The Effect of Introducing Voluntary Audit on Accounting Quality and Firm Behaviour

- an Empirical Study of Small Norwegian Firms

by

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Master Thesis in Financial Economics

Norwegian School of Economics (NHH), Bergen, Spring 2015

Acknowledgements

This thesis is written as a part of the Master of Science in Economics and Business Administration at NHH. It addresses the introduction of voluntary audit in Norway. We have found the process to be challenging, instructive and very rewarding.

We wish to thank everyone who helped us and contributed in the writing process. First and foremost we would like thank our supervisor Floris Zoutman. He has shown genuine interest in our subject and actively helped us along the way by providing constructive feedback and support. We would also like to thank The Norwegian Center of Taxation (NoCeT) and The Norwegian Tax Authorities for awarding us a grant, providing data material and helping us throughout the process. Lastly, a big thanks to friends and fellow students who helped us along the way.

Bergen, June 18. 2015

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Abstract

Auditors play an important role by ensuring that the firm's external stakeholders base their decisions on information subject to adequate controls. In this study, we explore the effects the option of voluntary audit has had on small firms' accounting quality and behaviour. We use a detailed data set on all businesses in Norway gathered by the Norwegian Tax Authorities. We present quasi-experimental evidence showing the negative causal effect opting out of audit has on accounting quality, and clear evidence of behavioural effects in the form of bunching below the revenue threshold for voluntary audit. Our findings suggest that the option of voluntary audit has led to an increased risk of external stakeholders basing their decisions on lower quality information. Evidence of bunching behaviour indicates that firms bunch by either exercising earnings management activities or reducing output.

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Introduction

In this paper we evaluate Norway's implementation of voluntary audit for small limited companies in 2011 in three steps. The reform allowed limited companies with less than NOK 5 million in revenues, NOK 20 million in total assets and no more than 10 full time equivalent employees (FTE) the right to voluntary audit. In the first step we evaluate if small Norwegian-registered Foreign Companies (NUFs), which already had the option of voluntary audit, have lower accounting quality than small limited companies in the period leading up to the law change. Secondly, we evaluate if opting out of audit leads to lower accounting quality for small limited companies. Lastly, we investigate if the implementation of threshold values for voluntary audit has affected small Norwegian firms' behaviour.

Several policies were aimed at reducing the relative attractiveness of NUF as a corporate form in the years from 2011, and we want to explore if these initiatives were well founded from an accounting quality perspective. Voluntary audit for small limited companies has been implemented in all Nordic countries and most countries within the EU, but few papers assess the relationship between dropping an auditor and accounting quality. The recent law change in Norway has made it possible to explore this relationship and motivates our research. Firms' financial statements constitute the basis of their tax payments, and is an important source of information to other external stakeholders. We find it interesting to see if the removal of a control mechanism (audit) leads to opportunistic behaviour (through earnings management) and less accurate reporting. A decrease in accounting quality can lead to a wrongful tax basis. This constitutes a cost to society in the form of lost tax revenues and may weaken tax morale, breaking with the notion that everyone should pay their share. Other external stakeholders are also affected by a potential weakening in accounting quality. Suppliers will for example need to make decisions on whether their clients should be allowed to receive credit or not based on information from financial statements. Lower accounting quality reduces the trustworthiness of firms' financial statements, which increases the risk of making decisions with inadequate information.

In addition to investigating differences in accounting quality, we explore the possibility that firms actively bunch below the threshold for voluntary audit to avoid being audited (e.g. to avoid the cost it represents). Firms can adapt to the thresholds by either reducing output or intentionally misstating their earnings, which both represents a cost to society. The implementation of new regulations can often have unintended consequences and documenting these are of great importance to policy makers. Both the Norwegian Progress Party and the Conservative Party have included an increase in threshold values for voluntary audit in their political platforms, which further stresses the importance of uncovering the effects of this policy.

Several names and definitions for accounting quality exist, and there is no universally accepted measure for accounting quality (Dechow et al., 2010, Hope et al., 2013). We therefore assess accounting quality using seven measurements. Four measures pertain to accruals, one addresses earnings smoothing and the last two assess timely loss recognition. This should allow us to generalize our results, mitigate concerns about fundamentals influencing our findings, and allow us to determine the source of differences in accounting quality (Barth et al., 2008).

We do not find conclusive evidence of differences in accounting quality between small NUFs and limited companies. Descriptive statistics show that the only major difference between the corporate forms is that NUFs in general do not have an auditor. Our findings suggest that small NUFs have lower accruals quality than small limited companies prior to the law change, but less accruals relative to operating cash flow. We find that NUFs report losses more timely than limited companies. This study is correlational and we can not determine if the lack of auditor use, or other factors, are responsible for the differences in accounting quality. Limited companies and NUFs may differ in unobserved characteristics. If these characteristics are correlated with both accounting quality and the corporate form, this yields biased estimates. Assuming there are no such characteristics is unrealistic, and halts a causal interpretation of the model. We find no statistical significant relationship between auditor use and our accounting quality measures, which suggest that other factors are responsible for the differences we find.

The 2011 reform enables us to assess the casual relationship between opting out of audit and accounting quality for small limited firms using a difference-in-difference (DiD) design. The model is based on the assumption that unobserved differences between the treatment and control groups are the same over time in absence of treatment, and the only thing that differs is whether they use an auditor or not. This is a realistic and testable assumption, and it allows us to make causal interpretations. By using the same measurements for accounting quality as in the first analysis, we

present quasi-experimental evidence showing the negative causal effect dropping an auditor has on accounting quality. We use one treatment group and two control groups. The treatment group contains firms dropping their auditor. The first control group consist of firms that keep their auditor, and the second contains firms not eligible for voluntary audit. We show that opting out of audit leads to lower accruals quality, more earnings smoothing and less timely loss recognition.

In our final analysis we show another effect of the reform by using the bunching-methodology presented by Saez (2010) and Chetty et al. (2011). The introduction of a revenue-limit for voluntary audit causes firms to actively bunch below the threshold. By aggregating post-reform data, we see clear indications of bunching in the area just below the threshold compared to the distribution in absence of a threshold. There are no signs of bunching behaviour prior to the reform. Exploration of the post-reform year-by-year distribution of firms shows that the bunching behaviour intensifies with time.

We contribute to the existing literature on accounting quality and voluntary audit in several ways. In our NUF analysis we use a different set of measures on a richer data set supplied by the Norwegian Tax Authorities. When assessing the implementation of voluntary audit we establish a causal relationship between opting out of audit and accounting quality. We use Norwegian data of high quality, and measurements encompassing more dimensions of accounting quality than any other paper, to the best of our knowledge. Research on bunching behaviour below the thresholds of voluntary audit have, to our knowledge, never been conducted before. This makes our contribution unique. It is also a new application for the methodology presented in Saez (2010) and Chetty et al. (2011).

Our findings will be of use when evaluating the tax reform of 2011, and to countries contemplating voluntary audit for small firms. Our focus is on the cost of implementing voluntary audit, not its benefits (e.g. lower administrative burdens). We do not discuss the choice between the two, as this is a political question. The costs in question are potential lost tax revenues and costs associated with lower quality financial accounts.

The paper is organized as follows: Section I describes our hypothesis developments, which is derived from background information and previous research. Section II describes our data material and explains our sample selection. Section III presents the research design for the three parts of our paper. Section IV presents our results, and section V summarizes.

Hypothesis Development

2.1 Background

In this section we introduce the background for the implementation of voluntary audit for small limited companies in Norway and explain what the law change entails. Next we outline the role of Norwegian-registered Foreign Companies (NUFs).

2.1.1 The Implementation of Voluntary Audit in Norway

Small Norwegian limited companies (AS) were, effective May 1st 2011, eligible for voluntary audit as long as they fulfilled certain requirements. Until this point the principal rule was that all companies which had an accounting obligation were obliged to have an auditor (Revisorloven, 1999).

In 2007 a committee, Revisjonspliktsutvalget, was appointed to assess the audit legislation in Norway. The majority of its members were in favour of keeping statutory audits for limited companies. They also wanted to impose statutory audit on small NUFs, which at that time were not obliged to have an auditor. The committee's minority argued that the cost of audit was substantial for small firms, and that several EU countries had agreed to introduce voluntary audit. The need for reductions in administrative burdens, in line with the EU target of a 25 per cent reduction by 2012, and the limited benefit of audit to users of small firms' financial records, were also part of the minority's arguments (European Commission, 2012, NOU, 2008). In the end legislators chose to introduce voluntary audit for small firms with revenues less than NOK 5 million, NOK 20 million in total assets, and no more than 10 FTE.

By the end of 2011, approximately 48,000 out of 80,000 companies had chosen to opt out of audit, and two out of three newly registered limited companies chose not to hire an auditor. The aggregate tax payments from firms who opted out of audit were approximately NOK 1.42 billion in 2011, NOK 2.24 billion in 2012 and NOK 2.86 billion in 2013. The firm's board can decide not to have the its financial

accounts audited, by authorisation through a majority vote in the general assembly (Altinn, 2014).

2.1.2 The Role of NUFs

In the early 2000s, NUF became an increasingly popular corporate form in Norway. Small NUFs were, as opposed to limited companies, eligible for voluntary audit before 2011 if they had revenues less than NOK 5 million. By incorporating in a country with low share capital requirements (e.g. the UK where the requirement is 1 pound), NUFs could bypass the relative high Norwegian requirement of NOK 100,000 in share capital for establishing a limited company. A NUF is treated like a limited liability company, which means it is not liable for funds exceeding what is injected in to the company. This could lead to NUFs taking on more risk, with little to no equity. Registering the legal entity behind the NUF abroad gave the Norwegian government limited possibilities to monitor them. The Norwegian Tax Authorities wanted to implement statutory audit for all NUFs in 2005, as this was thought to benefit the authorities in the form of higher accounting quality and tax collection (NOU, 2008). The Ministry of Finance decided to delay their decision until a recommendation was given by Revisjonspliktsutvalget.

Questions were raised about the reputability of some of these firms, and the Norwegian government finally implemented measures in part targeted at reducing the relative attractiveness of NUF over AS as corporate form. In addition to interlacing the auditor requirements for small limited companies and NUFs, the Norwegian government reduced the requirement in share capital for limited companies from NOK 100,000 to NOK 30,000 in 2012 (Regjeringen, 2011). It was followed by new regulation in 2013 which allowed NUFs to change their corporate form to AS (or ASA) without any additional costs, in reality with the click of a button (Regjeringen, 2013).

The number of newly established NUFs has been decreasing rapidly, and 2012 was the first year since 1989 in which a reduction in the total number of NUFs was observed. In 2013 there were 1,195 newly registered and 12,135 NUFs in total, compared to 3,639 and 17,184 in 2011. While the number of newly registered NUFs has been declining, the number of newly registered limited companies was 57.6 percent higher in 2012 relative to 2011 (The Brønnøysund Register Centre, 2013). This may suggest that several NUFs changed their corporate form to AS.

2.2 Accounting Quality

In this section we present our view of accounting quality (AQ) and our choice of AQ measures.

2.2.1 The Accounting Quality Perspective

We want to explore the aspect of accounting quality from the tax authority's point of view, as they are the largest external user of firms' financial reports. They process all firms' financial accounts, and AQ will affect the foundation for companies' rightful tax basis. From this point of view, firms' accounting quality will depend on how well the information in their financial statements, in line with the respective laws and regulations, reflect their true activities. Firms have contradicting incentives in their reporting. If they could, they would like to report low earnings to the tax authorities to minimize tax payments, and higher earnings to other external stakeholders to signal financial robustness. The firms' external stakeholders would however like them to report numbers that reflect their true activities. A supplier wants to be certain that the company in question can pay its accounts payable, and a bank wants to assess the firms' true ability to repay its loans. If reported numbers are not in line with regulations or do not reflect true activities, this constitutes low AQ. What constitutes high AQ for the tax authorities, will thus coincide with the firms' other external stakeholders' perception of high AQ. Langli (2009) shows that external stakeholders have varying use of small limited companies financial accounts (i.e. 65 per cent of the companies do not have employees), but our point of view will take all groups in to account.

Several names and definitions for accounting quality exist, and there is no universally accepted measure for AQ (Dechow et al., 2010, Hope et al., 2013). In line with our view we explore accounting quality from three angles; Accruals, earnings smoothing and timely loss recognition. AQ can also be evaluated using value relevance metrics, but we do not include these as our companies are not publicly listed (Barth et al., 2008). Using several metrics to assess AQ is advantageous in multiple ways. AQ is multidimensional, and using multiple measures should support us in generalizing our results. Results from one single proxy could capture other factors than AQ (e.g. fundamentals) and these factors may drive the result. Using several proxies can mitigate this risk. Furthermore, the use of several proxies should theoretically allow us to determine the source of the difference in accounting quality.

2.2.2 Accounting Quality Measures

Accrual Based Measures

Accruals are in part based on estimates and assumptions. This leaves them open to manipulation, and makes accrual based measures well suited to assess AQ. We use four measures that have all been used to assess the differences in AQ between groups of firms in previous research. Some of our measures cover the extent of firms' use of accruals in general, while others are targeted to specific accruals items. The specific accruals items we choose to look at are accruals in which managers have a high degree of flexibility. These are operating accruals related to the firm's daily operations, and covers accounting items such as receivables, property plant and equipment (PPE) and inventory. An advantage of focusing on operating accruals is that they are short-term accruals, and we should be able to reveal the effects of these in the time period we are looking at.

Our first measure is developed by Jones (1991) and modified by Kothari et al. (2005), measuring the general level of discretionary accruals. Discretionary accruals are based on managements' estimates and judgement, and include a high level of flexibility. Managers have the best knowledge to set these estimates correctly, but the estimates are also open to manipulation. A high level of discretionary accruals increases the opportunity of mistakes or manipulations, and is thus a sensible indicator for AQ.

The second measure is based on Dechow and Dichev (2002), and further developed by Francis et al. (2005) and Ball and Shivakumar (2006), measuring discretionary estimation errors in accruals. This is measured through working capital accruals, and assesses to what extent managers are able to estimate their accruals correctly. Working capital accruals are easily detectable in the short-term, which means they are a good measure within the time frame of our data. We use the modified measure as it includes long-term drivers of accruals, such as PPE and the change in revenue, and is thus not limited by the strict short-term nature of Dechow and Dichev's model.

The third proxy is Stubben (2010)'s discretionary revenue model. A large part of companies' total revenues are often discretionary. In line with the revenue recognition principle, revenues are recognized when they are realized. The proxy models premature revenue recognition and its effect on the relationship between accounts receivable and revenues. The author shows that the discretionary revenue model can detect cases of earnings manipulation, even when traditional accrual models can not, using Securities and Exchange Commission data on actual earnings misstatements.

Lastly we use a proxy developed by Burgstahler et al. (2006) measuring the relative size of firms' accruals. This is a rough measure, as it assumes that more accruals relative to operating cash flow translate to lower AQ. While we focus on discretion and manipulation, it is interesting to see whether the relative size of accrual coincides with the other measure of accrual quality.

Earnings Smoothing

Having a direct measure of earnings smoothing can be beneficial in instances where the firms in question have few or no accruals. Earnings smoothing affects the taxable income for a company, as it can be used to both minimize and stabilize earnings. Our measure of earnings smoothing is based on Barth et al. (2008), which use it to assess earnings smoothing in a setting where it is hypothesized that companies aim for smooth and positive earnings. This may be more important for publicly listed companies, and may not be directly relatable to our firms.

Timely Loss Recognition

Timely loss recognition relates to the conservatism principle stating that unrealized losses should be recognised immediately if there is uncertainty about the outcome. We use two measures to assess timely loss recognition. The first measure is developed by Ball and Shivakumar (2005) and relates to conditional conservatism. More conditional conservatism indicates higher AQ. It is a non-stock-market version of Basu (1997)'s measure of conditional conservatism, and we choose to use it because the firms we investigate are not listed. The model incorporates the role of accruals in conditional conservatism, which the four direct accruals models fail to do. The measure is thus a good complement to these. Hope et al. (2013) uses this measure to assess differences in AQ between small private and public firms.

The second timely loss recognition measure assesses firms frequency of big losses and is developed by Barth et al. (2008). A lower frequency of reported large negative results reflects lower AQ, as this can be an indication of losses being spread out over a period of time. With this measure we also get to measure timely loss recognition for firms that do not have a lot of accruals.

2.3 Previous Research

In this section we present previous research describing the relationship between AQ and auditors. We then present research examining AQ in NUFs. In the following two sections we review general observations and previous empirical studies exploring the effects of voluntary audit internationally and in Norway. In the last section we review the effect of thresholds on firm behaviour.

2.3.1 Accounting Quality and Auditors

A company with an accounting obligation is responsible for ensuring that their financial statements are prepared in accordance with the prevailing regulation. This can either be done in-house or by an external accountant. An auditor is an independent firm hired by the company subject to the audit. The auditor's role is to give an independent and objective assessment of whether the company's financial statements are free of material misstatements, which can be the result of errors or deliberate manipulations (NOU, 2008). This is to ensure that external stakeholders base their decisions on information subject to adequate controls.

The link between auditors and accounting quality is examined in several papers. Krishnan (2003) finds that firms audited by a Big N auditor categorized as an industry specialist have lower levels of discretionary accruals than clients of "non specialists".[1] While clients of Big N auditors have a higher level of total accruals, their level of discretionary accruals are lower than firms audited by non-Big N firms (Becker et al., 1998, Francis et al., 1999). Lastly, Caramanis and Lennox (2008) establishes a negative correlation between numbers of auditing hours worked, and the level of income-increasing accruals in a firm. All of these studies are based on discretionary accruals measures. Dedman and Kausar (2012) finds that firms with an auditor have more conservatism and higher accruals quality, indicating that being audited is associated with higher AQ.

2.3.2 Accounting Quality and NUFs

Despite NUFs questionable reputation, little research has been conducted in terms of documenting whether this reputation is justified. The only research we can find is an article based on a master thesis written by Frøyshov and Johansen (2011).

[1] The top tier accounting firms. Prior to 2002 these were Deloitte, PwC, KPMG, EY and Arthur Andersen. Today these are Deloitte, PwC, KPMG, EY and BDO.

They look at differences in accounting quality between NUFs and small limited companies, and the study was conducted before the law change on voluntary audit for small limited companies was enacted. By adapting and developing six markers for measuring accounting quality based on the methodology in Barth et al. (2008), they try to establish a connection between the corporate form, and the corresponding accounting quality. The analysis is correlational, and uses earnings smoothing, earnings manipulation and timely loss recognition measures as proxies for AQ.

In their analysis, which also includes a comprehensive review of the firm-characteristics that applies to the average NUF, the authors use data compiled by SNF and NHH, in addition to a database compiled by the Brønnøysund Register Centre specifically on NUFs. While comprehensive, the study suffers somewhat from a lack of data as the authors only have accounting data for 5,435 unique NUFs (representing 19,9per cent of the total). Their findings do not offer grounds to conclude whether NUFs or limited companies have higher accounting quality.

We distinguish ourselves from their study by using a different set of proxies for AQ. Their proxies are used exclusively on large companies prior to their study. Most of our proxies have been used to assess AQ in small firms, which is why we believe them to be better suited to the data material. Only two of our proxies overlap with their study, allowing us to assess AQ from other angles, while also allowing us to compare our findings. We have a more comprehensive data set, as our data from the Norwegian Tax Authorities includes data on NUFs that do not send their financial reports to the Brønnøysund Register Centre. Based on NUFs reputation, and the government's focus on reducing the attractiveness of NUF as a corporate form, our first hypothesis is as follows:

H1: NUFs have lower AQ than comparable limited companies.

2.3.3 Implementation of Voluntary Audit in Other Countries

A country's overall institutional system (Ball, 2001) and firms' incentives for financial reporting greatly influence firms' AQ. Hence, looking at evidence from implementation of voluntary audit in countries with similar institutional frames as Norway, such as Denmark, Sweden and Finland, could give us indications about the anticipated affects. As little empirical research on voluntary audit has been conducted in the Nordic countries, we also look at experiences from the UK. The UK has been a pioneer in the case of voluntary audit and empirical research has been done evaluating the post-reform effects.

Evidence from Other Nordic Countries

In Denmark, thresholds for voluntary audit were implemented in 2006 (Norwegian Ministry of Finance, 2011). The thresholds were revenues of DKK 3 million, total assets of DKK 1,5 million and 12 FTE. Companies that did not exceed two out of three thresholds for two consecutive years, were eligible for voluntary audit. With these rules, approximately 76,000 out of 186,000 limited companies (approximately 41 percent) were allowed to drop their auditor. We find no empirical studies investigating the effects of the reform, but the Danish Business Authority evaluates the law change based on observations done in the following fiscal year (2007). They report that 22.8 percent out of the firms eligible for voluntary audit choose to drop their auditor, but 30.6 percent out of these firms continue to use an auditor for other duties (such as preparation of annual reports). In 2011 the Danish Business Authority review a randomly selected sample of 1,200 annual reports from fiscal years 2010 and 2011. They conclude that the amount of errors in the financial accounts are higher for firms that drop their auditor compared to those continuing to be audited (Danish Business Authority, 2011), but these findings are merely descriptive. As they do not conduct an empirical analysis, controlling for other factors that may influence the number of errors in the annual reports, they can not conclude on whether the higher number of errors is caused by the reform or other factors. Most of these errors are connected to firms' lack of knowledge concerning accounting regulations. In relation to the effect on tax control, the evaluation shows that there are more errors in the tax returns of firms who are not audited.

Sweden implemented voluntary audit in 2010. Firms not exceeding two out of three thresholds were subject to voluntary audit. The limits were revenues of SEK 3 million, total assets of SEK 1.5 million and 3 employees. This entailed that 250,000 limited companies, 70 percent of all limited companies in Sweden, could opt out of audit. 64,000 limited companies had chosen to do so by August 2012. We do not find any empirical research evaluating the reform, but in a press release Bolagsverket (2012), the Swedish Companies Registration Office, claim they receive a higher number of annual reports of lower quality in 2012 after the voluntary audit is introduced. The evaluation presented is anecdotal, and based on the amount of errors, not financial determinants of AQ. The number of fees sent out to companies that fail to deliver their financial accounts within the set deadline have also increased by 10 percent. Statistics show that two out of three start-ups choose not to appoint an auditor.

Finland introduced voluntary audit in 2007 for firms that did not exceed two out of three thresholds the last two fiscal years. The thresholds were revenues of EUR

200,000, total assets of EUR 100,000 and 3 employees. By the end of 2008 approximately 6 percent of all limited companies had chosen to opt out of audit. Roughly one out of two start-ups chose not to use an auditor. In their paper, Ojala et al. (2011) hypothesize that accruals quality, post reform, is higher for audited than for non-audited debt financed small companies. They apply a DiD-design with one treatment and one control group. The authors use one proxy, measuring discretionary estimation errors in accruals, for AQ. They find weak causal empirical evidence supporting their hypothesis for companies funded by director's loans, but not for companies funded by external debt.

Our study distinguishes itself from the Danish and Swedish evaluations as we attempt to establish a causal relationship between audit and AQ, while their evaluations were descriptive and carried out by their respective government entities. Ojala et al. (2011)'s study uses only one accrual based measure for AQ, compared to our seven measures of AQ. They also limit their sample to debt financed companies, while we look at all firms. Neither do they attempt to look at firm behaviour around the thresholds as we do.

Evidence from the UK

The EU allowed their member states to implement voluntary audit through the EU Fourth Directive in 1978. The UK introduced voluntary audit in 1994, and progressively raised their threshold until it was set at the EU maximum in 2004. The EU limits were then (in GBP) £5.6M in turnover, total assets of £2.8M and 50 employees (EU, 2013, UK Government, 2015).[2] To be eligible for voluntary audit a firm has to satisfy at least two out of three limits. In 2005 it was estimated that 880,000 companies chose to opt out of audit, comprising approximately 83 percent of all small and active limited companies in the UK (Professional Oversight Board for Accountancy, 2006).

Dedman and Kausar (2012) use a DiD-design to examine accrual quality and conservatism for private UK firms after the change in thresholds in 2004. Their treatment group is firms who opt out of audit, and their control group contains firms who retain their auditor. Their conservatism and accruals based tests indicate that opting out of audit is associated with lower AQ. They also find that firms retaining their auditor experience significantly higher credit scores than firms opting out. This research is in line with Lennox and Pittman (2011)'s findings, who suggests that

[2]Today, the EU maximum limits are no more than EUR 8 million (£6.5M) in revenues, EUR 4 million (£3.26M) in total assets and 50 employees (EU, 2013), and the UK operates with these thresholds (UK Government, 2015)

firms choosing voluntary audit attracts upgrades to their ratings through positive signalling, while firms opting out experience downgrades to their ratings due to the negative signals associated with this.

Both studies use the FAME database, which relies on company reports to Companies House. This is unverified data, which likely makes it of lesser quality. The coverage of the database is not very comprehensive for the years included in these studies (Anayadike-Danes, 2015). Small and medium-sized companies are not obliged to share information about employment, assets and turnover, which means that the study only covers the firms reporting it voluntarily. This may lead to problems with selection bias. Our data covers the universe of Norwegian firms, is collected by the Norwegian Tax Authorities, and should as such be of higher quality. Furthermore, Dedman and Kausar (2012) uses one model for timely loss recognition, and two models for accrual quality to assess AQ, whereas we use seven measures in total. They do not evaluate firm behaviour in relation to the thresholds as we do.

2.3.4 Implementation of Voluntary Audit in Norway

The first major evaluation of the 2011 law change came at the end of March 2015, in the form of a multidimensional study by Langli (2015). One part of the study assesses AQ by using measures for accruals quality and timely loss recognition. The measures are based on Hope et al. (2013), and the study is conducted on the same data material as we use. His findings indicate that there is a general worsening in AQ amongst firms opting out of audit, primarily for firms with a lot of inventory, customer receivables or a combination there of. He also finds indications of a decrease in AQ when the firms in question have high levels of debt.

His study was commissioned to evaluate the effects of the 2011 law change, and as such does not evaluate accounting quality for NUFs prior to the law change. As NUFs have been subjected to voluntary audit for several years, and as they figure in the debate preceding the law change, we find it prudent to include this in our analysis. While his study is comprehensive, his choice of research design when assessing AQ may give biased estimates. He evaluates the reform with cross-sectional analyses for year 2010, 2011 and 2012 separately.[3] With this design it is not possible to control for unobserved but fixed omitted variables and year fixed effects. Cross sectional estimates are therefore often higher than fixed effects estimates (Angrist and Pischke, 2008). In our analysis we try to control for this by exploiting the

[3]For the two timely loss recognition proxies he uses all years present in the data material, and he uses a pooled regression.

advantages of panel data and control for firm and year-fixed effects. Lastly we assess small firms behavioural changes, in the form of bunching behaviour post reform, something which Langli does not consider.

With the law-change enacted in 2011, excluding Langli (2015), there has been limited opportunity to empirically evaluate the full impact of the reform. The analyses that have been conducted are primarily master theses, such as Bjørnerud and Vestli (2013) and Borgersen and Thorsbakken (2014). They both base their theses on financial reports sent to the Brønnøysund Register Centre.

Bjørnerud and Vestli look at two different aspects of AQ. They use two proxies for discretionary accruals and one discretionary revenue model. Their study is descriptive and they investigate if mean values for their AQ measures differ between firms who keep and drop their auditor, pre and post reform. They do not find any significant mean differences. They also look at how auditor-choice affect AQ. Their findings suggest that companies using a "Big 4" auditor in 2010 and subsequently opt out, experience a significant decrease in AQ. This indicates that auditor-type is an important determinant of AQ. They also find evidence that companies using a "Big 4" auditor have higher AQ than companies using a "non-Big 4" auditor. The limited number of metrics used is a weakness with this study. As the paper points out, they only have access to data for one year in which the law change was active, further reducing the reliability of their findings.

Borgersen and Thorsbakken (2014) postulate that a general loosening in the requirements for statutory audits can increase competition amongst auditors. This can result in auditors signing off on financial statements of lower quality in order to keep their clients, which could decrease the general level of AQ for firms still subject to statutory audit. The authors focus on private limited companies, with NOK 5M to NOK 70M in revenues from 2009 to 2012, and use six indicators to measure AQ. Their findings do not indicate a general worsening of the accounting quality over the chosen period, and they find no differences in AQ between companies audited by "Big 4" vs. "non-Big 4" auditors.

Their study is correlational, and the proposed relationship between increased competition and decreased AQ is interesting in relation to our choice of control groups. Auditors face large reputational risk should they fail to deliver a thorough and independent assessment of a company's financial statements. This is especially critical for "Big 4" auditors in strictly enforced regulatory regimes, of which the Scandinavian countries rank the highest, though it is less prevalent for "non-Big4" auditors (Francis and Wang, 2008, Leuz et al., 2003). Langli and Svanström (2013) do however point out that the potential downside in reputational risk is lower when the

auditors' clients are private and receive less publicity. Borgersen and Thorsbakken's findings show that firms not eligible for voluntary audit are not affected by the reform, and these firms should thus make a good control group in our analysis.

Our study distinguishes itself from Bjørnerud and Vestli's as we analyze accounting quality along more dimensions. We also try to establish a casual relationship between opting out of audit and AQ, by using a DiD design with a treatment group and two control groups. Our study focuses on firms within the limits of voluntary audit, which separates us from Borgersen and Thorsbakken. Lastly, our data material covers more years, and is of higher quality than the previous studies as it is compiled by the Norwegian Tax Authorities.

Empirical research on AQ and auditors, both in Norway and in other countries, suggest that there may be a relationship between dropping your auditor and AQ. We believe that removing a control mechanism may lead to some firms exploiting this opportunity, and increases the likelihood of not detecting errors. We hypothesize that:

H2: Opting out of audit leads to a decrease in accounting quality

2.3.5 The Effect of Thresholds on Firm Behaviour

Nearly 70 percent of all limited companies in Norway have revenues less than NOK 5 million, and small companies are considered important drivers of economic growth.[4] The threshold for voluntary audit is size-dependent and the cost of audit can be substantial for small firms (Langli, 2009). Firms situated in the region around the threshold might actively try to avoid being audited, because they do not want their accounts revised or to avoid the cost of audit. In order to this they either have to reduce output or manipulate their accounts.

We find no prior studies on how the implementation of threshold values for voluntary audit has affected small firms' behaviour in Norway or in any other countries. In terms of related research, Harju et al. (2015) study the effect of value-add tax (VAT) thresholds on the behaviour of small businesses in Finland. Firms with annual sales lower than 8,500 EUR are not liable to pay VAT, and the researchers find that firms actively bunch just below this threshold. The authors suggest that firms respond to this threshold by reducing output, as they find no evidence of tax avoidance or evasion. They argue that the threshold acts as a brake for the growth of small companies, as the bunching behaviour is observed as relatively permanent. In another

[4]Based on numbers from 2013. 179,848 out of 260,155 limited companies have less than 5 million in revenues.

study, Onji (2009) documents the effects of the implementation of VAT thresholds in Japan, focusing on the reactions of larger firms. By comparing corporate size distributions before and after the VAT introduction in 1989, he finds a cluster of corporations just below the threshold value. This suggests that larger firms respond to this threshold by splitting into smaller entities in order to avoid VAT. Li and Lockwood (2014) study the VAT-threshold in the UK, and find that firms actively bunch just below the threshold, and that this is partly driven by under-reporting.

Empirical evidence from research on VAT-thresholds shows that firms actively bunch below them in different countries, suggesting that this could be an international phenomenon. The VAT thresholds are similar to the thresholds for voluntary audit in that they are both linked with the economic activity of the firms. As small firms face extra costs by ending up above the threshold in both cases, and because some firms may want to avoid being audited for other reasons, we hypothesize that some firms will actively bunch below the thresholds for voluntary audit. Before 2011 it was not clear if the government would implement voluntary audit, and the committee commissioned to assess the potential law change advised against it. We therefore do not expect to see any firms adapt to the potential law change in the years before 2011. NUFs have been subject to these thresholds for a long time, while small limited companies have only had three years to respond to them. Our hypothesis is:

H3: The introduction of a threshold for voluntary audit causes firms to actively bunch below it.

Data, Sample Selection and Descriptive Statistics

In this section we start of describing the data set we base our analyses on. We then outline the rationale behind our sample selections for the three parts of our study. Lastly, we provide descriptive statistics for these samples.[5]

3.1 Data Source

Our data set contains accounting data for the universe of Norwegian firms gathered by the Norwegian Tax Authorities. The data is anonymous and as it is gathered by the tax authorities it also contains data on firms who do not report their numbers to the Brønnøyund Register Centre. All firms have an obligation to report their numbers to Brønnøysund, but not all firms do. Our data set contains 1,971,580 firm-year observations in the time period 2006 to 2013. It has 380,648 unique firm observations, where 331,404 and 35,590 are observations of limited companies (AS) and NUFs respectively. The size and extent of the sample distinguishes this study from previous studies, and it will enable us to maximize the chance of uncovering specific and significant mean differences.

3.2 Sample Selection

3.2.1 Descriptive Analysis of AQ for NUFs

For the first part of our study, where we do a correlational analysis comparing the accounting quality of small NUFs to small limited companies, we remove firms with

[5] All descriptive statistics are done on our final samples. This means that we only describe firms meeting our selection criterion.

negative, missing or more than NOK 5 million in revenues. We also remove firms with negative, missing or more than NOK 20 million in total assets or more than 10 employees. Furthermore, we remove firms without an industry code and firms dissolving their business. There is a large re-classification of NACE-codes effective in 2009, which is not corrected in our data set. In order to classify firms in the most correct way, we set the NACE-codes prior to 2009 equal to the code in 2009. This imposes the assumption that no firm could have changed industry prior to 2009. We also remove firms within the finance and power industry, as their financial accounts are not comparable to the other firms in our sample. After doing this, we still observe firms with billions in financial income. We remove firms with financial income higher than NOK 5 million, as we choose to classify them as financial companies due to their extensive financial activity. We keep observations for firms between 2006 and 2010. Table A.2 summarizes the sample selection, and we are left with 107,597 and 8,886 unique firm observations of AS and NUF respectively.

3.2.2 DiD Analysis of AQ in Limited Companies

For the second part of our study, where we explore the causal effect of opting out of audit, we follow the same reasoning with our sample selection criterion as in the NUF analysis. We keep firms with NOK 5 to 10 million in revenues, because we want to use these as an extra control group in our analyses. We exclude all NUFs, as the reform was targeted towards limited companies. The time-period we look at is now 2006-2013. To be able to compare the firms' AQ before and after the reform, we balance our data set. This leaves us with 452,432 firm-year observations and 56,554 unique firm observations, as shown in table A.3.[6]

3.2.3 Discontinuity Analysis of the Threshold for Voluntary Audit

In the third part of our study, we investigate if we observe bunching behaviour below the threshold for voluntary audit for NUFs in the years between 2006 and 2013, and for limited companies pre and post reform. We remove all firms that are obliged to have an auditor even though they operate below the threshold values. These include finance, auditing, accounting and law firms.

[6]For the analysis, year 2006 is dropped as we scale our variables by lagged total assets, which leaves observations for 2006 missing.

3.3 Descriptive Statistics

3.3.1 What Distinguishes a NUF from a Limited Company?

The number of registered NUFs increases every year in our chosen time period (2006-2010). There are 1,643 and 6,470 unique observations of NUFs in 2006 and 2010 respectively. This represents an approximate 300% rise in the total number of NUFs in the time period.[7] In our data set, companies changing their corporate form are given a new organization number. This makes it impossible to identify those firms who have changed from NUF to AS.

The NUFs within our sample are eligible for voluntary audit during the whole period, and the share of NUFs using an auditor is less than 1 percent each year. This is exhibited in table A.4. Most NUFs operate within Academic, Scientific and Technical services, Trade, Construction and IT. Table A.5 and A.6 show descriptive statistics for the sample of NUFs and limited companies respectively. Mean values for number of employees, revenues and assets indicate that limited companies are larger than NUFs in our sample.

In order to model the differences between a NUF and an AS, we have estimated a probit regression model that predicts the probability that a firm is a NUF. In our search to find the most parsimonious model that reflects the "true" model we start out very generally, including all available variables that can explain the differences between the corporate forms. We then remove the least significant variables, one by one. To check the robustness of our results, we also apply a regular OLS and logit model. This does not appreciably change our results. Table A.7 exhibits our probit model (dprobit to show marginal probabilities), and the regression shows the marginal effects of the explanatory variables on the probability that a firm is a NUF. The result can be interpreted as follows: The coefficient of -0.2294 for the variable "auditor" means that the probability that a firm is a NUF decreases with approximately 23 percent if the firm has an auditor. This result is not surprising, as very few NUFs have an auditor. The model generally signals that there are very small differences in the marginal probabilities of each explanatory variable on the probability of whether a firm is an AS or a NUF.

[7] We do not look at the time period between 2011 and 2013, but an interesting note is that the number of registered NUF starts declining from 2012 on. 2012 was the year that equity share capital requirements for AS was lowered from NOK 100,000 to 30,000 and NUFs were in 2013 allowed to change corporate form to AS without additional costs.

3.3.2 What Characterizes a Firm that Drops its Auditor?

Table A.8, A.9 and A.10 shows descriptive group statistics for our treatment and control groups, both before and after 2011. Firms described in table A.8 and A.9 are firms qualified for voluntary audit, which choose to opt out of audit (treatment group) and keep their auditor (first control group) respectively.[8] Firms in table A.10 are firms with five to ten millions in revenues and are hence not qualified for voluntary audit (second control group).[9] The mean threshold values for the firms qualified for voluntary audit are thus naturally lower than for the firms not qualified for voluntary audit. Comparing the two groups that qualify for voluntary audit shows that firms which opt out have on average more employees, lower revenues and less assets than firms who keep their auditor.

In order to model what characterizes a firm which opts out of audit, we have estimated a probit regression model following the same approach as we did modelling NUF characteristics.[10] The characteristics are based on data from 2006-2010. Looking at their attributes before they drop their auditor could provide us with information on why they choose to opt out. Table A.11 displays the results of the model. The factor with the biggest influence on the probability of a firm dropping its auditor is whether it has an external accountant. By having an external accountant the probability of opting out of audit increases by approximately 17%. Other factors with high positive influence are if the owner is also CEO of the firm, if it has a lot of inventory and if it has had a negative auditor report in the past. Factors that influence the probability of opting out of audit negatively are total revenues and total assets, which suggest that the larger a firm is the lower the probability of it dropping its auditor. If a firm operates within agriculture, forestry and fishing, health and social work, private household or other services it increases the probability of opting out, while working within mining and quarrying, real estate and business activities decreases the probability.

3.3.3 What Characterizes a "Bunching" Firm?

In table A.12 we describe the characteristics of firms positioned just below the revenue threshold for voluntary audit, using an OLS regression as done in Harju et al. (2015).[11] Column (1) exhibits the results of the regression where we regress

[8] Firms which are not law, auditing or accounting firms, with values for number of employees, revenues and assets less than the set threshold values.

[9] Includes law, auditing and accounting firms below the thresholds.

[10] Tests with regular OLS and logit models provided the same results.

[11] A probit model yield the same results

the dependent variable "Buncher", a dummy variable of having total revenues between NOK 4,900,000-5,000,000 millions, on firm level characteristics.[12] To make the results comparable, we run the same regression for firms located just below and above the potential bunchers. Column (2) and column (3) show the results of regressions with dependent variables of belonging to to total revenues region NOK 4,750,000-4,850,000 and NOK 5,050,000-5,150,000. We call these placebo group 1 and 2 respectively. The "just below" control variables indicate if the firm has been in the bunching region in previous years, and the "just above" variables indicate if the firms have been right above the threshold in previous periods.

Coefficients for being in the bunching region in the two previous periods are positive and highly significant. The interaction term on the other hand is negative and significant at a 10 percent level. This suggests that past behaviour significantly explains bunching, as being located in the bunching region one of the past two years increase the possibility of being in the bunching region today. However, the bunching behaviour does not seem to be persistent. Past behaviour of bunching firms does not explain current behaviour more than past behaviour of placebo firms explain their current behaviour. The interaction term for the placebo groups is positive, suggesting that firms are also more persistently located in these regions.

The coefficients for being located just above the threshold in previous periods are positive and highly significant. This suggests that firms are more likely to bunch below the threshold if they are located just above the threshold in previous years. This could have a natural explanation connected to firm performance, or it could be done by either reducing output, or misstating financial reports. The same applies to the placebo groups, which suggest that past behaviour does not explain current behaviour more for bunchers than for the placebos. The interaction terms are not significant for any of the groups. Firms which operate within the health and social work industry are less likely to bunch.

[12]The final model is found by using the general to specific method, where we include all relevant variables and remove the least significant variable after each run of the regression

Research Design

In this section we outline the research design behind our analyses. Variable definitions are exhibited in table A.1 and explained in the text the first time they are used. We first present the general model for our AQ analyses, followed by a detailed explanation of the AQ measures and control variables used. Lastly, we describe the research design for the analysis of firm behaviour around the threshold for voluntary audit.

4.1 General Model

We use seven measures as proxies for AQ. The first four measures relate to accruals quality, the fifth to earnings smoothing and the last two to timely loss recognition. Our general model is:

$$AQ = X_{it}\gamma + \beta Dummy1 + \beta Dummy2 + \epsilon_{it} \tag{4.1}$$

Where

- AQ is a measure of accounting quality
- $X_{it}\gamma$ includes control variables. It also includes time and firm fixed effects when applicable.
- $Dummy1$ is a dummy variable indicating if the firm has the ability to opt out of audit.
- $Dummy2$ is a dummy variable indicating if the firm has an auditor.

We control for robust standard errors and cluster at firm level.

4.1.1 Descriptive analysis of AQ for NUFs

In our first analysis we use a correlational design. We use an OLS-regression model in order to find significant differences in AQ between small NUFs and limited companies. $Dummy1$ is equal to one if the company is a NUF, as all NUFs in our sample are eligible for voluntary audit. $Dummy2$ is $Auditor$, and it is equal to 1 if the firm is audited. The results of this model may only be interpreted causally under the assumption that small NUFs and limited companies do not differ in unobserved characteristics correlated with company form and AQ. This assumption is unrealistic and not possible to test. Therefore the results can not be interpreted causally, as the estimates may be biased. Thus, we can not determine if it is the lack of auditor use in NUFs that is responsible for possible differences in AQ between the two corporate forms. We include time fixed effects where applicable, and use control variables known to affect AQ. We also control for firm characteristics.

4.1.2 DiD Analysis of AQ in Limited Companies

In order to explore if opting out of audit causes a decrease in AQ, we use a DiD design where $Dummy1$ is Can_opt_out and is equal to one if the firm qualifies for voluntary audit. $Dummy2$ is $Drop\_aud$, which is equal to one if the firm drops its auditor. With a DiD design we look at the difference in differences in AQ for our treatment and control groups before and after the reform. The treatment is dropping your auditor. With this design we can interpret the results causally under the assumption of parallel trends in AQ in absence of treatment. This assumption is much more realistic than the assumption in our first model, and we also test it by conducting a placebo test imposing the assumption that the law change happens in 2009 (Angrist and Pischke, 2008). With this setup we exploit the advantages of quasi-experimental data. We use two control groups and one treatment group. The treatment group consist of firms choosing to drop their auditor. Our control groups are firms who retain their auditor, and firms not eligible for voluntary audit. We include firm and year fixed effects to control for potential unobserved but fixed omitted variables.

4.2 Accounting Quality Measures

We use seven measurements for AQ that have been used in previous research. The measurements were originally developed to look at AQ in larger firms, but have also

been used on samples containing small firms. As accruals are central in several of our measurements for AQ, we need to define it. We do not have data on firms' cash flows, and we will define accruals based on the accounting variables we have.

4.2.1 Accruals Definition

The revenue recognition and the matching principle are accounting principles stating that revenues shall be recognized when they are realized, and costs in the same period as their corresponding revenues. According to Dechow (1994), accruals deal with timing and matching problems innate in cash flows so that earnings better describe firm performance. In line with the recognition and matching principle, we derive the following relationship between net income, accruals and cash flows for firm i in year t:

$$NI_{it} = Accruals_{it} + OCF_{it} \tag{4.2}$$

Where

- NI_{it} is net income
- $Accruals_{it}$ is accruals
- OCF_{it} is operating cash flow

We use a definition by Hope et al. (2013) in order to derive accruals, and use the relationship in equation 4.2 to derive OCF. The definition of accruals is:

$$Accruals_{it} = (CA_{it} - Cash_{it}) - (CA_{i,t-1} - Cash_{i,t-1}) - \Delta NIBCL_{it} - Dep_{it} \tag{4.3}$$

Where

- CA_{it} is current assets.
- $Cash_{it}$ is cash and cash equivalent.
- $NIBCL_{it}$ is non-interest bearing current liabilities.
- Dep_{it} is depreciation.

This definition of accruals is used throughout the paper. As accruals are central to several of our measures, we will do a robustness test using an alternative definition of accruals by Barth et al. (2008).[13]

[13] $Accruals = \Delta Inventories_t + \Delta Receivables_t + +\Delta OtherCurrentAssets_t - \Delta Payables - \Delta OtherCurrentLiabilities - Depreciation$

4.2.2 Accrual Based Measures

Discretionary Accruals (1)

Our first measure of accrual quality is based on the Jones (1991) model and measures the extent of discretionary accruals. In the model we regress variables that drive non-discretionary accruals, such as growth in revenues and gross level of PPE, on total accruals. The residual in the regression, the unexplained variation in total accruals, represents the firms' discretionary accruals. We use total accruals as our dependent variable because this captures more management manipulation than focusing on just one specific accruals type. Non-discretionary accruals reflect business conditions that naturally creates accruals, while discretionary accruals are related to management choices. Discretionary accruals are thus a better measure for AQ than total accruals, which is why we use the residual in the regression as our proxy for AQ. We incorporate ROA in the regression to control for firm performance and we also control for firm size (Kothari et al., 2005).

$$Accr_{it} = \beta_0 + \beta_1(\frac{1}{Assets_{i,t-1}}) + \beta_2 \Delta Rev_{it} + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \epsilon_{it} \tag{4.4}$$

Where

- $Accr_{it}$ is total accruals scaled by lagged total assets.
- ΔRev_{it} is change in revenues scaled by lagged total assets.
- PPE_{it} is property, plant and equipment scaled by lagged total assets.
- ROA_{it} is return on assets.

As firms can use accruals to both increase and decrease their net income, we take the absolute value of the residual and multiply it with negative one (Hope et al., 2013). This is our proxy for Discretionary Accruals (DiscA).

$$DiscA = -|\epsilon_{it}| \tag{4.5}$$

A higher value for DiscA represents better AQ. Our hypotheses for this measure are:

$H1_1$ = NUFs have lower value for DiscA than limited companies.

$H2_1$ = Opting out of audit leads to lower DiscA.

A high amount of discretionary accruals reflects lower AQ, but this interpretation may not always be right. Firms can have a high proportion of discretionary accruals for good reasons, such as high growth firms, which is a weakness with the measure.

We correct for this by including a measure that focuses on estimation errors in accruals, which directly measures how well firms are estimating their accruals. We also look at the extent of discretionary revenues.

Discretionary Estimation Errors (2)

This model builds on Dechow and Dichev (2002)'s model and assesses total estimation errors in working capital accruals (WCA).[14] Accruals are based on assumptions and estimates that need to be corrected in the future if they turn out to be wrong. Short-term working capital accruals should be explained by last, this, and next years operating cash flows, as accruals are transitory and should revert. The residuals in the model are unrelated to cash flow realizations, and will thus include estimation errors and corrections. We adjust for PPE and the change in revenue, as these are long-term drivers of accruals. Lastly we incorporate a dummy variable for negative operating cash flow to proxy for losses, as this controls for the timely loss aspect of accruals, and strengthens the model (Ball and Shivakumar, 2006, Dechow and Dichev, 2002, Francis et al., 2005).[15] Our model does not include next years operating cash flows, as we have no data for 2014, and we consider it vital to base our analyses on data for three years post reform.

$$\begin{aligned} WCA_{it} = \beta_0 + \beta_1 OCF_{i,t-1} + \beta_2 OCF_{it} + \beta_3 \Delta Rev_{it} \\ + \beta_4 PPE_{it} + \beta_5 Neg\_OCF_{it} + \beta_8 OCF_{it} * Neg\_OCF_{it} + \epsilon_{it} \end{aligned} \tag{4.6}$$

Where

- WCA_{it} is working capital accruals scaled by lagged total assets.
- OCF_{it} is cash flow from operations scaled by lagged total assets.
- $OCF_{i,t-1}$ is last year's cash flow from operations scaled by lagged total assets.
- Neg_OCF_{it} is a dummy-variable equal to one if cash flows from operations is negative.

The residuals in the regression are working capital accruals not explained by last years and this years OCF, PPE and change in revenue. This deviation from the expected value of working capital accruals, represented by the absolute value of the

[14] WCA is calculated as change is non-cash current assets less change in current liabilities not including short-term debt and taxes payable (Hope et al., 2013)

[15] Accruals mitigate noise in OCF (OCF and WCA negatively correlated), and deal with timely recognition (OCF and WCA positively correlated). By including a dummy for negative cash flow we counterweight the negative correlation between WCA and OCF present in the model, as OCF and WCA are positively correlated in times of losses.

residual multiplied by negative one, is our proxy for accrual quality (DiscEE).

$$DiscEE = -|\epsilon_{it}| \tag{4.7}$$

A higher value of DiscEE represents higher AQ. For this measure, we hypothesize:

$H1_2$ = NUFs have a lower value for DiscEE than limited companies.

$H2_2$ = Opting out of audit leads to lower DiscEE.

As we do not have enough data to include next year's cash flow, our model may somewhat overestimate the error in short-term accruals. A solution for this would be to forecast next year's cash flow, but we do not possess the relevant information to accurately do that. Forecasting OCF would also introduce an element of measurement error, and we consider it most appropriate to exclude next year's cash flow. Using several measures for accrual quality should somewhat mitigate this weakness, as we can interpret these measures in conjunction to strengthen our findings.

Discretionary Revenues (3)

Our third model measures discretionary revenues. We regress the change in revenues on the change in accounts receivable. Accounts receivable consist of a non-discretionary and a discretionary part, where the non-discretionary part does not require management estimations. The discretionary part is however subject to management discretion. By controlling for the change in revenue in the model, we have controlled for the non-discretionary part of accounts receivables through the change in revenues (Stubben, 2010).

$$\Delta AR_{it} = \beta_0 + \beta_1 \Delta Rev_{it} + \epsilon_{it} \tag{4.8}$$

Where

- ΔAR_{it} is the change in accounts receivable scaled by lagged total assets.

The absolute value of the residuals multiplied with negative one is the proxy for discretionary revenues (DiscRev). In this model, a higher value of DiscRev indicates higher AQ.

$$DiscRev = -|\epsilon_{it}| \tag{4.9}$$

We hypothesize that:

$H1_3$ = NUFs have a lower value for DiscRev than limited companies.

$H2_3$ = Opting out of audit leads to lower DiscRev.

A weakness with this model is that it will somewhat understate discretionary revenues (Stubben, 2010).[16]

Size of Accruals (4)

Our fourth measure of AQ is the size of accruals (SizeAccr), calculated as the absolute value of total accruals scaled by operating cash flow. Since earnings management is essentially a function of manipulating accruals it is intuitive to use the size of accruals as an indicator of AQ. Using accruals to misstate earnings by using aggressive revenue recognition or overstating reported earnings can be done in a number of ways, but in most cases the cash flow is unaffected. By scaling total accruals with operating cash flow (OCF) we also account for the fact that larger firms have higher accruals, and the size of accruals is more comparable across firms. A higher ratio of accruals to operating cash flow is indicative of using accruals to inflate earnings, indicating lower AQ (Burgstahler et al., 2006).

$$SizeAcc = -|\ln(|\frac{Accruals_{it}}{OCF_{it}}|)| \tag{4.10}$$

We multiply the absolute value of our ratio with negative one, so that a higher number represents better AQ. We hypothesize that:

$H1_4$ = NUFs have a lower value for SizeAccr than limited companies.

$H2_4$ = Opting out of audit leads to lower SizeAccr.

It should be noted that high levels of accruals do not directly translate to lower AQ, as it is normal that for example high growth firms have higher levels of accruals. This is a weakness in the model. In our analysis we will assess the overall level of accruals to operating cash flow, and the estimates will be a rough measure of AQ, but our main focus will remain with the first three accrual based measures as they assess discretionary components of accruals.

[16] See appendix C.1 for further explanation.

4.2.3 Earnings Smoothing (5)

Variance in Net Income

The next proxy for AQ measures the volatility in the change in net income. If firms target their earnings towards small positive (or negative) numbers, variability in the change in net income will be smaller than in the absence of earnings management. We have change in net income as our dependent variable, and control for factors that affects it such as size, growth and leverage (Barth et al., 2008, Frøyshov and Johansen, 2011, Lang et al., 2006). More earnings management should result in lower variability in earnings, which is indicative of lower AQ.

$$\begin{aligned}\Delta NI_{it} =&\beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Lev_{it} + \\ &+ \beta_4 Age_{it} + \beta_5 Rev_{it} + \beta_6 OCF_{it} + \beta_7 AUD_{it} + \epsilon_{it}\end{aligned} \tag{4.11}$$

Where

- ΔNI_{it} = Change in net income scaled by lagged total assets.
- $Size_{it}$ = The natural logarithm of total assets.
- $Growth_{it}$ = Relative growth in revenue.
- Lev_{it} = Interest bearing debt over book value of equity.
- Age_{it} = The firm's age measured from the year of incorporation.[17]
- Rev_{it} = Revenue scaled by lagged total assets.
- AUD_{it} = Dummy variable indicating if the firm is audited in the first analysis, and if the firm is audited by a "Big 5" auditor in analysis 2.

Our proxy for AQ, variance in change in net income (VCNI), is calculated as the variance in the residuals for each firm. Higher VCNI indicates better AQ, and we hypothesize that:

$H1_5$ = NUFs have a lower value for VCNI than limited companies.

$H2_5$ = Opting out of audit leads to lower VCNI.

A weakness with this measure is that firms exercising big bath accounting will be considered to have good AQ. Big bath accounting is another form of earnings management where firms take big losses one year with the intention of artificially improve next year's earnings. This kind of reporting will increase the variance in net income, which we interpret as good AQ (Barth et al., 2008). However, the sample of small firms we look at have a limited amount of resources and it is not likely

[17]The variable "Age" is not available in analysis 1, as the data on NUF's year of registration is lacking for a majority of our observations.

that they exercise this form of earnings manipulation. The model will only provide one observation per firm in the first analysis, and two per firm in the second. This is also a weakness with the measure, as we loose most of the time variation in the data. However, the accruals quality and timely loss recognition measures utilize the time variation in the observations. The earnings smoothing measure is also a good complement for measuring AQ in firms with few accruals.

4.2.4 Timely Loss Recognition

The timely loss recognition measures are fitted to our model directly, and thus treated differently than the first five measures.

Conditional Conservatism (6)

Timely loss recognition is a form of conditional conservatism, stating that bad news are more readily implemented than good news (Basu, 1997). Accruals serve two purposes. They mitigate noise in the operating cash flow with regards to earnings, and deal with unrealized gains and losses. The first purpose implies a negative correlation between accruals and operating cash flows. In this model, developed by Ball and Shivakumar (2005), we are concerned with the second role of accruals, as how firms deal with unrealized gains and losses reveal how well their accounting is in line with conditional conservatism.

The assumption behind this model is that the probability of accrued losses is greater in periods with negative cash flows. Timely loss recognition is based on information about expected, not realized, cash flows and are thus handled through accruals. This implies that timely loss recognition infers a positive correlation between current year's operating cash flows and accruals, because revisions (through accruals) in current year's cash flow are positively correlated with revisions in expected future cash flows.

In the model we have accruals as our dependent variable, explained by operating cash flow as our regressor. We include an interaction term with a dummy variable for negative cash flow from operations multiplied with OCF, in line with the assumption that accrued losses is greater in periods with negative cash flows.

$$\begin{aligned} Accr_{it} = \beta_0 + \beta_1 OCF_{it} + \beta_2 Neg\_OCF_{it} \\ + \beta_3 Neg\_OCF_{it} * OCF_{it} + \epsilon_{i,t} \end{aligned} \tag{4.12}$$

For our first analysis we fit the measure to our model by adding a variable for NUF and by including control variables, as seen in appendix C.2. We hypothesize that:

$H1_6$ = NUFs have less conditional conservatism than limited companies.

In our second analysis, we fit the measure to our model by adding a dummy for firms that can opt out, and a dummy for firms who drop their auditor, as seen in appendix C.2. We also include control variables. We hypothesize that:

$H2_6$ = Opting out of audit leads to lower conditional conservatism.

The validity of conditional conservatism measures has been criticized, as results have differed depending on the choice of measure (Wang et al., 2008). Results from the measure must be interpreted with this in mind. To account for this we use a second proxy, measuring timely loss recognition with a different approach.

Large Negative Results (7)

Our last measure of AQ is the frequency and size of losses, where a lower frequency of large negative results indicates lower AQ. If earnings are being managed, losses could potentially be spread out over a period of time. We control for revenue and operating cash flow because these will directly affect net income, as well as other relevant control variables (Barth et al., 2008).

We fit the measure to our model by adding a dummy variable for NUF and auditor in our first analysis. In our second analysis we add a dummy variable for firms who can opt out, and for firms who drop their auditor. We include relevant control variables in both analyses.

$$\begin{aligned} LNEG_{it} =& \beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Lev_{it} + \\ &+ \beta_4 Age_{it} + \beta_5 Rev_{it} + \beta_6 OCF_{it} + \epsilon_{it} \end{aligned} \tag{4.13}$$

Where

- $LNEG_{it}$ is Large Negative Result. A dummy variable equal to one if Net Income divided by Total Assets is less than -0.2.

We hypothesize that:

$H1_7$ = NUFs have less large negative results than limited companies.

$H2_7$ = Opting out of audit leads to less large negative losses.

Big bath accounting will also reflect good AQ in this measure, and this is a weakness. But in line with our previous argument, big bath accounting is not likely to be exercised in small firms.

4.2.5 Control Variables

Controlling for firm characteristics and the relevant factors which affect firms' incentives or ability to report precise estimates is important for our analysis. We use several control variables that previous research have found to impact AQ (Borgersen and Thorsbakken, 2014, Hope et al., 2013) or internal controls (Ashbaugh-Skaife et al., 2009), and we include variables that control for firm characteristics. Through the natural logarithm of total assets (Size) and growth in revenue (Growth) we control for the fact that small and young firms often have higher accruals than larger and more mature firms. This is due to their need of growing their asset side in order to meet future demand. To control for firms' overall performance we control for return on assets (ROA), and we control for firms' reported cumulative loss ratio (Cum_Loss) as this is found to increase the likelihood of internal control deficiencies. Capital structure and financing needs are found to impact AQ and we control for these through firms' financial leverage (Lev). We also control for the fact that managers have a high degree of flexibility in estimating the value of their inventory (Inv). Based on previous research of "Big 5" and external accountants impact on AQ, we also control for this in our analysis.[18] As our data set is anonymous, the "Big 5" are the five audit companies with the most clients in our data set. The big five audit companies in our paper are assumed to be Deloitte, KPMG, EY, PwC and BDO. We include firms' age as a control variable to control for the possibility that a firms' position in the life cycle has an impact on AQ (i.e. older firms have established better control routines).

We scale all relevant variables with lagged total assets to address the issue of heteroskedasticity (Kothari et al., 2005).[19] This also makes the variables comparable across firms. As proposed in prior research (see Barth et al., 2008, Francis et al., 2005, Kothari et al., 2005, Lang et al., 2006, Stubben, 2010), we winsordise all relevant variables at the 1st and 99th percentile to control for potential outliers. This is especially important as several of our dependent and independent variables are ratios. These could yield extreme outliers, which could materially alter the results of our regressions (Gujarati, 2008).

[18] In analysis 1 we control for firms being audited instead of firms being audited by Big 5

[19] We scale by lagged total assets, as opposed to total assets, because total assets may be determined jointly with other variables, or total assets may be a function of the scaled variables.

4.3 Discontinuity Analysis of the Threshold for Voluntary Audit

In our third analysis we look at possible bunching of firms below the revenue-limit for voluntary audit, following the bunching methodology used by Saez (2010) and Chetty et al. (2011). We explore the revenue threshold, because the majority of small firms close to being eligible for voluntary audit are not close to having 20 million in assets or 10 employees. The distribution of firms, if no bunching is present, should be convex with the number of firms decreasing with revenue. Figure 4.1, based on a figure by Harju et al. (2015), illustrates this with the number of firms (frequency) on the Y-axis, and revenue on the X-axis. It shows the distribution of firms both as it is assumed to be without bunching (the counterfactual distribution), and how it looks if firms bunch below the threshold (actual distribution).

Following Saez (2010)'s suggested method we first inspect the distribution visually to see if a spike appear at the threshold of 5 million by constructing a histogram with a bin width of 20 000, meaning that the frequency shows how many firms that have revenues between 4,400,000-4,420,000, 4,420,000-4,440,000 etc.[20] We then overlay these histograms with a quadratic best fit line with a 95 percent confidence interval to assess if there is a significant difference between the amount of firms on either side of the threshold.

In order to quantify the number of bunching firms, we use Chetty et al. (2011)'s program in Stata.[21] With this program we calculate the number of bunching firms and the amount of excess mass by constructing a polynomial line for the distribution, excluding the firms around the threshold. The program excludes the excess and missing mass when calculating the counterfactual distribution, and fits the points to a seventh-degree polynomial. This method may overestimate the amount of firms bunching, because the area under the actual distribution is larger than the area under the counterfactual distribution. To adjust for this, the program shifts the counterfactual distribution to the right of the threshold upwards, until the two areas are equal. This accounts for the missing mass to the right of the threshold, but may somewhat underestimate the amount of firms bunching. This enables us to conclude with more certainty, but the quantified bunching may be larger than our results suggest.

[20] After trying several bin sizes we have trough visual inspection set the optimal bin size to 20,000. This bin size is used for the rest of our analysis.

[21] The program is called bunch_count and is written by Tore Olsen.

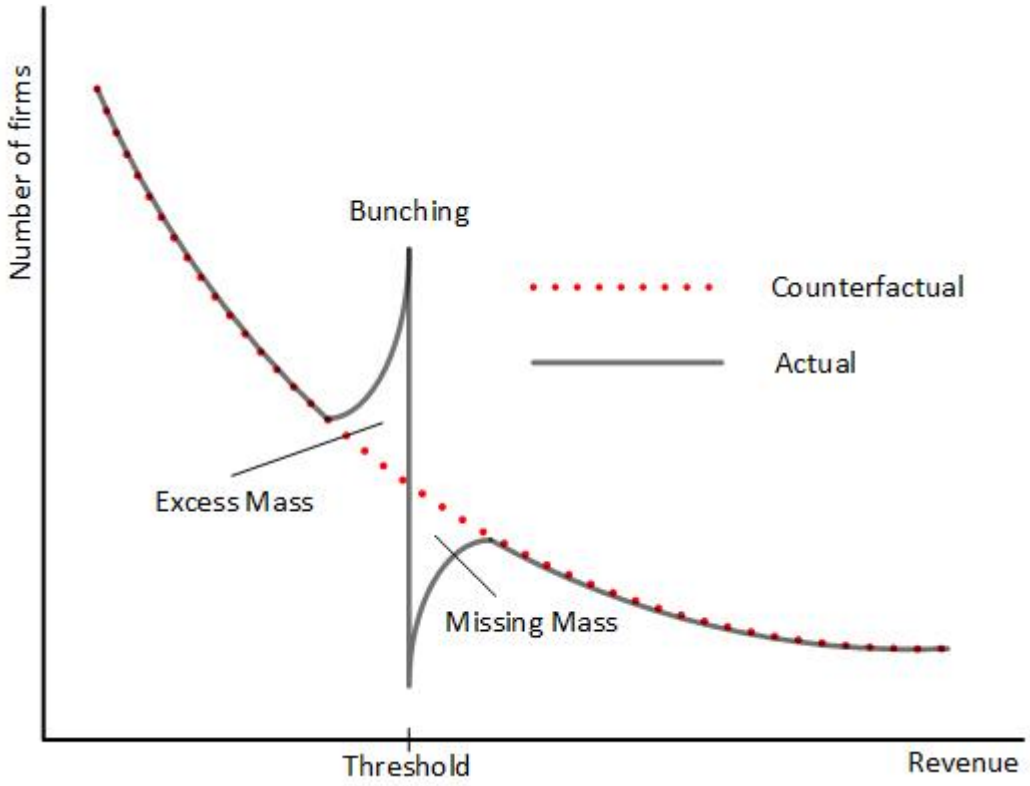

Figure 4.1: Bunching Behaviour Illustrated

Results

In this section we present the results for the three parts of our study. We first present our findings from the correlational analysis of differences in AQ between small NUFs and limited companies. Second, we exhibit the results from our DiD analyses of AQ after the introduction of voluntary audit. Third, we present the findings of our discontinuity analysis of bunching behaviour around the threshold for voluntary audit.

5.1 Correlational Analysis of AQ for NUFs

In our first analysis we look for significant differences in accounting quality between small NUFs and limited companies. Our overarching hypothesis is that NUFs have relatively lower AQ, and this is tested through the hypotheses for our seven proxies for AQ, $H1_1$ through $H1_7$. Our expectations are summed up in table 5.1.

5.1.1 Descriptive Results

As shown in table A.5, the mean values for our three indicators for accrual quality suggest that limited companies have relatively higher AQ. The mean of the measure for size of accruals signals that limited companies have higher accruals relative to operational cash flow than NUFs.

5.1.2 Accrual Based Measures

The results for our accrual based measures are presented in table B.1.[22] The three relevant coefficients in the measures for accrual quality are all negative and signifi-

[22]The number of firm-year observations for model one, three and four are the same. Model two includes less firm year observations due to the models structure. Model two includes a lagged variable $\beta_1 OCF_{i,t-1}$, and lacks observations for $t = 2006$ and $t = 2007$.

Table 5.1: Expectations NUF

Proxy	**Hypothesis**	**Expectation**
Accrual Based Measures		
DiscA	$H1_1$	$\beta_1 < 0$
DiscEE	$H1_2$	$\beta_1 < 0$
DiscRev	$H1_3$	$\beta_1 < 0$
SizeAccr	$H1_4$	$\beta_1 < 0$
Earnings Smoothing		
Var Change NI	$H1_5$	$\beta_1 < 0$
Timely Loss Recognition		
Accruals	$H1_6$	$\beta_7 < 0$
LNEG	$H1_7$	$\beta_1 < 0$

[1] $\beta_1 = NUF$ and $\beta_7 = Neg\_OCF * OCF * NUF$

cant at the one percent level. This is in line with our hypotheses and indicate that NUFs have lower AQ than limited companies. For the fourth model the coefficient is positive and significant at the five percent level, contrary to $H4_A$. This indicates that NUFs have less accruals relative to operating cash flow than limited companies. Our focus regarding accruals quality does however remain with the first three measures, as they focus on discretionary accruals. We find no statistical significant relationship between having an auditor and the four measures of AQ.

As NUFs have lower accrual quality, but relatively fewer accruals, this substantiates our claim that NUFs have lower AQ than limited companies. They have less accruals, but more errors or manipulations. As the coefficients for Auditor in all four models are not significant, they apparently differ in something else than their use of auditor. Our findings suggest that NUFs have more discretionary accruals, more discretionary estimation errors and more discretionary revenues than limited companies. This indicate that NUFs to a higher extent manipulate or incorrectly state their accruals, which provides external stakeholders with incorrect information and could provide a wrongful basis for taxation.

5.1.3 Earnings Smoothing

We find no statistically significant difference in our earnings smoothing measure between NUFs and limited companies, as shown in table B.2. This means that we

have no grounds to conclude whether small NUFs exhibit more earnings smoothing than small limited companies. This is not in line with Frøyshov and Johansen (2011) findings. They find that NUFs have statistically lower variance in change in net income than limited companies. Their findings are however not robust. We find no statistical significant relationship between having an auditor and our measure of earnings smoothing.

5.1.4 Timely Loss Recognition

The results from model six and seven are shown in table B.3. In model six, the coefficient of the interaction term is positive and significant. This is not in line with our hypothesis. It indicates that NUFs take their losses in a more timely manner than small limited companies, providing their external stakeholders with more accurate information about their operations. In the seventh model, we find no statistically significant differences in the occurrence of large negative losses between NUFs and small limited companies. This contrasts with Frøyshov and Johansen (2011)'s findings, where they find NUFs to have a lower frequency of large negative results than limited companies.

5.1.5 Robustness Tests

We test the robustness of our findings by scaling all relevant variables with average total assets instead of lagged total assets.[23] In addition to this, we use an alternative definition of accruals and operating cash flow, supplied by Barth et al. (2008).[24] When scaling with average total assets, nothing materially changes in our findings and all signed coefficients stay the same.[25] When using different definitions of accruals and operating cash flow none of our conclusions change. In light of this we believe our findings to be robust.

5.2 DiD Analysis of AQ in Limited Companies

In analysis two, we want to assess whether dropping an auditor leads to lower accounting quality. We first present descriptive results. We then test the parallel

[23] Average total assets is calculated as $(TotalAssets + LaggedTotalAssets)/2$

[24] $Accruals = \Delta Inventories_t + \Delta Receivables_t + +\Delta OtherCurrentAssets_t - \Delta Payables - \Delta OtherCurrentLiabilities - Depreciation$

[25] We use average total assets as opposed to total assets because total assets may be determined jointly with other variables, or total assets may be a function of the scaled variables themselves.

trend assumption, before we present the results of our analysis.

Our overarching hypothesis is that dropping your auditor leads to lower accounting quality. This is tested through the hypotheses for our seven proxies for AQ, $H2_1$ through $H2_7$. Our expectations are summed up in table 5.2.

Table 5.2: Expectations Limited Companies

Proxy	**Hypothesis**	**Expectation**	**Expectation**
		Opt Out vs Do Not	Opt Out vs Can Not
Accrual Based Measures			
DiscA	$H2_1$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$
DiscEE	$H2_2$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$
DiscRev	$H2_3$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$
SizeAccr	$H2_4$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$
Earnings Smoothing			
Variance Change NI	$H2_5$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$
Timely Loss Recognition			
Accruals	$H2_6$	$\beta_{11} < 0$	$\beta_{10} + \beta_{11} < 0$
LNEG	$H2_7$	$\beta_2 < 0$	$\beta_1 + \beta_2 < 0$

[1] $\beta_1 = CanOptOut$ and $\beta_2 = DropAuditor$.
[2] $\beta_{10} = Neg\_OCF*OCF*CanOptOut$ and $\beta_{11} = Neg\_OCF*OCF*DropAud$

When interpreting the regression output for all models except model six, $\beta_1 + \beta_2$ is the treatment effect for those who drop their auditor. In model six, $\beta_{10} + \beta_{11}$ is the treatment effect for those firms who drop their auditor. Our first control group consists of firms that keep their auditor, and our second control group consists of firms not eligible for voluntary audit.

5.2.1 Descriptive Results

In table A.8, A.9 and A.10 we present descriptive results for firms opting out of audit, firms keeping their auditor and firms not eligible for voluntary audit respectively. Firms not eligible for voluntary audit have higher means for the two first accrual quality measures, but lower for the third. Higher values translate to higher AQ. This applies to both before and after the reform. All three groups have higher means for accruals relative to operational cash flow after the reform.

Opt out firms have lower accruals quality and less accruals relative to operating cash

flow than firms that keep their auditor, both before and after the reform. Firms which keep their auditor have higher means for all three accruals quality measures after the reform, while opt out firms have higher means for measure one (DiscA) and three (DiscRev).

5.2.2 Testing the Parallel Trend Assumption

In order to establish a causal relationship between opting out of audit and our measures for AQ, we first reaffirm there are no systematic differences between our treatment and control groups in absence of treatment (see Angrist and Pischke, 2008, page 237). To do this we impose the assumption that the law change happens in 2009, and control for the treatment effects in subsequent years. This way our placebo treatment in 2009 will only capture pre-reform variation. If trends are parallel, the pre-reform variation should not be significantly different from zero.

The results from our placebo tests are shown in table C.1 and C.2. When comparing the treatment group (firms dropping their auditor) and the first control group (firms who keep their auditor), the parallel trend assumption does not hold for the second and third measure as we find significant differences between the groups. This means we can not interpret these estimates causally. The parallel trend assumption does however hold for all measures when comparing the treatment and second control group (firms not eligible for voluntary audit). This allows us to make a causal interpretation of our results. Due to its construction, we only have two data points per firm in measure five. We can not adjust for the treatment effects in 2011, and a placebo test for this measure would not give meaningful results.

5.2.3 Accrual Based Measures

The results of our first four models are shown in table C.3. For our first three measures, β_2 is negative and significant, indicating there is a decline in accrual quality for the treatment group when compared to those who keep their auditor, after treatment. These findings are significant at the one, five and one percent level respectively. We also observe that $\beta_1 + \beta_2 < 0$ for all three models, indicating a decline in accrual quality for the treatment group when compared to those not eligible for voluntary audit, after treatment. A Wald test shows that the sums of the coefficients are significant. These findings are in line with our hypotheses.

The relevant coefficients in our fourth measure are not significant, and we can not conclude whether there are significant differences in accruals relative to operating

cash flow between our treatment and control groups.

The results from our first three models indicate that dropping your auditor leads to lower AQ. As we reject the parallel trend assumption for our second and third measure when comparing firms who drop and firms who keep their auditor, this causal relationship may be biased. However, we do not reject the parallel trend assumption between those who drop and those not eligible for voluntary audit, and the fact that all three accrual quality measures are negative and significant increase our confidence in that dropping your auditor leads to lower AQ. This implies that firms who drop their auditor may have a wrongful tax base, and that their financial statements are of lower value to other external stakeholders.

5.2.4 Earnings Smoothing

The results for our fifth model are shown in table C.4. In order to calculate the variance in net income, we collapse the data on each firm before and after 2011. This leaves us with one observation per firm pre and post reform.[26]

Our findings indicate that there is a decline in the variance in net income for the treatment group when compared to firms who keep their auditor after treatment ($\beta_2 < 0$). This is significant at the five percent level. We also see that there is a decline in variance in net income for our treatment group compared to firms not eligible for voluntary audit, after treatment, shown by $\beta_1 + \beta_2 < 0$. A Wald test shows that the sum of the coefficients is significant.

Opting out of audit leads to lower variance in net income, which is indicative of earnings smoothing and lower AQ. This will impact the firms' tax basis, and make their financial statements of lower value to other external stakeholders.

5.2.5 Timely Loss Recognition

Results from the regression analyses for model six and seven are shown in table C.5. In model six the relevant coefficients are not significant, and we can not conclude whether there is a relationship between opting out of audit and conditional conservatism.

For our seventh model, β_2 is negative and significant. This indicates that the treatment group exhibits a decline in the frequency of large negative results when compared to those who keep their auditor, following treatment. As $\beta_1 + \beta_2 < 0$ our

[26] Using Stata's "collapse" function.

results indicate that there is a decline in the frequency of large negative results for our treatment group when compared to firms not eligible for voluntary audit, following the treatment. The findings are significant at the one percent level.

Our findings imply that opting out of audit leads to less timely loss recognition and lower AQ. This indicates that firms dropping their auditor may spread out their losses over a period of time, making their financial statements of lower value to external stakeholders.

5.2.6 Robustness Tests

Our results are robust when using alternative definitions for accruals and operating cash flow. In our analyses, the dummy variable indicating whether a firm can drop its auditor or not, is time varying after the reform. This means that a firm with revenues higher than 5 millions in 2011, may be eligible for voluntary audit in 2012 if their revenues drop below 5 million. Our analyses yields the same results when this dummy variable is not time varying, and based on total revenues in 2010. Identifying firms eligible for voluntary audits in 2010 also accounts for the possibility that the firms in question actively position themselves under the limits once the law change is declared in 2011. When scaling all our relevant variables with average total assets, the findings in proxy one through three are no longer significant. Our findings do not change for the earnings smoothing or timely loss recognition measures. We thus believe our overall findings to be robust, but the accrual based measures must be interpreted with caution.

5.2.7 Adjusting for "Big 5"

It is interesting to investigate if dropping a "Big 5" auditor has an effect on accounting quality beyond the effect of dropping *any* auditor. As shown in table C.6, C.7 and C.8, only proxy one shows that dropping a "Big 5" auditor leads to a larger decline in AQ when compared to dropping an auditor in general. There is no significant impact of dropping a "Big 5" auditor in model 2-7.

These findings are interesting, because they suggest that the type of auditor dropped is not significant for the magnitude of the effect on AQ in our measures. This is not in line with previous research. Small firms are easier to audit, which may limit the added value of using a "Big 5" auditor, and thus limit the extra effect of dropping one.

5.3 Discontinuity Analysis of the Threshold for Voluntary Audit

The visual inspection of the histograms exhibiting the yearly distribution of firms, as seen in figure D.1, shows no spike just below the threshold for the years 2008-2010. This is in line with our expectations of firms not adapting prior to the reform. Starting in 2011 we see clear indications of bunching behaviour intensifying year-by-year in the form of a spike in the distribution below the threshold. The year-by-year distribution is graphed in figure D.2 and confirms the tendencies seen in the histograms. Aggregated data pre and post reform are shown in figure D.3 and D.4. They complement the year-by-year distributions, and visually verify that the threshold leads to bunching behaviour.

In order to determine if there is a significant difference in the amount of firms above and below the threshold, we plot the distribution of firms in a histogram for the interval of revenue between four and six million. We include a quadratic best fit line with a 95 percent confidence interval, as shown in figure 5.1.[27] This figure shows a distinct discontinuity in the quadratic best fit line, indicating that there is a significant difference in the distribution of firms above and below the threshold. Figure D.6 shows the same illustration for the years before the law change and we observe that there is no discontinuity in the 95 percent confidence interval.

Inspection of bunching behaviour exhibited by small limited companies post reform enables us to look at the short-term effects of introducing the threshold. In order to explore the longer-term effects, we look at the distribution of NUFs between 2006-2013, as displayed in figure D.7. The graph shows how NUFs with four to six millions in revenues are distributed. The low amount of NUFs makes it harder to visually detect bunching behaviour, but the illustration shows that the highest spike is just below the threshold of five million.[28] The amount of firms in the bunching region is too small to say anything conclusive about long-term effects of bunching. The small number of firms does however indicate that the results in our analysis of bunching behaviour exhibited by limited companies post reform is not driven by NUFs who change their corporate form.

We use Chetty et al. (2011)'s program to quantify the number of bunching firms, and the results are presented in figure 5.2. This shows the distribution of total firms as a function of total revenues around the NOK 5 million revenue limit for voluntary

[27] Scatter plot of the bins are included in D.5

[28] This is the highest spike in the interval of NUFs with 4-6 millions in revenues. When including all firms between zero and ten millions we did not observe any bunching behaviour other places.

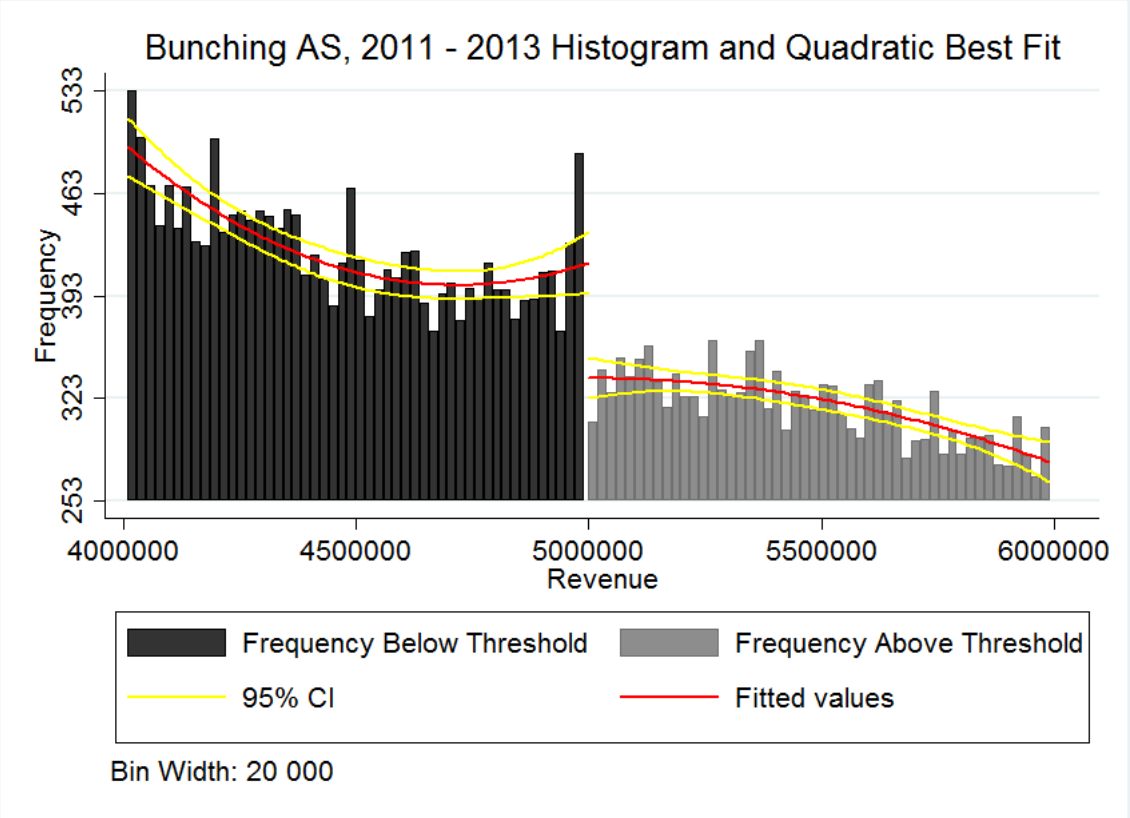

Figure 5.1: Bunching Histogram with Quadratic Best Fit Post Reform

audit, using data from after the law change was enacted (2011 - 2013). The solid line is the actual distribution, while the dotted line is the counterfactual distribution fitted to a seventh degree polynomial.[29] Point zero on the X-axis represents the threshold of NOK 5 million. The interval from 4,84M to 5,1M is excluded when calculating the counterfactual distribution, represented by the two vertical dotted lines. We first assume that firms start exhibiting bunching behaviour NOK 160,000 below the threshold, and this interval is selected through a visual inspection of the histogram in figure 5.1. We assume that bunching behaviour starts at the point where we observe that the frequency of firms, represented by the quadratic best fit line, starts increasing.[30] This interval seems economically reasonable, as managing streams of revenues perfectly can be difficult. Excess mass is the amount of firms exceeding the projected amount of firms below the threshold. It is calculated as the area above the counterfactual distribution and represents the number of bunching firms. The analysis yields an excess mass of 189 firms, representing a surplus of 52 percent relative to the counterfactual distribution.

If we assume that bunching behaviour starts at NOK 60,000 below the threshold, we

[29] Changing the degree of the polynomial does not materially change our findings.

[30] The end-point of the interval is chosen through visual inspection of the figure itself, and represents the point at which the actual distribution is close to the counterfactual distribution.

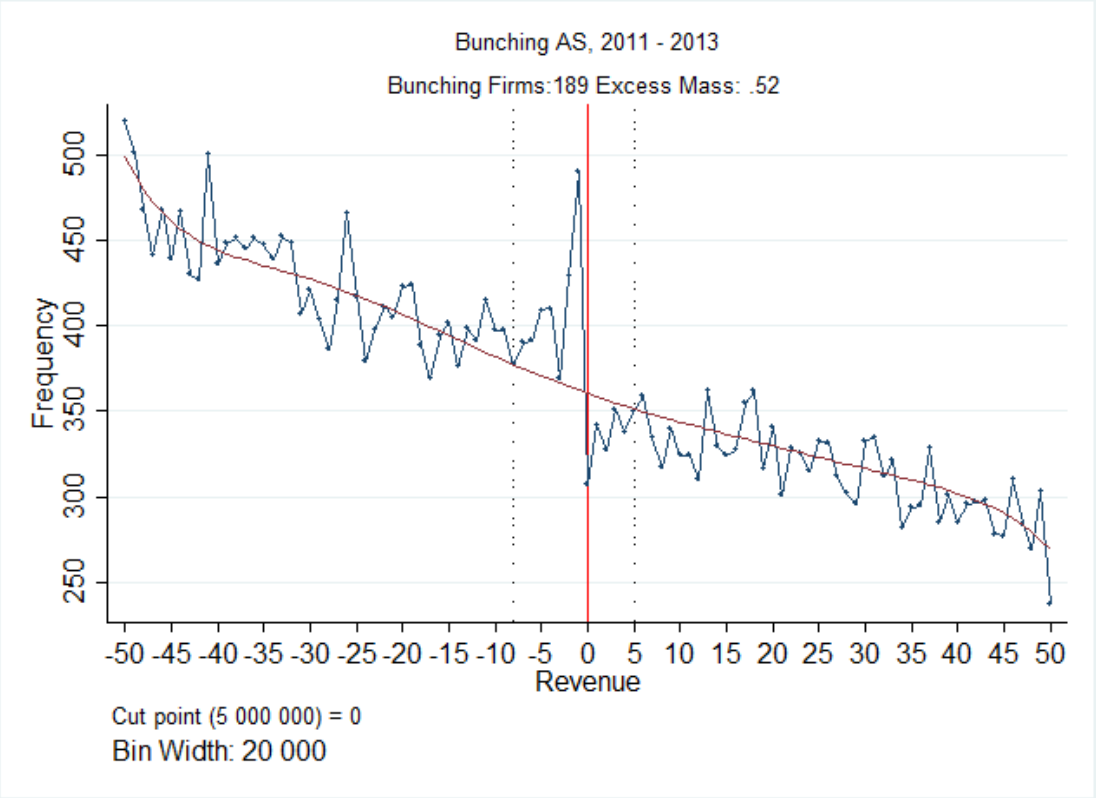

Figure 5.2: Bunching 2011 - 2013

exclude the interval between NOK 4.94M and 5.06M when calculating the counterfactual distribution, as shown in figure D.8. This strict assumption says that firms are able to manage their earnings almost perfectly, and we choose this point as the frequency of firms from 4.94M to 5M is strictly increasing, indicating a certain break with the downward sloping distribution. We observe a total of 60 firms bunching below the threshold, representing an excess mass of 16.46 percent when compared to the counterfactual distribution. To assess whether this behaviour is instigated by the 2011 law change, we run the strict calculations on the data from year 2006 to 2010, with the results shown in figure D.9. We find no evidence of bunching in the pre reform period, as results show an excess mass of negative 9.14 percent.

These analyses show that firms actively bunch under the threshold for voluntary audit. There are no indications of bunching in the period before 2011, both when evaluating yearly and aggregate data. This implies that introducing the threshold for voluntary audit causes firms to actively bunch below the threshold. We do not attempt to discover how firms bunch below the threshold, but they either have to reduce output, or misstate their revenues. The first represents an unfortunate unintended side effect, incentivizing some firms to stop growing. The latter would make their financial accounts of lower value to both the tax authorities and other external stakeholders.

Summary and Concluding Remarks

In this paper we search for differences in accounting quality between small NUFs and limited companies, the effect dropping your auditor has on accounting quality, and how firms adapt when faced with a revenue threshold for voluntary audit.

In our first analysis we find that small NUFs have lower accruals quality, but more timely loss recognition than small limited companies. We can not conclude whether NUFs have lower AQ in general. In our second analysis we find a negative causal relationship between dropping an auditor and accounting quality. Dropping your auditor leads lower accruals quality, more earnings smoothing and less timely loss recognition. In our third analysis we find that introducing a threshold for voluntary audit leads some firms to bunch below this threshold in order to avoid being audited. Analysis of pre-reform data shows no bunching tendencies, and analysis of yearly data post-reform shows that the effect is intensifying.

Our study highlights the costs related to the introduction of voluntary audit, and not the benefits. It is meant to serve as a contribution to the evaluation of the 2011 reform, but the trade-off between costs and benefits remains a political question. The measurements used to assess AQ are developed for large, or at least larger, firms than we examine in our paper. This could impair their effectiveness when used on small companies. As the law change has been active for four years, and we have data on three of these, we can only say something about the short-term effects of the reform. In future research it would be interesting to see if the same effects is observed in the long-term.

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Appendices

Appendix A

Variable Definitions

Table A.1: Variable Definitions

Variables	Definitions
Dependent variables:	
DiscA	Discretionary Accruals; Defined in section: 4.2.2 (1)
DiscEE	Discretionary Estimation Errors; Defined in section: 4.2.2 (2)
DiscRev	Discretionary Revenues; Defined in section: 4.2.2 (3)
SizeAccr	Size of Accruals; Defined in section: 4.2.2 (4)
Var Δ NI	Variance in change in Net Income: Defined in section 4.2.2 (5)
Accr	Accruals Defined in section 4.2.2 (6)
LNEG	Large Negative Results. Defined in section 4.2.2 (7)
Control variables	
NUF	Dummy variable equal to one if the company is a NUF and equal to zero if it is a small limited company
Can_Opt_Out	Dummy variable equal to one if the firm is eligible for voluntary audit
Drop_Aud	Dummy variable equal to one if the firm opts out of audit
Auditor	Dummy variable equal to one if the firm has an auditor
Size	The natural logarithm of total assets
ROA	Return on Assets; Net Income/Average Total Assets
Lev	Financial Leverage; Total Interest Bearing Debt/Equity
Growth	Growth in Revenue;
Inv_Scaled	Inventories scaled by total assets
Cum_Loss	Cumulative loss. Measured by the cumulative percentage of sample years with negative NI
Big5	Dummy variable equal to one if auditor is one of the big 5 (Deloitte, PwC, KPMG, EY or BDO)
Accountant	Dummy variable equal to one if firm has an external accountant
Age	The firm's age measured from year of incorporation

A.1 Sample Selection

Table A.2: Sample Selection for NUF vs AS Analysis

	AS	NUF	Total
Total number of firm-year observations	1,801,332	121,489	1,922,821
- less firms with revenues higher than 5 million	1,173,877	64,506	1,238,383
- less firms with negative or missing revenues	1,071,459	46,278	1,117,737
- less firms with total assets higher than 20 million	957,763	45,984	1,003,747
- less firms with negative or missing total assets	957,180	45,625	1,002,805
- less firms with more than 10 employees	948,712	45,336	994,048
- less firms with missing or negative employees	948,712	45,336	994,048
- less firms which are closing down	945,123	44,013	989,136
- less firms with missing NACE-codes	892,400	41,549	933,949
- less firms within the finance industry	770,579	38,674	809,253
- less firms within the power industry	764,759	38,610	803,369
- less firm observations from 2011-2013	421,835	20,184	442,019
Number of unique firm observations	107,597	8,886	116,483

Table A.3: Sample Selection: Voluntary Audit for AS

	#of firms	#of firm-years
Observations of AS	331,404	1,801,332
- less firms with revenues higher than 10 million	251,830	1,373,983
- less firms with negative or missing revenue	251,791	1,257,999
- less firms with total assets higher than 20 million	229,322	1,119,022
- less firms with negative or missing total assets	229,243	1,118,414
- less firms with more than 10 employees	223,455	1,086,245
- less firms with missing or negative employees	223,455	1,086,245
- less firms which are closing down	223,221	1,082,408
- less firms with missing NACE-codes	201,164	1,026,896
- less firms within the finance industry	186,828	903,203
- less firms within the power industry	185,654	896,853
- less firms without observations for all years	56,554	452,432
Total number of observations	56,554	452,432

A.2 Descriptive Statistics

Table A.4: NUFs With and Without Auditor

	2006	2007	2008	2009	2010
Auditor	12 (0.7%)	16 (0.6%)	22 (0.6%)	32 (0.7%)	28 (0.4%)
No Auditor	1,631 (99.3%)	2,664 (99.4%)	3,958 (99.4%)	5,279 (99.4%)	6,542 (99.6%)
Total	1,643	2,680	3,980	5,311	6,570

Descriptive statistics NUF sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	mean	sd	min	max
Threshold values:					
Total Employees	20,184	0.656	1.235	0	10
Total Revenues	20,184	605,008	816,785	0	4.997e+06
Total Assets	20,184	416,715	871,485	0	1.883e+07
Dependent variables:					
DiscA	10,312	-0.548	0.742	-5.067	-8.05e-05
DiscEE	5,549	-0.390	0.636	-5.475	-5.22e-05
DiscRev	10,312	-0.208	0.258	-1.547	-4.84e-06
SizeAccr	10,393	-1.036	1.120	-11.83	0
Control variables:					
Size	18,293	11.90	1.912	0	16.75
ROA	10,674	-0.0921	0.743	-2.986	1.095
Lev	18,181	0.0183	8.367	-39.33	58.54
Growth	9,276	0.803	2.650	-1	14.89
Inv_Scaled	18,293	0.0613	0.178	0	0.926
Cum_Loss	20,184	0.213	0.265	0	1

Table A.5: Descriptive Statistics NUF Sample

Descriptive statistics AS sample

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Threshold values:					
Total Employees	421,835	0.891	1.541	0	10
Total Revenues	421,835	916,615	1.101e+06	0	5.000e+06
Total Assets	421,835	2.333e+06	3.223e+06	0	2.000e+07
Dependent variables:					
DiscA	309,676	-0.284	0.504	-5.168	-1.01e-06
DiscEE	214,336	-0.216	0.459	-5.551	-1.09e-07
DiscRev	309,676	-0.0787	0.157	-1.547	-7.94e-07
SizeAccr	304,067	-1.077	1.174	-14.30	0
Control variables:					
Size	420,255	13.73	1.662	0	16.81
ROA	311,871	-0.0396	0.481	-2.986	1.095
Lev	421,480	1.443	9.818	-39.33	58.54
Growth	236,494	0.381	1.961	-1	14.89
Inv_Scaled	420,255	0.0673	0.185	0	0.926
Cum_Loss	421,835	0.185	0.212	0	1

Table A.6: Descriptive Statistics AS Sample

What distinguishes a NUF from an AS?

VARIABLES	(1) Marginal probability
Total Employees	-0.00000273*
	(0.00000144)
Owner is CEO	-0.00001689*
	(0.00000889)
Agriculture, forestry and fishing	-0.00000903*
	(0.00000494)
Construction Industry	0.00001951*
	(0.00001128)
Wholesale and retail trade	0.00001846*
	(0.00001098)
Transport, storage and communication	0.00002147
	(0.00001487)
IT Industry	0.00005062*
	(0.00002817)
Real Estate Industry	-0.00002065*
	(0.00001099)
Academic, scientific and technical services	0.00002865*
	(0.00001575)
Business activities	0.00002150
	(0.00001328)
Education	0.00004436
	(0.00003363)
Health and social work	0.00001483
	(0.00001152)
Size	-0.00001522**
	(0.00000768)
ROA	0.00001186*
	(0.00000613)
Growth	0.00000172*
	(0.00000088)
Inventory	-0.00001470*
	(0.00000847)
Auditor	-0.22947823***
	(0.00612716)
Accountant	0.00004375**
	(0.00002158)
Observations	245,207
Pseudo R-sq	0.707

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.7: What Distinguishes a NUF from an AS?

Descriptive statistics: Firms which qualify for voluntary audit and opt out

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Before 2011:					
Threshold values:					
Total Employees	117,568	1.196	1.708	0	10
Total Revenues	117,568	1.239e+06	1.403e+06	0	9.984e+06
Total Assets	117,568	1.909e+06	2.463e+06	0	1.999e+07
Dependent variables:					
DiscA	113,197	-0.251	0.448	-4.960	-1.27e-06
DiscEE	83,937	-0.197	0.424	-5.643	-2.64e-06
DiscRev	113,197	-0.0853	0.155	-1.561	-3.99e-07
SizeAccr	111,491	-1.050	1.106	-12.81	0
Control variables::					
Size	117,282	13.70	1.505	0	16.81
ROA	113,356	-0.00477	0.432	-2.986	1.095
Lev	117,536	1.122	9.139	-39.33	58.54
Growth	95,983	0.295	1.724	-1	14.89
Inventory	117,282	0.0830	0.197	0	0.926
Cum_Loss	117,568	0.164	0.160	0	0.625
After 2011:					
Threshold values:					
Total Employees	117,568	1.171	1.631	0	10
Total Revenues	117,568	1.172e+06	1.326e+06	0	9.981e+06
Total Assets	117,568	1.956e+06	2.545e+06	0	1.997e+07
Dependent variables:					
DiscA	117,169	-0.238	0.447	-4.960	-8.62e-07
DiscEE	117,169	-0.203	0.456	-5.717	-2.88e-07
DiscRev	117,170	-0.0789	0.152	-1.561	-1.08e-06
SizeAccr	114,642	-1.078	1.144	-13.02	0
Control variables:					
Size	117,046	13.65	1.669	0	16.81
ROA	117,264	-0.00873	0.446	-2.986	1.095
Lev	117,486	0.771	7.792	-39.33	58.54
Growth	98,695	0.188	1.519	-1	14.89
Inventory	117,046	0.0826	0.200	0	0.926
Cum_Loss	117,568	0.320	0.247	0	1

Table A.8: Firms which Qualify for Voluntary Audit and Opt Out

Descriptive statistics: Firms which qualify for voluntary audit, but keep their auditor

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Before 2011:					
Threshold values:					
Total Employees	119,152	1.013	1.784	0	10
Total Revenues	119,152	1.395e+06	1.728e+06	0	9.998e+06
Total Assets	119,152	3.577e+06	3.889e+06	0	2.000e+07
Dependent variables:					
DiscA	114,707	-0.239	0.452	-4.960	-8.98e-07
DiscEE	85,071	-0.172	0.377	-5.643	-1.85e-06
DiscRev	114,707	-0.0682	0.143	-1.561	-1.31e-06
SizeAccr	112,074	-1.057	1.158	-14.10	0
Control variables:					
Size	118,938	14.37	1.507	0	16.81
ROA	114,873	0.00901	0.382	-2.986	1.095
Lev	119,124	1.807	10.33	-39.33	58.54
Growth	89,032	0.327	1.761	-1	14.89
Inventory	118,938	0.0613	0.176	0	0.926
Cum_Loss	119,152	0.157	0.166	0	0.625
After 2011:					
Threshold values:					
Total Employees	119,152	1.040	1.779	0	10
Total Revenues	119,152	1.453e+06	1.737e+06	0	9.998e+06
Total Assets	119,152	3.867e+06	4.066e+06	0	2.000e+07
Dependent variables:					
DiscA	118,887	-0.212	0.409	-4.696	-8.98e-07
DiscEE	118,887	-0.170	0.393	-5.800	-2.19e-07
DiscRev	118,887	-0.0598	0.130	-1.561	-7.44e-07
SizeAccr	115,661	-1.094	1.196	-14.10	0
Control variables:					
Size	118,825	14.44	1.579	0	16.81
ROA	118,951	-0.00457	0.401	-2.986	1.095
Lev	119,097	1.326	8.892	-39.33	58.54
Growth	92,497	0.223	1.549	-1	14.89
Inventory	118,825	0.0622	0.179	0	0.926
Cum_Loss	119,152	0.306	0.266	0	1

Table A.9: Firms which Qualify for Voluntary Audit, but Keep their Auditor

Descriptive statistics: Firms which cannot opt out

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Before 2011:					
Threshold values:					
Total Employees	25,376	3.792	2.527	0	10
Total Revenues	25,376	4.638e+06	2.543e+06	0	9.992e+06
Total Assets	25,376	2.804e+06	2.404e+06	0	1.991e+07
Dependent variables:					
DiscA	24,779	-0.201	0.305	-4.078	-5.55e-06
DiscEE	18,443	-0.114	0.195	-4.466	-1.06e-07
DiscRev	24,779	-0.0946	0.137	-1.421	-1.77e-07
SizeAccr	24,714	-1.051	1.031	-11.49	0
Control variables:					
Size	25,362	14.50	0.935	2.944	16.81
ROA	24,785	0.114	0.216	-2.986	1.095
Lev	25,370	0.938	5.548	-39.33	58.54
Growth	23,704	0.221	1.139	-1	14.89
Inventory	25,362	0.135	0.224	0	0.926
Cum_Loss	25,376	0.0824	0.122	0	0.625
After 2011:					
Threshold values:					
Total Employees	25,376	4.174	2.550	0	10
Total Revenues	25,376	5.392e+06	2.633e+06	0	1.000e+07
Total Assets	25,376	3.343e+06	2.747e+06	0	1.996e+07
Dependent variables:					
DiscA	25,364	-0.163	0.217	-4.194	-7.49e-06
DiscEE	25,364	-0.100	0.163	-4.745	-7.86e-07
DiscRev	25,364	-0.0819	0.118	-1.509	-9.72e-09
SizeAccr	25,313	-1.076	1.041	-12.33	0
Control variables:					
Size	25,364	14.70	0.924	0	16.81
ROA	25,368	0.104	0.196	-2.986	1.095
Lev	25,374	0.795	5.044	-39.33	58.54
Growth	24,505	0.0898	0.648	-1	14.89
Inventory	25,364	0.138	0.228	0	0.926
Cum_Loss	25,376	0.156	0.191	0	1

Table A.10: Descriptive Statistics: Firms which Cannot Opt Out

What Characterizes a Firm that Drop its Auditor?

VARIABLES	(1) Marginal probability
Total Revenues	-0.00039022***
	(0.00001735)
Total Assets	-0.00025651***
	(0.00001366)
Total Employees	0.01110263***
	(0.00152902)
Age	-0.00095276***
	(0.00018362)
Owner CEO	0.08235653***
	(0.00415686)
Historic Negative Audit Report	0.05043489***
	(0.00450806)
Agriculture, Forestry and Fishing	0.05490684***
	(0.01755618)
Mining and Quarrying	-0.11860731***
	(0.03396042)
Real Estate Industry	-0.07599316***
	(0.00545626)
Business Activities	-0.06499564***
	(0.01034995)
Health and Social Work	0.09008532***
	(0.01249551)
Private households with Employees	0.04448525**
	(0.01739436)
Other Services	0.08319385***
	(0.01626528)
ROA	0.01419972***
	(0.00405578)
Inventory	0.10808153***
	(0.01137617)
Cumulative Loss Ratio	-0.09429875***
	(0.01237312)
Accountant	0.17132230***
	(0.00400343)
Observations	228,034
Pseudo R-sq	0.0878

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Total Revenues, Total Assets and Inventory are multiplied by 10,000. A NOK 10,000 increase in inventory will increase the probability of a firm dropping an auditor by 10.8 percent.

Table A.11: What Characterizes a Firm that Drop its Auditor?

What characterizes bunching firms?

VARIABLES	(1) Buncher	(2) Placebo1	(3) Placebo2
Just below t-1	0.0578***	0.0576***	0.0559***
	(0.0057)	(0.0057)	(0.0060)
Just below t-2	0.0257***	0.0250***	0.0261***
	(0.0042)	(0.0041)	(0.0044)
Just below (t-1)*(t-2)	-0.0366*	0.0517*	0.0726*
	(0.0222)	(0.0305)	(0.0379)
Just above t-1	0.0442***	0.0360***	0.0386***
	(0.0055)	(0.0047)	(0.0053)
Just above t-2	0.0187***	0.0175***	0.0188***
	(0.0038)	(0.0037)	(0.0039)
Just above (t-1)*(t-2)	0.0140	-0.0002	-0.0232
	(0.0300)	(0.0231)	(0.0221)
Construction Industry	0.0007**	0.0004	0.0005**
	(0.0003)	(0.0003)	(0.0002)
Wholesale and retail trade	0.0014***	0.0012***	0.0012***
	(0.0003)	(0.0003)	(0.0002)
Hotels and restaurants	0.0026***	0.0020***	0.0019***
	(0.0006)	(0.0006)	(0.0006)
IT Industry	-0.0011***	-0.0007*	-0.0004
	(0.0003)	(0.0003)	(0.0003)
Real Estate Industry	-0.0010***	-0.0010***	-0.0004**
	(0.0002)	(0.0002)	(0.0002)
Education	-0.0015**	0.0014	0.0002
	(0.0007)	(0.0010)	(0.0009)
Health and social work	0.0015**	0.0033***	0.0026***
	(0.0006)	(0.0007)	(0.0006)
Other Services	0.0021**	0.0030***	0.0030***
	(0.0010)	(0.0010)	(0.0010)
Accountant	0.0019***	0.0016***	0.0009***
	(0.0002)	(0.0002)	(0.0001)
Constant	0.0020***	0.0021***	0.0017***
	(0.0002)	(0.0002)	(0.0001)
Observations	534,922	534,922	534,922
R-squared	0.0070	0.0078	0.0080
Year FE	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.12: What Characterizes Bunching Firms?

Appendix B

Analysis 1

Accounting Quality for AS versus NUF, Accrual Quality

VARIABLES	(1) DiscA	(2) DiscEE	(3) DiscRev	(4) SizeAccr
NUF	-0.1384***	-0.0650***	-0.0660***	0.0326**
	(0.0078)	(0.0091)	(0.0033)	(0.0162)
Size	0.0607***	0.0728***	0.0350***	0.0190***
	(0.0011)	(0.0014)	(0.0003)	(0.0019)
ROA	0.0310***	0.0887***	-0.0405***	0.0295***
	(0.0061)	(0.0092)	(0.0016)	(0.0081)
Leverage	0.0003***	0.0003***	0.0003***	0.0050***
	(0.0001)	(0.0001)	(0.0000)	(0.0002)
Growth	-0.0408***	-0.0377***	-0.0149***	-0.0029***
	(0.0009)	(0.0013)	(0.0003)	(0.0011)
Inventory	0.1056***	0.0845***	0.0585***	0.0975***
	(0.0045)	(0.0045)	(0.0015)	(0.0115)
Cummulative Loss	-0.0868***	-0.1249***	-0.0153***	-0.0029
	(0.0059)	(0.0069)	(0.0022)	(0.0135)
Accountant	0.0129***	0.0095***	-0.0041***	0.0122**
	(0.0018)	(0.0018)	(0.0008)	(0.0048)
Auditor	0.0007	-0.0005	-0.0002	0.0051
	(0.0033)	(0.0034)	(0.0015)	(0.0100)
Constant	-1.0909***	-1.1764***	-0.5806***	-1.2945***
	(0.0158)	(0.0207)	(0.0050)	(0.0291)
Observations	244,171	171,495	244,171	244,171
R-squared	0.1156	0.1674	0.1423	0.0036
Year FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Sample size in model two differs from the rest due to the model's structure. [2] VIF tests show no problems with respect to collinearity.
[3] Years included: $t = 2006$ to $t = 2010$ [4] Standard errors are clustered at the firm level.

Table B.1: NUF vs AS, Model 1 - 4

Accounting Quality for AS versus NUF, Earnings Smoothing	
	(1)
VARIABLES	Variance Change Net Income
NUF	-0.0247
	(0.0949)
Size	-0.5287***
	(0.0152)
ROA	-2.3655***
	(0.1319)
Leverage	0.0036***
	(0.0009)
Growth	0.1653***
	(0.0136)
Inventory	-1.0825***
	(0.0459)
Cummulative Loss	-0.6156***
	(0.1195)
Auditor	0.0013
	(0.0494)
Accountant	-0.0810***
	(0.0205)
Constant	8.0203***
	(0.2319)
Observations	67,663
R-squared	0.1780

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Data is collapsed on orgnr using Stata's Collapse command.
[2] VIF test shows no problems with respect to collinearity.
[3] Years included in the collapse are $t = 2006$ to $t = 2010$.
[4] Standard errors are clustered at the firm level.

Table B.2: NUF vs AS, Model 5

Accounting Quality for AS versus NUF, Timely Loss Recognition

	(1)	(2)
VARIABLES	Total Accruals	Large Negative Results
Scaled OCF	-0.6749***	0.0271***
	(0.0084)	(0.0015)
Negative OCF	0.1250***	
	(0.0030)	
Neg OCF * OCF	-0.0365***	
	(0.0126)	
NUF	-0.0407***	0.0034
	(0.0107)	(0.0043)
Neg OCF * NUF	0.1108***	
	(0.0188)	
OCF * NUF	-0.0275	
	(0.0230)	
Neg OCF * OCF * NUF	0.2071***	
	(0.0496)	
Auditor	-0.0037	-0.0027
	(0.0023)	(0.0023)
Rev Scaled		0.0004
		(0.0004)
Constant	0.2679***	0.6951***
	(0.0135)	(0.0088)
Observations	244,171	244,171
R-squared	0.6871	0.4933
Year FE	YES	YES
Control Variables	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] The relevant coefficients are $NegOCF * OCF * NUF$ and NUF respectively. [2] VIF test shows no problems with respect to collinearity.
[3] Years included: $t = 2006$ to $t = 2010$.
[4] Standard errors are clustered at the firm level.

Table B.3: NUF vs AS, Model 6 - 7

Appendix C

Analysis 2

Placebo Test, Accrual Quality

VARIABLES	(1) DiscA	(2) DiscEE	(3) DiscRev	(4) SizeAccr
can_opt_out_p09	0.0000	0.0116***	-0.0021	-0.0314**
	(0.0039)	(0.0032)	(0.0018)	(0.0154)
drop_aud_p09	-0.0025	-0.0088***	0.0033**	0.0176
	(0.0033)	(0.0032)	(0.0013)	(0.0112)
Size	0.0013	0.0305***	0.0002	0.0454***
	(0.0030)	(0.0032)	(0.0008)	(0.0043)
ROA	-0.0722***	-0.0534***	-0.0530***	-0.0892***
	(0.0062)	(0.0083)	(0.0017)	(0.0092)
Leverage	-0.0000	-0.0000	0.0000	0.0021***
	(0.0001)	(0.0000)	(0.0000)	(0.0002)
Growth	-0.0313***	-0.0270***	-0.0106***	-0.0084***
	(0.0009)	(0.0009)	(0.0003)	(0.0012)
Inventory	0.0537***	0.0372***	0.0852***	0.0156
	(0.0154)	(0.0143)	(0.0043)	(0.0258)
Cummulative Loss	-0.1195***	-0.1364***	-0.0279***	-0.0606***
	(0.0082)	(0.0082)	(0.0030)	(0.0227)
Big 5	-0.0045**	-0.0058***	-0.0011	-0.0072
	(0.0022)	(0.0020)	(0.0009)	(0.0074)
Accountant	0.0104***	0.0071***	0.0010	0.0058
	(0.0027)	(0.0026)	(0.0011)	(0.0077)
Age	0.0002	-0.0047***	-0.0007***	-0.0001
	(0.0018)	(0.0002)	(0.0001)	(0.0038)
Constant	-0.2307***	-0.5115***	-0.0916***	-1.6340***
	(0.0466)	(0.0451)	(0.0113)	(0.0728)
Observations	369,042	317,671	369,042	369,042
R-squared	0.0397	0.0345	0.0450	0.0017
Number of orgnr	58,825	58,393	58,825	58,825
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Sample size in model two differs from the rest due to the model's structure. [2] Standard errors are clustered at the firm level.
[3] Years included: $t = 2007$ to $t = 2013$.
[4] Wald test shows that the sum of the coefficients *CanOptOutp*09 and *DropAudp*09 are not significant for any of the models.
[5] Treatment dummies for subsequent years are included, but not shown.

Table C.1: AS Model 1 - 4, Placebo

Accounting Quality for AS, Timely Loss Recognition

	(1)	(2)
VARIABLES	Accruals	Large Negative Results
Scaled OCF	-0.7112***	0.0391***
	(0.0099)	(0.0016)
neg_alt_ocf	0.1061***	
	(0.0037)	
neg_ocf_x_ocf	-0.0346**	
	(0.0176)	
can_opt_out_p09	-0.0015	0.0010
	(0.0051)	(0.0026)
drop_aud_p09	-0.0235***	-0.0009
	(0.0075)	(0.0023)
all_three_can_opt_out_p09	-0.0207	
	(0.0460)	
all_three_drop_aud_p09	-0.0164	
	(0.0635)	
Rev Scaled		-0.0054***
		(0.0005)
Constant	0.5857***	0.8058***
	(0.0423)	(0.0210)
Observations	369,042	369,042
R-squared	0.7158	0.3680
Number of orgnr	58,825	58,825
Year FE	YES	YES
Firm FE	YES	YES
Control Variables	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] The relevant coefficients are $DnegOCF * OCF * CanOptOutp09$ and $DnegOCF * OCF * DropAuditorp09$ for the accrual model, and $DropAud09$ and $CanOptOutp09$ for the "Large Negative Results" model. [2] Standard errors are clustered at the firm level. [3] Years included: $t = 2007$ to $t = 2013$. [4] Wald test shows the sum of the coefficients of the interaction terms are not significant in in either model. [5] Treatment dummies for subsequent years are included, but not shown.
[6] Extra interaction terms are included, but not shown.

Table C.2: AS Model 6 - 7, Placebo

Accounting Quality for AS, Accrual Quality

VARIABLES	(1) DiscA	(2) DiscEE	(3) DiscRev	(4) SizeAccr
Can Opt Out	-0.0033	-0.0001	0.0007	0.0151
	(0.0024)	(0.0019)	(0.0012)	(0.0094)
Drop Auditor	-0.0079***	-0.0045**	-0.0033***	0.0011
	(0.0023)	(0.0021)	(0.0010)	(0.0075)
Size	0.0013	0.0305***	0.0002	0.0451***
	(0.0030)	(0.0032)	(0.0008)	(0.0043)
ROA	-0.0723***	-0.0534***	-0.0530***	-0.0892***
	(0.0062)	(0.0083)	(0.0017)	(0.0092)
Leverage	-0.0000	-0.0000	0.0000*	0.0021***
	(0.0001)	(0.0000)	(0.0000)	(0.0002)
Growth	-0.0313***	-0.0270***	-0.0106***	-0.0084***
	(0.0009)	(0.0009)	(0.0003)	(0.0012)
Inventory	0.0538***	0.0375***	0.0853***	0.0157
	(0.0154)	(0.0143)	(0.0043)	(0.0258)
Cummulative Loss	-0.1202***	-0.1363***	-0.0279***	-0.0586***
	(0.0082)	(0.0082)	(0.0029)	(0.0227)
Big 5	-0.0045**	-0.0057***	-0.0011	-0.0073
	(0.0022)	(0.0020)	(0.0009)	(0.0074)
Accountant	0.0104***	0.0071***	0.0010	0.0059
	(0.0027)	(0.0026)	(0.0011)	(0.0077)
Age	0.0001	-0.0047***	-0.0007***	-0.0000
	(0.0018)	(0.0002)	(0.0001)	(0.0037)
Constant	-0.2307***	-0.5112***	-0.0913***	-1.6308***
	(0.0466)	(0.0451)	(0.0113)	(0.0724)
Observations	369,042	317,585	369,042	369,042
R-squared	0.0397	0.0345	0.0449	0.0017
Number of orgnr	58,825	58,387	58,825	58,825
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Sample size in model two differs from the rest due to the model's structure. [2] Standard errors are clustered at the firm level. [3] Years included: $t = 2007$ to $t = 2013$. [4] Wald test shows the sum of the coefficients Can Opt Out and Drop Aud is significant at: 1% level for model 1, 10% level for model 2 and 5% level for model 3. It is not significant in model 4.

Table C.3: AS, Model 1 - 4

Accounting Quality for AS, Earnings Smoothing	
	(1)
VARIABLES	Variance Change Net Income
Can Opt Out	-0.0650***
	(0.0143)
Drop Auditor	-0.0491**
	(0.0200)
Size	-0.8893***
	(0.0466)
ROA	-0.4687***
	(0.1381)
Leverage	0.0017**
	(0.0008)
Growth	0.1678***
	(0.0141)
Inventory	-0.8773***
	(0.2263)
Cummulative Loss	-0.1446*
	(0.0863)
Big 5	0.0054
	(0.0196)
Accountant	0.0003
	(0.0258)
Age	-0.2813**
	(0.1174)
Constant	16.7298***
	(1.7092)
Observations	109,011
Number of orgnr	56,849
R-squared	0.1023
Year FE	YES
Firm FE	YES
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

[1] Data is collapsed on orgnr and on period (before and after 2011) using Stata's Collapse command.
[2] Standard errors are clustered at the firm level.
[3] Years included in the collapse are $t = 2007$ to $t = 2010$ before, and $t = 2011$ to $t = 2013$ after.
[5] Wald test shows the sum of the coefficients Can Opt Out and Drop Aud is significant at: 1% level.

Table C.4: AS, Model 5

Accounting Quality for AS, Timely Loss Recognition

VARIABLES	(1) Accruals	(2) Large Negative Results
Scaled OCF	-0.7043***	0.0391***
	(0.0083)	(0.0016)
DnegOCF	0.1111***	
	(0.0030)	
DnegOCF*OCF	-0.0318**	
	(0.0143)	
Can Opt Out	-0.0025	-0.0105***
	(0.0041)	(0.0016)
Drop Auditor	-0.0308***	-0.0082***
	(0.0053)	(0.0016)
DnegOCF*Can Opt Out	-0.0081	
	(0.0056)	
DnegOCF*Drop Auditor	0.0464***	
	(0.0078)	
OCF*Can Opt Out	-0.0051	
	(0.0198)	
OCF*Drop Auditor	0.1131***	
	(0.0249)	
DnegOCF*OCF*Can Opt Out	0.0064	
	(0.0295)	
DnegOCF*OCF*Drop Auditor	-0.0381	
	(0.0406)	
Rev Scaled		-0.0054***
		(0.0005)
Constant	0.5779***	0.8056***
	(0.0422)	(0.0210)
Observations	369,042	369,042
R-squared	0.7152	0.3679
Number of orgnr	58,825	58,825
Year FE	YES	YES
Firm FE	YES	YES
Control Variables	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] The relevant coefficients are $DnegOCF * OCF * CanOptOut$ and $DnegOCF * OCF * DropAuditor$ for the accrual model, and $DropAuditor$ and $CanOptOut$ for the "Large Negative Results" model.
[2] Standard errors are clustered at the firm level.
[3] Years included: $t = 2007$ to $t = 2013$. [4] Wald test shows the sum of the coefficients Can Opt Out and Drop Aud is significant at: 1% level for model 7. It is not significant for model 6.

Table C.5: AS, Model 6 - 7

Accounting Quality for AS, Accrual Quality (Big5)

VARIABLES	(1) DiscA	(2) DiscEE	(3) DiscRev	(4) SizeAccr
Can Opt Out	-0.0029	0.0001	0.0007	0.0151
	(0.0024)	(0.0019)	(0.0012)	(0.0094)
Drop Auditor	-0.0048**	-0.0023	-0.0028***	0.0031
	(0.0023)	(0.0021)	(0.0010)	(0.0074)
Drop Big5 Auditor	-0.0099***	-0.0034	-0.0012	0.0016
	(0.0037)	(0.0033)	(0.0016)	(0.0118)
Size	0.0013	0.0305***	0.0002	0.0451***
	(0.0030)	(0.0031)	(0.0008)	(0.0043)
ROA	-0.0723***	-0.0533***	-0.0530***	-0.0892***
	(0.0062)	(0.0083)	(0.0017)	(0.0092)
Leverage	-0.0000	-0.0000	0.0000*	0.0021***
	(0.0001)	(0.0000)	(0.0000)	(0.0002)
Growth	-0.0313***	-0.0270***	-0.0106***	-0.0084***
	(0.0009)	(0.0009)	(0.0003)	(0.0012)
Inventory	0.0539***	0.0372***	0.0853***	0.0158
	(0.0154)	(0.0143)	(0.0043)	(0.0258)
Cummulative Loss	-0.1203***	-0.1361***	-0.0279***	-0.0587***
	(0.0082)	(0.0082)	(0.0029)	(0.0227)
Accountant	0.0104***	0.0071***	0.0010	0.0058
	(0.0027)	(0.0026)	(0.0011)	(0.0077)
Age	0.0001	-0.0048***	-0.0007***	-0.0000
	(0.0018)	(0.0002)	(0.0001)	(0.0037)
Constant	-0.2308***	-0.5125***	-0.0913***	-1.6317***
	(0.0466)	(0.0451)	(0.0113)	(0.0724)
Observations	369,042	317,671	369,042	369,042
R-squared	0.0397	0.0344	0.0449	0.0017
Number of orgnr	58,825	58,393	58,825	58,825
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Sample size in model two differs from the rest due to the model's structure. [2] Standard errors are clustered at the firm level.
[3] Years included: $t = 2007$ to $t = 2013$.

Table C.6: AS Model 1 - 4, Big5

Accounting Quality for AS, Earnings Smoothing (Big5)	
	(1)
VARIABLES	Variance Change Net Income
Can Opt Out	-0.0652***
	(0.0143)
Drop Auditor	-0.0526**
	(0.0206)
Drop Big5 Auditor	0.0095
	(0.0348)
Size	-0.8894***
	(0.0466)
ROA	-0.4687***
	(0.1381)
Leverage	0.0017**
	(0.0008)
Growth	0.1678***
	(0.0141)
Inventory	-0.8775***
	(0.2263)
Cummulative Loss	-0.1443*
	(0.0863)
Accountant	0.0004
	(0.0258)
Age	-0.2811**
	(0.1174)
Constant	16.7286***
	(1.7093)
Observations	109,011
Number of orgnr	56,849
R-squared	0.1023
Year FE	YES
Firm FE	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] Data is collapsed on orgnr and on period (before and after 2011) using Stata's Collapse command.
[2] Standard errors are clustered at the firm level.
[3] Years included in the collapse are $t = 2007$ to $t = 2010$ before, and $t = 2011$ to $t = 2013$ after.

Table C.7: AS Model 5, Big5

Accounting Quality for AS, Timely Loss Recognition (Big5)

VARIABLES	(1) Accruals	(2) Large Negative Results
Scaled OCF	-0.7041***	0.0391***
	(0.0083)	(0.0016)
DnegOCF	0.1111***	
	(0.0030)	
DnegOCF*OCF	-0.0319**	
	(0.0143)	
Can Opt Out	-0.0030	-0.0105***
	(0.0042)	(0.0016)
Drop Auditor	-0.0325***	-0.0088***
	(0.0055)	(0.0016)
Drop Big5 Auditor	0.0106	0.0025
	(0.0083)	(0.0026)
DnegOCF*OCF*Can Opt Out	0.0056	
	(0.0296)	
DnegOCF*OCF*Drop Auditor	-0.0432	
	(0.0418)	
DnegOCF*OCF*Drop Big5 Auditor	0.0371	
	(0.0704)	
Rev Scaled		-0.0054***
		(0.0005)
Constant	0.5781***	0.8056***
	(0.0422)	(0.0210)
Observations	369,042	369,042
R-squared	0.7153	0.3679
Number of orgnr	58,825	58,825
Year FE	YES	YES
Firm FE	YES	YES
Control Variables	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[1] The relevant coefficients are $DnegOCF * OCF * CanOptOut$, $DnegOCF * OCF * DropAuditor$ and $DnegOCF * OCF * DropBig5$for the accrual model. [2] Standard errors are clustered at the firm level. [3] Years included: $t = 2007$ to $t = 2013$. [4] The regression also includes interaction terms not interpreted or shown.

Table C.8: AS Model 6 - 7, Big5

C.1 Discretionary Revenues

Our fourth measure for AQ is based on Stubben (2010). We use the change in accounts receivable as our dependent variable, and the change in revenue as our independent variable. The residual from this regression is a proxy for accounting quality, but the amount of discretion will be somewhat understated.

Revenues consist of a discretionary part γ, and a non-discretionary part.

$$Rev = Rev^{non-disc} + \gamma \tag{C.1}$$

If we assume, as done in Stubben (2010) that a part of the non-discretionary revenues (c) is uncollected each year, and we do not collect cash from discretionary revenues, then Account Receivables is:

$$AR = c * Rev^{non-disc} + \gamma \tag{C.2}$$

γ is the same for both revenues and receivables, which means that any increase in γ will influence both accounts receivable and revenue the same way.

By combining the two, to account for the fact that the non-discretionary revenues are non-observable, and taking the first difference, we are left with the expression:

$$\Delta AR = c * R + (1 - c)\Delta\gamma \tag{C.3}$$

The model we use is:

$$\Delta AR_{i,t} = \beta_0 + \beta_1 \Delta Rev_{i,t} + \epsilon_{i,t} \tag{C.4}$$

As *Rev* includes discretionary revenues we will be understating discretionary revenues ϵ by a factor of $(1 - c)$ (see Stubben, 2010).

C.2 Conditional Conservatism

In our first analysis, we extend the model by adding a dummy variable for NUF.

$$\begin{aligned} Accr_{it} = \beta_0 &+ \beta_1 OCF_{it} + \beta_2 Neg\_OCF_{it} + \beta_3 Neg\_OCF_{it} * OCF_{it} \\ &+ \beta_4 NUF_{it} + \beta_5 Neg\_OCF_{it} * NUF_{it} + \beta_6 OCF_{it} * NUF_{it} \\ &+ \beta_7 Neg\_OCF_{it} * OCF_{it} * NUF_{it} + \epsilon_{it} \end{aligned} \tag{C.5}$$

The test for conditional conservatism is β_7, where a negative coefficient implies that the firm represented by the Dummy has less conditional conservatism, implying lower AQ.

In our second analysis, we extend the model by adding one dummy for firms that can opt out, and one for firms that actually drop their auditor.

$$\begin{aligned} Accr_{it} = \beta_0 &+ \beta_1 OCF_{it} + \beta_2 Neg\_OCF_{it} + \beta_3 Neg\_OCF_{it} * OCF_{it} \\ &+ \beta_4 Can\_opt\_out_{it} + \beta_5 Drop\_aud_{it} + \beta_6 Neg\_OCF_{it} * Can\_opt\_out_{it} \\ &+ \beta_7 Neg\_OCF_{it} * Drop\_aud_{it} + \beta_8 OCF_{it} * Can\_opt\_out_{it} \\ &+ \beta_9 OCF_{it} * Drop\_aud_{it} + \beta_{10} Neg\_OCF_{it} * OCF_{it} * Can\_opt\_out_{it} \\ &+ \beta_{11} Neg\_OCF_{it} * OCF_{it} * Drop\_aud_{it} + \epsilon_{it} \end{aligned} \tag{C.6}$$

The test for conditional conservatism is β_{10} and $\beta 11$.

C.2.1 Explanation

The first role of accruals, to reduce noise in cash flow, is is presented by:

$$Accr_{it} = \beta_0 + \beta_1 OCF_{it} + ... \tag{C.7}$$

The the coefficient β_1 should be negative, so that accruals and OCF are negatively correlated.

The second role of accruals is presented by

$$Accr_{it} = ... + \beta_3 * Neg\_OCF_{it} * OCF_{it} \tag{C.8}$$

As Neg_OCF will be one when OCF is negative, the two terms together will always be negative or 0. The coefficient β_3 should be positive. To see why this is the case, remember that conditional conservatism means you take your losses when

you are supposed to. If this is the case, conditional conservatism should act as a counterweight to the negative correlation between $Accr$ and OCF. In times of losses ($OCF < 0$), the following will happen: $\beta_1 * OCF > 0$ which reduces noise, and $\beta_3 * Neg\_OCF * OCF < 0$ to counterweight this.

When we include NUF in the equation, as shown above, the test for conditional conservatism is $\beta_7 Neg\_OCF_{it} * OCF_{it} * NUF_{it}$. If $\beta_7 < 0$, it means that NUFs have less conditional conservatism than limited companies.

In our second analysis, the test for conditional conservatism is $\beta_{10} Neg\_OCF_{it} * OCF_{it} * Can\_opt\_out_{it}$ and $\beta_{11} Neg\_OCF_{it} * OCF_{it} * Drop\_aud_{it}$. If $\beta_{11} < 0$ it means that firms who drop their auditor have less conditional conservatism than firms who keep their auditor. If $\beta_{10} + \beta_{11} < 0$ it means that firms who drop their auditor have less conditional conservatism than firms not eligible for voluntary audit.

Appendix D

Analysis 3

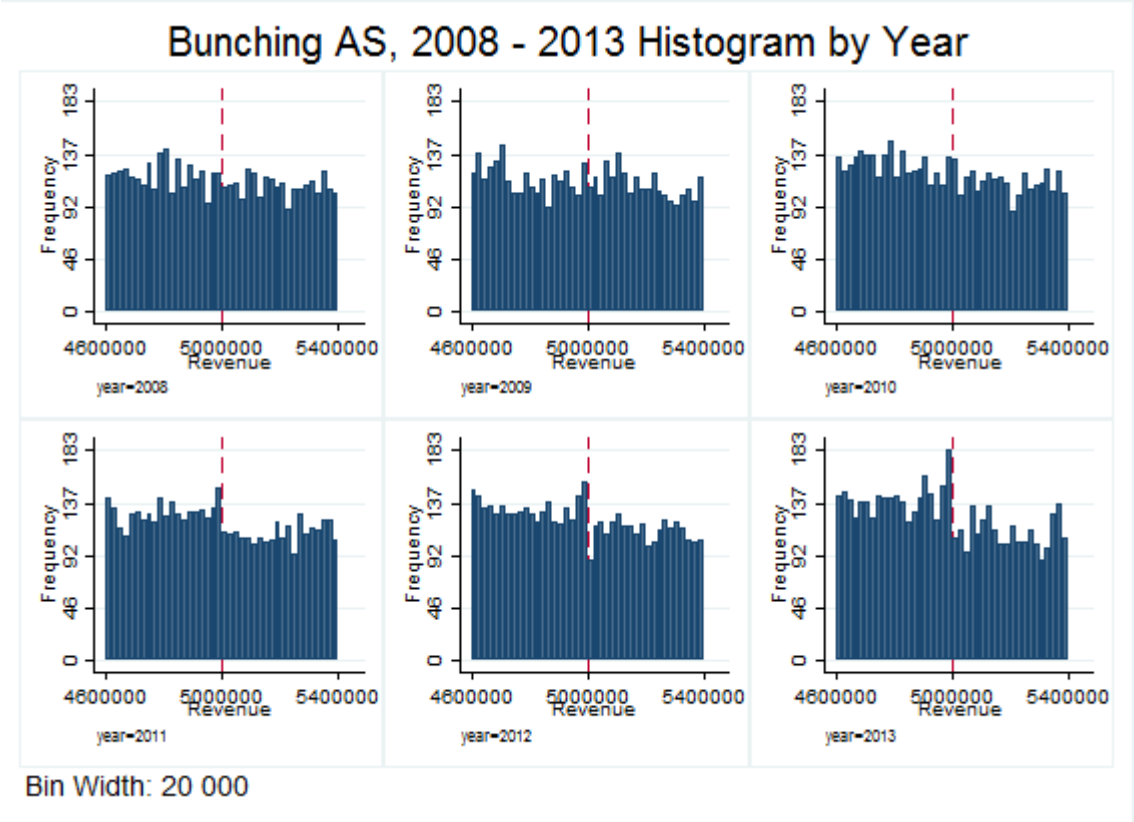

Figure D.1: Bunching Histogram Year-by-Year

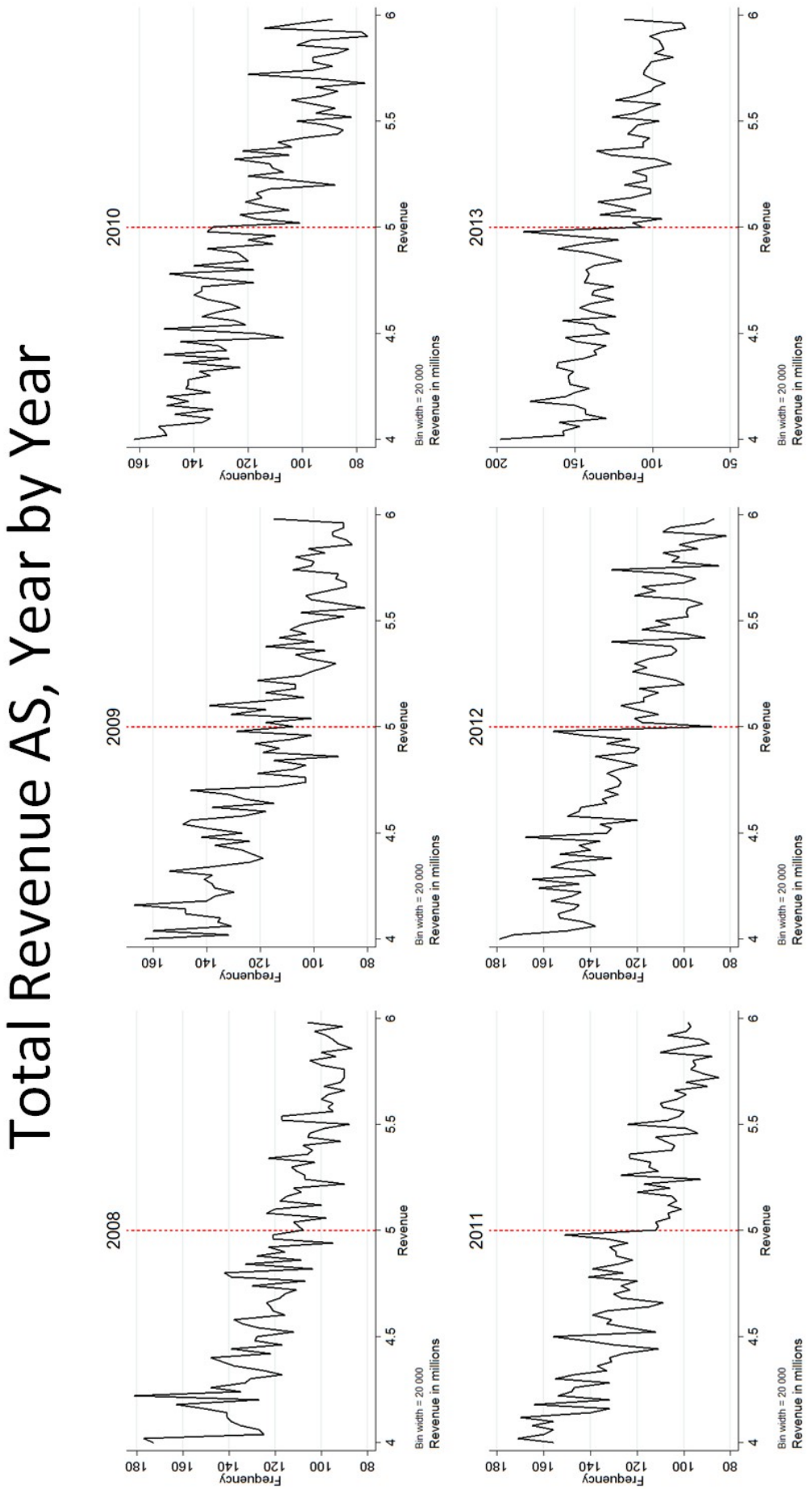

Figure D.2: Bunching Year-by-Year for Limited Companies

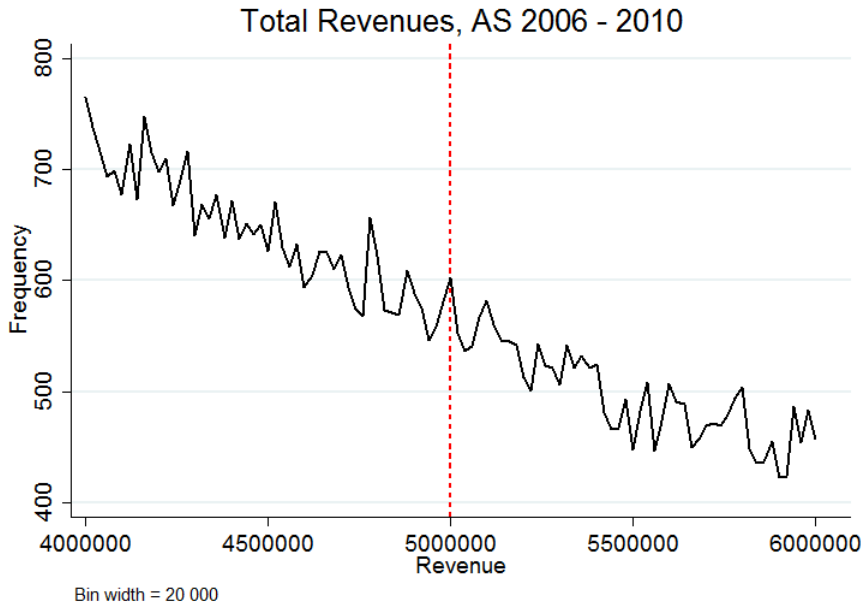

Figure D.3: Distribution of Limited Companies, pre reform

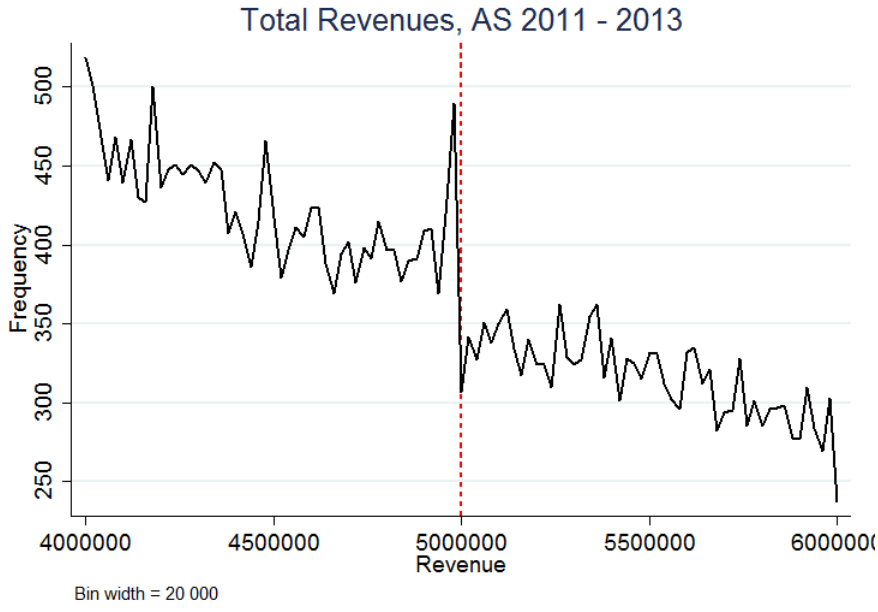

Figure D.4: Distribution of Limited Companies, post reform

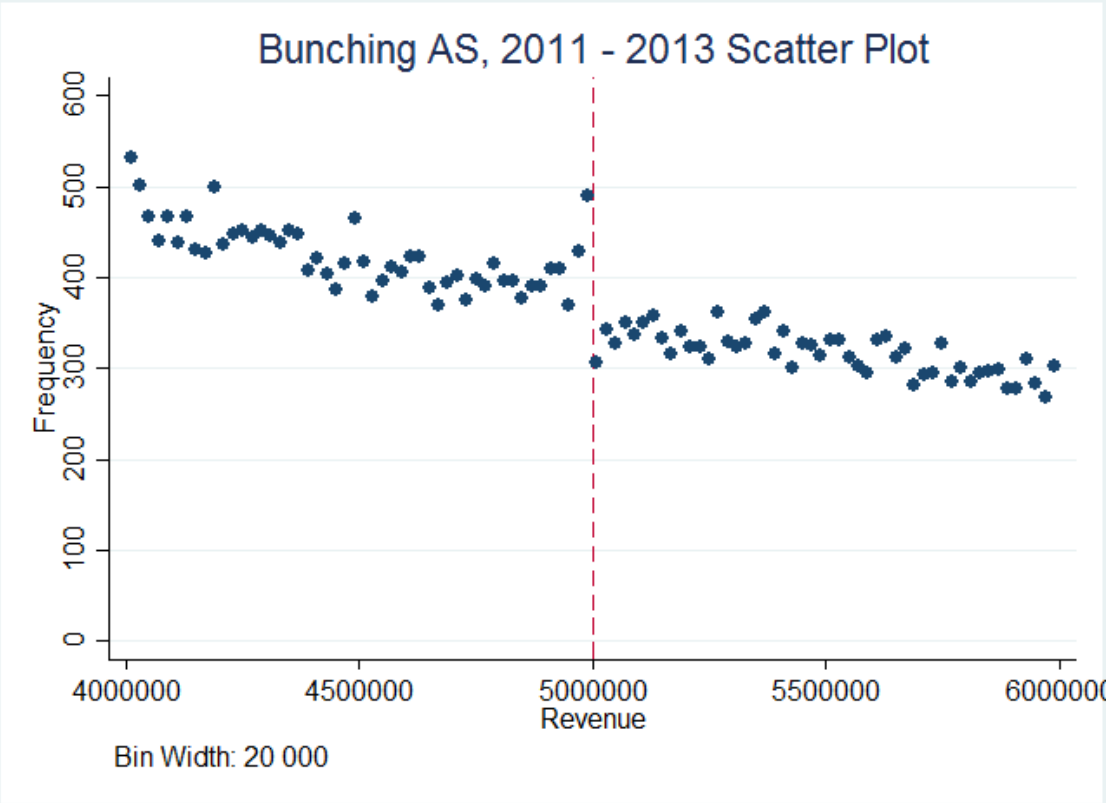

Figure D.5: Bunching Limited Companies, Scatter Plot

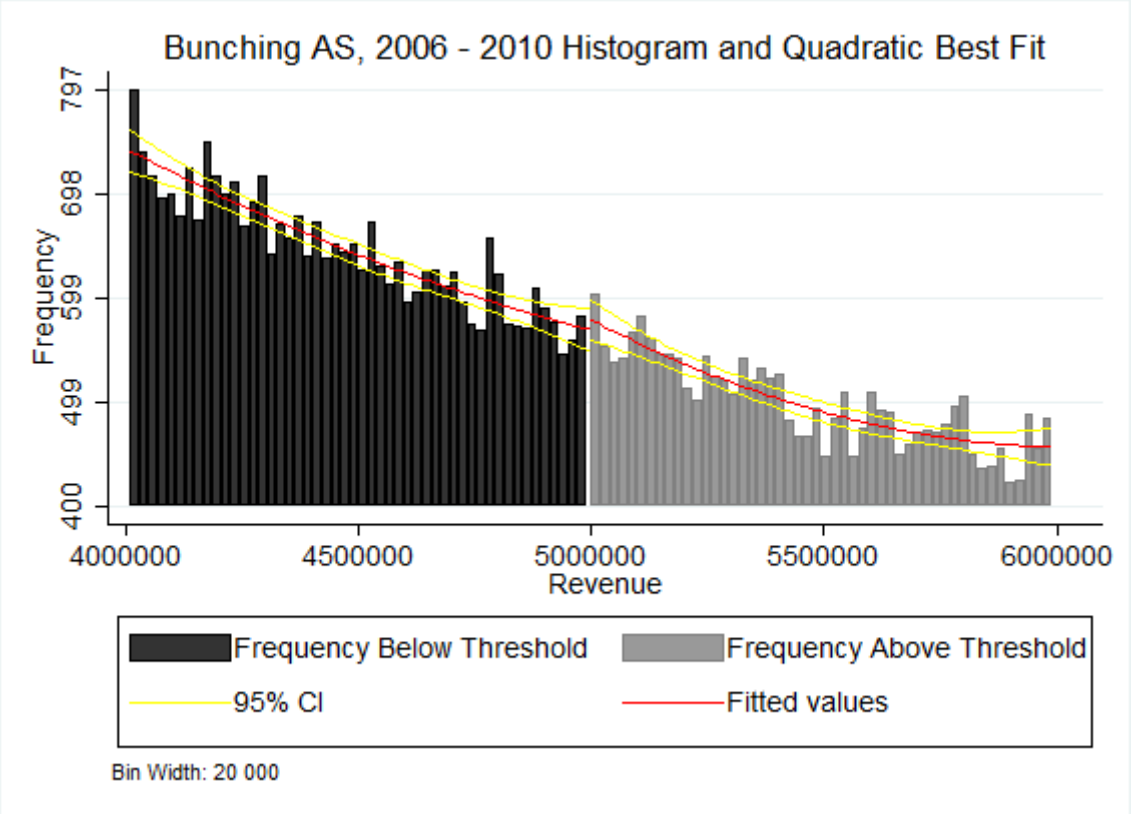

Figure D.6: Bunching Histogram with Quadratic Best Fit Pre Reform

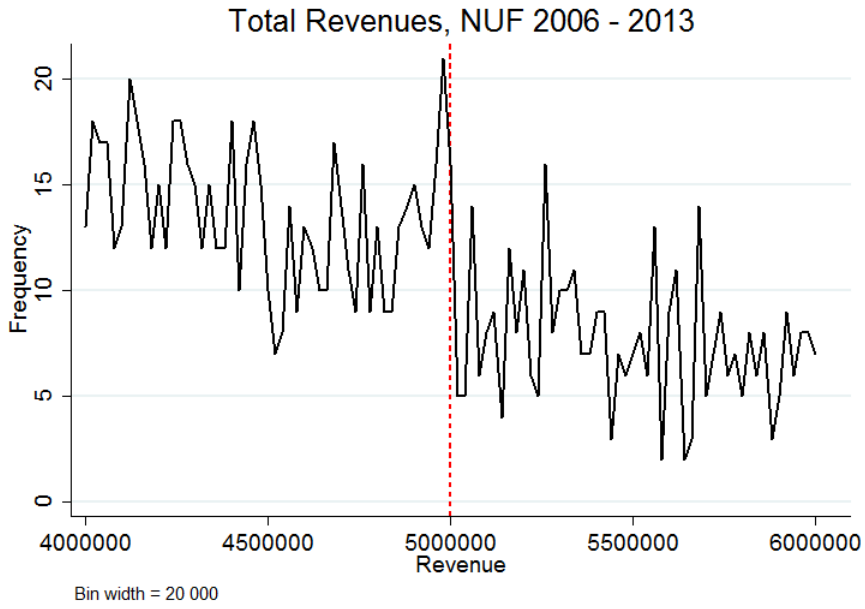

Figure D.7: Distribution of NUFs, 2006-2013

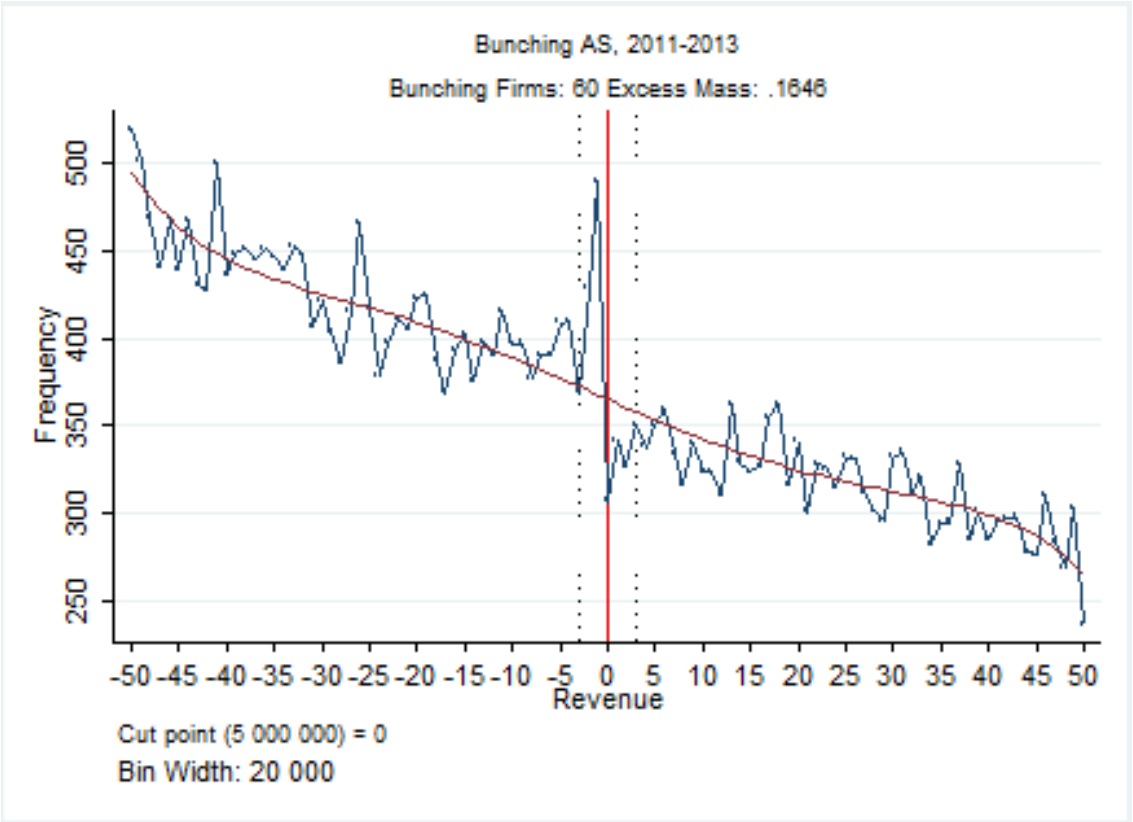

Figure D.8: Bunching Limited Companies, 2011 - 2013 Strict

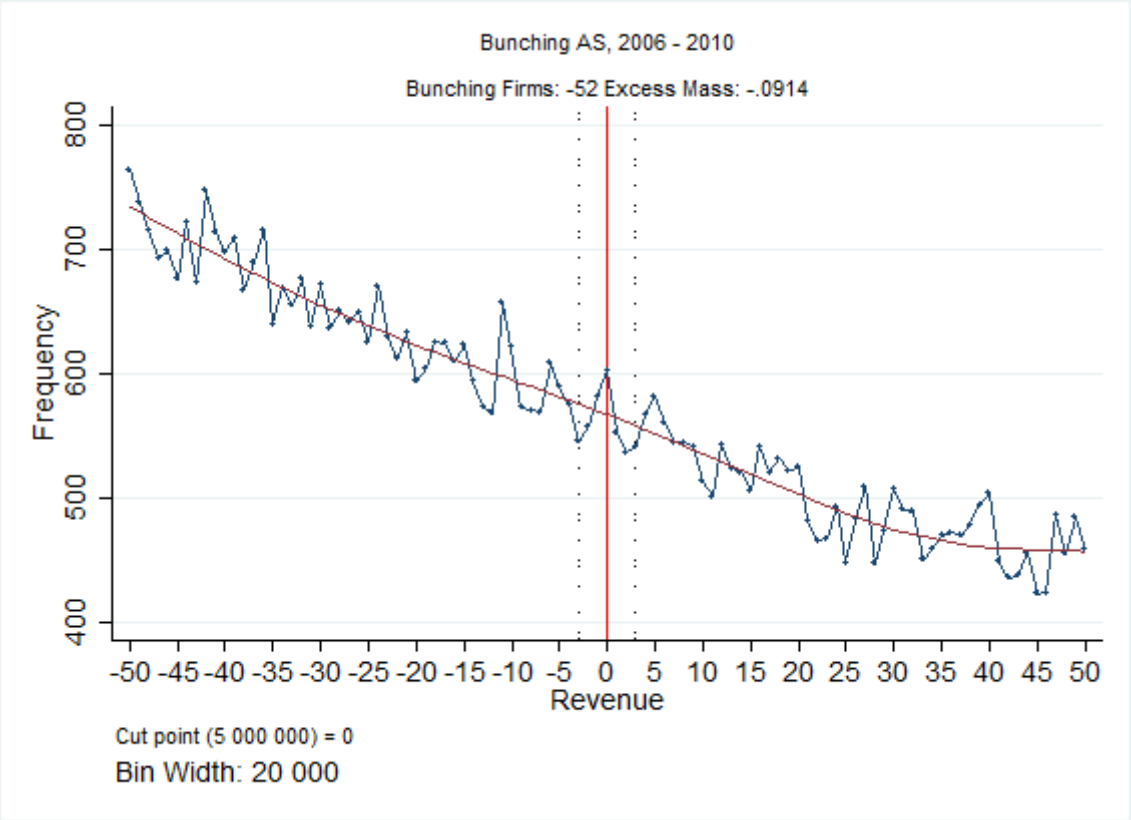

Figure D.9: Bunching Limited Companies, 2006 - 2010