Master Thesis

- Drivers of voluntary audit in Norway: A study over time -

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Abstract

Utilizing a data set with over 48 000 Norwegian private limited liability companies spanning over a three year period from 2011 to 2013, this thesis investigate the drivers of voluntary audit after post-exemption of voluntary audit. We use prior evidence and theories relevant to the research topics to generate hypotheses and examine them over a longer period right after the deregulation. Our results indicate that companies are more likely to opt for a voluntary audit if they have greater agency costs, are more leveraged, purchase non-audit services from their auditor, pays higher audit fees, engage a big4 auditor, have higher dispersed ownership and have more families involved in their company. Moreover, those companies are less likely to opt for a voluntary audit if they are in financial distress and have hired an external accountant. We document that some of the factors predicting demand of voluntary audit changes over the time, although companies in general behave more in line with what theory predicts. Overall, our findings in consistent with the contention that companies rationally select into audit when it is in their interest to do so.

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1. Introduction

1.1 – Introduction

The Private Limited Liability Companies act § 7-6 became effective as of first of May 2011. This amendment represents the introduction of non-mandatory audit in Norway. Before the deregulation, auditing had been mandatory in Norway since Aksjeloven was enacted in 1910. The new legislation allowed most limited liability companies with specific characteristics to qualify for audit exemption. In the first year of the non-mandatory audit regime in Norway, a report from The Brønnøysund Register Centre released in February 2012 revealed that approx. 48 000 companies out of 149 000 refrained from audit in the first year of voluntary audit (Sekkeseter 2012, 14). The question we will explore in this thesis is why some companies opt for a voluntary audit while others refrain.

Collis, Jarvis and Skeratt (2004) finds that the main factors that predict the demand for voluntary audit in United Kingdom (UK) are perception of benefit, education, size (turnover) and agency relationships. Collis (2010) compare the determinants for voluntary audit in Denmark and UK and found further evidence of firm-specific factors suggested by economic rationality and agency theory, and that the predictors of demand are slightly different in UK and Denmark. Niemi et.al (2012) provide empirical evidence of the robustness of the findings from Collis, Jarvis and Skeratt (2004), confirming that in spite of regulatory differences results are generalizable to Finland. Further, Niemi et al (2012) broaden prior research by finding evidence that tax advisory services and a qualified opinion from an auditor reduces the likelihood of hiring an auditor voluntarily, whereas firms who experiences financial distress would be more willing to have their financial statements audited. Dedman, Kausar and Lennox (2014) finds evidence that companies are more likely to purchase voluntary audits if they have greater agency costs, are riskier, wish to raise capital, purchase non-audit services from their auditor, and exhibited greater demand for audit assurance in the mandatory regime.
In this thesis, we seek to elaborate more on the drivers of demand for voluntary audit. Building upon emerging literature, we empirical test different drivers of voluntary audit, such as company size, dispersed ownership, agency conflicts, audit assurance, external accountant, debt, financial distress, audit services and family variables. We test whether these drivers can also explain the demand for voluntary audit in Norway, and if the drivers affecting exemption of audit change over time.

Our contribution to existing literature is providing empirical evidence of drivers of voluntary audit over time. Few studies have examined the drivers of voluntary audit over a longer period, to our best knowledge, only Dedman, Kausar and Lennox (2014) and Ojala et al. (2014) have used a data over a three-year period when researching drivers of voluntary audit. Our thesis will adopt a similar approach as Dedman, Kausar, Lennox (2014) using Norwegian data over a three year period on companies qualifying for exemption of audit.

This master thesis consists of eight sections. The next section provides a discussion of the International and Norwegian regulatory setting. Section 3 introduces past literature, research studies relevant to our research question and the hypothesis derived. Section 4 covers the methodology used, while section 5 provides the result from the empirical analysis conducted. Section 6 consists of a sensitivity analysis, limitations and conclusions are presented in section 7 and 8.

2. Legislation

2.1 – Background

In recent years, more European countries have removed mandatory audit for limited liability companies. Their underlying focus has been to increase the competitiveness of the industry by simplification and facilitation of regulations and public services. This is in part a result of the Lisbon Strategy (Lisbon European Council 2000), which is a development plan devised in 2000 by the EU commission. EU created this plan with the intension of strengthening employment and increasing economic growth in the EU. Allowing statutory audit for small
companies to become non-mandatory is a part of this strategy. The new focus represent a shift in strategy from the Norwegian government. From the late 1900s and beginnings of 2000s the Norwegian government had an increasing focus on the importance of having an auditor as quality assurance. This was in order to achieve more realistic and accurate financial statements and to enhance the credibility of the financial statements (NOU 2008: 20-21). This stand in contrast to the strategy change in 2007, when they aimed to reduce the administrative burdens for all companies and to look at the business cost related to compliance with the information requirements (2013/34 EU, article 38: 33). Audit fees for small companies in Norway are estimated to range between 10 000 and 30 000 NOK (Prop. 51L 2010-2011; NOU 2008: 12), but the cost benefit of opting out of audit depends on the potential need for services provided by auditors.

2.2 - Norwegian Regulatory Setting

The change in legislation was a proposal of the Ministry of Finance (78/660/EEC). The two main amendments are the Norwegian Audit Act paragraph 2-1 and the Norwegian Private Limited Liability Companies Act paragraph 7-6. The act is summarized below.

**Act of June 13, 1997 No. 44 Norwegian Private Limited Liability Companies (Prop. 51L 2010-2011)**

*Act Paragraph 7-6. Proxy to omit auditing*

*(1) The general meeting may, with the majority required for amendments of the article of association, issue a proxy giving the board of directors authorization to adopt a resolution to the effect that the company’s annual accounts shall not be audited in accordance with the Auditors Act provided that*

1. The operating revenues of the total business do not exceed five million crowns
2. The balance sheet amount does not exceed twenty million crowns, and
3. The average number of employees does not exceed ten man-years.

The amendment was put in practice from May 1st, 2011. Norway, along with similar countries like Denmark and Sweden, opted for a lower threshold compared
to the EU maxima. The three listed conditions in the act are cumulative, meaning that all conditions must be met before the general meeting may issue the proxy. Hence, companies remaining passive still have to perform statutory audit. In order to issue the proxy, two thirds of the votes and the share capital represented at the general meeting is required.

If parent companies are required to submit audited financial statements, their subsidiaries will also be required to the same, regardless of the criteria mentioned above. Law firms, providers of financial services, auditors, banks, other entities under scrutiny of financial regulators and insurance companies are also required to have their financial statements audited yearly (SIC2007: 64-66 and 69).

### 2.3 - International Regulatory Setting

Three different types of companies are defined within the small and medium enterprises: micro, small and medium-sized companies. See appendix 1 for a detailed summary. The numbers are adapted from the European Commission (2003/361/EC). To be categorized as one of these types, two of three criteria must be fulfilled: the number of employees and one of the two last criteria (turnover or balance sheet). Small and medium-sized enterprises (“SME”) represent over 100 million jobs and 99% of all enterprises (total of € 23 million SMEs in EU) (Collis 2010). Therefore, the government sees the importance of stimulating and facilitating those types of companies. Numbers from Statistics Norway (2015) indicate that SMEs have a crucial position in Norway, accounting for 99.5% of the total companies in Norway, as of January 1st, 2015 and account for 66.8% of the total employment.

**EU maxima**

Appendix 2 presents the European Union (EU) Maxima. Two of the three-size test must be fulfilled to qualify for audit exemption (Collis 2012). The directive of 2013 gives EU member states the opportunity to exempt companies from statutory auditing as long as the companies can be defined as small companies (2013/34 EU, article 3(2)). Member states are however able to adjust the thresholds within the EU maxima, evident in Scandinavian countries. This is because there are
specific needs and considerations, which vary widely among European countries (Knechel, Niemi and Sundgren 2008).

Scandinavia

There is several studies emphasized in the voluntary audit literature from Scandinavian countries and Finland. Appendix 3 shows the thresholds in the respective countries. Norway’s threshold is similar in comparison, though other Nordic countries must meet all three-size criteria. Because of the similarity in size, culture and threshold, it may be valuable to compare the results of studies done in those countries. The corporate governance of Nordic countries is based on national legislation, primarily each country’s companies act, but also the respective accounting acts and acts governing the securities market and securities trading, as well as relevant EU regulation, stock exchange rules and corporate governance codes. The Nordic companies’ acts share a heritage of strong harmonization efforts from the mid-20th century. This development ended in the beginning of the 1970’s when Denmark entered the European Commission EC, followed by Finland and Sweden in 1995. Iceland and Norway are members of the EEA and thereby implement all EC legislation relevant to the EEA agreement (Nordic corporate governance 2009). Norway was the last of the EU/EEA countries to introduce voluntary audit for limited liability firms. Denmark was the first Nordic country to introduce the act in 2006 followed by Sweden in 2010.

The standards and laws are similar for most of the Nordic countries and arguably give a high degree of predictability and same attractiveness. However, there are some differences in legal frameworks - Denmark allows auditors to assist companies when revising their financial statements (Ervervstyrelsen 2009). In Norway and other Scandinavian countries, this is a violation of the auditor independency provision (Langli 2015, 99).
2.4 - Future legislation and differences among countries studied.

There may be reasons to reconsider how to define the size criteria for small limited liability firms qualifying for audit exemption in Norway (Langli 2009). The audit market is more difficult than before: eight months after the amendment, approximately 30% of the Big five\(^1\) clients had chosen not to be audited (Vestrum and Smith 2012). Further, as many as 12% of all Norwegian private limited companies were characterized by zero revenue, debt and employees in 2006 (Langli 2009). In addition, 75% of all small limited liability firms have no interest-bearing debt. This gives an indication that the financial statements for many small companies contain simple accounting numbers (Lennox 2005), and hence a lower probability of making mistakes or conduction economic crime (Simunic and Stein 1987, Abdel-Khalik 1993, Carey et al. 2000). This also relates to an ongoing debate in Europe concerning access to finance for small firms and efforts to reduce administrative burdens for micro-entities under the new accounting directive (2013/34/EU). The latter will affect around 5.3 million micro-companies in Europe, representing approx. 75 percent of all entities that fall within the scope of the Fourth Directive (78/660/EEC) (Ojala et al 2015). In short, the directive suggest a number of exemptions and simplifications for micro-entities, such as simplified balance sheets by reducing information standards, requiring limited disclosure by way of notes to the financial statements and relieving micro-companies from calculating year-end-accruals and prepayments.

A master thesis written by Halvorsen and Aarbø (2013) indicated that an increase in the turnover threshold from five to 10 MNOK would have large consequences for the audit firms in Norway. They found that, hypothetically, approximately 25% of the big five customers would prefer to skip auditor if they could. Before the amendment in Norway, Langli (2009) claimed that it would be sensible, to start with a turnover limit of two MNOK. This will affect approx. 51% of all Norwegian limited liability companies, and constitute 1.2% of the total turnover generated by those. Further, Langli (2009) argues it would better adjusting the

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\(^1\) Big five in Norway consist of EY, KPMG, Deloitte, PwC and BDO.
limit to a higher level after experiencing the social impacts of the change in legislation.

**Developments after the first year of voluntary audit**

In Norway, approx. 40%\(^2\) of all eligible limited liability companies refrained from audit in the first year of exemption of voluntary audit. This trend is the opposite of what’s observed in our neighbour countries Denmark and Sweden, as well as Great Britain which has been emphasized in the voluntary audit literature. According to *Erverstyrelsen* (2009a) (equivalent to statistics in Norway only in Denmark), only 22.8% of all qualifying companies chose to refrain from audit in the first year of voluntary audit in Denmark. After three years, this number increased to 32.3%, and continued to increase to 38% after five years, the lowest opt out rate out of the countries mentioned (*Ervervstyrelsen* 2014)\(^3\). Thus, the number of companies opting out of audit in Denmark gradually increase in the first years as companies were given time to comply and consider the implications of the legislation. In Sweden, 14% of all eligible limited liability firms chose to refrain from audit in the first year of voluntary audit in 2010 (*Vestrum and Smith* 2012). A notably difference is that companies in Sweden can only pass exemption of audit at their ordinary annual general meeting, contrary to Norway where they allow passing legislation all year round at their extraordinary general meeting\(^4\). In 2013, the total number of companies, which refrained from audit in Sweden, had raised to 52.8% (*Marténg* 2013). Although there are institutional differences among these countries, the particular trend suggests that eligible companies in Norway adapted more rapidly, thereby refraining from audit at their first possibility.

\(^2\) See calculation in appendix 4  
\(^3\) Erhvervsbestyrelsen does not list their criteria used for estimating the number of possible companies opting out of audit. Hence, it is uncertain whether they have included subsidiaries and daughter companies when calculating the percentage of companies opting out audit.  
\(^4\) This is regulated in *Aksjeloven* § 7-6 and § 5-6. The board can at any time opt to refrain from audit cf. *Aksjeloven* §6-19. Askjeloven is Norwegian company law
3. Literature Review and Hypothesis Development

In this section, we will summarize the current literature and state of knowledge in regards to different drivers of voluntary audit. First by explaining the significance and importance of statutory auditing services, and address differences between public and private companies before introducing earlier studies and theories relevant to the research topics.

3.1 – The role of auditing

Since the start of the New York Stock Exchange in 1792, auditing and accounting played an important role for many companies. When the introduction of statutory audit first came in USA in 1933/1934, 82% of all companies already had an auditor hired (Benson 1969; Watkins, Hillison and Morecroft 2004). Norway introduced auditing in 1889, and became statutory in 1910 for all limited liability firms. The focus during this period was to protect the interests of both creditors and shareholders in the company (Prop. 51L 2010-2011; NOU 2008: 12). First in 1936, auditors were able to control papers sent to the tax authorities (such as income statements and tax returns), twenty-one years later, the committee of auditing described statutory audit as “the public general obligation to protect citizens, legitimate interests, including the interests of the workers (NOU 2008:12).”

Auditors have, from the majority’s point of view, through the audit of financial statements an important role in preventing and detecting economic crime” (NOU 2008:12, 72). The chief of Norwegian Tax Administration in Norway, Jan-Egil Kristiansen, said that voluntary audit would lead to less monitoring and a subsequent increase in economic crime (Sekkeseter 2012, 14), a concern shared by the appointed committee selected to assess and elucidate the implications of voluntary audit in Norway. The majority of the committee concluded that Norway

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*The Norwegian Ministry of Finance appointed a committee to assess the legislation. Professor Rune Sæbø, from NHH, was in charge. See page 7 in (Prop. 51L 2010-2011) for a comprehensive summary of board members.*
should not implement exemption of audit, emphasising the significance of auditing in preventing and detecting economic crime as well as ensuring correct taxation (Prop. 51L 2010-2011, p 24). However, the auditor’s actual influence in reducing economic crime is difficult to calculate, as it is close to impossible to measure tax evasions prevented (and not prevented). In 2007, the Norwegian Tax Administration stated that there was an estimated total loss of 15.4 billion NOK in unpaid and uncollected corporate taxes (Christophersen and Grimstad 2009, referenced in Langli 2009, p 11), and most of the guilty companies in tax evasion were private and public limited companies (Langli 2009). Another source, Økokrim\(^6\) (2015), estimated the total tax evasion losses in 2013 at a staggering 130 billion NOK.

Although the benefits of auditing related to tax evasions are hard to calculate there are numerous other arguments supporting statutory audit and the importance of an objective third party review of corporate books. The management of a company may influence the accounting numbers in the direction they find most advantageous. Management may have incentives to strengthen the results to cover a poor financial situation or reduce the result to minimize the tax bill. All users of the financial statements, such as owners, customers, banks and suppliers, need to rely on the numbers presented from the company. This fear of possible manipulation of accounting numbers makes stakeholders requiring an external expert to present the accounts (Langli 2009). An auditor gives this credibility to insider produced reports (Simunic and Stein 1987; Antle 1984, Christensen 2010). Further, the validity and reliability for external stakeholders increases with the hiring of an auditor (Power, 1997; Healy and Wahlen 1999).

\(^6\) The Norwegian Authority for Investigation and Prosecution of Economics and Environmental Crime (ØKOKRIM) is the central unit for investigation and prosecution of economics and environmental crime in Norway.
3.2 – Private and public companies

It is essential to acknowledge the institutional differences between private and public listed companies as the conclusions from public firm studies may not be generalizable to private firms (Hope, Langli and Thomas 2012). Despite accounting for a major part of the world economy and contributing to a significant portion of the economic growth, private companies are often omitted in auditing literature (Wymenga et al, 2012; Hope, Langli, and Thomas 2012, Niemi et al 2012). The literature does not provide a complete understanding of the role of auditing in private firms, hence there are ample possibilities for research that may forward theory and provide new insight about the role of auditing, in particular to private firms (Langli and Svanstrøm 2013). Differences between public and private firms vary across several dimensions. Ownership is more concentrated in private firms compared to public firms while it is more prevalent that board members, CEOs and shareholders in private firms are family members (Van Tendeloo and Vanstraelen 2008; Coffee 2005; Hope, Langli and Thomas 2012). Fama (1980) found empirical evidence between company size and the separation of ownership and control. His findings also suggest that on average, separation of ownership and control is lower in private companies compared to public companies (Fama 1980). This suggests agency problems are of a different nature in private companies compared to public companies, which is important in many ways - agency theory is used in the development of hypotheses in many important studies examining drivers of voluntary audit (Senkow et al 2001, Collis, Jarvis and Skerratt 2004, Niskanen et al 2011, Dedman, Kausar and Lennox 2014, Langli 2015), and has proved to be an important driver of voluntary audit. Private companies also operate in a non-transparent environment, and are less homogeneous compared to public firms due to less regulation (Langli and Svanstrøm 2013)

3.3 – Drivers of voluntary audit

This section covers company specific drivers of voluntary audit divided into different categories consistent with the structure in existing literature. Because of the amount
of theory dedicated to each topic and for simplicity reasons, we have chosen to
divide individual topics in separate sections. For instance, gearing is often
categorised within external agency, but we have dedicated a separate section to
this topic in order to get a more comprehensive overview.

3.3.1 - External agency conflicts

The most important factors in regards to voluntary audit are turnover, total assets
and number of employees, which constitutes the threshold for audit exemption.
Factors related to size in audit literature are referred to as agency costs/conflicts,
and can be categorized as internal and external agency conflicts. External agency
conflicts are the relationships between the company and their external
surroundings, such as providers of debt capital (banks and other financial
institutions). The use of size criteria in the legislation shows a relationship
between these measures and the relative cost and benefits of the audit, and that the
threshold reflects where the costs no longer outweigh the benefits (Collis, Jarvis,
Skerratt 2004).

There are two reasons why owner-managers seeks auditing, even in the absence of
ownership and control. To be able to comply with the constraints on the company
by the creditors, and to provide a certain control mechanism allowing them to
offset the loss of organisational control (Abdel Khalik, 1993). Thus, higher
increase in size leads to higher loss of organisation control, which again leads to
more need of monitoring (audit). This is in line with the reasoning of Jensen and
Meckling (1979) - agency costs increase with company size because of the cost
and difficulty related to monitoring and control in larger companies (Jensen and
Meckling 1979, 59).

In terms of cost effectiveness, it is clear that small companies have higher
incentives for opting out of audit. Langli (2009) found that auditing costs as a
percentage of company’s turnover are much higher for small companies compared
to large companies in Norway. Small companies paid an average of 1.04% of
turnover in audit fees, whereas companies with a turnover between 200 and 700
MNOK paid merely 0.05% of the turnover in audit fees. Collis (2003) reported
similar results in the UK. Langli (2009) also found that when turnover limit is set to one MNOK, one third of the turnover goes to auditing fees (measured by median revenue). This implies that small private companies may be more cost-efficient opting out of mandatory audit.

Most of the traditional studies involving voluntary audit in limited liability firms normally include at least two of the three size criteria variables. The difference across all studies is mainly in the selection criteria which vary from country to country due to different legislation. Collis, Jarvis and Skerratt (2004) examined the relationship between voluntarily audit with and an increase in size in UK, measured by three factors, turnover, balance and employees’. In their study only turnover proved significant when all size factors were included in the same model. This is consistent with Tauringana and Clarke’s (2000) findings from the UK, the only difference being that Tauringana and Clarke did not include employees.

The criteria for selection in Tauringana and Clarke’s study differ from Collis, Jarvis and Skeratt (2004), but still reaches the same conclusion. Tauringana and Clarke’s criteria were in accordance with the provision of section 246 of the 1985 Companies Act (as amended by S.I. 1994/1935), with a 0.9 MGBP turnover and 1.4 MGBP total balance sheet threshold. Whereas Collis, Jarvis and Skerratt (2004) criteria were in accordance with the 1999 EC maxima, which is turnover of up to 4.2 MGBP, balance sheet total up to 2.1 MGBP and up to 50 employees.

In a study performed by Collis in 2010, involving both the UK and Denmark, the upper limit for turnover was set to 1.0 MGBP. This study also found that voluntary audit was positively correlated with turnover. Similar studies performed by Svanstrøm (2008), Vestrum and Smith (2012) and Langli (2015) found that both total assets and employees were significant when including the three factors in the same model. However, turnover still had the highest explanatory power, thus proving to be the most compelling of the three.

Bear in mind, the difference among thresholds incorporated by member countries in EU is often higher than Norway. The low thresholds in Scandinavia may be too
small to intercept the potential agency conflicts. Gjengstø and Hovda (2014) argue that the threat of moral hazard by employees is negligible, as it is reasonable to assume that the manager would be able to monitor the employee himself.

H1, our first hypothesis, is based on prior results from the voluntary audit literature, and test the relationship between internal agency costs described above and voluntary audit.

\[ H1: \text{Ceteris paribus, adoption of voluntary audit is positively correlated with the size of the company measured through turnover, total assets and employees.} \]

3.3.2 – Gearing (financial leverage)

A study performed by Strawser (1994) suggested that banks and financial institutions are more likely to grant loans to companies providing audited financial statement. Debt providers may also have an incentive to encourage companies to use an accountant as a consultant in order to improve their performance and reduce the risk of potential bankruptcy (Tanewski and Carey 2007). The proportion of debt to total assets is a direct measure of a firm’s financial risk, with high leveraged companies being more exposed to default during financial turmoil or crisis (Firth 1997; Whisenant et al 2003). Faced with heightened financial risk management will also have incentives to seek professional external advice to develop a strategy to optimise it (Tanewski and Carey 2015).

Langli (2015) offers an explanation following the theory from Brealey and Meyers book, “Principal of corporate finance (7th edition)”, arguing that higher leveraged firms presumably have higher agency costs. The background for this is that the owners of a company can be tempted to fund risky investments with loans rather than own funds. If the investment should succeed they will harvest the benefits, whereas if the investment should turn out bad, the creditors will carry most of the loss (Brealey and Myers 2003, 505). If the creditors get assurance that assets are properly managed and in accordance with the loan covenants, an auditor’s report may create more favourable loan terms for the shareholders.
Hence, it is optimal for both lenders and shareholders to have an audited statement, reducing the information asymmetry between the stakeholders. This is also consistent with Jensen and Meckling (1976) which argues that agency costs increase with the proportion of outside financing of the company. Their argument is based on the same reasoning: providers of financing will recognise the possible underlying incentives for the management and shareholders; as a result, the providers of financing will protect themselves. This will result in an audit being the optimal solution for both parties.

Several studies are done on this particular field, where researchers attempted to empirically test the relationship between agency costs/leverage and voluntary audit. Chow (1982) found that audited companies were bigger and more leveraged compared to unaudited companies. Chow’s (1982) study was based on companies listed on the New York Stock Exchange and over-the-counter companies ranging back to 1926, prior to the Securities Act of 1934, which introduced mandatory audit for public companies. As discussed earlier, there are several differences between private and public companies and much less research devoted to the demand for audit in privately owned firms. Interestingly, the results from Chow (1982) are similar to the studies performed on private companies, despite their differences in size, structure and company model. Tauringana and Clarke (2000) found that the probability of a voluntarily audit will increase with higher proportion of debt compared to equity (higher leverage). Vestrum and Smith (2012) and Langli (2015) found similar results. On the other hand, Dedman, Kausar and Lennox (2014) failed to reach conventional levels of statistical significance in any year except one, despite having consistently positive coefficients as they expected when testing the relationship between voluntary audit and gearing. Following agency theory and prior research, we find it reasonable to hypothesise that:

\[H2: \text{Ceteris Paribus, the propensity to purchase a voluntary audit will increase with the amount of outside financing (gearin)}\]
3.3.3 – Financial Distress

In line with Niemi et al (2012) we expect that a firm’s financial distress is measured through a form of bankruptcy threat (see e.g. Altman (1968) and Altman, E. Hotchkiss, E. Chapter 1-2. ‘Corporate financial distress and Bankruptcy’ John Wiley & Sons Inc., third edition). Negative equity is generally used in audit choice studies as a measure of financial distress (Niskanen and Niskanen 2011; Niemi et al. 2012; Ojala et al. 2014). However, negative equity does not necessarily always relate to financial distress. Brown, Lajcygier, Li (2007) argues that firms in sound financial conditions might record a negative value for book equity, which could occur through accounting treatment of goodwill when companies with significant growth are taken over by larger companies. It can also occur when start-ups with patents, but no products, “eat” into their equity. As long as a company can raise capital, they are not truly in distress (Brown, Lajbcygier, Li 2007). In our case, we expect that most of the companies in our sample are neither facing extreme growth nor have any patents with significant value due to the low threshold in Norway.

It would be logical to assume that owners/managers of companies in financial distress would choose to forgo audit simply because their financial situation does not allow them additional expenses, and it would be more rational to use the remaining funds to save the company. However, it can be reasonable to assume that an owner/manager of a small firm, especially if he/she has no training in solving financial problems, may find professional advice from an experienced auditor useful to solve a financial distress situation (Niemi et al. 2012). Holmes et al. (1991) argues that a small company will only seek advice from external support when a certain “crisis” point is reached. Hence, the propensity to opt for a non-mandatory audit may be higher when a company is under financial distress. Furthermore, providers of outside debt, such as banks and financial institutions, will realize that there is a possibility for moral hazard (information asymmetry). That is, owners/managers with inside information behaving opportunistically under financial distress (Niemi et al. 2012). Aggressive accounting\(^7\) is often

\(^7\) Aggressive accounting is misreporting in income statement and balance sheet items to make the company appear more attractive.
related to companies in financial distress, and the financial reporting quality can rapidly change when the conditions of the company change, even more when the company may breach its debt covenants (Beattie et al. 2004). By undergoing an audit, the possibility for moral hazard would be mitigated (Simunic and Stein 1987, 9).

Niemi et al. (2012) findings indicate that companies under financial distress may increase the willingness to have an auditor despite low statistical significance. Bear in mind, the study performed by Niemi et al. (2012) used a random sample of 412 small private companies responding to an internet survey. This survey is based on intent rather than actual decision because Finland yet had implemented the possibility to opt for a voluntary audit. The respondents where to select between “Yes, Maybe or No” when asked if they would opt for a voluntary audit in the future. Niemi et al. (2012) finds only evidence supporting the impact of financial distress among respondents who answered Maybe and No towards voluntary audit. They were not able to document that financial distress affected companies actually opting for a voluntary audit. Results from a study performed by Ojala et al. (2014) finds results consistent with the contention that companies under financial distress tend to forego audit due to lack of economic funds. This suggests that companies that are in financial distress are less likely to opt for voluntary audit compared to companies that are not in financial distress. Ojala et.al. (2014) study is based on micro companies, which did not exceed any of the following size criteria for two consecutive years (the size test for audit exemption in Finland): turnover of 0.2 EUM, balance sheet total assets of 0.1 EUM and average number of employees of 3. The results from Ojala et al. (2014) may be more generalizable to Norway due to the low size criteria, despite being remarkably lower.

In short, we expect companies in financial distress to seek advice or hire an auditor to get out of financial distress and to remove the threat of moral hazard. On the other hand, we also expect companies in financial distress to forego audit due to lack of funds and that it would be more efficient to spend the money
elsewhere. As we are unable to make a clear directional prediction, H3 about financial distress is expressed in the null form.

**H3: The demand for voluntary audit in private companies does not vary with financial distress.**

### 3.3.4 – Non audit services (NAS)

NAS is the provision of non-audit services to the audit client (Svanstrøm 2012). Non Audit Services is referred as “any professional services provided to an issuer by a registered public accounting firm, other than those provided to an issuer in connection with an auditor or a review of the financial statements of an issuer” (Legal information institute 2002, referenced in US legal 2015).

Svanstrøm (2012) investigates the relationship between NAS and audit quality in private companies. He documents a significant positive correlation between the perception of audit quality and the proportion of NAS fees to total fees (Svanstrøm 2012). He concluded that accounting support and tax advice were both associated positively with audit quality. Hope and Langli (2010) failed to find any correlation between (abnormal) NAS fees and auditor’s propensity to issue a going concern option (referenced in Svanstrøm 2012, 3).

Other studies indicate that there is a positive relationship between the purchase of NAS and audit fees (Abdel-Khalik 1993; Davis et al. 1993; Barkess and Simnett 1994). The contention is supported by Simunic (1984) and Barkess and Simnett (1994) who found a positive correlation between the two factors (NAS and audit fees). This is in line with Kinney et al. (2004) who also documented a positive association between audit fees and unspecified NAS.

Parkash & Venable (1993) argues that purchases of NAS from an auditor are less likely to happen when the agency costs are high, as the consequence may be lower audit quality and reduced independence. Similar to Ye et al (2011), Quick, Sattler, and Wiemann (2013) were not able to document the relationship between purchase of NAS and agency conflicts, failing to reach conventional levels of significance in their models. Krishnan et al. (2005) and Francis and Ke (2006)
argue that higher fees related to NAS, leads to higher predictability in annual and quarterly reports.

Although there are many studies devoted to NAS, few emphasize the association to voluntary audit. Dedman, Kausar and Lennox (2014) tests the relationship between NAS and the audit decision, and find that private companies are more likely to retain the audit if they purchased NAS. This is in line with Langli (2015) findings, further underlining that companies purchasing NAS are less likely to refrain from audit. On the other hand, both Senkow et al. (2001) and Seow (2001) were not able to document a significant relationship between the two variables.

In line with Dedman, Kausar and Lennox (2014) and Langli (2015), we find it reasonable to formulate the following hypothesis:

\[ H4: \text{Ceteris Paribus, companies purchasing non-audit services (NAS) are more likely to prefer voluntary audit.} \]

### 3.3.5 – Audit Assurance

Assurance requirements include the variables Big4 and audit fees. Findings from prior literature are somehow unclear, but there is some evidence that suggests a higher level of assurance provides higher quality of the financial statements.

An important factor related to audit exemption is whether a company will use an auditor from PwC, Deloitte, KPMG or Ernst & Young (“Big four”, hereafter referred to as Big4). Becker et al. (1998) and Francis, Maydew, and Sparks (1999) argue that by hiring a Big4 auditor, stakeholders may expect good accounting - and higher audit quality. Further, they found evidence that suggests Big4 companies provide higher audit-quality compared to non-Big4 companies for U.S public companies. In addition, lenders and other creditors may be more interested to agree upon deals since the key information about the company is likely to give a more correct picture of their financial situation, and thereby increased credibility for stakeholders and outsiders of the company. Khurana and Raman (2004) find that Big4 auditors reduce the cost of equity capital, the cost of debt capital (Mansi,
Maxwell, and Miller 2004; Pittman and Fortin 2004), and increase IPO proceeds for U.S. public companies compared to non-Big4 auditors (Willenborg 1999). An interesting remark is that Khurana and Raman (2004) only found evidence in the U.S, not in U.K, Canada and Australia. Annual savings of approximately 0.5 MUSD were the benefits when changing to a Big4 auditor in the U.S (Khurana and Raman 2004).

In addition, Lennox (2005) explains that large audit firms are more able to do services at a lower average cost because of the economies of scale. Chaney, Jeter and Shivakumar (2004) came to the opposite conclusion. They find that big five (Big 5) companies charged more compared to non-Big5 auditors, given the firm’s characteristics. Other prior literature find no differences in whether hiring an auditor from Big8 companies provides higher audit quality (Petroni and Beasley 1996). Lennox and Pitman (2011) conclude in their research that companies, which would later opt out of audit, are less likely to appoint Big4 audit firms than companies that later kept the auditor. Further, they find that when audits were mandatory, small companies preferred auditors of “lower” quality.

Further, Big4 audit firms are the preferred option for companies that are interested in high audit quality (Literature of Francis review, 2004). Teoh and Wong (1993) concludes that earnings of US companies are of higher quality and the stock market values earnings surprises more than non-Big4 clients. Also Becker, Defond, Jiambalvo and Subramanyam (1998), Francis, Maydew and Sparks (1999) and Krishnan (2005) concludes that an audit from an Big4 auditor gives more credible earnings announcement, due to lower abnormal accruals in the accounts. As the investor protection regime becomes stricter, there is evidence that the abnormal accruals are smaller than for non-Big4 clients (Francis and Wang 2008).

8 In addition to the Big 4 companies, Big 5 includes BDO International.
Various results are published on whether BigN\textsuperscript{9} firms perform higher quality of the financial statements than non-BigN firms, but most states that Big N auditors actually provide higher quality audits (Becker et al. 1998; DeFond 1992; Mansi, Maxwell, & Miller 2004). In addition, earlier studies suggest that larger auditors normally perform higher quality audits (DeAngelo 1981; Palmrose 1986).

DeFond (1992) and Francis & Krishnan (1999) found that companies hiring a Big4 auditor are preferred by companies with increased monitoring needs (high agency costs) and companies with greater information asymmetry between the management and the stakeholders (Beatty 1989; Willenborg 1999). A study on East Asian firms find that a high degree of ownership concentration is positively correlated with appointing a Big5 auditor (Fan and Wong 2005).

Prior studies indicate that ownership concentration is highly correlated with audit exemptions (Langli 2015; Vestrum and Smith 2012; Dedman, Kausar and Lennox 2014; Hope, Langli and Thomas 2012) due to lower agency costs, and stand in contrast to the results from Fan and Wong (2005). Studies of audit quality are difficult to analyse since it is not a measurable factor (Langli 2015). A study by Sundgren and Svanstrøm (2013) tested on private companies in Sweden concludes that there are marginal differences between Big 4 and the two biggest non-Big4 companies, BDO and Grant Thornton. The results indicate that those two non-Big4 companies perform at approximately the same audit quality level as Big 4. The authors of the article argue that they achieve a more direct measure of audit quality by using disciplinary sanctions against auditors, which is different from most of prior literature performed on this field.

Some studies investigate the relationship between Big4 & 5 and voluntary audit. A master thesis written by Vestrum and Smith (2012) found that companies opting for a Big5 audit are more likely to opt for voluntary audit. Further, Dedman, Kausar and Lennox (2014) concluded that companies in the UK with a Big4 audit in 2003, largely kept their auditor compared to non-Big4 companies.

\textsuperscript{9}Big N is the largest accounting firms measured by revenue. For recent years, the groups have been changing from Big eight/six/five to Big four due to mergers (Investopedia 2015)
during the three-year period. Langli (2015) builds on the assumptions that a company chooses auditor to give a signal of good audit- and accounting-quality, and that these companies will continue this way in the future. The need for signalling will remain the same as before the Audit Act was changed. Interestingly, the results gave the opposite conclusion than predicted: companies using an auditor from Big4 are more likely to skip an auditor than non-Big4 firms.

Francis and Wilson (1988) found positive correlation between the company size and the size of the audit firm, which indicates a lower possibility that small companies would prefer a Big5 audit firm.

The other variable related to audit assurance is audit fees. Larger and older firms pay significantly higher audit fees, and companies in financial distress have higher audit fees based on statistics showing that audit fees are higher for companies where earnings are low relative to interest expense (Lennox and Pitman 2011). Higher audit fees may be a way to compensate for the increased audit risk and remain attractive to creditors. In industries where companies have more complex accounting numbers, voluntary audit is preferred largely due to higher audit fees (Chow 1982).

An assumption is that the more a company pays in audit fees, the higher the likelihood that the company will skip auditor due to cost savings. This argument is in line with Langli (2015), which tests companies paying abnormal high audit fees compared to other firms paying in line with average costs. The results were clear, the companies paying higher than average audit fees were more likely to skip auditor. Further, Chaney, Jeter and Shivakumar (2004) argue, “firms, on average, self-select an auditor that minimizes their audit fees.” The higher audit cost, the better is to skip auditor and hire an external advisor.

On the other hand, Dedman, Kausar and Lennox (2014) argues that audit clients with more needs and confirmations will pay on average more in audit fees and will continue to do it even though the audit is mandatory. Interestingly, the statistics in the article get empirical support upon that the companies in U.K,
which chose to keep auditor, had significantly higher amount of audit fees. This conclusion is opposite compared to the results provided by Langli (2015).

Vestrum and Smith (2012) examined the average amount of audit fees paid for having the financial statements audited by Big5 and non-Big5 companies. BDO and other non-Big4 companies delivered the service at a lower price than the Big4 companies did. The amount paid in audit fees may not be a decisive factor for the companies tested since the results indicate that companies hiring a Big5 auditor largely keep the auditor (Vestrum and Smith 2012). This is contrary to the results from Beattie & Fearnley (1998) who state that the size of the audit fee is the main cause for changing auditor. When the size of the audit fees is large relative to total operative expenses, it has huge impact on the choice to skip auditor (Vestrum and Smith 2012). This is in line with Collis (2010) who states that voluntary audit depends on how the management looks at the audit fees, and whether it is a significant expense for the company.

In summary, Dedman, Kausar and Lennox (2014) and Chow (1982) argue that voluntary audit is more likely when the amount of audit fees increase. And companies appointing Big4 auditor will, to a larger extent, keep auditor both in the short- and long-term perspective (Vestrum and Smith 2012; Dedman, Kausar and Lennox 2014. We therefore find it reasonable to hypothesise the following

**H5**: *Ceteris Paribus, voluntary audit is positively associated with increased amount of audit fees, and it is likely to be preferred when company appoint Big 4 auditor.*

### 3.3.6 – Internal agency conflicts

Agency conflicts arise when the management is different from the shareholders and so-called conflicting interests may affect the company negatively (Dyer 2006). This is one of the reasons why family companies are often governed more efficiently than non-family companies (Morck et al. 1988). The reason for less agency conflicts in family companies is that principals and agents are typically the same persons or have aligned interests (Jensen og Meckling 1976; Berzins, Bøhren and Stacescu 2013). Thus reducing agency costs to a minimum as there
are less cost related. Further, when ownership is concentrated on few owners, it is
natural to believe that the owners are also involved in the management or can
more easily monitor the management. Alimehmeti and Paletta (2012) confirm that
higher ownership concentration increases shareholder power, control aligning
managers, shareholders’ interests, and consequently increasing firm value, which
is according to theory. In addition, when the owner is involved in company
operations, firm agency conflicts are likely to arise in small companies (Collis
2004).

Lambert (2001) points out four types of interest conflicts: CEO doesn’t want to
work hard, CEO acquires unlawful benefits from the company, CEO has a short-
term perspective as opposed to shareholders thinking long term, and CEO is risk
averse while the shareholders are risk neutral. The only way to reduce the
possibility where the CEO acts contrary to the shareholders is to spend money on
agency costs (Lambert 2001). Bonuses and monitoring are typical actions to
control the situation (Jensen and Meckling 1976). CEO ownership in companies
also influences agency conflicts. When the CEO owns shares, the company is
more likely to opt out of audit (Vestrum and Smith 2012). A reason for this is that
the owner takes part in the daily management of the company and therefore has
access to important information (Jensen and Meckling 1976). Taurringa
and Clarke (2000) looked at the situation when management owns all the shares in the
company. When this was not the case, the frequency of hiring an auditor
increased, in line with their predictions.

Niskanen and Niskanen (2011) test the impact of managerial ownership\textsuperscript{10} on
demand for audit quality. They found that when the managerial ownership
decreases, demand for audit quality increases. These results are in line with prior
theory, concluding that agency problems are more likely to be reduced when
managerial ownership is high (Jensen and Meckling 1976). This is due to the
managers’ incentives becoming more in line with the shareholders. DeFond
(1992) and Simunic and Stein (1987) ended up with a similar conclusion,

\textsuperscript{10} Definition of managerial ownership: the percentage of equity owned by insiders and block
holders, where insiders are defined as the officers and directors of a firm (Holderness’s, 2003).
underlined by a positive correlation between the choice of auditor quality (Big 8 companies) compared to the percentage of non-managerial ownership.

Lennox (2005) achieves significant results only when managerial ownership was high and low, but emphasizes that there is non-linearity between the two variables mentioned. In some of his tests, the results indicate a clear significant relation between the two factors. For example, the likelihood of employing a Big 5 firm falls from 70% to 45% as management ownership increases from 0% to 15%. This predicted result is in line with finance literature and agency theory (McColgan 2001; Jensen and Meckling 1976). Further, Lennox (2005) emphasizes that this must be seen in relation to his study only examines unlisted companies, contrary to prior studies within this field.

On the other hand, some studies have tested managerial ownership compared to audit firm size, which is supposed to influence the demand for high quality audits. Theory suggests that the size of an audit firm is positively associated with the demand for high-quality audits (Ireland and Lennox 2002; Lennox 1999). In this case, large auditors attract clients that are of higher than average quality and require less than average audit effort (Ireland and Lennox 2002, 89). Francis and Wilson (1988) find no significant results between the two factors, while DeFond (1992) found a positive association as predicted in some of his models. Carey, Simnett and Tanewski (2000) find a positive association between non-family managerial ownership and demand towards voluntary audit. Further, when the CEO has shares in the firm, the probability of rejecting auditor increases (Niskanen and Niskanen 2011).

Hope, Thomas and Vyas (2011) investigate the relationship between cost saving and having their financial statements audited. The results indicated that the companies were able to get external financing at a lower cost due to the safety of having the accounts controlled. Other studies related to cost savings, reveal that having the financial statements audited gives greater access to credit, and the companies pay lower interest rates (Allee and Yohn 2009; Blackwell, Noland and Winters 1998). Dispersed ownership explains whether a company has various
owners (Ojala et al. 2014; Freedman & Goodwin, 1993; Carey et al. 2000). The number of shareholders gives an indication of whether the ownership is dispersed or concentrated on few owners. Prior studies find empirical support that companies are more likely to opt for audit with increased number of shareholders (Vestrum and Smith 2012; Dedman, Kausar and Lennox 2014; Ojala et al 2014; Langli 2015). The results are in line with the hypothesis, indicating that private companies with higher agency cost will prefer to be voluntary audited.

Another method to analyse dispersed ownership is analyse influential shareholders. Dispersed ownership is characterized by a higher degree of influential owners, thus increasing the possibility of potential agency conflicts. In addition, by having no influential shareholders in the company suggests that the power is dispersed (Ojala et al. 2014). The opposite suggests that few owners have a lot of power and may indicate that the shareholders are also involved as directors or managers in the company (Ojala et al. 2014).

Hope, Langli and Thomas (2012) do not look at the issue of whether to hire or skip an auditor isolated, but the findings in the article are still relevant to our research. Their research only includes limited liability firms, thereby separating them from other studies only emphasizing public companies and both. They found that audit fees decrease with the level of ownership concentration. This is in line with theory, confirming that the bigger part of the firm owned by one or few people, the lower agency conflicts (and agency costs) and fewer incentives to control the managers (Jensen and Meckling 1976).

In conclusion, we find it natural to hypothesize that increased number of shareholders lead to more dispersed ownership which will have positive impact on choosing auditor (Ojala et al. 2014; Vestrum and Smith 2012; Niskanen and Niskanen 2011; Langli 2015). On the other hand, auditor is less likely to be chosen when CEO owns shares in the company or is the dominant owner (Vestrum and Smith 2012; Tauringana and Clarke 2000; Niskanen and Niskanen 2011; Gjengstø and Hovda 2014).

11 Influential shareholders owns more than 20% or 30% of the total equity (Ojala et al. 2014)
**H6: Ceteris Paribus, voluntary audit has positive relationship with dispersed ownership (measured by the number of shareholders), while it is negatively associated with CEO as a dominant owner of the company.**

### 3.3.7 – Family relationship

Prior literature find that family relationship is positively associated when testing a company’s demand for voluntary audit and the separation of ownership from control (Carey, Simnett and Tanewski 2000; Langli 2015). Carey, Simnett and Tanewski (2000) investigate this by looking at the proportion of directors and managers who were not family members. Their results were in line with their predictions - In family businesses, the demand for external audit\(^\text{12}\) were positively associated with the separation of ownership and control. The results indicated that internal audits\(^\text{13}\) were more popular than external audit related to voluntary demand for audit (Carey, Simnett and Tanewski 2000). This is consistent with Langli (2015) who find that companies are more likely to hire an auditor as the number of families involved in the company increases. In contrast, companies with few families involved are more likely to skip auditor due to the less people being involved in the ownership, control and management, which means that each shareholder achieves more control (Langli 2015).

Berzins, Bøhren and Stacescu (2013) argue that there is a close relationship between the owners, board and management in Norwegian family companies. If the CEO is a member of the family, which has a controlling stake of the company, the family will naturally have full control and the likelihood of skipping auditor will increase (Langli 2015). Collis (2010) finds evidence that voluntary audit is positively correlated with companies owned by one or more family in the UK. Based on theory and prior literature, we find it reasonable to hypothesise that

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\(^{12}\) External audit: “Periodic or specific purpose audit conducted by external (independent qualified accountant(s))” (Businesddictionary 2015).

\(^{13}\) “Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations” (The Institute of Internal Audit 2015).
**H7: Ceteris Paribus, voluntary audit is positively correlated with the number of families involved in a company and the number of ultimate owners in the family with the largest ownership.**

### 3.3.8 – External accountant

The role of external accountants in public practice has evolved in the recent years. They provide compliance and monitoring services such as tax, statutory audits and annual updates to corporate regulators - services designed to fulfil regulatory requirements or to satisfy statutory or voluntarily contractual constraints (Carey and Tanewski 2015). Historically, the traditional services typically focus on preparation or interpretation of financial data within the legislation and standard formats (i.e. GAAP and IFRS). However, Carey and Tanewski (2015) points out that in the in the later years, external accounts have expanded their range of advisory services, and developed multi-disciplinary practices, offering a diverse range of skill and services (Fogarty et al. 2006; Greenwood et al. 2002; Parker 2001; Kirby et al. 1998). The modern external accountant is a “business professional”, whom specializes in adding value to client businesses and analysing the client is changing needs (Carnegie and Napier 2009).

In UK, external accountants are external sources for business advice and consulting (Kirby and King 1997; Benett and Robson 1999). As much as 85% of small companies in UK have used services provided by external accountants (Collis 2013). Gooderham et al (2004) argue that companies achieve a closer relationship to external accountants compared to auditors. Another study from Finland find evidence that owner-managers in companies prefers external accountant to auditors as providers of tax advisory services (Syrjä 2010). This is in line with evidence from Niemi et al (2012) who found that tax advisory services provided by the external accountant reduce the likelihood of a voluntary audit.

Although, Niemi et al (2012) found that tax advisory services provided by the external accountant reduce the likelihood of a voluntary audit, there is no international studies emphasising the relationship between voluntary audit and
external accountants explicitly, at least to our best knowledge. However, there are
two Norwegian studies, which have documented negative association between
voluntary audit and external accountant. Companies with higher proximity to
their external accountant increased the likelihood of opting out of audit (Blekastad
and Johannesen 2011; Vestrum and Smith 2012).

Based on the latest development for external accountants and following prior
research from Blekastad and Johannesen (2011) and Vestrum and Smith (2012),
we find it reasonable to hypothesize:

H8: Ceteris Paribus, the propensity to purchase a voluntary audit will decrease
when the company appoints an external accountant.

3.3.9 – Effects over time

In Langli (2015) concluding remarks, he underlines that his findings is done in
period where it is possible that the Norwegian audit market goes from one
equilibrium to another and that findings may not hold in a new state of
equilibrium. He contemplates this with the Norwegian audit market roughly was
in equilibrium before the introduction of voluntary audit and the new requirements
related to share capital in Norwegian limited liability companies.\textsuperscript{14}

Tauringana and Clarke (2000) find empirical evidence between the voluntary
audit choice and company size, gearing ratio and managerial share. However, they
stress that results may differ in a cross-sectional study compared to a longitudinal
study and suggest that many of the shortcomings in their study would be omitted
by conducting a longitudinal study. To our best knowledge, only Dedman, Kausar
and Lennox (2014) and Ojala et al. (2014) have used a data over a three-year

\textsuperscript{14} There had been an increase in number of foreign firms, so called NUF, in Norway in the period
leading up to 2012. These companies could be a problematic, as they are harder to monitor and
often more unserious. As a result, the share capital criteria for limited liability companies was
lowered from 100 000 NOK to 30 000 NOK, where the intension was to stimulate and encourage
more companies to select this company form (Lervik, 2013).
period when researching drivers of voluntary audit. Ojala et al. (2014) findings became stronger over a three-year period, indicated by a monotonically increasing pseudo $R^2$ and by more statistically significant coefficients. Dedman, Kausar and Lennox (2014) findings suggests that there is a period of adjustment before companies are able to benefit from the exemption (e.g. they need time to renegotiate their banking covenants). Using data over a longer period, we investigate if the factors predicting voluntary audit still is consistent with literature and if the model fit will increase (higher Pseudo $R^2$).

4. Methodology

This section present the motivation and reasoning behind (4.1) the modifications and exclusions in the dataset, (4.2) the model and methodology used to examine the hypotheses and (4.3) the variables included in the model.

4.1 – The dataset

For the empirical analysis, data is collected from different agencies. The Centre for Corporate Governance Research (CCGR) at the Department of Financial Economics at BI Norwegian Business School has provided detailed information of Norwegian limited liability firms, obligated by Norwegian law to report and store financial statements. CCGR provides high quality accounting data for unlisted firms as well as detailed ownership data and variables describing family relations. With the help of data provided by the Norwegian population register and Experian$^{15}$, CCGR has checked for kinship among all persons serving or acting as owners, board members and CEOs for each company based on blood type, marriage and adoption. All people with the same grandparents and their spouses is considered family. Data on company choice of auditor and external accountant is provided by The Norwegian Tax Administration (NTA), and is mainly obtained from The Brønnøysund Register Centre$^{16}$ and the Norwegian People Register.

$^{15}$ Experian is the leading global information services company, providing data and analytical tools to clients around the world

$^{16}$ (Norwegian) Brønnøysundregistret - develops and operates many of Norway’s most important registers and electronic solutions.
Variables related to audit services is delivered from Experian and Proff Forvalt\textsuperscript{17}, and accessed through our supervising Professor John Christian Langli. Industry classification is obtained from Norway's Central Institution for Producing Official Statistics (SSB). This leaves us with an original sample of detailed microeconomic firm-level data from 2010 to 2013 with 1 024 793 firm-year observations on 273 857 unique companies. Due to privacy restrictions and terms of violation, data of companies were made anonymous.

Necessary adjustments include removing companies not meeting the current size criteria and cleaning of the data, table 1 summarises the adjustments. Specifically, companies with turnover < 5 MNOK, Total assets < 20 MNOK and employees < 10 in year 2010 - 2013. Further, companies with a turnover lower than 50 000 NOK are also excluded, as we assume these companies are either holding companies or inactive. Norwegian parent companies are obliged by Askjeloven §1-3 to have their financial statements audited, thus they are excluded. Qualifying subsidiaries are also excluded, as these are required to disclose audited financial statements when their parent companies are audited. Due to the necessary license demanded by the Norwegian Financial Supervisory Authorities, companies within the financial and insurance sector as well as law, accounting and audit firms are also omitted from the sample. Licensed companies are required by law to undergo audit of their financial statements. Lastly, inconsistent financial statements and variables with low quality (observations with high frequency of missing values) are removed. Observations in only some years (for instance only 2011 and 2013) is also omitted, thus ensuring only complete panels in our finished sample. The finalized sample consists of panel data counting 193 680-years observations and 48 420 unique companies. Continuous variables in our data sample are winsorized at the 2\textsuperscript{nd} and 98\textsuperscript{th} percentiles to reduce the influence of outliers.

\textbf{Table 1.} Sample selection criteria

\textsuperscript{17} Proff Foralt contains information on Norwegian private and public companies
In order to test the relationship between our research variables and the demand for voluntary audit in 2010-2013 a logistic regression model has been constructed. Our primary objective with this thesis is to determine drivers of voluntary audit and to investigate if these changes over time, hence the dependent variable will be binary – we will only observe the effects per firm \( i \) at year \( t \). The dependent variable \( (AUDIT) \) will take the value one if the company opts for a voluntary audit in the measured period, zero otherwise. Opting for a logit\(^{18}\) model allows us to create estimated probabilities based on the audit decision that is within the assigned interval \((0, 1)\). Several issues become evident if an OLS-regression was to be used. Most critical is the possibility of a result outside the desired range of the audit decision (Johnson and Wichern 2014).

The fitted logit regression line will take an S-shaped form with values asymptotically bound to the limited interval.

\(^{18}\) The conventional wisdom is that the choice between probit or logit functions in most cases seems to largely be a matter of taste (Hahn and Soyer 2005). Greene (1997, 875) concludes that in most applications the choice whether to use probit or logit functions does not make much difference.
The logistic function \( F \) of any random variable \( Z_i \) is:

\[
F(z_i) = \frac{e^{z_i}}{1 + e^{z_i}} = \frac{1}{1 + e^{-z_i}}
\]

Where \( e \) is the exponential and \( F \) serves as the cumulative logistic distribution.

Our logit regression model \( (Z_i) \) will take the following form

\[
\text{Prob}(\text{AUDIT})_{i,t} = \frac{1}{1 + e^{-Z}}
\]

Where \( Z = \alpha_0 + \alpha_1 \ln(\text{TURNOVER})_{i,t} + \alpha_2 \ln(\text{TA})_{i,t} + \alpha_3 \text{EMPLOYEES}_{i,t} + \alpha_4 \text{GEARING}_{i,t} + \alpha_5 \text{NEG.EQUITY}_{i,t} + \alpha_6 \text{LIQ.RATIO}_{i,t} + \alpha_7 \ln(\text{NAS})_{i,t} + \alpha_8 \text{BIG4}_{i,t} + \alpha_9 \ln(\text{AUDITFEE})_{i,t} + \alpha_{10} \text{CEOOWNER}_{i,t} + \alpha_{11} \text{SHAREHOLDER}_{i,t} + \alpha_{12} \text{DISP.OWNERSHIP}_{i,t} + \alpha_{13} \text{ULT.OWNER}_{i,t} + \alpha_{14} \text{FAM.OWNED}_{i,t} + \alpha_{15} \text{EXT.ACCOUNT}_{i,t} + \text{Year effects} + \varepsilon_i
\]

The independent variables in the model are motivated by theory and literature from section 4. Variable list and definition of the respective variables are discussed in section 4.3. Two-year dummies (YEAR2012 and YEAR2013) are included because of the frequency of companies opting out of voluntary audit in the sample period (2010-2013).

By including year-dummies, we are able to let the model intercept to vary by year. This allows us to test if this trend is a result of companies learning that they can opt out of audit late or they need time to adjust.
Similar to Dedman, Kausar and Lennox (2014) which also have conducted a study over a three year period, we will re-run our logit models separately for each of the tree years (i.e. 2011, 2012, 2013). Lastly, the regression model is estimated with robust error terms correcting for heteroscedasticity. We reduce the danger of potential time-series dependence amongst the residuals, due to panel data of multiple yearly observations relating to each single company, by adjusting standard errors for clustering on each company.  

Table 2. Independent variables, variable description, hypotheses tested and their predicted influence on the demand for voluntary audit.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Variable description</th>
<th>Hypothesis</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(TURNOVER)</td>
<td>Natural logarithm of turnover.</td>
<td>H1 +</td>
<td></td>
</tr>
<tr>
<td>ln(TA)</td>
<td>Natural logarithm of 1 + total assets.</td>
<td>H1 +</td>
<td></td>
</tr>
<tr>
<td>EMPLOYEES</td>
<td>Number of manyears.</td>
<td>H1 +</td>
<td></td>
</tr>
<tr>
<td>Debt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEARING</td>
<td>Book value of total debt divided by the book value of total equity.</td>
<td>H2 +</td>
<td></td>
</tr>
<tr>
<td>Financial distress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEG_EQITY</td>
<td>Coded 1 if the company has negative equity and 0 otherwise.</td>
<td>H3 ?</td>
<td></td>
</tr>
<tr>
<td>Audit services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(NAS)</td>
<td>Natural logarithm of 1 + the price of non-audit services</td>
<td>H4 +</td>
<td></td>
</tr>
<tr>
<td>Audit assurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIG4</td>
<td>One if audited by one of the big 4, zero otherwise.</td>
<td>H5 +</td>
<td></td>
</tr>
<tr>
<td>ln(AUDITFEE)</td>
<td>Natural logarithm of 1 + the audit fee</td>
<td>H5 +</td>
<td></td>
</tr>
<tr>
<td>Agency conflicts internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO_OWNER</td>
<td>One if the CEO is the same individual as the dominant owner, zero other</td>
<td>H6 -</td>
<td></td>
</tr>
<tr>
<td>ln(SHAREHOLDER)</td>
<td>Natural logarithm of the number of shareholders</td>
<td>H6 +</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ULT_OWNER</td>
<td>Number ultimate owners in family with the most ultimate ownership</td>
<td>H7 +</td>
<td></td>
</tr>
<tr>
<td>FAM_OWNED</td>
<td>Number of families involved in the company</td>
<td>H7 +</td>
<td></td>
</tr>
<tr>
<td>External accountant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXT_ACCOUNT</td>
<td>One if the company’s accountant is externally hired, zero otherwise.</td>
<td>H8 -</td>
<td></td>
</tr>
</tbody>
</table>

4.3 – Variable Selection

We wish to investigate the association between opting for a voluntary audit and the selected predictors of demand for audit in a non-mandatory regime, which we

---

19 Results from the logit regression also prove robust to estimations using a random-effects model.
categories as measures of: H1 *External agency conflicts*; H2 *Leverage*; H3 *Financial distress*; H4 *Audit services*; H5, *Audit assurance*; H6 *Agency conflicts internal*; H7 *Family relationship* and H8 *External accountant*.

### 4.2.1 Agency conflicts external

The variables measuring H1 captures agency conflicts or agency costs and serves as size indicators. These are common variables used in the literature regarding voluntary audit studies (i.e. Senkow et al. 2001; Collis et al. 2004; Knechel, Niemi and Sundgren 2008; Hope and Langli 2010; Collis 2010; Niskanen and Niskanen 2011; Niemi et al. 2012; Dedman, Kausar and Lennox 2014; Langli 2015).

### 4.2.2 Gearing (Financial leverage)

In line with Tauringana and Clarke (2000) and Vestrum and Smith (2012), we hypothesize that the propensity to purchase a voluntary audit will rise along with the level of debt which is measured by the book value of total debt divided by the book value of total equity.

### 4.2.3 Financial distress

Following Niemi et al. (2012) and Ojala et al. (2014), we use the variable *NEGAT_EQUITY*, which is coded one if the company has negative equity and zero otherwise.

### 4.2.4 Audit services and NAS

In line with prior studies (e.g. Defond et al. 1992; Ashbaugh et al. 2003; Dedman, Kausar and Lennox 2014), NAS is measured through the natural of $1 + \text{the price of non-audit services in the sample years (in thousand NOK)}$. The variable serves as a measure of dependency and collaboration between the given company and their auditor.

### 4.2.5 Audit assurance

The variable BIG4 will take the value one if one of the four biggest auditing firms in Norway audits the company, zero otherwise. Following Abdel-Khalik (1993),
Bell et al. (2001) and Dedman, Kausar and Lennox (2014) we test the relationship between audit fees and voluntary audit by taking the natural logarithm of 1 + audit fees (in thousand NOK).

4.2.6 Agency conflicts internal
Following Niskanen and Niskanen (2011) and Carey, Simnett and Tanewski (2000) we use a dummy variable coded one if the CEO of the company is dominant owner of the company (owns more than 50%), and zero otherwise. The variable reflects direct ownership, which means that the mother company is the direct owner to the subsidiary, not the owner of the parent company.

The variable SHAREHOLDER is calculated by taking the natural logarithm of the number of shareholders, in line with Ojala et al. (2014), Niskanen and Niskanen (2011), Langli (2015) and Vestrum and Smith (2012).

4.2.7 Family relationship
The variables ULT_OWNER and FAM_OWNED consists of the number of ultimate owners in the family with the largest ownership and the number of families involved in the company. Ultimate ownership indicate that owners of the parent company also are owners of the subsidiary to the parent company. Both are tested in Langli (2015) and have positive association with keeping an auditor.

4.2.8 External accountant
In accordance with Blekastad and Johannessen (2011), Vestrum and Smith (2012) and Langli (2015), EXT_ACCOUNT is defined as a dummy coded one if the company uses an external accountant, and zero otherwise.

5. Empirical Results
This section contains descriptive and tabulated statistics (5.1) as well as a presentation of the results from the univariate test (5.2), pairwise correlation matrix (5.3) and logistic regression (5.4).
5.1 – Descriptive Statistics

Figure 1. Companies opting out of audit from May 2011 to December 2013.

Figure 1 displays that a decreasing share of eligible Norwegian private limited companies is choosing to opt out of audit. This suggests that companies exercised their option not to have audit as their first possibility. A plausible reason for this could be that a majority of Norwegian companies gained experience from other countries who had this option introduced before and adapted faster. Norway was the last of all the EU/EEA countries to implement voluntary audit.
Table 3. Tabulated statistics based on industry classification for audited and unaudited companies.

<table>
<thead>
<tr>
<th>SIC</th>
<th>Industry</th>
<th>Audited</th>
<th>Total</th>
<th>Unaudited</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No classification</td>
<td>27 1%</td>
<td>2092 99%</td>
<td>2119</td>
</tr>
<tr>
<td>1-3</td>
<td>Fishing, agriculture and forestry</td>
<td>367 47%</td>
<td>419 53%</td>
<td>786</td>
</tr>
<tr>
<td>5-9</td>
<td>Mining and Quarrying</td>
<td>64 63%</td>
<td>38 37%</td>
<td>102</td>
</tr>
<tr>
<td>10-33</td>
<td>Manufacturing</td>
<td>1179 64%</td>
<td>655 36%</td>
<td>1834</td>
</tr>
<tr>
<td>35</td>
<td>Electricity, water and gas supply</td>
<td>118 53%</td>
<td>103 47%</td>
<td>221</td>
</tr>
<tr>
<td>36-39</td>
<td>Water supply, sewerage and remediation activities</td>
<td>41 39%</td>
<td>63 61%</td>
<td>104</td>
</tr>
<tr>
<td>41-43</td>
<td>Construction</td>
<td>2791 65%</td>
<td>1503 35%</td>
<td>4294</td>
</tr>
<tr>
<td>45-47</td>
<td>Merchandising; reparation of motor vehicles.</td>
<td>3711 66%</td>
<td>1946 34%</td>
<td>5657</td>
</tr>
<tr>
<td>49-53</td>
<td>Transportation and storage</td>
<td>815 60%</td>
<td>548 40%</td>
<td>1363</td>
</tr>
<tr>
<td>55-56</td>
<td>Accommodation and food/beverage service</td>
<td>689 64%</td>
<td>383 36%</td>
<td>1072</td>
</tr>
<tr>
<td>58-63</td>
<td>Information and communication</td>
<td>1028 54%</td>
<td>876 46%</td>
<td>1904</td>
</tr>
<tr>
<td>68</td>
<td>Real estate</td>
<td>4624 30%</td>
<td>10770 70%</td>
<td>15394</td>
</tr>
<tr>
<td>69-75</td>
<td>Professional, Scientific and technical activities/consulting</td>
<td>3148 60%</td>
<td>2104 40%</td>
<td>5252</td>
</tr>
<tr>
<td>77-82</td>
<td>Business advice</td>
<td>909 55%</td>
<td>749 45%</td>
<td>1658</td>
</tr>
<tr>
<td>85</td>
<td>Education(tuition)</td>
<td>354 53%</td>
<td>312 47%</td>
<td>666</td>
</tr>
<tr>
<td>86-88</td>
<td>Health and social services</td>
<td>1218 56%</td>
<td>946 44%</td>
<td>2164</td>
</tr>
<tr>
<td>90-93</td>
<td>Art, entertainment and recreational activities</td>
<td>493 42%</td>
<td>668 58%</td>
<td>1161</td>
</tr>
<tr>
<td>94-96</td>
<td>Other services</td>
<td>820 31%</td>
<td>1849 69%</td>
<td>2669</td>
</tr>
</tbody>
</table>

Notes: Industry classification are based on numbers from SIC2007 (Statistics Norway 2008)

26 024 (54%) in our sample chose to refrain from audit between 2011 and 2013. The highest opt out rate (66%) in our sample is found in merchandising; reparation of motor vehicles which in general relates to wholesale and retail trade. The industry
which tends to keep the auditor most frequent is real estate (77%), which consists of buying and selling property.

Table 4. Descriptive statistics on independent variables used in the regression model and variables used to define other variables in the regression model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover (NOK 000)</td>
<td>1381</td>
<td>1163</td>
<td>50</td>
<td>5000</td>
</tr>
<tr>
<td>Total Assets (NOK 000)</td>
<td>2757</td>
<td>3610</td>
<td>-1828</td>
<td>20 000</td>
</tr>
<tr>
<td>ln(TURNOVER)</td>
<td>13.7</td>
<td>1.02</td>
<td>10.8</td>
<td>15.4</td>
</tr>
<tr>
<td>ln(TA)</td>
<td>14.05</td>
<td>1.41</td>
<td>0</td>
<td>16.8</td>
</tr>
<tr>
<td>EMPLOYEES</td>
<td>1.15</td>
<td>1.66</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>GEARING</td>
<td>0.73</td>
<td>0.60</td>
<td>0.11</td>
<td>3.30</td>
</tr>
<tr>
<td>NEQ_EQUITY</td>
<td>0.17</td>
<td>0.38</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Non-audit services (NOK 000)</td>
<td>65.57</td>
<td>46.57</td>
<td>1</td>
<td>129</td>
</tr>
<tr>
<td>ln(NAS)</td>
<td>3.13</td>
<td>1.41</td>
<td>0.69</td>
<td>4.86</td>
</tr>
<tr>
<td>BIG4</td>
<td>0.15</td>
<td>0.35</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Auditfees (NOK 000)</td>
<td>12.15</td>
<td>17.45</td>
<td>-20</td>
<td>4260</td>
</tr>
<tr>
<td>ln(AUDITFEE)</td>
<td>2.25</td>
<td>0.92</td>
<td>0</td>
<td>8.35</td>
</tr>
<tr>
<td>CEO_OWNER</td>
<td>0.67</td>
<td>0.83</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Number of shareholders</td>
<td>2.04</td>
<td>3.56</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>ln(SHAREHOLDER)</td>
<td>0.39</td>
<td>0.62</td>
<td>0</td>
<td>3.9</td>
</tr>
<tr>
<td>ULT_OWNER</td>
<td>1.4</td>
<td>0.80</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>FAM.Owner</td>
<td>1.62</td>
<td>2.51</td>
<td>1</td>
<td>195</td>
</tr>
<tr>
<td>EXT_ACCOUNT</td>
<td>0.71</td>
<td>0.45</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: A comprehensive summary of the variables can be found in table 2.
Companies within our sample are relatively small, with mean turnover of 1.381 MNOK, mean total assets of 2.7 MNOK and average employees is 1.15 per company. Further, 17% the companies in our sample have negative equity and average gearing is 73%. Sample companies also spends a lot on other services provided by auditor, with mean non-audit services rising up to 65 570 NOK. In comparison, average audit fees amounts to 12 150 NOK. Further, 15% of all companies employed a Big4 auditor. The mean number of shareholders is 2.04, confirming that limited liability firms in Norway have a high concentration of ownership and control. The mean for number of families involved in the company and ultimate owners also underpins this, resulting in a mean of 1.4 and 1.62 respectively. The results indicate that the majority of the companies only consist of one family or ultimate owner. Approx. 71% of sample companies are provided by services from external accountant, further underlining the effect external accountants may have on a firm’s choice of voluntary audit.

5.2 – Univariate Analysis

The univariate results are presented in table 5 for all companies that opting for voluntary audit (AUDIT = 1, n = 84 187), and for companies that not chose to hire an auditor (AUDIT = 0, n = 60 443) in the period from 2011–2013.

Table 5. Variable means for companies that opt (do not opt) for audits. (145 260-company years).

<table>
<thead>
<tr>
<th>Variable</th>
<th>AUDIT = 1 (N = 84 187)</th>
<th>AUDIT = 0 (N = 60 443)</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ln(TURNOVER)</td>
<td>13.676</td>
<td>13.770</td>
<td>18.66 ***</td>
</tr>
<tr>
<td>3 ln(TA)</td>
<td>14.159</td>
<td>13.818</td>
<td>-49.26 ***</td>
</tr>
<tr>
<td>4 EMPLOYEES</td>
<td>0.979</td>
<td>1.492</td>
<td>63.74 ***</td>
</tr>
<tr>
<td>5 GEARING</td>
<td>0.747</td>
<td>0.721</td>
<td>-8.72 ***</td>
</tr>
<tr>
<td>6 NEG_EQUITY</td>
<td>0.180</td>
<td>0.157</td>
<td>-12.49 ***</td>
</tr>
<tr>
<td>7 ln(NAS)</td>
<td>3.336</td>
<td>2.405</td>
<td>-81.52 ***</td>
</tr>
<tr>
<td>8 BIG4</td>
<td>0.216</td>
<td>0.05</td>
<td>-125.54 ***</td>
</tr>
<tr>
<td>9 ln(AUDITFEE)</td>
<td>2.392</td>
<td>1.761</td>
<td>-106.51 ***</td>
</tr>
<tr>
<td>10 CEO_OWNER</td>
<td>0.258</td>
<td>0.523</td>
<td>117.89 ***</td>
</tr>
<tr>
<td>11 ln(SHAREHOLDER)</td>
<td>0.360</td>
<td>0.465</td>
<td>33.97 ***</td>
</tr>
<tr>
<td>12 ULT_OWNER</td>
<td>1.444</td>
<td>1.349</td>
<td>-21.10 ***</td>
</tr>
<tr>
<td>13 FAM_OWNED</td>
<td>1.765</td>
<td>1.442</td>
<td>-23.25 ***</td>
</tr>
<tr>
<td>14 EXT_ACCOUNT</td>
<td>0.607</td>
<td>0.849</td>
<td>101.65 ***</td>
</tr>
</tbody>
</table>

*P < 0.05, **p < 0.01, ***p < 0.001
Only total assets is consistent with H1, indicating that larger amount of total assets is positively correlated with voluntary audit. On the other hand, turnover and employees shows an opposite trend to the expectations in the hypothesis even though the numbers are significant. The mean of GEARING (0.759) is higher for audited firms, confirming that voluntary audit is preferred when the amount of outside financing increases, consistent with H2. Further, the mean of financial distressed companies is greater for audited companies (0.180) than non-audited companies (0.157), thereby supporting the contention that owner-managers tend to forego audit because they cannot afford it.

H4 suggests that companies purchase non-audit services are more likely to prefer voluntary audit. Results from the univariate supports this, with the same conclusion as Dedman, Kausar and Lennox (2014), Palmrose (1986), Simunic (1984), Bell et al. (2001) and Davis et al. (1993).

Consistent with H5, both audit fees and BIG4 have a higher mean for audited firms (2.322 and 0.216 respectively) which indicate a positive relationship with voluntary audit. The results show that 21.6% of all audited companies use a BIG4 auditor. The difference between the two numbers is statistically significant (t = -125.54). Our results support Francis and Wilson (1988) findings, which find positive relationship between the company size and the size of the audit firm.

The univariate results provide supports related to H6, which indicates that CEO ownership decrease the likelihood of appointing an auditor. In this case, as much as 52.3% of non-audited firms have a CEO as dominant owner. The other part of H6 gives the opposite result as expected; the mean of the number of shareholders variable is greater for non-audited companies than for audited.

Other findings in table 5 find support related to H7, when testing the family variables. Both number of families involved in a company and the number of ultimate owners in family with the most ultimate ownership are positively associated with voluntary audit and statistically significant in this case (t = -23.25
and -21.10 respectively). The more people involved in a company increase the likelihood for audit assurance according to Langli (2015).

For the variable used to test the last hypothesis, as much as 84.9 % of the non-audited firms use an external accountant, while 60.7% of the audited firms also use an external accountant. The results provide support to H8, which indicate less non-audited firms choose to purchase a voluntary audit. The difference between the means is statistically significant (t = 101.65). This also emphasizes the potential influence on companies by external accountant

5.3 – Assessment of Multicollinearity

Table 6 presents the Person correlation matrix for the variables in our regression analysis. The problem with collinearity arises when “X1 is sufficiently highly correlated with another factor, X2, so that it is difficult or impossible to disentangle the independent effects of X1 and X2 when there is high correlation between two or more independent variables” (York, 2012, p 1380). This lead to reduced amount of information about X1 isolated from other factors (York 2012, p 1381).

Evident from table 6; the proxies used in this thesis do not in general reveal a high correlation with each other. The highest pairwise correlation coefficients is 0.5385 and is between NEG_EQUITY and GEARING, indicating that companies struggling with high debt compared to equity also, may achieve negative equity in the same year. This is acceptable, if correlation coefficients differ between -0.5 and +0.5, the regression analysis will most likely results without consequences of multicollinearity (Gripsrud, Olsson and Silkoset 2004). The highest variance inflation factor (VIF) is 2.74 in our sample underlines this (see appendix 5) Evans (2013, p 214) argue that conservative guidelines suggest that a maximum VIF of five or more suggests too much multicollinearity. Further, with a mean VIF of 1.57, we conclude that there is no potential multicollinearity problem in our regression analysis.

The results in table 6 indicate that the majority of the correlation coefficients are significant. In addition, many of the variables are consistent with our hypotheses. One
of the variables resulting opposite of our predictions is employees, which correlates negatively with voluntary audit. The correlation matrix shows that \( \ln{\text{SHAREHOLDERS}} \) correlates at a high level with both \( \text{ULT}_{\text{OWNER}}(0.5115) \) and \( \text{FAM}_{\text{OWNED}}(0.5374) \). This is not worrying as the number of shareholders is most likely to increase when the number of ultimate owners raise goes in the same direction. In the same way, the more families involved in the company requires a higher number of shareholders. All the variables correlating at a considerable level are retained in the regression analysis, because the interpretation of the results does not depend on whether one or both variables are included.
### Table 6. Pearson’s correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AUDITED</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ln(TURNOVER)</td>
<td>0.0424***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>0.2002***</td>
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<td>-0.0009</td>
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<td>0.1818***</td>
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<td>-0.0540***</td>
<td>-0.0264***</td>
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<td>-0.0225***</td>
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<td>0.0221***</td>
<td>-0.0301***</td>
<td>0.0186***</td>
<td>0.0179***</td>
<td>0.0146***</td>
<td>0.0313***</td>
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<td>14</td>
<td>EXT_ACCOUNT</td>
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<td>0.0956***</td>
<td>-0.0749***</td>
<td>0.0719***</td>
<td>0.0192***</td>
<td>0.0194***</td>
<td>-0.3277***</td>
<td>-0.0661***</td>
<td>-0.1161***</td>
<td>0.0899***</td>
<td>-0.0096***</td>
<td>-0.0805***</td>
<td>-0.0125***</td>
<td>1.00</td>
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</tr>
</tbody>
</table>

Notes: *P < 0.05, **p < 0.01, ***p < 0.001

<table>
<thead>
<tr>
<th></th>
<th>Full sample (n = 66,334)</th>
<th>Year 2011 (n = 20,553)</th>
<th>Year 2012 (n = 12,894)</th>
<th>Year 2013 (n = 10,415)</th>
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<td>Coeff.</td>
<td>z-stat</td>
<td>Coeff.</td>
<td>z-stat</td>
</tr>
<tr>
<td>ln(TURNOVER)</td>
<td>0.027</td>
<td>1.90 *</td>
<td>0.093</td>
<td>4.41 ***</td>
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<tr>
<td>ln(TA)</td>
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<td>EMPLOYEES</td>
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<td>0.265</td>
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<td>NEQ_EQUITY</td>
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<td>-0.028</td>
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<td>ln(NAS)</td>
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<td>BIG4</td>
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<td>29.70 ***</td>
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<td>11.72 ***</td>
</tr>
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<td>ln(AUDITFEE)</td>
<td>0.742</td>
<td>50.73 ***</td>
<td>0.177</td>
<td>5.62 ***</td>
</tr>
<tr>
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<td>-0.000</td>
<td>-0.00</td>
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<td>6.18 ***</td>
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</tr>
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<td>-1.310</td>
<td>-33.68 ***</td>
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<td>YEAR2012</td>
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<td>YEAR2013</td>
<td>-0.014</td>
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</tr>
<tr>
<td>Pseudo R^2</td>
<td>21.72%</td>
<td></td>
<td>22.74%</td>
<td></td>
</tr>
</tbody>
</table>

Note: The dependent variable equals 1 if the company opts for an audit and zero otherwise. A detailed summary of the variables can be found in Table xx.

*Statistically significant at 10% level
** Statistically significant at 5% level
*** Statistically significant at 1% level
5.4 – Multivariate Regression Results

Table 7 show the result of logit regressions. In terms of H1, the results provide some evidence of a positive association between the demand for voluntary audit and external agency conflicts measured by turnover, total assets and employees. Consistent with H1, TURNOVER and TA are significantly positively associated with having an audit, although low explanatory power (low coefficient) for TURNOVER. This is consistent with the majority of the existing literature (Tauringana and Clarke 2000; Carey et al. 2000; Svanstrøm 2008; Niskanen & Niskanen 2011; Niemi et al. 2012; Dedman, Kausar and Lennox 2014; Langli 2015). EMPLOYEES proves significant but in the opposite direction (negative coefficient) of hypothesised.

When we estimate the models on each year individually, the results stay consistent with the exception of two incidents. When the effect of EMPLOYEES turns insignificant in 2011, TURNOVER is significant at 1% level and when the effect of TURNOVER fails to reach significant levels in 2013, EMPLOYEES is significant at 1% level. These results may indicate that Turnover and total assets by itself captures the cost-benefits of the audit in Norway and that there is no need to include employees in the threshold. Only Turnover proved significant in a study from U.K in 2004 when all size measures were included in the same model (Collis, Jarvis and Skerratt 2004). Bear in mind, the Norwegian thresholds is relatively small compared to U.K, and sample companies’ averages 1.15 employees, which may explain the results. As discussed earlier, the low threshold may not fully intercept the potential agency conflicts. Thus, the threat of moral hazard by employees may not exist under the current threshold in Norway, and it is reasonable to assume that managers of firms are able to monitor the employees themselves.

Consistent with H2 (gearing), the full sample results show a significant positive association between purchasing a non-mandatory audit and the amount of outside financing. However, the effect weakens over time, becoming insignificant in 2012 and 2013. Dedman, Kausar and Lennox (2014) found similar results in their study where they failed to reach conventional levels of significance in any year expect
one. Further, Dedman, Kausar and Lennox (2014) suggest that this may due to relationship lending where the lender demands bespoke information, or to the directors of private companies offering their own assets as security for business loans. In this case, the banks would require validation of asset values from a source different to the audit, such as a report from a surveyor.

Although significant in the full sample test and 2013, \textit{NEGAT\_EQUITY} coefficient is insignificant in 2011 and 2012. The sign of \textit{NEGAT\_EQUITY} remain negative in all models. This suggests that limited liability firms in Norway that are in financial distress are less likely to opt for voluntary audit than those that are not in financial distress. This is in line with the contention that owner-managers whose companies are financially distressed tend to forego audit because they cannot afford it (Ojala et.al. 2015). Further, this shows that findings from Ojala et al. (2014) on micro companies\textsuperscript{20} is generalizable to Norway.

Consistent with H4, the results indicate a positive association between the purchase of voluntary audit and the purchase of non-audit services. Dedman, Kausar and Lennox (2014) found similar results. Thus confirming that voluntary audit correlates positive with purchase of NAS. The results were statistically significant at a 1 \% level, in all models. The coefficient for the full sample indicates that likelihood of purchasing voluntary audit increases by 36\% when the InNAS variable increases by one unit.

In line with H5, both \textit{BIG4} and ln\textit{AUDITFEE} are positive associated with voluntary audit in the full sample. An interesting remark is that BIG4 has a large coefficient of 5.145, which means that appointing a \textit{BIG4} auditor increases the probability of purchase of voluntary audit significantly. The results gives the same results as the regression analysis in other prior research (Dedman, Kausar and Lennox 2014; Vestrum and Smith 2012) and the multivariate analysis of \textit{BIG4} is highly significant for each year.

\textsuperscript{20} Companies qualifying exemption of audit in Finland is defined as Micro companies in Ojala et.al (2015) study. See appendix 3 for the size criteria in Finland.
The other variable tested in H5, lnAUDITFEE reaches conventional levels of significance in all models and support the hypothesis that companies paying high amount of audit fees prefer to keep their auditor, which is in line results from Dedman, Kausar and Lennox (2014).

H6 provides support between voluntary audit and agency conflicts internal, which indicate that when the number of shareholders increases, companies are more likely opt for an audit. InSHAREHOLDERS stays highly significant in all the models except from year 2013. Our findings also support results from previous studies, indicating that more dispersed ownership (measured by the number of shareholders) lead to an increased need of audit (Dedman, Kausar and Lennox (2014), Langli (2015) and Vestrum and Smith (2012).

Our regression do not provide consistent empirical evidence related to voluntary audit and whether the CEO is, a dominant owner (owns more than 50%) of the company. We do however find some evidence in 2013 supporting the contention that managerial ownership give less incentive to spend money-monitoring cost (Niskanen and Niskanen 2011). This is also in line with results from Tauringa and Clarke (2000), who found that the frequency of hiring auditor increases when the management do not own all the shares in the company. In this case, our results indicate that the likelihood increases from 0.5085 to 0.5702, thereby providing some support of this conclusion, although only significant at 5% percentile in 2013.

We find some evidence related to H7. The number of families represented in the companies (FAM OWNED) are statistically significant at a 10% level in the full sample and year 2012. Langli (2015) uses the same variable when testing family relationships in Norway and concludes that the need of auditor increases when the interests for more families involved has to be safeguarded. The second variable (ULT_OWNER) ends significant in the full sample and year 2011, but with opposite sign as expected in the hypothesis. A possible explanation is that 75 % of the observations related to the ULT_OWNER variable only has one owner that is in family with the most ultimate ownership, and thereby influence the results
significantly. The last hypothesis tests the association between voluntary audit and hiring an external accountant. The results provided from all regression models support H8. We find strong evidence that limited liability companies in Norway are less likely to hire an auditor when the company has appointed an external accountant (i.e. a company tends to choose one or the other). This is in line with prior research (Blekastad and Johannessen 2011; Vestrum and Smith 2012) and theory devoted to evolution of external accountants.

Effects over time

The coefficients on the year-dummies in the full sample regression model are negative, though only significant in 2012. This indicate that fewer companies chose to opt out of audit over time. This is also evident from the steady decline in voluntary audit from 2011 to 2013 displayed in figure 1. The fraction of firms who opts out of audit in 2013 is similar to 2012 although slightly lower, hence the insignificant coefficient. This stand in contrast to findings from Dedman, Kausar and Lennox (2014) who documented that, over time, more and more companies have exercised the option not to have audit in UK. They suggest that companies needing time to adjust their banking covenants in order to take advantage of the audit exemption can explain the trend away from audit\textsuperscript{21}. Although this is possible, other reasons may also explain this. A plausible explanation can be that companies need time to learn about the opt-out rule, and that there is possible inertia in the decision-making process (there are some work that has to be done, and for a number of firms the decision to opt-out is rather marginal – thus they do not have strong incentives to rush a decision).

In line with Ojala et al. (2014), the Pseudo $R^2$ is considerably higher in 2012 and 2013 respectively (from 22.74 to 28.37 to 27.57)\textsuperscript{22}, indicating that the data

\textsuperscript{21} Both Dedman, Kausar, Lennox (2014) and Ojala et al (2015) achieved negative and significant coefficients on their year dummies.

\textsuperscript{22} This level of explanatory is similar other studies investigating drivers of voluntary audit. For example, Niemi et al (2012) report a Pseudo $R^2$ of 31.12 % in their hypothesised model; Collis et al (2004) report a Pseudo $R^2$ 34.8% for their model. The reported Pseudo $R^2$ is our study is higher than other studies using a three-year period. Dedman, Kausar and Lennox (2014) report a Pseudo $R^2$ of 11.57%, 9.49% and 11.57% and Ojala et al (2015) reports a Pseudo $R^2$ of 7%, 12.2% and 16.1% in their three-year period.
contains less noise (higher model fit\textsuperscript{23}) as the distance from the audit law reform increases. This also document that there is other unmodelled factors affecting the voluntary audit choice. Further, whereas some factors predicting demand of voluntary audit (turnover, leverage, number of ultimate owners and dispersed ownership) weakens over time indicated by decreasing coefficients and lower levels of significance; some factors increases (CEO ownership, negative equity, employees). This suggests that some of the factors predicting demand for voluntary audit changes over the measured period, although sample companies in general behave more in line with what theory predicts (higher Pseudo R\textsuperscript{2}).

6. Sensitivity Analysis

In this section, we conduct additional tests to assess the robustness of the results from the empirical analysis.

6.1 – Size Factors

Another aspect, besides agency theory, to include turnover, total assets and employees in our main regression model is to investigate the adequacy of the size criteria used in Norwegian legislation to capture the cost versus the benefits. Interestingly, employees had the opposite effect of what predicted, and turnover, failed to reach conventional levels of significance in 2013. One of the problems with multicollinearity is that coefficients estimates can vary from sample to sample. Therefore, in addition to the Univariate test and Person correlation matrix, we test the effects of size measures individually and together. Appendix 6 presents the results from the analysis. No inconsistencies where found other that turnover reached significant levels in 2013, both individually and together. Employees still had the opposite effect of what predicted.

6.2 – Agency conflicts a driver of voluntary audit

If agency costs increase with company size (Jensen and Meckling 1979, 59), there is a possibility that companies smaller in size, have different drivers of voluntary audit compared to larger companies. We use turnover as a measure of size and split our sample in two groups. Large companies have turnover over one MNOK

\textsuperscript{23} The model explain the variability of the data around its mean better over time measured by a Higher Pseudo R\textsuperscript{2}
while small companies have turnover below one MNOK. We then explore if factors determining voluntary audit is different for small and large companies by re-running the model presented in section 4.2 for both samples. Table 8 presents the results for the sensitivity test. Overall, the tests suggest that factors predicting voluntary audit is the same for both groups, with two exceptions. For small companies, the regression result provide support for H6, that voluntary audit is negatively associated with CEO as the dominant owner of the company. We are, however, not able to find evidence that small companies tend to forego audit because they cannot afford it when in financial distress (H3), and that turnover are significantly positively associated with having an audit. Further, we also see from the difference in year-dummies coefficients, that small companies more frequently exercise their option not to have an audit over time.

6.3 – Agency costs and the association between NAS and Voluntary Auditing

Similar to Dedman, Kausar and Lennox (2014) we address the question whether our results are generalizable to publicly traded companies, or companies affected by a higher threshold than Norway. Dedman, Kausar and Lennox (2014) state that an important difference in their sample and public companies is in the level of agency costs associated with the separation of ownership and control (e.g Firth, 1997). Thus, if agency costs influence the spill over between NAS and auditing, we would, in line with Dedman, Kausar and Lennox (2014), expect to find different results after separating the sample in two categorises by low/high agency costs. We also use the number of shareholders as a measure of agency costs and split our data after by the median number of shareholders, and test if the association between NAS and voluntary audits is different in regards to shareholders (agency costs). Table 8 presents the result from the analysis. In line with Dedman, Kausar and Lennox (2014), we find that agency conflicts do not affect the relationship between voluntary audit and NAS, as we are able to find a significant association between NAS and voluntary audit in both samples.
### Table 8. Sensitivity Test

<table>
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<tr>
<th>Variable</th>
<th>Large Sample (n = 38,737)</th>
<th>Small Sample (n = 27,379)</th>
<th>Low nr of Shareholders (n = 48,506)</th>
<th>High nr of Shareholders (n = 35,552)</th>
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<td>Coeff.</td>
<td>z-stat</td>
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<td>1.79 *</td>
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<tr>
<td>ln(TA)</td>
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<td>8.50 ***</td>
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<td>0.081</td>
<td>2.25 **</td>
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<td>-1.96 **</td>
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<td>ln(NAS)</td>
<td>0.389</td>
<td>36.83 ***</td>
<td>0.363</td>
<td>27.15 ***</td>
</tr>
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<td>BIG4</td>
<td>2.777</td>
<td>21.59 ***</td>
<td>2.743</td>
<td>21.02 ***</td>
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<tr>
<td>ln(AUDITFEE)</td>
<td>0.787</td>
<td>39.66 ***</td>
<td>0.462</td>
<td>20.82 ***</td>
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<td>***</td>
<td>-1.729</td>
<td>-4.9 ***</td>
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<td>Pseudo R^2</td>
<td>21.74%</td>
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<td>18.50%</td>
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</tbody>
</table>

Note: The dependent variable equals 1 if the company opts for an audit and zero otherwise. A detailed summary of the variables can be found in table xx.

* Statistically significant at 10% level
** Statistically significant at 5% level
*** Statistically significant at 1% level
7. Limitations

Our research is subject to several limitations and readers should take caution when drawing generalizations from it. First, our data set is large with 48,420 companies, this could let predictors to easier become statistically significant. When we have a very high number of observations, standard errors become very small. The standard error of the mean is equal to $\frac{\text{std}}{\sqrt{n}}$ - thus, when we have a higher number of observations, the models power to detect changes increases.

One must also consider the relatively low threshold for audit exemption in Norway compared to European countries (apart from Scandinavia). There may exist differences in drivers of voluntary audit among larger companies as these may have different characteristics than companies included in the Norwegian threshold. This is evident in our regression model, where employees have the opposite effect of what predicted and found by prior studies. The low threshold in Norway may not intercept the potential agency conflicts which could arise due threat of moral hazard by employees. Further underlined in the sensitivity test where we find that there is in fact different drivers of voluntary audit between small and large companies within our sample. The low threshold in Norway may not intercept the potential agency conflicts which could arise due threat of moral hazard by employees. Further, some of our predictor variables is also subject to further scrutiny. Although Ojala et al 2015 use Negative equity as a proxy to reflect companies in financial distress, negative equity may not always capture companies in financial distress. If company equity is fallen to a level considered below appropriate risk and scope of operations, the board is obliged by law to immediately consider the matter cf. Aksjeloven § 3-5. Bråthen (2001) states that in Norway it is necessary to act when the company equity has reached half of share equity. Negative equity does not imply that company equity is equal to half of the share equity – If a company has assets valued lower than their total debt, they will achieve negative equity. Although negative equity is not a precise measure for financial distress, it still may serve as an indicator for financial distress, though
future researchers may want to elaborate on this by measuring liquidity ratios and other indicators of financial distress.

We do not control for industry specific effects like Dedman, Kausar and Lennox (2014), hence we are not able reflect the potential effects of the reduction in share capital from 100 000 NOK to 30 000 NOK, which was a concern shared by both the Norwegian treasury department, Grette (2011) and Langli (2015).

8. Conclusion and Summary
The purpose of this thesis is to establish the main factors predicting the demand for voluntary audit, and to examine if these factors affecting the voluntary audit choice changes over time in Norway. By applying agency theory and prior literature we develop a set of hypothesises, which predict that companies are more likely to opt for a voluntary audit if: (H1) they have higher external agency conflicts; (H2) Are more leveraged; (H3) They are in financial distress (null hypothesis); (H4) They purchase non-audit services; (H5) they demonstrate a higher need for audit assurance in the mandatory audit regime; (H6) they have more shareholders (dispersed ownership); and (H7) they have more family ties and more ultimate owners. Further, we also predict that companies are less likely to opt for a voluntary audit if: (H3) they are in financial distress (null hypothesis); (H6) the CEO is a dominant owner of the company; and (H8) they have hired an external accountant.

Our analysis provides support for most of our hypotheses. Companies with higher external agency conflicts measured through turnover and total assets are more likely to purchase a voluntary audit. In contrast to similar studies on this field, we found that employees had the opposite effect of what hypothesised. This also indicates that turnover and total assets may capture the cost-benefits of the audit itself in Norway. Leveraged companies, measured through debt divided by total assets, are also more likely to purchase a voluntary audit, although the effect weakens over time. We also find that companies in financial distress are less likely to opt for a voluntary audit. In line with our prediction, we find that limited liability companies in Norway are more likely to retain the audit during the
voluntary regime if they purchase other services (NAS). Moreover, companies that pays higher audit fees and that engage a Big4 auditor are more likely to retain the audit during the measured period.

We find evidence that company with higher dispersed ownership (measured by the number of shareholders) increase the probability to purchase or continue with voluntary audit; however, the effect weakens over time. We are not able to establish a clear association between the CEO ownership and voluntary audit, although we find some evidence in 2013, and our univariate analysis provide evidence supporting the contention that managerial ownership give less incentive to spend money on audit. Related to family relationship, we found evidence in both full sample and year 2012 that the more families involved in a company increase the likelihood of audit assurance. We found some evidence indicating a negative relationship between the number of ultimate owners and voluntary audit, but the effect weakens over time. Further, Companies who has appointed an external accountant are more likely to refrain from audit.

Examining a longer period (2011-2013) allows us to conclude that companies over time behave more in line with what theory predicts, indicated by stronger model fit. We also document a steady decline in voluntary audit from 2011 to 2013. Although drivers of voluntary audit become stronger over time and remain stable, we also find evidence that some of the factors predicting demand of voluntary audit changes over time. In conclusion, we find that companies rationally select into audit when it is in their interest to do so.
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### 10. Appendices

*Appendix 1 – International Regulatory Setting*

<table>
<thead>
<tr>
<th>Classification</th>
<th>Employees</th>
<th>Turnover</th>
<th>Balance Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>&lt; 10</td>
<td>≤ € 2 million</td>
<td>≤ € 2 million</td>
</tr>
<tr>
<td>Small</td>
<td>&lt; 50</td>
<td>≤ € 10 million</td>
<td>≤ € 10 million</td>
</tr>
<tr>
<td>Medium-Sized</td>
<td>&lt; 250</td>
<td>≤ € 50 million</td>
<td>≤ € 42 million</td>
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*Appendix 2 – EU Maxima*

<table>
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<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2003</th>
<th>2008</th>
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<tr>
<td>Annual Turnover</td>
<td>£ 5 000 000</td>
<td>£ 6 250 00</td>
<td>£ 7 300 000</td>
<td>£ 8 800 000</td>
</tr>
<tr>
<td>Balance Sheet</td>
<td>£ 2 500 000</td>
<td>£ 3 125 000</td>
<td>£ 3 650 000</td>
<td>£ 4 400 000</td>
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<tr>
<td>Average no. Employee</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
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</table>
Appendix 3 – Thresholds in the Scandinavian countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Employees</th>
<th>Turnover</th>
<th>Balance Sheet</th>
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</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>&lt; 10</td>
<td>≤ DKK 8 million</td>
<td>≤ DKK 4 million</td>
</tr>
<tr>
<td>Sweden</td>
<td>&lt; 3</td>
<td>≤ SEK 3 million</td>
<td>≤ SEK 1.5 million</td>
</tr>
<tr>
<td>Finland</td>
<td>≤ 3</td>
<td>≤ € 200 000</td>
<td>≤ € 100 000</td>
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</table>

Appendix 4 – Percentage of companies refraining from audit in 2011

<table>
<thead>
<tr>
<th>Percentage of companies refraining from audit in 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies qualifying for exemption</td>
</tr>
<tr>
<td>Companies actually refraining</td>
</tr>
<tr>
<td>Percentage of companies refraining</td>
</tr>
</tbody>
</table>
### Appendix 6 – Sensitivity Analysis

<table>
<thead>
<tr>
<th>Panel</th>
<th>Variable</th>
<th>Full sample</th>
<th>Year 2011</th>
<th>Year 2012</th>
<th>Year 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coeff.</td>
<td>z-stat</td>
<td>Coeff.</td>
<td>z-stat</td>
</tr>
<tr>
<td>A</td>
<td>ln(TURNOVER)</td>
<td>0.090</td>
<td>18.77 ***</td>
<td>0.011</td>
<td>12.48 ***</td>
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<tr>
<td>B</td>
<td>ln(TA)</td>
<td>1.24</td>
<td>67.60 ***</td>
<td>1.44</td>
<td>59.21 ***</td>
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<tr>
<td>C</td>
<td>EMPLOYEES</td>
<td>-1.17</td>
<td>-61.55 ***</td>
<td>-1.975</td>
<td>-34.49 ***</td>
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<tr>
<td>D</td>
<td>ln(TURNOVER)</td>
<td>0.021</td>
<td>2.89 ***</td>
<td>0.026</td>
<td>2.2 **</td>
</tr>
<tr>
<td></td>
<td>ln(TA)</td>
<td>0.156</td>
<td>41.12 ***</td>
<td>0.195</td>
<td>25.23 ***</td>
</tr>
<tr>
<td></td>
<td>EMPLOYEES</td>
<td>-0.166</td>
<td>-48.34 ***</td>
<td>-0.177</td>
<td>-9.81 ***</td>
</tr>
</tbody>
</table>