.4 Accrual models

There are various methods to measure audit quality. According to Sarah Yasser & Mohamed Soliman (2018), the efforts in measuring the quality of audit can be categorized to direct measures and indirect measures. Financial reporting compliance with GAAP, quality control review or outcome

measures such as litigation or regulatory enforcement actions against auditors, a going concern opinion, and auditor switches (Francis, 2011) are considered as direct measures. Meanwhile, the indirect measure includes audit firm size, auditor tenure, industry expertise, audit fees, economic dependence, reputation and cost of capital (Chadegani et al., 2011).

DeFond and Zhang (2014) also defined several important observations related to strengths and weaknesses of input and output commonly used audit quality proxies and therefore, multiple methods should be combined to generate efficient outcomes when measuring audit quality. Measuring audit quality by financial reporting quality can capture the variation for a large number of firms although some errors still occur. Accrual basis can give the company a true financial picture, but it might be difficult to manage cash flows since the cash on the books is not crucially equal to cash on hand. Also, using accrual methods to measure financial reporting quality can create high measurement error and even bias (DeFond and Zhang, 2014). Becker, Defond, Jiambalvo, and Subramanyam (1998) conducted a study in the US business environment using discretionary accrual (DACC) to measuring earning management, also focusing on income-increasing discretionary accrual but ignoring the effect of changing auditor tenure during their test period (1989-1992). This leads to the limitation of their analysis that the results ignored a number of audit quality variables can cause bias and error (Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam, 1998). Even though numerous studies use discretionary accrual (DA) as a proxy of audit quality, there is no evidence on whether DA is a good proxy to measure quality of audit (Elshafie, E., & Nyadroh, E., 2014). However, other methods such as Material misstatement, auditor communication, perception-based or auditor characteristics, auditor-client contracting features as mentioned by DeFond and Zhang (2014), also have weakness that it does not capture subtle quality variation but accrual method can capture the result of large population.

Accrual method is considered as a well-established method that is mostly used in prior research. This allows us to more easily compare our results with previous research. H. V. Bauwhede, M. Willekens, and A. Gaeremynck (2000) also used Jones Model (1991) to measure the audit quality and public

ownership in Belgium (H. V. Bauwhede, M. Willekens, and A. Gaeremynck, 2000). Gaynor et al. (2015) highlight that the financial reporting quality and audit quality are related but are well-defined constructs. Higher audit quality provides greater assurance of high financial reporting quality (Gaynor et al, 2015). Therefore, this is the motivation for our study to measure financial reporting quality concerning audit quality. One of the common methods to capture financial reporting quality is accrual quality which is emphasized as an appealing proxy to measure audit quality (DeFond and Zhang, 2004).

There are several models that estimate discretionary accruals, but the most popular and widely used models are by Dechow et al. (1995), classified as Healy model, DeAngelo model, Industry model, Jones model and Modified Jones model. Such models and techniques are employed to detect manipulation in financial information presented in the financial statements. Therefore, based on their advantages and disadvantages, we will analyze these models to provide the description of how discretionary accruals are calculated for each individual model mentioned above. Finally, we will conclude with the most suitable model for our study.

3.4.1 Healy Model

Healy (1985) Model is the first model developed in the literature which evaluates that in every period there is an existence of systematic earning management. In this model, the discretionary accruals are expected to be zero which means the model assumes total accruals to be equal to the non-discretionary accruals, if there is no evidence of discretionary accruals (Sun & Rath, 2010, p. 124). Although the model is very simple to use in nature, it is criticized by researchers like Young (1999) for being quite insufficient in estimating discretionary accruals (Yurt & Ergun, 2015, p. 41)

3.4.2 DeAngelo Model

The DeAngelo model, considered as a special version of the Healy Model (1985) where both the model assume that non-discretionary accruals (NDACC) are constant and all performance management activities can be captured by total accruals (Sun & Rath, 2010, p. 124).

In the DeAngelo model, the basis for measuring non-discretionary accruals is estimated by the use of last period's total accruals and the difference in total accruals (Dechow et al., 1995, p. 198). Both models will be able to measure the NDACC accurately only when the NDACC is constant and the discretionary accruals are zero in the estimation period. However, if the NADCC changes from period to period then in such a situation both will measure the NDACC inaccurately (Yurt & Ergun, 2015, p. 43). Therefore, the aptness of the two models depends on the nature of the time-series process generating NDACC. If the NADCC follows a "white noise" pattern, then Healy model is considered suitable whereas, if NDACC follows a random walk, then DeAngelo model is appropriate (Dechow et al., 1995, p. 198).

Hence, both Healy (1985) and DeAngelo (1986) models are based on the assumption that the NDACC is constant in the examined time period which is not a powerful assumption according to Dechow et al. (1995). This is due to the nature of accrual-based accounting systems since changes may occur in the level of NDACC with regard to the firm's economic condition (Kaplan, 1985). Furthermore, both models are intuitive but are based on an unrealistic assumption that assumes NDACC to be stable across firms. Therefore, we will not use those two models.

3.4.3 Industry Model

Another model proposed by Dechow and Sloan (1991) is the industry model which is based on the assumption of non-discretionary accruals (NDACC) being constant over time. In this context, the industry model assumes that the differences in the determinants of NDACC are common across firms in the same industry (Dechow et al., 1995, p. 199).

There are two disadvantages when using this model to reduce the error on discretionary accruals. Firstly, the industry model only removes the variation in NDACC which is common across firms in the same industry. If the variation in NADCC to a great extent reflects the changes in firm-specific circumstances, then the industry model will not be able to exclude the discretionary accruals indicators from NDACC. Secondly, the model removes the variation in NDACC that is correlated across firms in the same industry.

Hence, this situation can cause problems for the existence of profit. In the scope of the study, we will not conduct a test for each industry since we found that there is no big difference between industries. Every company in every industry needs to use audit services and non-audit services. The demand for using those services or incentive of earning management depends on the company's activities itself, and not its industry.

3.4.4 Jones Model

Research by Jones was one of the first studies in which a presentation model to estimate the change in discretionary accruals was predicted by using different variables (Awidat Marai and Vladan Pavlovic, 2014). According to Jones, the revenue and the depreciation level of fixed assets affect the accrual level, so Jones added these two variables to the model of the discretionary accruals (Chen & Tianran, 2010). According to Jones (1991), cited by Chen & Tianra (2010), the non-discretionary accrual variable (NDACC) varies based on the degree of change in revenue and cost of fixed assets between the event year and the year before.

The Jones model overcomes important weaknesses in the Healy model (1985) and DeAngelo model (1986) when removing the hypothesis that the un-adjustable accrual (non-discretionary accrual) has not changed over the years. In the Jones (1991) model, revenue is considered as an un-adjustable part, but managers can use account receivables to adjust profit (Chen & Tianran, 2010). Therefore, the calculation of the adjusted accrual accounting variable (DACC) in the Jones (1991) model still has some errors and inaccuracies thus, not suitable for our study.

3.4.5 Modified Jones Model

Dechow (1995) and his colleagues proposed an adjustment model known as the Jones model (1991) by changing the revenue variable with the revenue variable in cash. In particular, the revenue variable in cash is the difference between changes in revenue and changes in accounts receivable from customers. The changes of Dechow et al. (1995) overcome the disadvantages

of the Jones model (1991) by eliminating the assumption that the revenue variable is un-adjustable.

Assessment of models

In overall, those five models have advantages and also limitations when applying to calculate discretionary accrual. The difference between Healy Model (1985) compared with DeAngle Model (1986) is that Healy Model assumes that non-discretionary accruals revert to the previous financial period while DeAngelo indicates the assumptions in a random process (Anders Hedström, 2011). However, they are both simple to use but unrealistic with the assumption of constant non-discretionary accrual and discretionary-accrual being zero in the examined period. The underlying assumption regarding Industry Model by Dechow et al. (1995) is that for all the firms, there is the same deviation and only one value of non-discretionary accrual over several years. Due to the possibility of getting an error, we decided not to choose those models in our study.

The Modified Jones Model (1995) has eliminated the limitations of the Jones Model (1991) such as *different economic conjunctions* (Anders Hedström, 2011). According to DeFond and Zhang (2004), using the discretionary accrual method can capture the variation of quality in a large population as well as it is tightly connected with continuous assessment of audit quality. The Modified Jones model (1995) is the most popular and the most effective model for measuring adjustable discretionary accruals (DACC) or detecting corporate earnings management (Chen & Tianran, 2010). However, the limitation of the Modified Jones model (1995) and the Jones model (1991) is that they tend to have high measurement error and bias (DeFond & Zhang, 2004). Therefore, we need to be cautious while using it. In addition, it is necessary to estimate the parameters of the calculation model in each company and enterprise, which requires large data collection in the past. This model is limited to companies with a short past database. The choice of data is a factor to decide which model we should apply. In order to overcome the limitation, we decided to choose a testing sample which is relatively large in terms of company size and operating life based on available data in the period

2014 to 2017 and using the Modified Jones Model (1995) to test our hypothesis. This view is supported by Dechow et al. (1995) and Jones (1991) since they proved that Jones Modified Model is the best method for detecting earnings management.

Dechow (1995) proposed a model for calculating cumulative accrual accounting variables based on the balance-based method. Also, there are many other methods, such as the cash-flow based model of Hribar and Collins (2002). These two authors argue that balance-based method calculations can lead to errors in the DA calculation process, because of the effects of merger and acquisition, divestments of business, and conversion of foreign currency. Bjørndalen, S., & Kim-Rafiq, A. L (2017) also mentioned the difference in their study; the opposite result is given when testing two models. However, the difference is minor and can be caused by the error of data. Mostly in literature finding, the researcher uses a balance-based method only. Therefore, due to the scope of the thesis, we choose to perform a balance-based method for calculating discretionary accrual.

4. MODIFIED JONES MODEL – DISCRETIONARY ACCRUAL

4.1 Discretionary accruals

In most published studies, the level of earnings management is often evaluated based on the accrual accounting variable (Discretionary accruals) (Dechow, 2010). Thus, revenues and expenses are recognized based on the time the transaction arises, not depending on the cash flow. Net profit is the difference between revenues and expenditures. However, the cash flow statement is based on cash flows, which means that the accountant is only allowed to record revenues and expenses when paid, and not recorded at the time of the transaction. Therefore, the accrual is the difference between the net income in the income statement and the net cash flow in the cash flow statement. Based on the accrual basis of accounting, profit in the period is divided into two types: profit in cash and accumulated profit. In particular, profits in cash from the revenues and expenses are referred to as what the businesses have collected and spent in the period. Meanwhile, accrued earnings are the profit calculated in the period of the enterprise but have not

yet been collected in cash as the sales revenue after deducting non-cash expenses such as accrued expenses; redundancy costs; Depreciation of fixed assets, etc.

Researches all over the world such as Bartov, E., Gul, F., & Tsui, J., (2000) and C. Araújo Mendesa, L. Lima Rodriguesb, L. Parte Estebanc., (2012) believe that earnings management behaviour of companies comes from accumulated accrual profits or accrual earnings. "Total accrual earnings" (TACC) is also known as accrual accounting variable and is calculated by subtracting net cash flows from operating activities:

TACC = Profit after-tax - Net cash flow from operating activities

However, TACC variables cannot be used as a measure of profit adjustment because there are accruals suitable to the situation of the enterprise such as sales revenues in the period, provision for debts, doubtful debts, provision for the devaluation of inventory, payable expenses, etc. Therefore, it is necessary to separate the TACC into two parts, including:

- Non-discretionary accruals (NDACC): Accumulation is made following regulations, principles of accounting standards and regulations.

- Discretionary accruals (DACC) or abnormal accruals - accruals made by managers to adjust profit in the period.

The variable DACC shows that subjective adjustments from the manager to the profitability of the business should be a measure to evaluate profit information and thereby evaluate the quality of the audit. To estimate the value of DACC in TACC, many researchers around the world have used the model of Dechow et al (1995) improved from the original model of Jones (1991).

4.2 Discretionary accrual calculation: Balance-based method

In this study, we measure discretionary accruals according to the Jones model (1991). Based on his approach, we calculate discretionary accrual through two steps:

Step 1: Determine the non-discretionary accruals (NDACC) by the following equation:

$$NDACC_t / TA_{t-1} = \alpha / TA_{t-1} + \beta 1 \ \Delta REV_t / TA_{t-1} + \beta 2 \ PPE_t / TA_{t-1}$$

Within:

NDACCt: Non-discretionary accrual in year t.

TAt-1: Total assets at the end of year t-1.

ΔREVt: Changes in net revenue in year t.

PPEt: Cost of tangible fixed assets year t.

α, β1, β2 are the parameters estimated by the least square method of the coefficients a1, a2, a3 in the following model:

$$TACC_t / TA_{t-1} = a0 + a1 / TA_{t-1} + a2 \ \Delta REV_t / TA_{t-1} + a3 \ PPE_t / TA_{t-1} + \varepsilon_t$$

The remainder ε in the model above represents an unrecognized variable, including the self-accrued cumulative variable (DACCt).

Step 2: After estimating a non-deterministic cumulative variable (NDACC), from the equation:

$$DACC_t = TACC_t - NDACC_t$$

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We have:

$$DACC_t / TA_{t-1} = TACC_t / TA_{t-1} - NDACC_t / A_{t-1}$$

From there, the self-determination accrual accounting variables is defined as follows:

$$DACC_t / TA_{t-1} = TACC_t / TA_{t-1} - a_1\ 1 / TA_{t-1} - a_2\ \Delta REV_t / TA_{t-1} - a_3\ PPE_t / TA_{t-1}$$

The limitation of the Jones model (1991) is that when REV is selected as a research variable, net revenue can also be affected through revenue which is recorded in the wrong period. Hence, these amounts may be counterfeit revenue of the business. Therefore, Dechow et al. (1995) improved the Jones model by adding a change in customer accounts receivable (ΔREC) model to eliminate the effect of accrued revenues. Due to the increase in accounts receivable of customers during the period, the Jones model is improved as follows:

$$NDACC_t/TA_{t-1} = \alpha/TA_{t-1} + \beta_1\ (\Delta REV_t - \Delta REC_t)/TA_{t-1} + \beta_2\ PPE_t/TA_{t-1}$$

Dechow et al. (1995) suggested that the improved Jones model discovered better earning management behaviour than the original Jones model. Therefore, this study also uses the above model to measure accrual quality.

From the model of Dechow et al (1995), we calculate:

$$DACC_{it} / TA_{t-1} = TACC_{it} / TA_{t-1} - NDA_{it} / TA_{t-1}$$

When the $DACC_{it} / TA_{t-1}$ ratio is too high, it shows that the Discretionary Accruals account for a high proportion of the profits and the quality of the audit decreases. However, in practice, the value of each company's DACC can be positive or negative depending on the behaviour of the manager in the period to inflate profits (DACC> 0) or reduce profits (DACC <0). Therefore,

this study uses the absolute value of DACCit / TAt-1 as a dependent variable in the regression equation to represent the quality of financial statements audits. The symbol for the absolute value of DACCit / TAt-1 is | DA |.

5. NORDIC COUNTRIES

For the further development of the testing model, we decided to choose Nordic countries as a sub-sample to test in detail. Generally, most countries in the EEA region follow the IFRS, however, each country or group of countries releases their own individual accounting standard. In fact, the result of all samples is not present for individual observation. Testing individual groups of countries or even each country might result in different findings and contribute to further investigation of the overall picture. The study of Bjørndalen, S., & Kim-Rafiq, A. L (2017) found evidence proving the significant relationship between NAS and absolute discretionary accrual, income-increasing accrual in the entire EU in which Nordic countries and Latin present a relationship but in Anglo-American, Germanic and ex-communist countries found no evidence for its relation. Different from Nordic countries, Latin American countries are characterized as having little or no law enforcement (Beslic, Jaksic & Andric, 2015, p.75). Anglo-American accounting system can be described as more aggressive, with unjustified use of fair value that differs from the continental European system which is more conservative. In the audit environment, the litigation risk is one crucial feature that could impact on how standards are interpreted and applied, which may provide opportunities for strengthened auditor independence (Krishnan & Krishnan, 1997; Francis, 2011; Trønnes, 2011). The litigation risk in Nordic countries is lower compared with other regions that imply the important function of auditor to eliminate earning management (Sormunen, Jeppesen, Sundgren and Svanström, 2013). In addition, there are some prior studies in Nordic countries that we can use to compare with our testing result. Prior research of Svanström (2013) found positive results between non-audit service and audit quality in Sweden and Langli and Hope (2010) indicated no impact in Norway. With rich empirical findings and deep understanding in the Nordic region, we decided to choose the Nordic region and five countries in the Nordic area for further hypothesis testing. The test will be conducted

individually in Nordic area. Then, there are five main tests conducted individually for each of the five countries.

Nordic area includes five main countries which are Norway, Sweden, Denmark, Iceland and Finland. In general, they are quite similar in many ways (Doupnik & Salter 1995; Aisbitt, 2001) such as language, culture and legal systems but still different in accounting policies and practices (Sormunen, Jeppesen, Sundgren, and Svanström, 2013). The accounting system of the five countries originated from Germany, gradually developed and changed as they became members of the EU. Norway and Iceland are not EU members but EEA members, they follow the EU directive but there are some exceptions. Each country has their own accounting system that apply to private firms such as Sweden has Swedish Accounting Standard, Norway has the Norwegian Accounting Act and Finland follows the IAS and IFRS. However, all public listed firms in Nordic follow IFRS. Therefore, there is no difference in accounting recognition between chosen companies in our sample. According to La Porta et al. all four countries Norway, Denmark, Finland and Sweden belong to the same legal family. And therefore, the auditor in those countries follows the same rules and regulations such as EU directive as well as the regulation of non-audit services. Mostly in Nordic audit market, the Big 4 audit firms have a significant market share (Sormunen, Jeppesen, Sundgren, and Svanström, 2013).

In addition, based on the socio-economic situation, education level or governance behaviour, different results can be seen relating to management's manipulation of profits, or independence of auditors when providing accounting, auditing or consulting services. The difference between auditor's education can have impact on audit conduct as well as auditor competence (Sormunen, Jeppesen, Sundgren, and Svanström, 2013). The formal education requirement varies among the countries. Educational requirements and continuing assessment in Norway and Denmark is more demanding than in Finland and Sweden. Auditors in Norway require continuing their education in order to maintain their certification but in Finland, there is no specific requirement on number and content of courses. Also, Van Tendeloo & Vanstraelen (2008) found that high-quality auditors reduce earning

management more in countries with a high tax-book alignment than countries with low tax-book alignment. And the level of tax-book alignment is low in Norway and Denmark but high in Sweden and Finland. Overall, five countries in the Nordic area are considered countries with uniform economic growth, high levels of education, so we expect the percentage of profit-correcting behaviour in the company is very small and there will be no correlation between providing consulting services and accrual quality.

In this part, we will replicate the testing model with EEA countries and do the same for Nordic area with a total sample of 621 observations. This step combines testing six models with absolute discretionary accrual, income-increasing accrual and income-reducing accrual. For further investigation, we will apply model 1 and 2 to each country to test individual relations. Due to the sample size being quite small, we decide not to separate income-increasing accrual and income-reducing accruals as well as no further test in Iceland for similar reasons. Therefore, we will conduct a test with the entire Nordic area, and also with each individual country such as Norway, Sweden, Denmark and Finland except Iceland. There is no prior research in Denmark and Finland in terms of this topic, so we believe our work can contribute to new empirical findings for further investigation.

6. METHODOLOGY

6.1 Research

In simple words, research can be defined as the search for new knowledge. Research is a process that people undertake in a systematic way in order to find out new things, thereby increasing their knowledge (Saunders et al, 2016, p. 5). There are two ways of conducting research, either you can contribute innovative insights to an existing theme, or you can lay the foundation for new knowledge (Ghauri & Grønhaugh, 2010, pp. 32-33).

On the basis of a researcher's observation, there are two ways by which a researcher can establish what is true or false and draw conclusions: induction and deduction. Induction involves drawing conclusions based on empirical observation one makes and is often associated with the qualitative form of research whereas, the deduction is based on logic and involves gathering of

facts to accept or reject the hypothesized relationships among variables which are derived from the prevailing theory (Ghauri & Grønhaug, 2010, p. 15-16).

Furthermore, the deduction is based on a highly structured approach which is associated with a quantitative research design (Saunders, et al., 2016) and also emphasizes on scientific principles. This involves beginning with a theory, developing the hypothesis from that theory, and then collecting and analyzing data to test the hypothesis. Therefore, we will apply deductive research in our further study.

According to Saunders et al. (2009), research areas with well-established theories are particularly well suited for a deductive research approach. Our current research follows a deductive approach. Starting from the literature review, based on the established theory regarding the association between NAS and accrual quality, we built the hypothesis to find out whether there is an association between non-audit services and accrual quality. Next, we will focus on building the regression model consisting of a dependent variable which is affected by the changes in independent variables and control variables. After that, we will test the hypothesis with positive DACC, negative DACC and absolute DACC. Then, after testing the hypothesis and assumptions which are drawn from the existing theory are discussed and demonstrated by providing the relevance and applicability in our model. Finally, we compare the end results with the prior research to conclude with the newly generated findings.

6.2 Research Design

Research design is about the general plan of how one will approach answering the research questions (Saunders et al., 2016). During this study, we would like to research the relationship between non-audit services and accrual quality. In order to obtain the answer, firstly we must obtain the information that enables us to have an understanding of the concept of audit (accrual) quality. Secondly, obtaining the data allows us to determine the impact of non-audit services/ fees on quality of accrual. As we know what information is needed to answer the problem, it is characterized as a structured research question (Ghauri & Grønhaug, 2010, pp. 55-56).

Therefore, descriptive design can be used to answer the structured research question while the unstructured ones use exploratory. In descriptive design, one seeks to depict the relationship between one or more variables, while the casual design as known as explanatory differs in its attempt to explain the cause and effect relationship between the variables (Ghauri & Grønhaug, 2010, p. 57). Our study will focus largely on the phenomenon of accrual quality and its association with non-audit services. In this context, one can classify the design as descriptive and also at the same time, we want to widen this concept to test the relationship between non-audit services and accrual quality making the design casual to a certain extent.

6.3 Research Method

According to Saunders et al., 2016, Research method is an approach to the process of research. In other words, it is a technique for collecting and analyzing data. Moreover, research methods involve the use of tools and techniques used to obtain the empirical data that are largely influenced by the choices made in connection to the definition of the research question (Ghauri & Grønhaug, 2010, p. 70).

Qualitative and quantitative are commonly used methods when conducting the study. The preference for the use of methodology either qualitative or quantitative depends upon the choices made earlier in the research process which becomes the guiding principle for choosing the preferred methodology as they both differ from their uses and perspectives (Ghauri & Grønhaug, 2010, p. 104). Furthermore, quantitative studies are conducted when one seeks to answer the research question and focuses on gathering numerical data that are analyzed using statistical tools. This method differs from qualitative methods, which collect and work with non-numerical data where deeper insight is sought into the phenomenon.

6.3.1 Qualitative method

Qualitative method is often linked with interpretative philosophy where there is little underlying theory and no tests of hypotheses making the data collection unstructured and not standardized (Saunders et al., 2016). This method is suitable in situations where the researcher wants to gain a deeper understanding of a phenomenon, which initially is poorly understood (Ghauri & Grønhaug, 2010, p. 105). Therefore, this method is best suited for an inductive-exploratory research perspective. Furthermore, qualitative methods will be characterized by having very few observations compared to quantitative studies which are used to quantify the problem transforming the numeric data into usable statistics. Hence, choosing this approach cannot give reliable and consistent data when compared to using quantifiable figures since such approaches are characterized by feeling and personal reports (Atkins and Wallace, 2012, p18-23). In our study, we need a big sample size to test for the association. The result should be quantifiable and reliable. Thus, using qualitative methods such as an interview or collecting data through the survey or the questionnaire manually is not supported. Therefore, we decided not to use the qualitative method.

6.3.2 Quantitative method

Quantitative method involves examining relationships between variables, which are measured numerically and analyzed employing a range of statistical (and graphical) techniques (Saunders et al., 2016). According to Ghauri & Grønhaug (2010), quantitative methods are best suited within the cases where the problem is structured so that one has a given research question to answer. In this context, such a research method thus fits best with a descriptive and/ or casual approach. Thus, our study will focus on testing and verification of hypotheses which we derived from the prevailing theory.

The choice of research methodology depends mainly on the nature of the research question as already mentioned in 1.2. For the rather descriptive and explanatory study, like our research purpose and question, quantitative methods seem to be a suitable choice. Since, quantitative approaches are

mostly standardized procedures, trying to measure social phenomena by numbers and testing hypotheses through fixed variables. Due to their standardized measures, they are applicable for rather large samples (Silverman, 2006) and facilitate the finding of generalizable data (Patton, 2002). Thus, our choice of using quantitative research design is because it provides reliable research outcomes in the bigger population (Saunders et al., 2012) and also, the data is available in various sources such as Orbis or Eikon. This is relevant in our study as our main sample is medium and large listed companies in the EEA area. We have made models by reviewing the related literature and thereby making our research hypotheses. In fact, we are trying to find the link between non-audit services and accrual quality and will base our conclusion on the data that can be quantifiable. In addition, our study objective meets the deductive approach where existing theories are tested, and the research question is narrowed down with numbers in order to support the stated hypothesis. Thus, using quantitative methods makes it possible to generalize the results of the sample to a bigger population and the researchers can be seen as independent from respondents (Saunders et al. 2012).

6.4 Data Sources

When it comes to data collection we have two main types; primary data is collected by the researcher with the explicit purpose of answering the formulated problem and secondary data, which is already collected by a third party (Ghauri and Grønhaug, 2010) for different or similar purposes. The main advantage here is that the secondary data is much less time consuming to get and the data is easily accessible. Ghauri and Grønhaug (2010, p.90) indicate that the secondary data is always chosen at the starting point whenever considering which data source to use in a given research question.

For our research, the most requested data belongs to financial statements of all activities listed companies in European Economic Area (EEA) countries from 2014 to 2017 such as Total assets, Account Receivable, Net income, and so on. This will take a lot of time to collect manually, but that dataset is available already. Therefore, it is the motivation for us to choose secondary sources for time-saving and reliability of data. The main sources of secondary

data for our quantitative section will be the Orbis database at BI and from the Centre for Corporate Government Research (CCGR). Besides, the dataset is also collected via the Thomson Reuters Eikon database for missing data from Orbis such as information of auditors. Those sources are trustable and third parties can examine and verify the availability and reliability of collected data (Ghauri & Grønhaug, 2010, p.91). Since the Orbis database and Thomson Reuters Eikon enable us to access all needed data, the primary sources are not used in this study.

6.5 Data selection

The sample of this study is based on companies in EEA countries with the data availability in the period from 2015 to 2017. EEA countries include twenty-eight countries in the European Union and three members of the European Free Trade Association (EFTA) members which are Norway, Iceland and Liechtenstein. We chose the active listed companies for three years (2015-2017). Due to the requirement of calculating variables in our study, the dataset expands to collect available data in the prior year 2014 for further development. Some further research have examined some individual countries such as research of Svanström (2013) mentioned to private firms in Sweden, Hohenfels, Daniela, & Quick, Reiner (2018) referred to the relationship between Non-audit services and audit quality in Germany, and so on. The research of Bjørndalen, S., & Kim-Rafiq, A. L (2017) examined the most relevant dataset in 30 countries of the EU from 2009 to 2015, excluding Luxembourg due to unavailability of data sources. Although the sample range is nearly the same, except we have data of 28 countries (since no data in Romania, Slovakia and Liechtenstein), we are more focused on medium and large companies with the total sale revenue of more than 10 million USD. According to Annual Report on European SMEs 2018/2019, as the definition and enterprises category, the micro and small-enterprises categorized as turnover under 10 million euro, means that, the medium and large enterprises categorized as turnover is higher than 10 million euro (Commission Recommendation of 6 May 2003 concerning the definition of micro, small, and medium-sized enterprises (2003/361/EC), Official Journal of the European Union, L 124/36, 20 May 2003). Since we use the currency as

USD, we convert the threshold to 10 million USD of annual revenue and categorize the company as having more than 10 million USD of revenue as medium and large companies. Moreover, the total medium and large companies cover 79% of total population (2659 out of 3.366 firm observations - Table 3.1 Data selection). Therefore, a threshold of 10 million USD of revenue is an appropriate level to the testing purposes. Also, there are some prior studies showing that the higher sales revenue is, the higher will be the accrual quality. Therefore, our thesis result expected that medium and large companies with good results of performance can have low incentives to manipulate financial statements. Moreover, in 2014, as mentioned above, EU Regulation No 537/2014 issued with the purpose of improving audit quality and increasing auditor independence. Our period is from 2015 to 2017, intending to develop prior models and adjustment to any changes after the new regulation applied in European countries.

Through Orbis, we have identified all active listed companies. The result gives us a list of 90,047 unique companies globally within 15,644 companies in EEA countries. Further, there are 9,039 companies with available accounts in financial statements from 2014 to 2017. There are some restrictions since we need available specific accounts to calculate Discretionary accruals such as Account Receivable, Inventory, Net Property, Plant & Equipment and Total Revenue. The sample size reduces after the available filter of listed accounts (see detail in table 3.1) to 3,366 companies. As the purpose of the study is to choose the medium and large companies in EEA, we set the scale of Total Revenue of 10 million USD. Since, we expect that big companies cover more risks of earning management, which is associated with a lower audit (accrual quality). Therefore, the total remaining sample is 2659 firms and the currency is in million USD.

Table 3.1 Data Selection

No	Search category	Number of observation remaining
	Publicly listed companies	90,047
	European Union [28], Iceland, Liechtenstein, Norway	15,644
	Account availability in 2014, 2015, 2016, 2017	9,039
1	Accounts Receivable (mil USD)/ Total assets (mil USD)	4,294
2	Net Stated Inventory (mil USD)	3,380
3	Net Property, Plant & Equipment (mil USD)/ Total Current Assets (mil USD)	3,366
4	Total Revenues (mil USD), min = 10 mil USD	2,659
	Total observation	*2,659*

Therefore, there are 2659 companies, resulting in a total of 7827 firm year-observations in the total dataset through three years from 2015 to 2017. However, after analyzing and calculating needed variables (discretionary accruals, which is further explained in chapter 2), and detecting problem of prerequisites of multiple regression model (which will be further explained in chapter 5, article 5.3), there are 4179 firm year-observations which are unusable, that lead to the final dataset of 3648 firm year-observations. A detailed number of firm-year observations per country is presented in table 24 in Appendix.

From 3648 firm year-observations, we have 621 firm year-observations with an available account in Nordic country from 2014 to 2017. The details are indicated in the table below. Since the number of observations in Iceland is too small, we could not conduct a regression test in this country. Therefore,

only four main countries such as Norway, Sweden, Denmark and Finland will be tested.

Table 3.2 Number of firm year-observation in Nordic countries

Country	Norway	Sweden	Denmark	Iceland	Finland
No of observation	108	270	108	6	129

7. DATA ANALYSIS: RESULT AND DISCUSSION

7.1 Multiple Regression Model

Inheriting previous studies on the factors affecting the audit quality of Chen et al. (2008); Sylvia Veronica Siregar et al. (2012), this study uses the following research model to examine the relationship between auditing financial statement quality (measured by |DA|) and the independent variables involved the system with the level of profit adjustment. Specifically, the research model is as follows:

$$|DA| = \alpha + \beta 1 NAS + \beta 2 BIG4 + \beta 3 ROA + \beta 3 LEV + \beta 4 SALESG + \beta 5 PPETA + \beta 6 SIZE + \varepsilon$$

We use multiple regression models to analyze the hypothesis to find whether there is a correlation between consulting services and accrual quality. From the original model above, we develop the detailed six models to test the correlation. To be specific, in model 1, we will use NAF ratio as a dependent variable. NAF ratio is calculated by dividing consulting services fees to average audit fees last three year from 2014 to 2017. In model 2, we will test the logarithm of NAF as a dependent variable, as well as the logarithm of Audit fees. The following four models will be tested separately, to estimate the correlation between DA and NAS in terms of income-increasing discretionary accrual (Model 3 and 4) and income-decreasing discretionary accrual (Model 5 and 6).

Model 1:

$$|DA| = α + β1NAFratio + β2BIG4 + β3ROA + β4LEV + β5SALESG + β6PPETA + β7SIZE + ε$$

Model 2:

$$|DA| = α + β1NAFratio + β2\ ln\_NAS + β3\ ln\_auditfees + β4BIG4 + β5ROA + β6LEV + β7SALESG + β8PPETA + β9SIZE + ε$$

Model 3:

$$DACC(pos) = α + β1NAFratio + β2BIG4 + β3ROA + β4LEV + β5SALESG + β6PPETA + β7SIZE + ε$$

Model 4:

$$DACC(pos) = α + β1NAFratio + β2\ ln\_NAS + β3\ ln\_auditfees + β4BIG4 + β5ROA + β6LEV + β7SALESG + β8PPETA + β9SIZE + ε$$

Model 5:

$$DACC(neg) = α + β1NAFratio + β2BIG4 + β3ROA + β4LEV + β5GROW + β6CFO + β7SIZE + ε$$

Model 6:

$$DACC(neg) = α + β1NAFratio + β2\ ln\_NAS + β3\ ln\_auditfees + β4BIG4 + β5ROA + β6LEV + β7SALESG + β8PPETA + β9SIZE + ε$$

In model 2, model 4 and model 6, we decide to use two variables NAF ratio and ln_NAS to measure the relationship between non-audit services and discretionary accruals. Particularly, NAF ratio or LN_NAS can independently represent the non-audit services. NAF ratio equals the total non-audit service fees divided by average audit fees in three years. LN_NAS is a logarithm of non-audit service fees. We believe that two variables are different from each other. Since, companies can have high NAF ratio, but low or high non-audit service fees. Therefore, we decided to conduct two tests, where one test includes both variables whereas the other tests without Ln_NAS.

Table 4 Summary of variables

Variable	Description	Measurement
Dependent variables		
DACC absolute	Absolute discretionar accrual	DACC is measured according to the Modified Jones Model
DACC(pos)	Income-increasing discretionary accruals	Discretionary accrual with a positive value
DACC(neg)	Income-decreasing discretionary accruals	Discretionary accrual with a negative value
Independent variables		
NAF ratio	Non-audit fees ratios	(Non-audit services this year)/(Average of audit fees (3 years))
Ln_NAS	The natural logarithm of non-audit fees	ln(NAS)
Ln_Audit fees	The natural logarithm of audit fees	ln(audit fees)
NAF_70dummy	Dummy variable indicating if NAFratio is 70% or more	1 = NAF ratio greater or equal to 0.70 0 = NAF ratio less than 0.70
NAS_Dummy	Dummy variable indicating whether company use NAS or not	1 = companies use NAS 0 = companies without use NAS

BIG4	Dummy variables indicating if Audit firm is Big4	1 = audit firm is Big 4 0 = audit firm is non-Big 4
Control_variables		
ROA	Return on Assets, indicating business performance	(Net profit + Interest Expenses)/(Total assets)
SALESG	Sales Growth	(Net revenue (t)-Net revenue (t-1))/(Net revenue (t-1))
SIZE	Size of the firms	Ln(total asset)
LEV	Financial leverage	(Total debt)/(Market capitalization)
PPETA	Capital intensity	(Tangible fixed asset)/(Total assets)

7.2. Describing the Data
7.2.1 Dependent variables
DACC

In our models, discretionary accruals are used as a measure of audit quality or accrual quality. Many studies in the world have used discretionary accruals to estimate earnings quality, such as Hyeesoo Chung, & Sanjay Kallapur (2003); Frankel et al., (2002); or Svanström, (2013), using the accrual-based method in the model to analyze the impact of NAS on the audit quality of private firms in Sweden. Generally, high accrual quality means low discretionary accrual and low earning management.

The model uses the absolute value of the DA as a dependent variable of the model. By using absolute discretionary accruals, this will show that the quality of the audit affects both income-increasing discretionary accrual and income-decreasing discretionary accrual (Svanström, 2013). In several studies

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around the world, the author examined the effects of income-increasing and income-decreasing discretionary accruals separately (Ashbaugh et al., 2003; Frankel et al., 2002; Svanström, 2013).

Income-increasing discretionary accruals can be used to achieve earning targets (Balsam, 1998). Also, the incentive of using income-increasing discretionary may increase the ability to receive unpaid dividends from the company or to attract investors (Svanström, 2013, p.15). Meanwhile, the use of income-decreasing discretionary accruals can bring great advantages for tax purposes (Burgstahler et al., 2006; Van Tendeloo and Vanstraelen, 2008). Besides, income-decreasing discretionary accrual indicates that the auditor has held back management from making opportunistic choices.

Therefore, it is suitable to test absolute discretionary accruals and replace it with income-increasing and income-decreasing discretionary accruals to test the effect on both sides.

7.2.2 Independent variables
NAF ratio

Non-audit fees ratio is calculated by dividing non-audit services to average audit fees of the last three years. As mentioned in chapter 2, audit reform, the thesis is focusing on the EU Regulation No 537/2014, that has set a restriction on what types of consulting services that auditor can provide to their client and also the limitation on consulting fees are 70% of the average audit fee for the past three years. Therefore, it will be more relevant to test this ratio than using normal rate (consulting services year t/ total audit year t) as used in prior research (Ashbaugh et al., 2003; Mark L. DeFond, K. Raghunandan, & KR Subramanyam, 2002b; Ferguson et al., 2004; Frankel et al., 2002; Huang, Mishra & Raghunandan, 2007; Reynolds et al., 2004; Svanström, 2013).

The initial expectation is that the more consulting fees services companies use, the more accurate will be the quality of stated financial statements. However, the high rate of NAS on total audit services fees can lead to reduction in the independence of the auditor. Therefore, our expectation from this test is to achieve a significant positive relationship with discretionary accrual.

Ln_NAS and Ln-AF

According to Ferguson et al. (2004), the natural logarithm of non-audit service captures the level of financial that arises from counselling service. Furthermore, non-audit services fees and audit fees are different from other variables in terms of currency unit (normally million USD). This will cause abnormal and extreme observations when testing the model. Therefore, we decide to use logarithm for non-audit service fees and audit fees to transform into normal distribution. This will be further explained in chapter 7.

BIG 4_dummy variable

Initial hypothesis expects that big 4 deliver better audit quality, suggesting that companies audited by one of four big firms (EY, Deloitte, PwC and KPMG) have no incentive to manipulate financial statements, leading to low discretionary accruals. However, there are many studies that found contradictory relationships. The collapse of Lehman Brother and Enroll has put a big question mark on the quality of auditing from 4 major global audit firms. Meanwhile, Svanström (2013) found no evidence for this assumption.

NAF_dummy variable

This variable indicates the requirement of limiting 70% consulting fees for the past three years' average audit fees. The motivation for testing this indicator is to find out if there is a significant relationship between the company exceeding this limit and accrual quality. Bjørndalen, S., & Kim-Rafiq, A. L (2017) found that the NAF ratio is no longer significant when the limitation is up to 10%, indicating that the current restriction of 70% is too high.

NAS_dummy variable

This indicator specifies whether or not a company uses NAS (1 represent for the company with NAS, 0 represent for the company without using NAS). The motive for testing this indicator is to find if there is a significant relationship between a company with or without using non-audit services and discretionary accrual. Comparing the performance of two types of company will support our general findings whether or not the involvement of non-audit

services into firm operation can reduce the incentive of manipulation of the financial statement.

7.2.3 Control variables

ROA

According to Lang and Lundholm (1993), the performance of a company is a significant factor influencing information disclosure and financial reporting. ROA_variable is the index to measure the level of efficiency of the use of corporate assets. Initially, a negative relationship between firm performance and discretionary accruals is expected and the poor performance is associated with the high incentive to manipulate the financial statement. While Doyle et al. (2007) and DeAngelo et al. (1994) found the negative relationship between firm performance and quality of earnings, Francis et al. (1996) and Svanström (2013) found no link between two variables. However, the possibility of a positive relationship cannot be excluded, and the high total return on assets correlates to the high discretionary accruals due to aggressive accounting or target.

SALESG

The low ratio of growth initially expects the high possibility of earning manipulation. According to Nissim and Penman (2001), high growth companies have lower earning quality. However, the research of Dechow et al (2011) with Gopalan and Jayaraman (2012) found the opposite effect. Meanwhile, Lee et al. (2006), Vasilescu and Millo (2016) and Liu et al. (2017) found no evidence of this relationship. However, the aforementioned studies have not yet agreed on the direction of the impact. Therefore, we have put forward the hypothesis of testing and included the variable into the testing model.

SIZE

Dimensional relationship between the company size and quality of earnings has also been found in previous studies. Specifically, Ball and Foster (1982) point out that firm size is positively correlated with profit quality. Since large

companies often incur fixed costs to maintain internal control procedures during the financial reporting process. In contrast, small companies often have weak internal control systems and are more likely to revise previously reported profit targets (Doyle et al., 2007). However, Watts and Zimmerman (1990) point out those large companies may have a lower quality of profit than small ones. Gopalan and Jayaraman (2012) and Vasilescu and Millo (2016) also find that firm size is negatively correlated with profit quality while Parte-Esteban and Garcia (2014), Liu et al. (2017) find a positive relationship between firm size and profit quality.

LEV

Previous studies found a link between debt levels and the quality of corporate profits, typically: Dechow et al. (2011), DeFond and Jiambalvo (1994), Gopalan and Jayaraman (2012) and Liu et al. (2017). Specifically, a company with higher leverage means that the company is getting closer to the debt limit. Therefore, managers in companies with higher leverage will have an incentive to inflate financial performance both to meet financial covenants in existing debt contracts and to increase the new debt with more favourable terms (Dechow et al., 2011). DeFond and Jiambalvo (1994) also suggest that in companies that use a lot of debt, managers can interfere with the financial reporting process to inflate profits and avoid a breach of loan contracts. This action may reduce the quality of the company's profits. Gopalan and Jayaraman (2012) and Liu et al (2017) also found a relationship between reverse financial leverage and earnings quality. However, Barton and Waymire (2004) provide evidence that the quality of firm profits increases with debt levels, while Parte-Esteban and Garcia (2014) and Vasilescu and Millo (2016) find that this relationship is not statistically significant.

PPETA

Capital intensive is business processes or industries that require large investments to produce certain goods or services that have a high proportion of fixed assets, also known as factory and equipment assets. Companies in capital-intensive industries often have high depreciation rates. Large investment capital and earning quality have positive correlation following the research of Gopalan and Jayaraman (2012).

7.3 Prerequisites for a multiple regression analysis

There are many authors stating the prerequisites for regression analysis such as Midtbo (2012); Stock, J. H., & Watson, M. W. (2007) and Brooks, Chris (2002). In general, there are five main assumptions for classical linear regression models (CLRM) that must be met before one can conclude the result of the regression analysis being reliable.

7.3.1 Assumption 1: Unusual and influential data

In the first step, unusual or influential data should be checked to find out the outlier problems. A single observation can make a large difference in the result of the regression model, if it is far away or different from others. Therefore, by looking at scatter plots of absolute |DA| against each of the predictor variables before regression analysis, the potential problem can be found.

[Figure 1] Correlation matrix
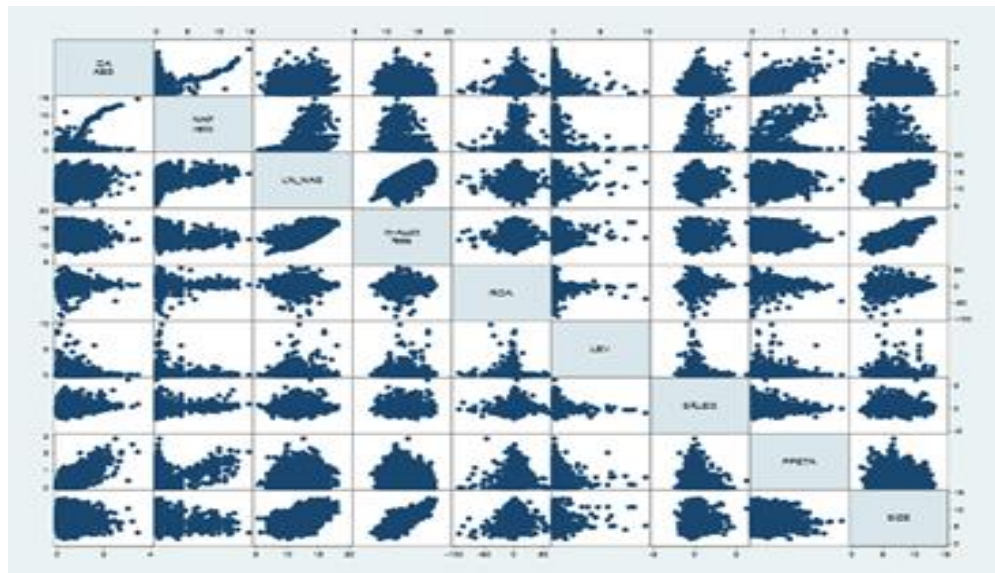
The given graph shows the matrix between the predictor variables and indicates the outlier problems. By using predict r, rstudent command in Stata, outlier variables are found and omitted out of the database. [Table 5]

Table 5 Detecting outlier problem

```
    list ISIN r in 1/10                          . list ISIN r in -10/L

       +-------------------------+                  +-------------------------+
       |         ISIN          r |                  |         ISIN          r |
       |-------------------------|                  |-------------------------|
    1. | PLPOLND00019  -4.935739 |          3690.  | GB0006710643    5.4397  |
    2. | PLMAKRM00019  -4.883754 |          3691.  | PLRNBWT00031   6.030571 |
    3. | PLJWC0000019     -4.718 |          3692.  | DE0006209901   6.253749 |
    4. | SE0001824103  -4.204958 |          3693.  | PLZPW0000017   6.744837 |
    5. | ES0169501030  -4.193884 |          3694.  | FI4000048418   7.119744 |
       |-------------------------|                  |-------------------------|
    6. | DE0005008007  -4.033693 |          3695.  | SE0000331266   8.295976 |
    7. | JE00B1RZDJ41  -3.840165 |          3696.  | GB00B3ZP1526   8.903146 |
    8. | DE000A0HN4T3  -3.614326 |          3697.  | FR0011208693   9.739911 |
    9. | DE000A0JL9W6  -3.504337 |          3698.  | BE0003765790   11.37469 |
   10. | FI0009900104  -3.495559 |          3699.  | FR0011208693   23.57521 |
       +-------------------------+                  +-------------------------+
```

Furthermore, the outliers can be fixed by using command winsor2 - winsorization in Stata for those variables such as |DA|, NAF ratio, ROA, LEV, SALEG, PPETA, and SIZE. Observations less than 5 percentile will be replaced with a value of 5 percentile, Observations greater than 95 percentile will be replaced with values at 95 percentile. Those variables will be transformed to increase the significant correlation.

7.3.2 Assumption 2: Normality of Residuals

The second assumption that should be adjusted is checking normality of residuals. Many researchers indicate the criticality of obtaining normality of multiple regression models. According to Greene (2012, p.64), one of the most important prerequisites before an analysis regression model is that the residual is identically and normally distributed. The violation of this assumption usually occurs when the sample size is small. Therefore, it will have little effect on the results since the dataset is quite large. To test the normality of residuals, the predict command is first created. Then, the commands such as *k-density*, *q-norm* and *p-norm* are used to check the normality of residuals.

[Figure 2] Kernel density estimate, qnorm, pnorm

kernel = epanechnikov, bandwidth = 0.0197
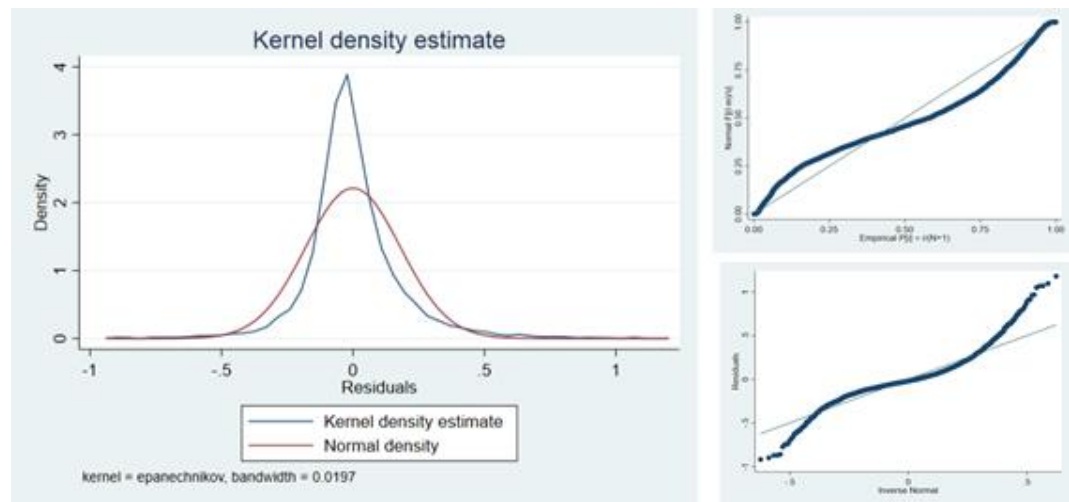
The given table 2 indicates the normal distributed residual. The red line shows normal density curve while the blue line shows the kernel density of the residuals. However, the deviation is quite significant. Another test available is the Shapiro-Wilk W test for normality. The p_value is small so the null hypothesis cannot reject that residual (r) is normally distributed.

```
. swilk l
```

```
                Shapiro-Wilk W test for normal data

    Variable |      Obs        W            V           z
Prob>z
-------------+-----------------------------------------------------
           l |     3,648    0.90114    202.009     13.788
0.00000

Note: The normal approximation to the sampling distribution of
W'
      is valid for 4<=n<=2000.
```

7.3.3 Assumption 3: Homoscedasticity of Residuals

The main assumption that should be addressed is the homogeneity of residuals. Homogeneity means that the variance of residuals compared with the predicted dependent variable should be equal to all predicted dependent variables. The contradiction term is "heteroscedastic" – means that the variance of the residuals is non-constant. A normally used graphical method is to plot the residuals versus fitted (predicted) values. The figure shows that there is no unusual point in the data since the outlier problems have been fixed before and the model is quite appropriate with the dataset.

[Figure 3] Residuals versus fitted values
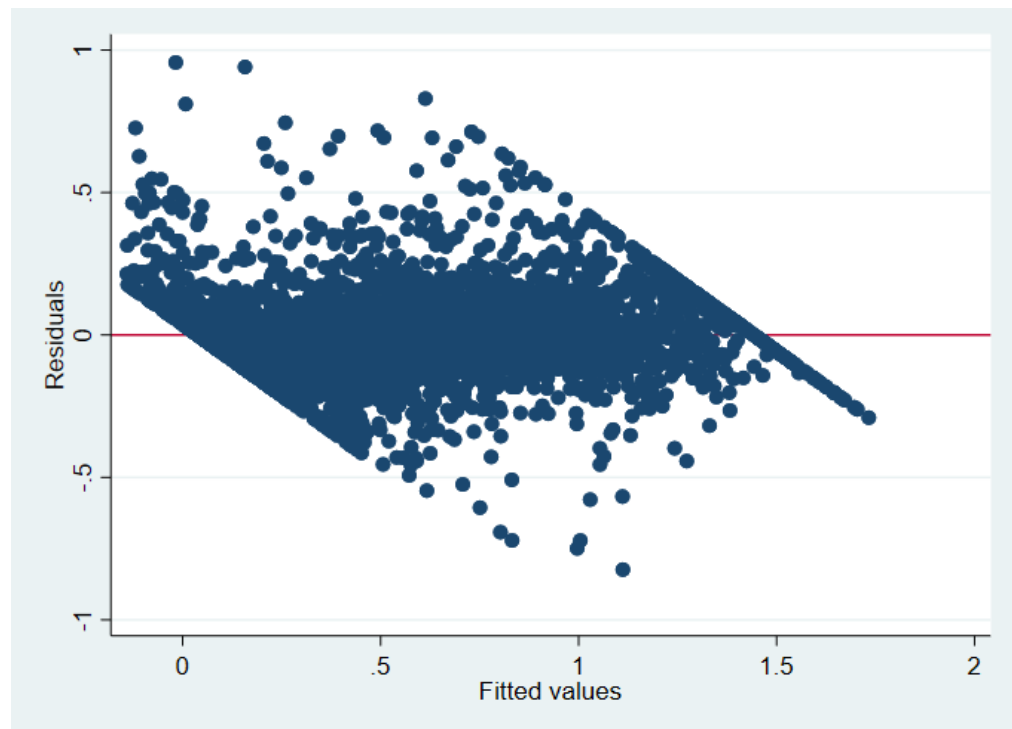
Another test that can adjust the heteroskedasticity are the White's test and the Breusch-Pagan test. The null hypothesis of both tests is that the variable is homogenous. The given results indicate the small p-value indicating that the null hypothesis can be rejected and the variable is not homogenous. The model has a problem of heteroscedasticity.

```
. estat imtest

Cameron & Trivedi's decomposition of IM-test

---------------------------------------------------
            Source |      chi2     df       p
-------------------+-------------------------------
Heteroskedasticity |    938.10     53    0.0000
          Skewness |     74.46      9    0.0000
          Kurtosis |     43.15      1    0.0000
-------------------+-------------------------------
             Total |   1055.71     63    0.0000
---------------------------------------------------
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of DAABS

        chi2(1)      =     296.38
        Prob > chi2  =     0.0000
```

Furthermore, whether the database is characterized by heteroskedasticity can be investigated by using the "Hausman test". By conducting this test, a suitable model can be identified to know whether it is random or fixed effects

(Torres-Reyna, 2007, p.29). Robust standard deviation is used to fix the problem of heteroscedasticity. The "Hausman test" is conducted after running two models with random and fixed effects separately. The null hypothesis is that a suitable model is a random effect.

```
. hausman fe re

                ---- Coefficients ----
            |      (b)          (B)            (b-B)   sqrt(diag(V_b-V_B))
            |       fe           re         Difference          S.E.
------------+-----------------------------------------------------------
  NAFratio  |    .0551135     .035636        .0194774        .0024246
   LN_NAS   |   -.0528039    -.0305524      -.0222515        .003569
 lnAuditfees|    .053388      .0266241       .026764         .0116122
      ROA   |   -.0002135     .0005716      -.0007851        .0004684
      LEV   |   -.0293993    -.0137303      -.015669         .0105838
     SÂLEG  |    .5456119     .6327041      -.0870922        .009416
     PPETA  |    .6797125     .9485949      -.2688824        .0361454
     SIZE   |    .255968     -.0048732       .2608412        .0226439
------------------------------------------------------------------------
                         b = consistent under Ho and Ha; obtained
from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained
from xtreg

    Test:  Ho:  difference in coefficients not systematic

              chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =       346.99
             Prob>chi2 =      0.0000
```

The given result shows that the most suitable model is a fixed-effects regression model since the ki-square is 346.99 and p-value is 0.000. The outcome of this test is a p-value of less than 5%. Hence, it is statistically significant and the null hypothesis is rejected that the variance of the error-term is homoscedastic. Heteroscedasticity is present in our case and one possible solution for this problem is to run a regression with robust standard errors.

7.3.4 Assumption 4: Multicollinearity

One goal of regression analysis is to isolate the relationship between a dependent variable and each independent variable. A potential problem is when independent variables are highly correlated with each other. Therefore, checking the existence of multicollinearity with the correlation matrix and variance inflation factor (VIF) test is needed.

```
             |   DAABS NAFratio   LN_NAS  lnAudi~s     ROA      LEV    SÂLEG    PPETA
        SIZE
-------------+--------------------------------------------------------------------------------
       DAABS |  1.0000
     NAFratio |  0.3858   1.0000
      LN_NAS |  0.0209   0.3836   1.0000
   lnAuditfees | -0.0877  -0.2276   0.6381   1.0000
         ROA |  0.0415   0.0023   0.0071   0.0319   1.0000
         LEV | -0.0381   0.0126  -0.0161  -0.0541  -0.2122   1.0000
       SÂLEG |  0.2599   0.0958   0.0130  -0.0318   0.1206  -0.0983   1.0000
       PPETA |  0.8467   0.3119   0.0349  -0.0499  -0.0156   0.0140  -0.0964   1.0000
        SIZE | -0.0100  -0.2082   0.5294   0.8398   0.0838  -0.0379  -0.0224   0.0421
        1.0000
```

The given matrix indicates that there are significant correlations between SIZE (Ln_Total asset) and Ln_NAS and ROA or between Ln_auditfees with LN_NAS. This correlation can be explained naturally. The large companies will often operate more complex actions and generate accounting transactions that require a great contribution of the auditor to achieve a satisfactory level of security. This will thus affect not only the statutory audit but also the non-audit services.

Furthermore, the VIF test is conducted against multicollinearity. As a rule of thumb, VIF (values greater than 10) is an indication that multicollinearity may exist. The outcome shows VIF values between 1 and 5 which is lower than 10.

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
 lnAuditfees |      5.38    0.185954
        SIZE |      3.63    0.275591
      LN_NAS |      3.52    0.284460
    NAFratio |      2.46    0.406434
       PPETA |      1.23    0.816251
        BIG4 |      1.12    0.892514
         ROA |      1.07    0.930711
         LEV |      1.06    0.939319
       SÂLEG |      1.05    0.950052
-------------+----------------------
    Mean VIF |      2.28
```

Degree of collinearity can also be checked with tolerance value (1/VIF). A tolerance value lower than 0.1 might indicate the variable is a linear combination of other independent variables. The result shows all tolerance values greater than 0.1. Based on the results from the correlation matrix and VIF test, the model does not have multicollinearity.

7.3.5 Assumption 5: Linearity

The final assumption to check is whether the relationship between the response variable and the predictors is linear or not. This assumption is linearity. According to Midtbo (2012), linearity means that the average effect of the independent variable on the dependent can be described as a straight line. If the assumption is not met, there is a risk of underestimation or overestimation of the ratio of the variables. The command for detecting non-linearity is acpr.plot. This command can be used to identify the non-linear in the dataset. Here, the transformation is made by adding logarithm to NAS variables. The figure 4 shows the linearity in our dataset.

[Figure 4] Acprplot and Kernel density estimate
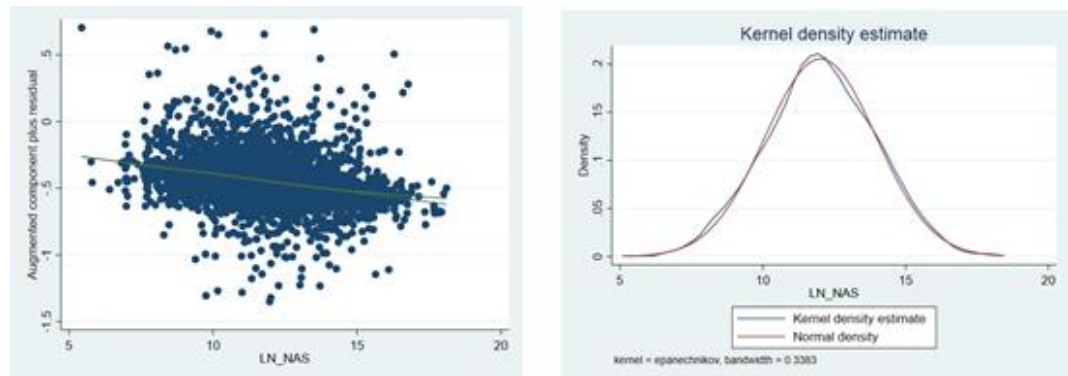
In general, after considering all factors, it seems that most of the problems can be addressed. And therefore, the prerequisite is considered as fulfilled.

7.4. Empirical Results and Discussion

In this chapter, the hypothesis testing will be presented by each model. In the next part, an additional model of 70% limitation on non-audit service fees is conducted. Finally, the result of the testing model will be compared by region with prior researches.

As fulfilling the assumption above, the model will be transformed accordingly by using logarithm to NAF and audit fees. Other variables were detected with outlier problems by using winsorization. Since the model has a problem of heteroscedasticity, the robust test is used to address the problem. The given graphs show the positive result of transforming to normal

distribution level, such as from indicator NAS to ln_NAS. The normal distribution is marked by a green line.

[Figure 5] Histogram NAS and ln_NAS
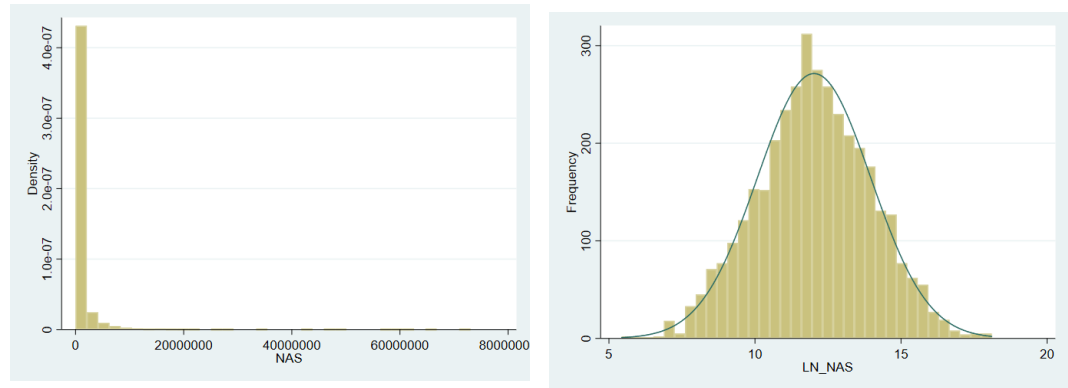
7.4.1 Hypothesis testing

The table 6.1 presents descriptive statistics for all variables in the multi regression models with independent variable |DA| and predictor variables as follows.

Table 6.1 Summary of variables in regression analysis in EEA

Variable	Obs	Mean	Std.Dev.	Min	Max
DAABS	3648	.559	.412	.038	1.443
NAF ratio	3648	.975	1.606	.023	6.383
LN_NAS	3648	12.023	1.942	5.436	18.107
LN_AF	3648	13.088	1.744	7.62	17.782
ROA	3648	4.004	5.071	-7.48	14.471
LEV	3648	.13	.18	.001	.686
SALEG	3648	.055	.171	-.233	.416
PPETA	3648	.436	.367	.002	1.233
SIZE	3648	6.931	1.947	3.789	10.632
BIG4	3648	.671	.47	0	1
NAS _dummy	3648	.995	.072	0	1

The table above (table 6.1) represents some important criteria such as Mean and Standard Deviation of total population in EEA countries, which includes 3648 observations. The mean of absolute Discretionary Accrual (DAABS), which is 0.559, is quite higher as compared with other prior research such as 0.063 in Hohenfels, Daniela, & Quick, Reiner (2018); 0.031 in Svanström (2013) and 0.127 in Ayers, Benjamin & Jiang, John & Yeung, Eric (2006). Since our observation includes medium and large firms in EEA areas (with more than 10 million USD of sales operations), that makes the high Total accrual (refer to the DA formula in chapter 4). Therefore, the high calculated DA result is understandable.

Besides, we decided to omit the entire zero and N/A non-audit service fees. In fact, there are only 19 observations with zero NAS out of 3648 observations. We might expect that there is no difference when we include or omit those observations. However, we will also conduct tests which include zero NAS observations to find out whether it has an effect or not, to confirm our expectation. The detailed test and result will be presented in chapter 7.

The NAF ratio in the table 6.1 is 0.975. This number is medium high when compared with prior studies. Study of Bjørndalen, S., & Kim-Rafiq, A. L (2017) showed the mean of NAF ratio is 0.8, meanwhile, Svanström (2013) indicated the mean of NAF ratio as only 0.226. The similar explanation can be used to describe that medium and large firms use to hire consulting services with large amounts of fees. Moreover, due to the complexity of transactions, accounting systems and business activities, big companies will have more intention to use advisory, accounting, legal or tax services. Therefore, this might be associated with the high value of NAF ratio.

The table 6.2 indicates the summary variables in Nordic countries. There are 621 medium and large companies in Nordic group that have availability accounts from 2015 to 2017.

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Table 6.2 Summary of variables in regression analysis in Nordic countries

```
   Variable |        Obs        Mean    Std. Dev.       Min         Max
------------+------------------------------------------------------------
      DAABS |        621    .5710829    .4290965    .0496216    1.555995
   NAFratio |        621    1.132021    2.260826    .0026834        14.8
     LN_NAS |        621     12.2355    1.790794    8.680553    15.09356
 lnAuditfees |        621    13.23648    1.212457    11.37366    15.41943
        ROA |        621    5.213465    5.703646      -5.936      17.524
------------+------------------------------------------------------------
        LEV |        621    .1017842    .1454712    .0011051    .5687346
      SÂLEG |        621    .0466019     .164059   -.2377127    .3747608
      PPETA |        621     .456625    .4095879    .0122137    1.456967
       SIZE |        621    6.825677    1.673562    3.941383    9.801003
       BIG4 |        621    .7729469    .4192649           0           1
```

In general, the mean of DAABS is 0.571 which is in line with the results of the mean DAABS of the whole population (0.559). The NAF ratio is higher (1.13 in Nordic and 0.975 in total population) indicating that the large amount of consulting fees being used in the cost structure of a company for consulting and auditing activities. Higher mean ROA (5.213 in Nordic and 4.004 in total population) shows that the firm's performance in Nordic countries is better than the average of the whole EEA. Other indicators are presented as similar with the whole population. We can expect the similar result in terms of relationship between Non-audit service fees and discretionary accrual of Nordic area and EEA area since they have quite similar DAABS and NAF ratio.

In fact, in model 2, 4 and 6, we use both NAF ratio and LN_NAS in one regression model. Particularly, NAF ratio or LN_NAS can independently represent the non-audit services. NAF ratio equals the total non-audit service fees divided by average audit fees in three years. LN_NAS is a logarithm of non-audit service fees. We conduct two tests, where one test includes both variables whereas the other tests without Ln_NAS. The result shows the same findings (Table 11, Table 12, Table 14 & Table 16). In fact, we can understand two variables that represent different meanings. Companies can have large amounts of non-audit services but the NAF ratio can be low due to the higher audit fees or high due to small amounts for audit activities. In

addition, the correlation between two variables is 0.38. Therefore, there is no multicollinearity problem. We decide to keep both variables to test in detail for model 2, 4 and 6.

7.4.1.1 Main model 1 and 2

The first model we test for the association between non-audit service fees ratio and the absolute value of discretionary accrual. In general, the model is significant entirely with most of the presented variables. The correlation of NAF ratio (sig 0.000 and sig <0.01), LEV (sig 0.008 and sig <0.01), SALEG (sig 0.000 and sig <0.01), PPETA (sig 0.000 and sig <0.01) and SIZE (sig 0.000 and sig <0.01) are statistically significant at the level 1%, within ROA (sig 0.082 and sig <0.1) is significant at level of 5%. However, the Big 4 (sig 0.226 and sig>0.05) is non-significant at acceptable levels. Also, the R-Square in model 1 is 0.8595 which implies that 85% of dependent variables can be explained by an independent variable in the regression model. In the second model, two more variables are added to test the relationship with discretionary accruals. The result appears to be the same as the first model. Both ln_NAF (sig 0.000 and sig <0.01) and ln_Auditfees (sig 0.000 and sig <0.01) are highly significant at the level 1%. The R-square in model 2 is also high at a level of 86%, meaning that overall both models with listed independent variables have a significant impact on discretionary accrual.

This result of R-square is quite high in comparison with the prior research. Normal R-Square is 19% (Bjørndalen, S., & Kim-Rafiq, A. L, 2017) and 12.6% in Svanström (2013). We have conducted the test for all variables in the model, and also tried to omit some variables to see the effect. The final conclusion for the high R-Square in our model is because of variable PPETA – capital intensity. The significant relationship between capital intensity and discretionary accrual are found in various researches such as Cohen (2008), Gopalan and Jayaraman (2012) which shows capital-intensive firms have a higher profit quality because capital intensity serves as a barrier to entry for competitors in the future. The correlation between PPETA and DA is also high in this model (cor 0.8467) indicates that PPETA is a well-explained variable for Discretionary accrual variable. After removing this variable, the R-square of the new model reduces from 86% to 19% (Table 10), similar to

prior research such as Svanström (2013) or Bjørndalen, S., & Kim-Rafiq, A. L (2017). NAF ratio has positive relationship with discretionary accrual (DACC) with positive coefficient 0.121, means that high level of NAF can create incentive of earning management and reduce accrual quality. Ln_NAS, with a negative coefficient of -0.0764 shows a negative relationship with |DA|, interpreted that higher level of non-audit service fees leads to a lower level of |DA| and earning management, but higher accrual quality. In contrast, the ln_Auditfees with a positive coefficient of 0.1471 indicates the lower audit fees, the lower discretionary accruals but, the higher accrual quality.

The sign of correlation is consistent with the result tested with variables PPETA. In addition, there is no multi correlation between PPETA with other independent variables, and this indicator makes the model well-explained with 86% level, so we decided to keep it in our model to conduct the testing.

The table 7 is the result of testing model 1 and 2 which includes PPETA.

Table 7 Summary of model 1 and 2

	(1) DAABS	(2) DAABS
NAFratio	0.0104*** (6.10)	0.0249*** (9.44)
ROA	-0.00110* (-2.00)	-0.00112* (-2.04)
LEV	-0.0414** (-2.67)	-0.0400* (-2.57)
SÂLEG	0.872*** (56.35)	0.866*** (56.21)
PPETA	0.984*** (135.48)	0.976*** (132.06)
SIZE	-0.00829*** (-5.82)	-0.00879*** (-3.59)
BIG4	0.00623 (1.08)	0.00650 (1.13)
LN_NAS		-0.0190*** (-7.15)
lN_AF		0.0177*** (5.06)
_cons	0.135*** (12.13)	0.124*** (4.92)
N	3648	3648

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

The positive relationship between NAF ratio (with a coefficient of 0.0103 in model 1 and 0.0248 in model 2) and Discretionary accruals means that the NAF ratio harms accrual quality and has a positive effect with earning management. The lower level of NAF ratio can increase the quality of accruals and reduce the incentive of manipulating financial reports due to the

lower level of earning management. This result is supported by the studies by Frankel et al. (2002), Larcker and Richardson (2004) and Bjørndalen, S., & Kim-Rafiq, A. L (2017), however, contradicts with the study of Svanström (2013). The explanation is different from the dataset and method of calculating NAF ratio. Ln_NAS, with a negative coefficient of -0.0190 shows a negative relationship with |DA|, interpreted that higher level of non-audit service fees leads to a lower level of |DA| and earning management, but higher accrual quality. In contrast, the ln_Auditfees with a positive coefficient of 0.0177 indicates the lower audit fees, the lower discretionary accruals but, the higher accrual quality. This finding is consistent with Bjørndalen, S., & Kim-Rafiq, A. L (2017), Svanström (2013) and Larcker and Richardson (2004). The result might refer to the assumption that the larger the audit fees are, the less independent the auditor will be, which leads to lower quality of audit and high level of earning management.

For control variables, the relation of each independent variable with |DA| is quite similar and in line with findings in prior research in the EU (Bjørndalen, S., & Kim-Rafiq, A. L, 2017) however, contradicts with some studies in specific areas. The growth and capital intensity have a high positive relationship with absolute discretionary accruals, with 0.8719 and 0.9837 coefficients respectively in model 1 (Table 12) and coefficients of 0.866 and 0.976 respectively in model 2 (Table 13). It can be interpreted as the increases in the sales growth and capital intensity will decrease the accrual quality. This finding is followed by Nissim and Penman (2001), indicating that a company with high growth has more incentive to manipulate financial statements by reverting revenue each year to achieve the target. In contrast variable ROA, LEV and SIZE present the negative relationship with discretionary accruals. From this finding, the lower accrual quality can be interpreted by the increasing company's performance, financial leverage and firm size. This is contradicting with the finding of Antle et al. (2006) and Bjørndalen, S., & Kim-Rafiq, A. L (2017) where they found the positive relationship between ROA and |DA|. However, the coefficient of those variables ROA (coefficient is -0.001) and SIZE (coefficient is -0.008) is too small to make any impact on |DA|. LEV with a coefficient of -0.04 and p_value significant at 5% level implies that a company with a high level of debt may have the incentive to

inflate financial performance, leading to the low quality of accruals. This finding is similar to Dechow et al., (2011) and DeFond and Jiambalvo (1994) but contradicts with the findings of Barton and Waymire (2004). For the variable Big 4, there is no significant relationship between the uses of big 4 audit firm with |DA|. Hence, this conflict with our initial expectation that companies audited by Big 4 can have higher accrual quality. The result is similar to the finding of Svanström (2013) in Sweden.

In general, the results in model 1 and 2 indicate that a higher proportion of NAS can harm the quality of accruals. Thus, we can reject the null hypothesis and conclude that there is a relationship between NAS and accrual quality.

7.4.1.2 Model 3 & Model 4

In model 3 and 4, the signed accruals are tested; specific in this case is positive discretionary accruals. The model 3 and 4 are conducted with the same variables in model 1 and 2 except the replacement of absolute DA to positive DA. However, due to the small number of observations (No of observation is 221), the model is not significant in general. The R-Square is only 0.3133 in model 3 and 0.3172 in model 4. Most of the variable is insignificant with positive DA except for NAF ratio (sig 0.000 and sig <0.001), ROA (sig 0.021 and sig <0.05) and SALEG (sig 0.000 and sig <0.001) in model 3 (Table 12) and same replication in model 4, NAF ratio (sig 0.003 and sig <0.001), ROA (sig 0.030 and sig <0.05) and SALEG (sig 0.000 and sig <0.001) (Table 15).

NAF ratio in both model 3 and 4 still show the positive relationship with income-increasing discretionary accrual with a coefficient of 0.0430 in model 3 and 0.0471 in model 4 respectively. This finding is consistent with Frankel et al., (2002), Bjørndalen, S., & Kim-Rafiq, A. L (2017), but in contrast with Svanström (2013). Ln_NAS (sig 0.755 and sig >0.05) and Ln_Auditfees (sig 0.326 and sig >0.05) are non-significant at accepted level. Also, at table 8 below, the result indicates most of the control variables such as LEV, PPETA, SIZE and BIG4 are insignificant to predict any assumption.

Overall, we can reject the null hypothesis and conclude that there is a relationship between NAS and accrual quality.

Table 8 Summary of model 3 and 4

```
---------------------------------------------
                        (1)              (2)
                      posDA            posDA
---------------------------------------------
NAFratio             0.0430***        0.0471**
                      (4.33)           (3.04)
ROA                 -0.00254*        -0.00241*
                     (-2.32)          (-2.18)
LEV                  0.00414          0.0101
                      (0.12)           (0.29)
SÂLEG                -0.261***        -0.260***
                     (-6.05)          (-5.97)
PPETA                0.0263           0.0219
                      (0.30)           (0.25)
SIZE                -0.00535         -0.0110
                     (-1.15)          (-1.58)
BIG4                -0.0164          -0.0172
                     (-0.94)          (-0.97)
LN_NAS                               -0.00290
                                      (-0.31)
lnAuditfees                          0.0113
                                      (0.98)
_cons                0.107***         0.0293
                      (3.35)           (0.37)
---------------------------------------------
N                       221              221
---------------------------------------------
t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001
```

7.4.1.3 Model 5 and Model 6

Other than model 3 and 4, in model 5 and 6, the negative sign of DA is tested to find whether or not there is a correlation between NAS and income-decreasing accrual. The number of observations is 3427; indicating that most of the listed firms in EEA from 2015 to 2017 have negative discretionary accruals. The detailed regression analysis in table 14 for model 5 and table 15 for model 6 shows the high proportion of R-Square (87% in both models). In general, the findings in model 5 and 6 are with different signs with the findings in model 1, 2, 3 and 4. In model 1, 2, 3 and 4, we found a positive relationship with absolute DA and income-increasing DA. However, in model 5 and 6 we found a negative relationship with income-decreasing (negative) DA. In fact, negative relationship with negative DA means positive relationship with DA, suggesting that the finding is consistent with the above four models. Both models 5 and 6 are significant in its entirety except ROA (sig 0.468 and sig >0.05 in model 5; sig 0.447 and sig >0.05 in model 6) and BIG 4 (sig 0.424 and sig >0.05 in model 5; sig 0.421 and sig >0.05 in model 6).

Table 9 Summary of model 5 and 6

```
-------------------------------------------
                      (1)             (2)
                    negDA           negDA
-------------------------------------------
NAFratio          -0.00798***     -0.0219***
                   (-5.02)         (-8.87)
ROA                0.000407        0.000426
                    (0.73)          (0.76)
LEV                0.0456**         0.0447**
                    (2.91)          (2.86)
SÂLEG             -0.975***       -0.966***
                   (-61.78)        (-61.48)
PPETA             -1.006***       -0.997***
                  (-141.80)       (-137.70)
SIZE               0.00623***      0.00687**
                    (4.50)          (2.87)
BIG4              -0.00448        -0.00448
                   (-0.80)         (-0.81)
LN_NAS                             0.0187***
                                    (7.29)
lnAuditfees                       -0.0178***
                                   (-5.25)
_cons             -0.0971***      -0.0849***
                   (-8.74)         (-3.45)
-------------------------------------------
N                    3427            3427
-------------------------------------------
t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001
```

The NAF ratio is on a significant level of 5% but shows a little negative impact on income-decreasing accrual. The coefficient of NAF ratio in model 5 is -0.007 and -0.02 in model 6. The difference between the two models can be explained by the correlation between NAF ratio and ln_NAF and ln_Auditfees in model 6. In fact, the negative relationship between NAF ratio and income-reducing accruals also means that high NAF ratio is associated with low negative DA but positive with the quality of accruals. Together with the negative relationship between Ln_Auditfees (coefficient of -0.0178) shows that the involvement of non-audit services and audit services can decrease the incentive of management in manipulating accounting performance. However, a higher percentage of non-audit services fees leads to a decrease in the quality of accruals due to the positive relationship between ln_NAS (coefficient is 0.0187) and income-decreasing accruals. This finding might be related to the regulation of limitation of 70% non-audit services fees in EU Regulation No 537/2014. Further testing will be presented in the next section to find which level of limitation will affect the accrual quality.

In sum, we can reject the null hypothesis and conclude that there is a relationship between non-audit service and income-decreasing accrual.

7.4.2. Testing for different NAF ratio thresholds.

As mentioned above, there is a relationship between NAS and accrual quality. In this part, the statistical test for the average NAF ratio is conducted as well as the impact of the company with or without using non-audit service. A new regression model is created on the basic model template of absolute discretionary accrual and adding two more dummy variables such as NAS_dummy (1 - a company using NAS, 0 – a company without using NAS) and NAF_dummy (1 = NAF ratio greater or equal to 0.70 and 0 = NAF ratio less than 0.70). Since Ln_NAS and Ln_Auditfees have a high correlation in this new model, we decided to keep only variable ln_NAS for further testing. In general, the regression model is as follows.

$$|DA| = \alpha + \beta_1 \text{NAFratio} + \beta_2 \text{ln\_NAS} + \beta_3 \text{BIG4} + \beta_4 \text{ROA} + \beta_5 \text{LEV} + \beta_6 \text{SALESG} + \beta_7 \text{PPETA} + \beta_8 \text{SIZE} + \beta_8 \text{NAS\_dummy} + \beta_8 \text{NAF\_dummy} + \varepsilon$$

The interesting result (Table 18) shows that the NAS_dummy (sig 0.042 and sig <0.05) is significant at 5% level. The coefficient of NAS_dummy is - 0.0739 means the negative relationship with absolute discretionary accruals and positive relation with accrual quality. This implies that the company using non-audit services can increase the earning quality better than a company without using those kinds of services. The involvement of advisory service can somehow detect the problems of earning management. The finding is consistent with the above result when testing the relation between NAS and DA. The detailed result is referred to in table 18 of the appendix. However, there are only 19 out of 3648 observations. Therefore, the result should be used with caution.

Furthermore, the NAF_dummy70 (sig 0.03 and sig <0.05) which has positive coefficient (0.3881) imply the positive relationship with absolute discretionary accrual and negative relationship with accrual quality. To test in detail, we choose to perform the test with different levels of limitation (60%, 80% and 90%). The surprising result we found was that the above level of 70% shows the significant negative relationship with quality of accrual, under limitation of 70% shows the positive sign. At the level of 80% and 90%, the dummy variable NAF indicates p_value at significant 5% and the coefficient

is positive. However, at the level from 10% to 60%, NAF_dummy presents significant relationship with |DA| at significant 5% level and negative coefficient (Table 19). The further and detailed testing supports the EU Regulation No 537/2014 which set the limitation of non-audit service fees at 70% of average audit fees in three prior years suggesting companies should limit the amount of non-audit service fees under the level of 70%. This finding is contradicted with the result found in Bjørndalen, S., & Kim-Rafiq, A. L (2017) which argues that the EU Regulation requirement should be lower at a rate of 10% or more. The difference can be interpreted due to the difference of time frame and the time applying the regulation.

Overall, after testing the model in chapter 7, we have a clear implication that non-audit service has a relationship with accrual quality with a positive sign. However, the company should limit the amount of non-audit services fee to maintain no significant impact to lower accrual quality. From empirical finding, we support the implication of EU Regulation No 537/2014 with the limitation at the level 70% and use non-audit service for financial reporting purposes.

7.4.3 Nordic countries

In this part, the further tests in the entire Nordic country and individual country in the Nordic region are performed. We test full 6 models for the entire observation in the Nordic region to investigate whether there is a relationship between NAS and absolute Discretionary accrual, income-increasing accrual and income-decreasing accrual. Besides, we also conduct the test in every five countries inside Nordic which are Norway, Sweden, Denmark, Iceland and Finland. However, due to the small size of observation in Iceland, the test could not be conducted for the sample in this country (Table 21). The separation of income-increasing and income-reducing accrual limit the size of the sample test therefore, we only perform the test with absolute discretionary accruals.

7.4.3.1 Nordic

When testing model 1 and 2, the positive relationship between NAS and absolute discretionary accruals is found as before. Most surprising result is

that this relationship is similar to the outcome of entire samples in the EEA region. NAFratio (sig 0.000 and sig <0.001), Ln_NAF (sig 0.000 and sig<0.001) and Ln_Auditfees (sig 0.003 and sig <0.01) in model 1 and 2 perform significant level and a piece of strong evidence against the null hypothesis that there is no relation between NAS and |DA| (Table 20). The coefficient of NAF ratio is 0.0211, which means that the increase of NAF ratio in Nordic countries is mostly negative with the accrual quality. The same result is consistent with the finding of Bjørndalen, S., & Kim-Rafiq, A. L (2017). Different from the result in EEA, model 3 and 4 in the Nordic show that there is no significant impact between NAS and income-increasing discretionary accrual. All of the variables in the model are insignificant. What can explain the result is due to the small sample; only 32 observations have income-increasing discretionary accrual in total Nordic countries. The last two models 5 and 6 indicate the negative relationship between NAS and income-reducing discretionary accrual. The similar finding is consistent with the result in chapter 7 with the sample in the EEA countries.

In short, NAS and accrual quality have a positive relationship in Nordic countries. The engagement of non-audit service and audit service can increase the performance of the firm and lower the incentive of earning management.

7.4.3.2 Norway

Norway is one of the countries with stable levels of economic development and strict accounting standards in comparison to other countries. Most Norwegian firms follow IFRS and Norwegian Accounting Act to perform their financial statement. As prior research of Langli and Hope (2010), they found no relation between NAS and discretionary accruals as well as audit quality. In this study, a similar result is presented. There is no significant relationship between NAF ratio, ln_NAS, ln_Auditfees and the absolute value of discretionary accruals. Most control variables are insignificant except SALEG (sig 0.000 and sig <0.001), PPETA (sig 0.000 and sig <0.001) in both models and ROA (sig 0.032 and sig <0.05) in model 2 (Table 22). The coefficient of Sales growth is 0.849, indicating the positive relation with discretionary accruals and negative relationship with accrual quality. PPETA presents a similar result with a coefficient of 1.049. ROA in model 2

generates a negative coefficient (-0.005) which indicates the positive relationship with accrual quality. Overall, the use of non-audit services or audit services is not affecting the result of the financial statement of the firms.

7.4.3.3 Sweden

The similar test is performed with 270 observations in Sweden. We found the same result with the above models in Norway. With the influence of SALEG, PPETA, variable SIZE also has a significant impact on discretionary accruals at level 5%. The coefficient of SIZE in model 1 is -0.011 and in model 2 is -0.024 (Table 22) led to the conclusion of a negative relationship between firm size and earning management, but a positive relationship with accrual quality. This finding is consistent with Ball and Foster (1982), shows that big companies manage better profit than others. The overall finding is that there is no relationship between accruals quality and the usage of non-audit services in Sweden. However, our finding is different from the study of Svanström (2013) due to the difference in the time frame and sample selection (private firms and listed companies in Sweden).

7.4.3.4 Denmark

Since there is no prior finding in this relationship, the result might be beneficial for further investigation. With 108 observations available in Denmark, the finding shows the significant relationship between non-audit service and discretionary accruals. NAF ratio (sig 0.03 and sig <0.05) is a significant relation at 5% level. With the coefficient of 0.014, the test indicates the strong positive impact on discretionary accruals, but the negative effect on accrual quality. The high ratio of NAS can harm the accrual quality and increase earning management. In model 2, there is no evidence supporting the relationship between NAS and accrual quality. This might appear due to the high correlation with ln_NAS and ln_Auditfees. Besides, SALEG and PPETA are two variables significant to discretionary accruals (Table 23). In overall, there is a positive relationship between NAS and absolute discretionary accrual in Denmark suggesting, companies should follow the non-audit fees restriction of 70% according to EU Regulation No. 537/2004.

7.4.3.5 Finland

Together with a group of countries, Finland also presents the same IFRS accounting standard. Similar to the case in Denmark, there are no prior researches that investigate this relation. According to the table result 23 in the appendix, the positive relationship is found in both models. NAF ratio (sig 0.003 and sign <0.01) in model 1 and NAF ratio (sig 0.023 and sig <0.05) in model 2 indicates the strong relationship between two variables. Due to the positive impact, the increase of non-audit service ratio can harm the company's performance. Besides, the ROA, SALEG and PPETA replicate the same outcome with the above model. In general, for most of 129 observations in Finland, there is a positive relationship between NAS and discretionary accruals but the negative impact on accrual quality.

In conclusion, as compared with the test of the whole population in EEA countries, Nordic region and individual countries have mixed results which show consistency and inconsistency to each other. We found the positive relationship between non-audit fees ratio and discretionary accruals indicating the higher level of NAF ratios can harm the audit quality. The same result is found in samples of Nordic region, Denmark and Finland. However, there is no significant finding in terms of relationship between non-audit service fees and audit (accrual quality) in Norway and Sweden. The inconsistent result between each testing sample shows that the result of total population in EEA countries cannot represent all individual countries inside this group. Therefore, further testing of this relationship should be implemented in each country since the difference might result from the differences in the accounting system or social and economic wealth.

8. Conclusion remarks

8.1 Conclusion

The research provides empirical study of the association between Non-audit services and accrual quality in EEA countries from 2015 to 2017. According to prior research and empirical findings, the absolute discretionary accruals, income-increasing accruals and income-reducing accruals are chosen as three indicators to measure accrual quality. The lower discretionary and earning

management incentive indicates the higher quality of accrual. Following the Jones Model (1991) and modified Jones model of Dechow et al (1995), six multiple regression models are used to investigate the relationship. Furthermore, Nordic region and its four members that include Norway, Sweden, Denmark and Finland are tested individually to find out whether or not the similar result is generated. Additionally, the study also investigated whether the non-audit fee ratio has an effect on discretionary accruals under the consequence of the EU regulation's requirement for limitations on advisory services.

Firstly, the study found the positive correlation between NAF ratio and absolute discretionary accruals and income-increasing accruals but negative effect on income-decreasing accruals. Those findings indicate that a high ratio of NAF might harm the accrual quality and increase the incentive of earning management. The same result is found when testing Nordic countries entirely. However, different from the finding in EEA, there is no significant relationship with income-increasing accrual and NAF ratio. Moreover, the finding is present differently between each country, such as, no significant relationship is found in Norway and Sweden, however, positive effect is stated in the regression analysis of Denmark and Finland. There is no prior study in Denmark and Finland regarding this topic, so our new findings can contribute to further investigation in the future.

Secondly, we found that the company using non-audit services can increase its quality of accrual but high level of NAF ratio might harm the accrual quality. The findings motivate us to adjust an appropriate level of NAS fee ratio to prevent the negative effect on accrual quality. As previous clarification, the EU Regulation 537/2014 highlights the requirement of a 70% limitation cap on non-audit service fees to average audit fees in prior three years. Our result shows that if the non-audit service fees ratio is higher than 70%, this indicator can harm the quality of accruals and also the audit quality. Hence, this conclusion is consistent with EU Regulation 537/2014, article 4, and provides clear implications for regulators on the non-audit services issue to maintain the level of non-audit service fees to an average of

audit fees in three years at 70% or lower to increase the audit (accrual) quality.

Overall, the involvement of non-audit services with appropriate level of fees charged (i.e. below 70% of average audit fees in the last three year) can increase the accrual quality. However, there are dissimilar results between each group of countries and each country as tested in chapter 7. Therefore, the result of the whole population in the EEA area cannot represent the result of a group or individual country. Therefore, we recommend that the future research should conduct a test in each country or specific region to get the correct insight with minimum error.

8.2. Limitation

As with most research, our study is exposed to several potential limitations which are important to keep in mind while considering our research and results. At the same time, we acknowledge that the dataset we are investigating might not give sufficient evidence of association between NAS and accrual quality in the EEA countries. While combining databases from Orbis and Eikon, we found a large sample with missing data in terms of audit fees and non-audit service fees. Therefore, it took a couple of weeks to collect those data manually from the financial statement of each company from the period 2014 to 2017.

In addition, the failure of the Eikon system in detecting the problem with zero values and missing values is the reason for decreasing number of testing observations, due to which those observations could not be included in the regression analysis. Similarly, the information regarding the firms was given in different formats and varying currency between the countries. So, it was a daunting task to compare between those data. As a result, we could cover only 20% of the missing data. Also, the data on NAS had been given as a whole without concrete specification of which specific type of NAS was provided by the firms, thus we could not test for different types of NAS (tax, legal, accounting, advisory). Moreover, during the testing process, a large number of data was deleted to solve the problem of outlier and extreme value.

This was largely reflected in data on NAF, and thus the dataset might not be directly representative of the population.

We acknowledge our method which we used to calculate discretionary accrual might have some limitations. According to DeFond and Zhang (2004), using discretionary accrual to measure the audit quality might generate large errors of measurement and potential bias. Gul et al. (2009) and Reichelt and Wang (2010) showed that, depending on each model and sample, average discretionary accrual can range from 4% to 10% of total assets, which is too large to be appropriately explained by this method only. Also, there is little consensus on the correct way to measure discretionary accrual since there are several models to calculate it but they generate different results with errors. In fact, there is some prior research that refers to the contradictory results between balanced-based and cash-flow based methods in the model of Jones (1991). Although we didn't choose to follow a cash flow-based method, this finding makes us feel less confident to make any conclusions. However, the dissimilar result between two methods is also explained by the small errors appearing in large samples or during the process of data collection. Beside the criticism, discretionary accruals method is still considered as an appealing proxy due to its close link to audit quality and possibly best method to describe results for large populations (DeFond and Zhang, 2004). But we should also consider the underlying economics of the accounting representation or its nature of interpretation (Jackson, Andrew B., 2016) or firm's innate characteristics to use multiple proxies to capture the accrual result (DeFond and Zhang, 2004).

8.3. Further research

As discussed above, further research should be conducted in specific countries to adjust the association between the non-audit services and accrual quality. The NAF limitation according to EU Regulation also needs to be investigated in specific countries to have better estimation of the level that applies. Besides non-audit service fees, other factors can be adjusted such as the independence of advisors or the tenancy of consultants. Therefore, further tests with different independent variables or control variables can expand the findings and create new contributions.

We attempt to collect the data of each service's fees inside non-auditing services such as accounting, legal or tax. However, due to the large sample of data, and inability to collect manually in a short-time period, we decided not to go on this indicator. However, as recommended previously, at the level of the country, the study can be conducted such as research of Svanström (2013) in Sweden.

The EU Regulation is limited not only to the fees of non-audit service, but also the type of consulting activities. An audit firm is limited to provide both audit and advisory services to the same client at the same time. As a consequence, the transformation of audit firms such as big 4 that separate into two companies. The purpose of this split is to reduce the level of Big 4's expansion and increase the quality of auditing and consulting. In our study, we found that there is no significant relationship between dummy variable BIG 4 and accrual quality. Therefore, future research has the possibility to check the association between the separation of BIG 4 (audit and non-audit services) and accrual quality. This is a trending topic but requires more qualitative tests such as interview or questionnaire as well as time for preparation. However, it is worth investing time on researching since the findings can support the future audit and consulting service transformation that might contribute towards higher accrual quality.

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APPENDIX

Table 10 Regression Model without variable PPETA

```
. regress DAABS NAFratio LN_NAS lnAuditfees ROA LEV SÂLEG SIZE (without PPETA)


      Source |       SS           df       MS      Number of obs   =     3,648
-------------+----------------------------------   F(7, 3640)      =    124.23
       Model |  119.22081            7  17.0315442   Prob > F        =    0.0000
    Residual |  499.01947        3,640  .137093261   R-squared       =    0.1928
-------------+----------------------------------   Adj R-squared   =    0.1913
       Total |  618.24028        3,647  .16952023    Root MSE        =    .37026


------------------------------------------------------------------------------
       DAABS |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio |   .1216623   .0061086    19.92   0.000     .1096858    .1336389
      LN_NAS |   -.076494   .0063288   -12.09   0.000    -.0889024   -.0640857
  lnAuditfees |   .0147174   .0084609     1.74   0.082    -.0018711    .0313059
         ROA |  -.0020771   .0013237    -1.57   0.117    -.0046723    .0005181
         LEV |  -.0685414   .0373497    -1.84   0.067    -.1417698     .004687
       SÂLEG |   .6038245   .0368551    16.38   0.000     .5315659    .6760832
        SIZE |   .0521486   .0057471     9.07   0.000     .0408808    .0634165
       _cons |    .789873   .0596462    13.24   0.000     .6729297    .9068164
```

Table 11 Regression Model without variable Ln_NAS

```
. regress DAABS NAFratio lnAuditfees ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS      Number of obs   =     3,648
-------------+----------------------------------   F(8, 3639)      =   2783.36
       Model |  531.396089           8  66.4245111   Prob > F        =    0.0000
    Residual |  86.8441911       3,639  .023864851   R-squared       =    0.8595
-------------+----------------------------------   Adj R-squared   =    0.8592
       Total |  618.24028        3,647  .16952023    Root MSE        =    .15448


------------------------------------------------------------------------------
       DAABS |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio |   .0104619   .0017064     6.13   0.000     .0071162    .0138075
  lnAuditfees |   .0019962   .0029927     0.67   0.505    -.0038714    .0078638
         ROA |  -.0010612   .0005528    -1.92   0.055     -.002145    .0000225
         LEV |  -.0400214   .0156721    -2.55   0.011    -.0707484   -.0092945
       SÂLEG |   .8722311   .0154822    56.34   0.000     .8418765    .9025857
       PPETA |   .9844147    .007332   134.26   0.000     .9700395      .99879
        SIZE |  -.0096619   .0024991    -3.87   0.000    -.0145616   -.0047622
        BIG4 |     .00616   .0057709     1.07   0.286    -.0051546    .0174746
       _cons |   .1177067   .0282677     4.16   0.000     .0622845    .1731289
------------------------------------------------------------------------------
```

Table 12 Regression Model 1

```
. regress DAABS NAFratio ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS          Number of obs   =     3,648
-------------+----------------------------------        F(7, 3640)      =   3181.41
       Model |  531.385471         7  75.9122101        Prob > F        =    0.0000
    Residual |  86.8548086      3,640  .023861211        R-squared       =    0.8595
-------------+----------------------------------        Adj R-squared   =    0.8592
       Total |   618.24028      3,647   .16952023        Root MSE        =   .15447


-------------------------------------------------------------------------------
       DAABS |     Coef.    Std. Err.       t     P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
    NAFratio |    .010372     .001701      6.10   0.000      .007037     .013707
         ROA |  -.0010996    .0005497     -2.00   0.046    -.0021774   -.0000218
         LEV |  -.0414185    .0155303     -2.67   0.008    -.0718675   -.0109696
       SÂLEG |   .8719143    .0154737     56.35   0.000     .8415763    .9022522
       PPETA |   .9837393    .0072612    135.48   0.000     .9695029    .9979757
        SIZE |  -.0082928    .0014254     -5.82   0.000    -.0110875   -.0054982
        BIG4 |   .0062307    .0057695      1.08   0.280    -.0050811    .0175426
       _cons |   .1350387    .0111284     12.13   0.000     .1132201    .1568573
-------------------------------------------------------------------------------
```

Table 13 Regression Model 2

```
. regress DAABS NAFratio LN_NAS lnAuditfees ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS          Number of obs   =     3,648
-------------+----------------------------------        F(9, 3638)      =   2513.89
       Model |  532.600375         9  59.1778195        Prob > F        =    0.0000
    Residual |  85.6399043      3,638  .023540381        R-squared       =    0.8615
-------------+----------------------------------        Adj R-squared   =    0.8611
       Total |   618.24028      3,647   .16952023        Root MSE        =   .15343


-------------------------------------------------------------------------------
       DAABS |     Coef.    Std. Err.       t     P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
    NAFratio |    .024879    .0026345      9.44   0.000     .0197137    .0300443
      LN_NAS |  -.0190084    .0026583     -7.15   0.000    -.0242203   -.0137965
 lnAuditfees |   .0177442    .0035064      5.06   0.000     .0108695     .024619
         ROA |  -.0011202    .0005487     -2.04   0.041     -.002196   -.0000445
         LEV |  -.0399778    .0155503     -2.57   0.010     -.070466   -.0094896
       SÂLEG |   .8657485    .0154034     56.21   0.000     .8355484    .8959486
       PPETA |   .9758344    .0073891    132.06   0.000     .9613473    .9903216
        SIZE |  -.0087856      .00245     -3.59   0.000    -.0135891    -.003982
        BIG4 |   .0065014    .0057326      1.13   0.257    -.0047381    .0177409
       _cons |    .124112    .0252246      4.92   0.000     .0746564    .1735677
-------------------------------------------------------------------------------
```

Table 14 Regression Model 3

```
. regress DA NAFratio ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS          Number of obs   =       221
-------------+----------------------------------       F(7, 213)       =      13.88
       Model |  1.30204897         7   .186006996       Prob > F        =     0.0000
    Residual |  2.85449617       213   .01340139        R-squared       =     0.3133
-------------+----------------------------------       Adj R-squared   =     0.2907
       Total |  4.15654514       220   .018893387       Root MSE        =    .11576


------------------------------------------------------------------------------
          DA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio |   .0429706   .0099334     4.33   0.000     .0233902     .062551
         ROA |  -.0025448   .0010969    -2.32   0.021    -.004707   -.0003826
         LEV |    .004145   .0345375     0.12   0.905    -.0639341     .072224
       SÂLEG |  -.2608821   .0431417    -6.05   0.000    -.3459215   -.1758428
       PPETA |   .0263005   .0866631     0.30   0.762    -.1445266    .1971276
        SIZE |  -.0053493    .004645    -1.15   0.251    -.0145053    .0038067
        BIG4 |  -.0164209   .0174764    -0.94   0.348    -.0508698    .0180281
       _cons |   .1068483   .0318684     3.35   0.001     .0440304    .1696662
------------------------------------------------------------------------------
```

Table 15 Regression Model 4

```
. regress DA NAFratio LN_NAS lnAuditfees ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS          Number of obs   =       221
-------------+----------------------------------       F(9, 211)       =      10.89
       Model |  1.31865958         9   .146517732       Prob > F        =     0.0000
    Residual |  2.83788555       211   .013449695       R-squared       =     0.3172
-------------+----------------------------------       Adj R-squared   =     0.2881
       Total |  4.15654514       220   .018893387       Root MSE        =    .11597


------------------------------------------------------------------------------
          DA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio |    .047088   .0155078     3.04   0.003     .0165179    .0776581
      LN_NAS |  -.0028995   .0092811    -0.31   0.755     -.021195     .015396
 lnAuditfees |   .0112725   .0114485     0.98   0.326    -.0112955    .0338406
         ROA |  -.0024107   .0011067    -2.18   0.030    -.0045922   -.0002291
         LEV |   .0100639   .0350257     0.29   0.774    -.0589812    .0791089
       SÂLEG |  -.2601432   .0435388    -5.97   0.000    -.3459699   -.1743166
       PPETA |   .0218518   .0870732     0.25   0.802    -.1497931    .1934966
        SIZE |  -.0110404   .0069973    -1.58   0.116     -.024834    .0027532
        BIG4 |  -.0172372   .0177709    -0.97   0.333    -.0522685    .0177942
       _cons |   .0293328   .0792092     0.37   0.712    -.1268099    .1854755
------------------------------------------------------------------------------
```

Table 16 Regression Model 5

```
. regress DA NAFratio ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS      Number of obs   =      3,427
-------------+----------------------------------   F(7, 3419)      =    3402.08
       Model | 502.963781          7  71.8519688   Prob > F        =     0.0000
    Residual | 72.2094241      3,419  .021120042   R-squared       =     0.8745
-------------+----------------------------------   Adj R-squared   =     0.8742
       Total | 575.173206      3,426  .167884765   Root MSE        =     .14533


------------------------------------------------------------------------------
          DA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio | -.0079835      .00159    -5.02   0.000     -.011101    -.004866
         ROA |  .0004074    .0005616     0.73   0.468    -.0006937    .0015084
         LEV |  .0455517    .0156309     2.91   0.004     .0149049    .0761984
       SÂLEG | -.9745039    .0157729   -61.78   0.000    -1.005429   -.9435786
       PPETA | -1.005777    .0070928  -141.80   0.000    -1.019683     -.99187
        SIZE |  .0062276    .0013842     4.50   0.000     .0035135    .0089416
        BIG4 | -.0044797    .0056065    -0.80   0.424    -.0154721    .0065127
       _cons | -.0971279    .0111114    -8.74   0.000    -.1189135   -.0753423
------------------------------------------------------------------------------
```

Table 17 Regression Model 6

```
. regress DA NAFratio LN_NAS lnAuditfees ROA LEV SÂLEG PPETA SIZE BIG4

      Source |       SS           df       MS      Number of obs   =      3,427
-------------+----------------------------------   F(9, 3417)      =    2692.21
       Model | 504.085145          9  56.0094606   Prob > F        =     0.0000
    Residual | 71.0880605      3,417  .020804232   R-squared       =     0.8764
-------------+----------------------------------   Adj R-squared   =     0.8761
       Total | 575.173206      3,426  .167884765   Root MSE        =     .14424


------------------------------------------------------------------------------
          DA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio | -.0218827     .002468    -8.87   0.000    -.0267216   -.0170437
      LN_NAS |  .0187456    .0025712     7.29   0.000     .0137044    .0237868
 lnAuditfees | -.0177882     .003389    -5.25   0.000    -.0244329   -.0111435
         ROA |  .0004256    .0005598     0.76   0.447    -.0006721    .0015232
         LEV |  .0447494    .0156389     2.86   0.004     .0140869     .075412
       SÂLEG |  -.965931    .0157111   -61.48   0.000    -.9967351   -.9351268
       PPETA | -.9971292    .0072413  -137.70   0.000    -1.011327   -.9829315
        SIZE |  .0068655    .0023913     2.87   0.004      .002177    .0115541
        BIG4 | -.0044839     .005566    -0.81   0.421    -.0153969    .0064291
       _cons | -.0849279    .0246013    -3.45   0.001    -.1331627   -.0366931
------------------------------------------------------------------------------
```

Table 18 NAS_dummy variable

```
.  regress DAABS NAFratio LN_NAS ROA LEV SÂLEG PPETA SIZE BIG4 NAF70 NAFNOYes

      Source |       SS           df       MS      Number of obs   =     3,648
-------------+----------------------------------   F(10, 3637)     =   2252.55
       Model | 532.295033          10  53.2295033  Prob > F        =    0.0000
    Residual | 85.9452462        3,637  .023630807  R-squared       =    0.8610
-------------+----------------------------------   Adj R-squared   =    0.8606
       Total | 618.24028         3,647  .16952023  Root MSE        =    .15372


------------------------------------------------------------------------------
       DAABS |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    NAFratio |   .0168805   .0022885     7.38   0.000     .0123937    .0213674
      LN_NAS |  -.0088393    .002133    -4.14   0.000    -.0130213   -.0046574
         ROA |   -.001332   .0005486    -2.43   0.015    -.0024075   -.0002564
         LEV |  -.0453928   .0155201    -2.92   0.003    -.0758218   -.0149638
       SÂLEG |   .8655081   .0154367    56.07   0.000     .8352426    .8957737
       PPETA |   .9740978    .007444   130.86   0.000     .9595031    .9886926
        SIZE |   -.002728   .0020088    -1.36   0.175    -.0066664    .0012104
        BIG4 |   .0068312   .0057431     1.19   0.234    -.0044289    .0180912
       NAF70 |   .0388192   .0132275     2.93   0.003     .0128852    .0647532
   NAS_dummy |  -.0739093   .0364191    -2.03   0.042    -.1453133   -.0025054
       _cons |   .2382512   .0398088     5.98   0.000     .1602015     .316301
------------------------------------------------------------------------------
```

Table 19 Level of dummy variable NAF (from 60% to 90%)

```
. estout m1 m2 m3 m4, cells(b(star fmt(3)) t(par fmt(2))) legend label
varlabels(_cons constant)stats(r2 df_r bic)


------------------------------------------------------------------------------
                   Model 1        Model 2        Model 3        Model 4
                    b/t            b/t            b/t            b/t
------------------------------------------------------------------------------
NAF ratio         0.031***       0.017***       0.017***       0.017***
                   (9.79)         (7.48)         (7.38)         (7.50)
LN_NAS           -0.008***      -0.009***      -0.009***      -0.009***
                  (-3.74)        (-4.25)        (-4.14)        (-4.36)
ROA               -0.001*        -0.001*        -0.001*        -0.001*
                  (-2.45)        (-2.37)        (-2.43)        (-2.41)
LEV              -0.047**       -0.048**       -0.045**       -0.046**
                  (-3.01)        (-3.07)        (-2.92)        (-2.99)
SÂLEG             0.860***       0.867***       0.866***       0.866***
                  (55.81)        (56.13)        (56.07)        (56.14)
PPETA             0.967***       0.976***       0.974***       0.975***
                 (128.16)       (131.54)       (130.86)       (131.38)
SIZE              -0.003         -0.002         -0.003         -0.002
                  (-1.43)        (-1.21)        (-1.36)        (-1.14)
BIG 4              0.006          0.007          0.007          0.007
                   (1.10)         (1.27)         (1.19)         (1.17)
NAF (90)          0.070***
                   (6.16)
NAF (80)                         0.040*
                                  (2.21)
NAF (70)                                        0.039**
                                                 (2.93)
NAF (60)                                                       -0.044**
                                                               (-3.11)
NAS_dummy        -0.079*        -0.074*        -0.074*        -0.072*
                  (-2.18)        (-2.02)        (-2.03)        (-1.98)
constant          0.206***       0.235***       0.238***       0.277***
                   (5.24)         (5.59)         (5.98)         (7.35)
------------------------------------------------------------------------------
r2                 0.862          0.861          0.861          0.861
df_r            3637.000       3637.000       3637.000       3637.000
bic            -3260.007      -3226.975      -3230.724      -3231.789
------------------------------------------------------------------------------
* p<0.05, ** p<0.01, *** p<0.001
```

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Table 20 Sub-group – Nordic countries

Model 1&2 (significant effect)			Model 3&4 (no effect)			Model 5&6 (significant effect)		
	(1) DAABS	(2) DAABS		(3) DApos	(4) DApos		(5) DAneg	(6) DAneg
NAFratio	0.0211*** (5.21)	0.0389*** (6.19)	NAFratio	-0.00770 (-0.11)	0.0631 (0.53)	NAFratio	-0.0114*** (-3.63)	-0.0283*** (-5.89)
ROA	-0.00126 (-0.94)	-0.00126 (-0.92)	ROA	0.00443 (1.10)	0.00393 (0.95)	ROA	0.000674 (0.58)	0.000781 (0.67)
LEV	-0.0379 (-0.73)	-0.0590 (-1.12)	LEV	0.209 (1.09)	0.248 (1.14)	LEV	0.0306 (0.68)	0.0520 (1.14)
SÂLEG	1.073*** (23.96)	1.057*** (23.73)	SÂLEG	-0.312 (-1.24)	-0.348 (-1.33)	SÂLEG	-1.070*** (-27.01)	-1.057*** (-27.01)
PPETA	1.033*** (55.03)	1.021*** (53.23)	PPETA	0.544 (1.14)	0.479 (0.97)	PPETA	-0.972*** (-60.36)	-0.959*** (-58.44)
SIZE	-0.0144*** (-3.31)	-0.0152 (-1.93)	SIZE	-0.00269 (-0.12)	-0.0236 (-0.74)	SIZE	0.00976** (2.66)	0.00905 (1.35)
BIG4	0.0318 (1.88)	0.0250 (1.48)	BIG4	0.0257 (0.28)	0.0273 (0.29)	BIG4	-0.0240 (-1.68)	-0.0160 (-1.13)
LN_NAS		-0.0267*** (-3.66)	LN_NAS		-0.0172 (-0.30)	LN_NAS		0.0273*** (4.58)
lnAuditfees		0.0325** (2.70)	lnAuditfees		0.0688 (0.94)	lnAuditfees		-0.0312** (-3.07)
_cons	0.126*** (3.70)	0.0235 (0.24)	_cons	0.00145 (0.01)	-0.597 (-0.96)	_cons	-0.109*** (-3.72)	-0.0223 (-0.27)
N	621	621	N	32	32	N	589	589
t statistics in parentheses * p<0.05, ** p<0.01, *** p<0.001			t statistics in parentheses * p<0.05, ** p<0.01, *** p<0.001			t statistics in parentheses * p<0.05, ** p<0.01, *** p<0.001		

Table 21 Number of observation per country

Country	Norway	Sweden	Denmark	Iceland	Finland
No of observation	108	270	108	6	129

Table 22 Sub-countries: Norway and Sweden

Norway	Model 1 & 2 (No effect)		Sweden	Model 1 & 2 (No effect)	
	(1) DAABS	(2) DAABS		(1) DAABS	(2) DAABS
NAFratio	0.0228 (1.46)	0.0235 (0.91)	NAFratio	-0.0155 (-1.76)	-0.00558 (-0.37)
ROA	-0.00472 (-1.96)	-0.00563* (-2.26)	ROA	0.0000397 (0.02)	0.000551 (0.32)
LEV	0.00939 (0.21)	-0.00717 (-0.15)	LEV	-0.0915 (-1.19)	-0.0671 (-0.86)
SÂLEG	0.849*** (9.18)	0.843*** (9.12)	SÂLEG	0.858*** (16.47)	0.854*** (16.31)
PPETA	1.049*** (28.49)	1.049*** (28.55)	PPETA	0.949*** (29.83)	0.955*** (29.34)
SIZE	-0.00820 (-0.80)	0.00816 (0.54)	SIZE	-0.0110* (-2.20)	-0.0246* (-2.39)
BIG4	0.0502 (0.88)	0.0669 (1.15)	BIG4	0.00908 (0.51)	0.00830 (0.47)
NAF70	0.0203 (0.21)	0.0350 (0.36)	NAF70	-0.0357 (-1.19)	-0.0273 (-0.88)
LN_NAS		-0.00133 (-0.08)	LN_NAS		-0.00933 (-0.80)
lnAuditfees		-0.0297 (-1.20)	lnAuditfees		0.0296 (1.85)
_cons	0.0934 (1.12)	0.377 (1.84)	_cons	0.167*** (4.35)	-0.0353 (-0.30)
N	108	108	N	270	270

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 23 Sub-countries: Danmark and Finland

Denmark	Model 1&2 (significant effect in model 1)		Finland	Model 1 & 2 (significant effect)	
	(1) DAABS	(2) DAABS		(1) DAABS	(2) DAABS
NAFratio	0.0142* (2.20)	0.0192 (1.84)	NAFratio	0.0176** (2.87)	0.0253* (2.48)
ROA	0.000425 (0.29)	0.000300 (0.20)	ROA	0.00702* (2.08)	0.00544 (1.54)
LEV	-0.0446 (-0.49)	-0.0505 (-0.54)	LEV	0.134 (0.38)	0.167 (0.48)
SÂLEG	1.180*** (13.76)	1.169*** (13.28)	SÂLEG	1.194*** (13.12)	1.191*** (12.62)
PPETA	1.009*** (27.91)	1.001*** (26.07)	PPETA	0.853*** (23.28)	0.846*** (22.99)
SIZE	-0.0117 (-1.23)	-0.00267 (-0.14)	SIZE	-0.00629 (-0.63)	0.0113 (0.63)
BIG4	0.0424 (1.47)	0.0410 (1.40)	BIG4	0.152 (1.94)	0.120 (1.49)
NAF70	0.0355 (1.20)	0.0414 (1.28)	NAF70	-0.0543 (-0.96)	-0.0589 (-0.92)
LN_NAS		-0.00791 (-0.54)	LN_NAS		-0.0187 (-1.13)
lnAuditfees		-0.00212 (-0.09)	lnAuditfees		-0.00884 (-0.29)
_cons	0.0818 (1.16)	0.148 (0.80)	_cons	-0.00401 (-0.03)	0.253 (0.93)
N	108	108	N	129	129

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 24 Number of firm-year observation per country

Country	Number of observation	Country	Number of observation
Austria	99	Hungary	3
Belgium	93	Ireland	66
Bulgaria	18	Iceland	6
Republic of Cyprus	9	Italy	240
Czech Republic	6	Lithuania	6
Germany	633	Luxembourg	42
Denmark	108	Latvia	9
Estonia	6	Malta	6
Spain	183	Nederlands	87
Finland	129	Norway	108
France	471	Poland	333
UK	657	Portugal	33
Greece	9	Sweden	270
Croatia	9	Slovenia	9
	2430		**1218**
Total	**3648**		