Essays on the effects of introducing thresholds for mandatory audits in a fully regulated audit market for private limited liability firms

Øivind André Strand Aase

Dissertation submitted to the Norwegian School of Economics, for the degree of Philosophiae Doctor (PhD)

January, 2023

Acknowledgements

First and foremost, I would like to express my deepest gratitude to my main supervisor Jarle Møen for his commitment, guidance, and support. Without him, I would not have achieved this milestone. I am also very grateful for the constructive feedback from my co-supervisors, Kjell Henry Knivsflå and Liv Osland, and my colleague Svein Abrahamsen.

I thank my fellow PhD students and colleagues at NHH and HVL for being inspiring and supportive. I would also like to express gratitude to the Norwegian Centre for Taxation, for giving me access to the data and for financial support, and the Norwegian Tax Administration for providing the data.

Finally, I am grateful to my family, especially Håkon and Nora, for putting things in perspective, and Ida, for showing great patience, support and understanding throughout.

Haugesund, January 2023
Øivind André Strand Aase

Contents

Acknowledgements i
Chapter 1 Introduction 1
Chapter 2 Size Management in Response to Mandatory Audit Rules 23
Chapter 3 Effects of Voluntary Audit on Accounting Quality in Small Private Firms 57
Chapter 4 The Effects of Private Audit on Tax Compliance in Small Firms 92

Chapter 1

Introduction

Motivation and overview of the literature

To what extent governments should impose mandatory audits is a recurring regulatory issue with implications for the efficiency of the overall economy. On the one hand, regulating the audit market ensures that firms are audited, and may have positive implications for, e.g., public income and the cost of capital for firms. On the other hand, making audits mandatory obscures the audit decision itself. It can limit possible signaling and screening effects among debtors and creditors and inflict audit costs on segments of firms that gain few benefits from audits due to, e.g., uncomplicated reporting issues.

In recent decades, there has been a growing international trend towards reducing the costs and complexity of private firms' financial reporting.[1] A common regulatory measure has been to raise the bar for requiring private audits for small private firms, entrusting demand for audits in this segment to the market.[2] In Norway, thresholds for mandatory audits were introduced in 2011, and thresholds relating to total revenue and total assets were increased in 2018. There is currently a consultation proposal to further increase the thresholds for mandatory audits relating to total revenue and total assets.[3] Prior to 2011, *all* Norwegian private limited liability firms were subject to mandatory audits.

As a consequence of the 2011 reform, Norwegian limited liability firms with

1) less than NOK 5 million (EUR 0.5 million) in lagged total revenue,

2) less than NOK 20 million (EUR 2 million) in lagged total assets,

3) and no more than 10 full-time employees in the prior year,

could choose to drop auditing.

[1] See, for instance Paragraph 1 of DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, where it is stated that "The European Council of 24 and 25 March 2011 also called for the overall regulatory burden, in particular for SMEs, to be reduced at both Union and national level and suggested measures to increase productivity, such as the removal of red tape and the improvement of the regulatory framework for SMEs."

[2] See, e.g., Bernard et al. (2018) and Langli (2015).

[3] https://www.regjeringen.no/no/dokumenter/horing-2/id2867717/ (last accessed December 9, 2022). See the chapter entitled "Policy implications for audit regulation in Norway" for further discussion of the consultation proposal.

Cost-benefit considerations relating to the 2011 Norwegian audit reform were discussed in the green paper, Prop. 51 L (2010–2011). The motivation for allowing size-dependent audit exemptions was primarily to reduce reporting costs and complexity, to generate economic net gains and increased competitiveness as a result of making the national regulations more comparable to international regulations. Concerns were expressed, however, about the risk of lower reporting quality, effects on public income, and higher public spending on control mechanisms.[4]

In this dissertation, I use the 2011 reform to study whether introducing thresholds for mandatory audits in a fully regulated audit market for private limited liability firms:

1) is of importance to small private firms in the sense that the audit decision can build on a firm-specific, cost-benefit assessment
2) affects the quality of financial reporting
3) affects tax compliance.

Norway is a particular interesting setting for studying the effects of audit deregulation. First, Norway was the last country in the EU/EEA to abolish full statutory audits for small private limited liability firms (Langli, 2015, p. 143), and the Norwegian revenue and balance sheet threshold has been set very low relative to EU regulations. The turnover threshold in Norway could be about twenty times as large as it is today, and the balance sheet threshold could be roughly tripled.[5] In line with Chen et al. (2011, p. 1257), who focus on the "(…) 'boundary conditions' for the importance of accounting information", this dissertation focuses on the "boundary conditions" for the importance of an external audit, and adds to our knowledge of the fundamental question of *"why audit?"*.[6]

Second, in a consultative statement, Langli (2008) estimated that small private limited liability firms in Norway, under a mandatory audit regime, paid more than 40% of total audit fees in the Norwegian private limited liability firm segment, whereas they only accounted for 4% of total revenue in the same segment.[7] The possibility of dropping an audit can therefore

[4] Prop. 51 L (2010–2011) p. 58.
[5] Paragraph 43 of DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL states that small undertakings should not be covered by an audit obligation. Small undertakings are in Article 3 (2) defined as undertakings not exceeding at least two of the three following criteria: (a) balance sheet total: EUR 4 000 000; (b) net turnover: EUR 8 000 000; (c) average number of employees during the financial year: 50. Member States are allowed to raise the thresholds for the total balance sheet to EUR 6 000 000, and net turnover to EUR 12 000 000.
[6] This fundamental question is far from being resolved (Hay, 2015).
[7] https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf (last accessed December 9, 2022)

be of great importance to this segment of firms and an important cost-saving measure for small private firms. I therefore evaluate the effects of introducing thresholds for mandatory audits in a market where the benefits of mandatory audits have been perceived to be particularly large by the government, on the one hand, and where deregulation of the audit market may have the potential to be particularly important to the affected firms, on the other.

Audits can potentially reduce principal-agent problems in private firms, as pointed out by Jensen and Meckling (1976). In such firms, the agency conflicts are typically between owners and creditors – including the tax authorities. Prior studies have found audits to have a positive effect on accounting quality, and to act as a mitigating factor in relation to, e.g., constrained access to capital and investment opportunities in private firms.[8] In an overview of the literature, Vanstraelen and Schelleman (2017, p. 578) state that "[t]he drivers of audit demand for private companies range from mitigating agency conflicts and meeting contractual constraints to improving operational efficiency and effectiveness and obtaining business advice. Hence, auditors are likely to provide benefits to private companies beyond financial reporting."

Minnis and Shroff (2017) find that private firms see that audits have benefits, such as a lower cost of debt. The firms, however, see few positive externalities of audits and would prefer mandatory audits to be removed. Kausar et al. (2016) argue that the *observable* choice to obtain an audit provides incremental information to creditors, and Ichev et al. (2020) find that a voluntary audit facilitates access to financial debt for firms with a higher information risk that might otherwise have limited access to external capital. This finding supports their hypothesis that the effect of a voluntary audit on the cost of debt is dependent on the firm's reporting incentives – i.e., whether the reported numbers are closer to the underlying cash flow and can predict future cash flows, since creditors will likely require audited financial statements from firms with a higher information risk (i.e., poor predictability of future cash flows). Vanstraelen and Schelleman (p. 578) state that "[o]verall, it seems that private company audits generate real economic benefits in the form of lower interest rates on debt, higher credit ratings, and better access to credit, particularly when the audit is voluntary rather than mandatory".

[8] See, e.g., Allee and Yohn (2009), Clatworthy and Peel (2013), Dedman and Kausar (2012), Kausar et al. (2016), Lennox and Pittman (2011), and Minnis (2011).

Using a large sample of private firms from 12 European countries, Bernard et al. (2018) find that firms tend to bunch under the thresholds for mandatory audits. The authors argue that such size management can be related to both direct audit costs, such as audit fees, and indirect audit costs, such as the time and effort involved in providing information to auditors. These findings support the findings of, e.g., Minnis and Shroff (2017), and imply that many firms may seek to avoid mandatory audits.

Langli (2009) argues that the number of stakeholders in small private firms is often exaggerated, since many small private limited liability firms do not have employees or interest-bearing debt. In other words, small private firms may not have the same incentives as large and medium-sized private firms to request audit services, as the value of audit services will depend on firm-specific factors such as the owner/management structure, the level of external funding, and the number of employees.

Vanstraelen and Schelleman (2017) conclude in their overview of the literature that there is considerable heterogeneity in terms of the value derived from an audit, and consequently in the cost-efficiency of mandatory audits. Benefits are for instance contingent on firms' level of external financing, management and ownership structure, operational efficiency, and complexity. In their view, mandatory audits is not an economically optimal solution for all private firms, and audit costs in small private firms may typically outweigh the benefits – leading to economic inefficiency.

Despite the importance of small private firms to the economy, these firms have received limited attention in the accounting literature, and there is little evidence-based policy concerning the deregulation of financial reporting requirements, according to Peel (2019). Vanstraelen and Schelleman (2017) state that research on private firms' audits is much more limited than research on public firms' audits, and Ojala et al. (2020) point out that research on the effect of voluntary audit on, e.g., firms' tax behavior is scarce. Beuselinck et al. (2021, p. 33) argue that private firms are "an appealing laboratory" with respect to isolating specific effects, since these firms are less complex and "less affected by confounding mechanisms". They also advocate studies exploiting the unique regulatory settings of these firms.

Examples of prior evaluations of audit reforms

Langli (2015) has evaluated the Norwegian audit reform but emphasizes that it is impossible to determine its full effect on, e.g., accounting quality as a result of the reform because he

only has one year of data after the reform. Dedman et al. (2014) find evidence suggesting that firms need time to benefit from the exemption from audits. Long-term effects of audit reforms are in other words important to understand. The data used in this dissertation spans from 2006 (five years before the reform) to 2015 (five years after the reform).

In 2017, the Swedish National Audit Office issued a report evaluating a similar Swedish audit reform implemented in 2010.[9] The overall conclusions were that (1) opt-out firms did not perform better after opting out of audit, (2) firms made a small saving as a result of choosing to opt out of audit, (3) companies in risk sectors opted out of audit to a greater extent, (4) formal errors in annual reports have increased, (5) the Swedish Tax Agency does not have the knowledge of the consequences of the reform, and the new controls have not led to fewer misstatements, and (6) work to combat economic crime has been made more difficult. In the wake of the report, Sweden is still debating whether or not the government should reverse the audit reform.[10]

The Swedish report states that, although there are indications of increased tax evasion due to the reform, this has not been established. The lack of increased profitability among opt-out firms could, e.g., be attributed to selection effects, in the sense that opt-out firms may have reduced their growth ambitions more that audited firms, as stated in the report. Another interpretation that they do not mention relates to Kausar et al.'s (2016) point that firms may signal higher growth ambitions through their audit choice. Kausar et al. (p. 157) conclude that "the audit *choice* conveys important information to capital providers, which reduces financing frictions and improves performance". As a result, the Swedish audit reform may have had positive effects that are not taken into account in the evaluation report. These possible positive effects may also explain why saved audit costs do not have a positive effect on Swedish limited companies' growth or profitability relative to audited firms.

The low indirect audit cost estimate of SEK 1814 (EUR 180) contrasts with the finding in Minnis and Schroff (2017) that the time spent by the management on an audit is a highly important cost consideration among firms.[11]

[9] https://www.riksrevisionen.se/en/audit-reports/audit-reports/2017/abolition-of-audit-obligation-for-small-limited-companies---a-reform-where-costs-outweigh-benefits.html (last accessed December 9, 2022)
[10] https://www.revisorsinspektionen.se/publikationer/nyheter/2022/ny-utredning-bolaget-som-brottsverktyg/ and (last accessed December 9, 2022) https://www.regeringen.se/rattsliga-dokument/kommittedirektiv/2021/12/dir.-2021115/ (last accessed December 9, 2022)
[11] The evaluation report refers to Prop. 2009/10:204, s. 98 (last accessed December 9, 2022) in footnote 72 on page 32 of the evaluation report, but also states that the estimate is uncertain.

Prior literature has, according to DeFond and Zhang (2014, p. 292), found that voluntary audits among private firms "(…) reduce the cost of debt, improve credit ratings, and have signaling value that is lost when auditing is mandatory (…)". This view is also supported by the findings in Kausar et al. (2016). It is therefore plausible that firms' audit decision is influenced by firms' leverage. However, the matching procedure in the Swedish report does not take account of leverage. As stated on page 4 of Appendix 6 of the Swedish report, not including time-varying variables that affect the audit choice may cause the measured effect to be biased.

At the request of FSR, the Danish Association of Auditors, Copenhagen Economics has analyzed the effect on tax payments by small firms relieved of their audit obligation following an audit reform in Denmark in 2011.[12] The report concludes that the audit reform led to a yearly increase in the tax gap of approximately DKK 1.5 billion (EUR 150 million), which it is emphasized is a conservative estimate. In a difference-in-difference analysis, they find that the treatment group (firms affected by the audit reform) report significantly lower income tax revenue, and lower VAT revenue than the control group of firms not affected by the audit reform.[13]

The report emphasizes that there is a potential omitted variable bias, and it includes robustness tests using more control variables to mitigate such concerns. However, controls for factors that the literature finds to affect tax payments, such as leverage, profitability, growth, tax loss carryforwards, and property, plant, and equipment, are not included in these tests.[14] The main results are obtained by comparing firms affected by the audit reform (not actual opt-out firms) to a wide control group consisting of non-affected firms with less than 20 employees and a total revenue of less than DKK 36 million, which suggests that more control variables would be useful.[15] The report recognizes that the audit choice is dependent on firm-

[12] https://www.fsr.dk/Files/Files/Dokumenter/Politik%20og%20analyser/Analyser/2018/20181109_Samlet%20skattetab%20af%20%C3%A6ndret%20revisionspligt.pdf (last accessed December 9, 2022)

[13] The results are obtained from analyses without control variables. In the robustness test in Table A5, controls for lagged total assets, lagged total revenue, and industry are included. The treatment group consists of the following firms: 1) firms with total assets of between DKK 1.5 and 4 million, and less than 12 employees in two succeeding years; 2) firms with a total revenue of between DKK 3 and 8 million, and less than 12 employees in two succeeding years; 3) firms with total assets of between DKK 1.5 and 4 million, and total revenue of between DKK 3 and 8 million.

[14] See, e.g., Chen et al. (2010), and Langli and Willekens (2017).

[15] In a robustness analysis, the control group is restricted to firms with a total revenue between DKK 1.5 and 50 million, which is also a very wide range of firms.

specific factors but argues that the aggregated analysis of affected and non-affected firms eliminates firm-specific effects, without further explanation.

The Danish evaluation report does not measure what firms actually pay in income tax, but, instead, uses a proxy based on the difference between after-tax earnings and estimated pre-tax earnings (based on after-tax earnings and the year-specific tax rate). This is known to be a very rough and problematic approximation of *paid* income taxes, see, e.g., Hanlon (2003) and Hanlon and Heitzman (2010).

All dependent variables are measured as logarithmic values. As stated in the evaluation report, using the logarithmic value of tax and VAT payments as dependent variables excludes all firm observations with zero or negative payments. No robustness tests are provided, however, for different measures of the dependent variable, e.g., cash effective tax rates or other scaled measures of tax payments, which could allow them to include more firm observations in the analysis.

The yearly increase in the tax gap of approximately DKK 1.5 billion is estimated using the average of the estimated effects in the post-reform period. Effects on withholding tax (A-skat) are also included and make up about 27% of the total estimate, even though the effects are not found to be robust, and not found to be significant in an analysis of withholding tax per employee. Although the yearly estimates of effects on firms' income tax are found to be lower in robustness tests, the main results are used in the estimation of the tax gap. The estimation is also based on firms that, in 2016, were affected by the prior audit reform, although the data span from 2007 to 2013. As a result, there may be discrepancies in the basis for the point estimates and the basis for tax payments. Another objection to the relevance of the estimation is that it does not consider audit effects among affected firms. As stated on page 5 of the evaluation report, only 9% of firms did not receive any assistance from auditors in 2012. This percentage had increased to 19% in 2017. The percentage of firms subjected to a full audit was 82% in 2012 and 37% in 2017.

Hence, prior evaluations may arguably suffer from methodological challenges related to data access. Vanstraelen and Schelleman (2017) call for more evidence on whether and how audit exemptions for private firms affect the quality of financial reporting over time, and a greater focus on developing appropriate measures of accounting quality for private firms. This dissertation targets effects of introducing voluntary audits in a fully regulated audit market using confidential panel data (including accounting, VAT, and tax figures reported to the Tax

Authority). The data allow for the use of firm fixed effect analyses – controlling for unobserved firm-specific effects (time constant) that may be correlated with the audit decision – and analyses of long-term effects. IV-regressions are also performed – to endeavor to account for unobserved transitory effects. Based on the rich data, the effects are measured on both traditional reporting quality metrics, and measures not subject to the pitfalls of standard quality proxies used in the literature.

General methodology

I use firm-level data on financial statement figures and tax amounts reported to the Norwegian Tax Authority in the time period 2006 (five years before the reform) to 2015 (five years after the reform). The analyses focus on non-grouped, active limited liability firms not too far from the adopted revenue threshold, established prior to the reform and registered in industries affected by the reform. None of the included firms exceeds thresholds for total assets or number of employees, as the revenue threshold is found to be the most relevant constraint.

All private limited liability firms in Norway are subject to a mandatory obligation to prepare financial statements – including both balance sheets and income statements. Hence, there is no data limitation on small private firms, which is typically seen as a major impediment in the related research literature (see, e.g., Vanstraelen and Schelleman, 2017). Moreover, the data provide access to financial statement figures, VAT, and tax amounts reported to the Norwegian Tax Authority. Arguably, this increases the validity of the available data.

The primary focus is on reporting quality, and the general regression model is the following:

$$Reporting\ Quality_{it} = \beta_0 + \beta_1 Eligible_{it} + \beta_2 Drop_{it} + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it} \qquad (1)$$

Where:

i = firm, t = time (year)

$Reporting\ Quality_{it}$= Different measures of accounting quality and tax compliance

$Eligible_{it}$ = An indicator variable taking the value 1 if a firm is eligible to opt out of auditing, and 0 otherwise

$Drop_{it}$ = An indicator variable taking the value 1, if an eligible firm opts out of auditing, and 0 otherwise

X_{it} = Control variables

θ_t = Year fixed effects

γ_i = Firm or industry fixed effects

The main treatment variable is *Drop*. Because the data are derived from firms that were established before the 2011 reform, all firms have at least one year with a mandatory audit.

Whether a firm chooses to drop auditing or not may be contingent on unobserved firm-specific characteristics that are correlated with reporting quality, causing estimates to suffer from potential selection bias. Firm fixed effects analyses mitigate such potential selection bias caused by *time-invariant* unobserved firm characteristics. However, in theory, *time-variant* unobserved factors affecting both the decision to drop auditing and measures of reporting quality may still cause potential selection bias. Negative temporary shocks may, for instance, cause firms to save money spent on control mechanisms and also cause problems with the firm's reporting quality – problems that are not attributed to the audit choice per se. As robustness tests for possible selection bias, four instruments for the variable *Drop* were therefore developed and used in IV-regressions: two time-invariant instruments, and two time-variant instruments.,

The instruments are based on pre-reform (counterfactual) eligibility, whether a firm was always or sometimes eligible during the pre-reform period, and time elapsed since the reform. The instruments are correlated with the choice of dropping auditing since smaller firms have a higher probability of dropping auditing, and the proportion of firms dropping auditing increases over time. However, post-reform reporting quality should not be correlated with pre-reform eligibility (whether a firm has more or less than NOK 5 million in total revenue in the pre-reform period) or time elapsed since the reform. The two time-invariant instruments are used in IV-regressions without firm fixed effects, whereas the two time-variant instruments are used in IV-regressions with firm fixed effects.

Contribution and findings

The three different aspects of introducing thresholds for mandatory audits are studied in three separate articles.

Article 1: Size management in response to mandatory audit rules

In Chapter 2 – the first research article – I study demand for audits among small private firms in Norway and whether private firms value the opportunity to drop an audit. Many firms may have incentives to drop audits (see, e.g., Vanstraelen and Schelleman, 2017), and the aim of the first article is to study the willingness of firms to avoid audits at the expense of growth opportunities.

The introduction of a voluntary audit regime enabled firms under the thresholds for mandatory audits to make a rational decision about whether or not to be audited. Firms around the threshold for mandatory audits therefore have incentives to squeeze in below these thresholds if an audit is perceived as entailing costs that outweigh the benefits. Norway is not included in the study by Bernard et al. (2018), and in contrast to Bernard et al., who study size distribution around *asset* thresholds for mandatory audits, I study whether there is an overrepresentation of firms just below, and an underrepresentation of firms just above, the adopted *revenue* threshold for mandatory audit.

I use Burgstahler and Dichev's (1997) standard difference test, Byzalov and Basu's (2019) model, and Kleven and Waseem's (2013) estimation of the counterfactual distribution to estimate whether size management around the revenue threshold for mandatory audits is statistically and economically significant.

I find an overrepresentation of firms just below the revenue threshold and a missing mass of firms just above the revenue threshold in years affected by the audit reform, signaling that audits entail costs that outweigh the benefits for certain small private firms, and that some firms are willing to forego growth opportunities to avoid mandatory audits. The overall effect of size management is estimated to be immaterial, however.

I also estimate how much revenue firms are willing to forego to squeeze in below the revenue threshold for mandatory audits. I find that the amount saved in external fees (including direct audit fees) is comparable to the lost profit on downsized revenue, suggesting that indirect audit costs are important in firms' cost-benefit analyses of audits.

Findings relating to size management are also supported by an analysis of financial ratios in the years surrounding the first year of a mandatory audit after firms have at some point dropped auditing in the post-reform period. Findings from the latter analysis suggest that postponing sales and offering discounts may be used as size management mechanisms. I find no consistent evidence of firms using real earnings management (i.e., reducing output and

building up inventory) to squeeze in below the revenue threshold. The latter finding suggests that, e.g., earnings management (affecting accounting quality) might be used as a size management mechanism, rather than manipulation of real activities.

Overall, the study demonstrates that small firms value the opportunity to save both direct and indirect audit costs and are willing to forego growth opportunities to become eligible to opt out of audits.

Article 2: The Effects of voluntary audit on accounting quality in small private firms

In Chapter 3 – the second research article – I study whether deregulating the audit market for small private limited liability firms has implications for accounting quality among the targeted firms, and whether the management of accounts is used as a means of size management to squeeze in below the adopted revenue threshold. Prior literature is ambiguous as regards the extent to which audits affect conventional measures of accounting quality. Several studies have found that auditing increases accounting quality in private firms.[16] Langli (2015), and Liu and Skerratt (2018), however, find no consistent negative effect on accounting quality of small private firms dropping audits. I provide more empirical evidence on the relationship between auditing and conventional measures of accounting quality. Perceived accounting quality can have implications for, e.g., the cost of capital (see, e.g., Dedman and Kausar, 2012), which is therefore a major concern when assessing the effects of audit deregulation on economic efficiency.

I base the main analysis on model (1) above, where I use the level of discretionary accruals as a measure of reporting quality. Discretionary accruals are estimated based on Kothari et al.'s (2005) model.[17] Following Hope et al. (2013), I use the negative absolute value of estimated discretionary accruals as the dependent variable in the analysis of how discretionary accruals are affected by the audit reform. With this measure, a higher value of the proxy for discretionary accruals indicates less discretionary accruals, and better accounting quality.[18] When testing for bunching behavior among opt-outs, I use an extended version of model (1) in which I include a proxy for bunching behavior based on the findings in Article 1.

[16] See, e.g., Allee and Yohn (2009), Clatworthy and Peel (2013), Dedman and Kausar (2012), and Minnis (2011).
[17] Kothari et al. (2005) augment and modify the Jones (1991) model.
[18] Discretionary accruals are trimmed at the 1% level.

Measures of accruals used as indicators of accounting quality have been criticized over the years.[19] Therefore, I use alternative measures of financial reporting quality to test the robustness of the derived results: discretionary revenue (a specific, rather than aggregated measure of accruals), and three measures of conditional conservatism. Hui et al. (2012) argue that accounting conservatism is especially important in private firms, as stakeholders do not have access to signals of firms' performance, such as stock prices.

I find no consistent signs of negative effects on accounting quality for firms that drop audits. Nor do I find significant signs of firms managing revenue downwards through manipulation of the accounts. I conclude that enabling firms to make rational audit choices does not seem to come at the expense of lower accounting quality.

Article 3: The effects of private audit on tax compliance in small firms

In the last chapter, my co-author and I study the effects of private audit on tax compliance. The main concerns expressed before the 2011 audit reform in Norway concerned effects on public income and higher public spending on control mechanisms.[20] We examine both VAT reporting quality and tax avoidance in the small private firm segment.

The aim of the article is to provide more empirical evidence of the relationship between private auditing and tax compliance. Our study complements, e.g., Downing and Langli (2019) by looking at more fine-tuned measures of reporting quality, and Clatworthy and Peel (2013) by using measures of reporting quality that are not affected by firms' *self-reporting* of errors.

We use model (1) above to study whether private audit affects:

1) timeliness in VAT reporting – using data from the VAT register,
2) timeliness in the payment of VAT and general taxes – using data from the Tax Authority's accounts receivables register,
3) tax audit findings, and

[19] See, e.g., Bernard and Skinner (1996), Dechow et al. (1995), Guay et al. (1996), Kothari et al. (2005), McNichols (2000), McNichols and Stubben (2018), Owens et al. (2017), Stubben, (2010), and Thomas and Zhang (2000).
[20] See the green paper: Prop. 51 L (2010–2011).

4) firms' level of tax avoidance – using cash effective tax rates estimated as tax payable divided by operating cash flow.[21]

Our overall results show few signs of lower tax compliance associated with the introduction of thresholds for mandatory audits. In cases where we see a drop in tax compliance among opt-out firms (i.e., increased tax avoidance), the effect is very modest and mitigated for firms with external accountants. The results of our IV analysis also indicate that the drop in cash effective tax rates may be caused by selection on unobserved transitory shocks that are not attributable to the audit decision per se. We therefore conclude that mandatory auditing is not an efficient measure to ensure high tax compliance among small private firms.

Overall conclusion

This dissertation shows that introducing thresholds for mandatory audits in a fully regulated audit-market for private limited liability firms:

1) is of importance to small private firms in the sense that the audit decision can build on firm-specific, cost-benefit assessments,
2) had no significant effect on the quality of financial accounting, measured by discretionary accruals, discretionary revenues, and three different measures of conditional conservatism,
3) had no significant effect on tax compliance, measured by the number of missed VAT reporting deadlines, the amount of overdue payments to the Tax Authority, tax audit findings, and cash effective tax rates.

Policy implications for audit regulation in Norway

In Norway, the revenue thresholds were slightly increased in 2018, from NOK 5 to 6 million.[22] At the same time, the threshold for total assets was increased from NOK 20 to 23 million. Currently, a consultation proposal has been issued that proposes further increasing the thresholds for mandatory auditing – from NOK 6 million to NOK 7 million in total revenue, and from NOK 23 million to NOK 25 million in total assets.[23] It is proposed to keep the

[21] See, e.g., Gupta and Newberry (1997). We truncate cash effective tax rates to be in the interval [0, 1], following Chen et al. (2010).
[22] NOK 6 million corresponds to approximately EUR 600 000.
[23] https://www.regjeringen.no/no/dokumenter/horing-2/id2867717/ (last accessed December 9, 2022)

number of full-time employees unchanged at no more than 10, i.e., the same level as in 2011.[24] Compared to EEA and EU regulations, the proposed thresholds are very low, particularly with respect to revenue. In an overview of audit exemption thresholds prepared by Accountancy Europe, almost all of the 27 countries included have a revenue threshold that is about twice the size of the asset threshold, and Norway is the only country where the revenue threshold is set lower than the asset threshold.[25]

According to the Norwegian Institute of Public Accountants, a substantial proportion of eligible firms choose to be audited, and the industry is experiencing high general demand for its services. The Norwegian Institute of Public Accountants reports 8.2% revenue growth in the audit industry from 2020 to 2021. The total turnover in 2021 was NOK 16.6 billion (EUR 1.66 billion). High demand and a substantial growth in revenue is expected in 2022. Moreover, the Norwegian Institute of Public Accountants reports that 97.5% of total turnover in the private limited liability firm market is audited, and the introduction of voluntary auditing is stated to have had small effects on growth in the audit industry.[26]

In the current consultation proposal to increase thresholds in Norway, the Norwegian Ministry of Trade, Industry and Fisheries concludes that there are no significant negative effects of raising the bar for mandatory audits as suggested, whereas related yearly net savings for firms are estimated to be approximately NOK 108 million (using Langli's (2015) estimate of NOK 20 000 in net savings per firm).[27] My estimate of savings on direct external service fees, based on the numbers reported in Chapter 2 of this dissertation, would be about NOK 90 million net

[24] https://www.regjeringen.no/no/dokumenter/horing-2/id2867717/?expand=horingsnotater (last accessed December 9, 2022)

[25] See pages 7 and 8 in https://www.accountancyeurope.eu/wp-content/uploads/Audit-exemption-thresholds-in-Europe.pdf (last accessed December 30, 2022). Thresholds for mandatory audits vary significantly between European countries. Accountancy Europe has published an overview of thresholds for mandatory audits, which shows that only 4 out of 26 countries have lower revenue thresholds than Norway, whereas 13 out of 26 countries have lower asset thresholds. They include Cyprus, which has removed the possibility of voluntary audits and demands that all small firms be subject to mandatory audits. As the revenue threshold is found to be the most binding constraint in the data used in this dissertation, Norway has one of Europe's lowest thresholds for imposing mandatory audits on firms.

[26] https://www.revisorforeningen.no/om-oss/dnr-mener1/sterk-vekst-i-revisjonsbransjen2/ (last accessed December 9, 2022)

[27] See https://www.regjeringen.no/no/dokumenter/horing-2/id2867717/ and https://www.regjeringen.no/contentassets/3273285c7f8b42e58103fc210fde819d/horingsnotat.pdf. (last accessed December 9, 2022). According to Langli (2015, p. 50), "(…) net savings denotes the savings from not paying audit fees adjusted for other effects, such as increased fees to accountants, higher interest rates on loans, a decline in wage expenses because employees use less time in communication with the auditor and planning for the audit, *etc*."

of tax. This is about NOK 15 million higher than Langli's estimation of direct audit fees savings, which amounted to about NOK 14 000 per firm.[28]

The Norwegian Institute of Public Accountants and the Norwegian Tax Administration are among the consultative bodies that do not recommend an upward adjustment of thresholds.[29] The Tax Administration emphasizes that both the use of an auditor and/or external accountants can reduce the probability of misstatements and fraudulent firm behavior. In the consultation statement, the Tax Administration also refers to a Danish proposal to require either an extended review or an audit of firms with revenue between DKK 5 and 8 million (between approx. NOK 6.5 and 10 million,) in 11 different "risk" industries.[30]

The Confederation of Norwegian Enterprise (NHO – Norway's largest organization for employers) and Accounting Norway (a market oriented, competence and service organization for accountants) are among the consultative bodies that do recommend an upward adjustment of the thresholds.[31]

An important factor in the Norwegian setting is that both auditors and authorized accountants are subject to regulation and supervision by the Financial Supervisory Authority of Norway. Both professions are also obliged to report any suspicious transactions to the National Authority for Investigation and Prosecution of Economic and Environmental Crime (ØKOKRIM).[32] The authorization scheme for accountants is unique to Norway and it contributes to maintaining the quality of financial reporting regardless of auditing, according to the consultation submission from Accountancy Norway.

My findings in this dissertation correspond to findings in Langli (2015), Downing and Langli (2019), and Clatworthy and Peel (2021) indicating that external accountants mitigate possible weakened reporting quality among opt-out firms. This suggests that regulators should consider applying higher thresholds for mandatory audits to firms that use authorized accountants. This idea has actually already been written into the current government's

[28] Langli uses the term "gross savings" for money saved on not paying audit fees. My estimate of NOK 90 million is based on a direct saving on external service fees of NOK 17 000 net of tax multiplied by the number of affected firms, calculated in the consultation proposal to be 5 400.
[29] The consultation response from the Norwegian Institute of Public Accountants and the consultation response from the Norwegian Tax Administration. (last accessed December 9, 2022)
[30] https://em.dk/media/14220/revisionspligt-aftaletekst.pdf and https://www.accountancyeurope.eu/wp-content/uploads/Audit-exemption-thresholds-in-Europe.pdf. (last accessed December 9, 2022)
[31] The consultation response from NHO, and the consultation response from Accountancy Norway (last accessed December 9, 2022). The Financial Supervisory Authority of Norway had no comments on the proposal.
[32] https://www.altinn.no/en/forms-overview/national-authority-for-investigation-and-prosecution-of-economic-and-environmental-crime-okokrim/suspicious-transaction-report-/ (last accessed December 9, 2022)

statement of ambitions (the "Granavolden declaration"), which states that the government will raise the bar for mandatory auditing for firms that use an authorized accountant. However, this condition seems to have disappeared in the proposed reform and is only briefly mentioned in the introduction to the consultation paper from the Ministry of Trade, Industry and Fisheries.

As stated above, the Tax Administration emphasizes in its consultation response that both the use of an auditor and/or external accountants can reduce the probability of misstatements and fraudulent behavior by firms. However, external accountants are typically more hands-on in connection with firms' continuous reporting than auditors, and they have the possibility to detect errors at an earlier stage. In the small private firm audit market, the main part of the audit and correspondence with audit clients will typically take place at certain points in time, after the fiscal year has ended. The findings relating to tax compliance in this dissertation show that the use of external accountants in the small private firm segment may affect reporting quality at least as much as the use of auditors.

The future of audit of small private firms

Langli and Willekens (2018, p. 166) argue that audit quality is largely unobservable, and that it is therefore unobservable to what extent auditor regulations enhance audit quality. Since audit quality is difficult to distinguish from firms' financial reporting quality, as stated by, e.g., DeFond and Zhang (2014), this argument also implies that it is hard to assess effects on the reliability of financial information.

The broad international adoption of voluntary auditing for small private firms is a sign of governments acknowledging lower demand for auditing in certain firm segments, and their willingness to leave the audit decision in targeted firms to be taken on the basis of cost-benefit assessments at the firm level.

Accountancy Europe emphasizes that it is important for the auditing profession to demonstrate the relevance of audit and assurance services to the small private firm segment, as firms exempt from mandatory audits make use of professional accountants on a voluntary basis and may not see the value of audit services.[33]

[33] See page 14 in the overview (https://www.accountancyeurope.eu/wp-content/uploads/Audit-exemption-thresholds-in-Europe.pdf), and see also the discussion paper https://www.accountancyeurope.eu/wp-content/uploads/1601_Future_of_audit_and_assurance-2.pdf (last accessed December 9, 2022)

The International Auditing and Assurance Standards Board (IAASB) is currently developing an international standard on auditing (ISA) for audits of financial statements of less complex entities (LCE).[34] In the executive summary, the IAASB emphasizes the need to design a standard "to be proportionate to the typical nature and circumstance of an audit of an LCE (…)", and the need for urgent action, as stated by users of LCEs' financial statements.

The IAASB's action is a response to stakeholders' concerns about whether the ISAs "remain relevant and can be applied in a cost-effective manner to all audits" (ISA for LCE, p.7) and can be seen in the light of cost-savings measures implemented by governments in many countries in recent decades. Subsection 18 of the exposure draft of the ISA for LCE states that "[t]he project is intended to serve the public interest by (a) Maintaining confidence in financial reporting of LCEs, (b) Helping auditors of LCEs undertake consistent, effective, and high-quality audits, (c) Being responsive to stakeholders needs, and (d) Promoting a more consistent application of the auditing standards to audits of LCEs".

The Danish solution of requiring auditor's statements or extended reviews for firms in high-risk industries is also a sign of heterogenous treatment of private firms in the audit market. Vanstraelen and Schelleman (2017, p. 579) argue that a review, rather than an audit "(…) may be a more cost-effective way for some private companies to add credibility to their financial statements". A review does not require audit work of the same scope as is performed in a full audit, and it provides a lower level of assurance.

The Norwegian Institute of Public Accountants states that the Danish proposal is interesting and could be applicable in Norway as an alternative to lowering mandatory audit thresholds. It emphasizes that more and smarter controls are needed, not fewer.[35] The findings in this dissertation also underpin that auditors need to develop smarter and more effective controls in audits of small private firms.

Implications for future research on audit effects in private firms

In this dissertation, I argue that certain firms value the opportunity to drop audits – even at the expense of growth opportunities. The audit decision is part of a firm's optimization problem of maximizing profits based on the specific cost-benefit ratio of an audit for the firm. Future

[34] https://www.iaasb.org/publications/exposure-draft-proposed-international-standard-auditing-financial-statements-less-complex-entities (last accessed December 9, 2022)
[35] https://kapital.no/reportasjer/naeringsliv/2021/07/06/7700875/skjerpet-revisjonsplikt (last accessed December 9, 2022)

research could take a more theoretical approach to modeling the audit decision in a framework of optimization.

The dissertation also finds that dropping audits has no consistent, significant negative effect on the quality of financial accounting and tax compliance. Future research could target different measures of financial accounting quality and tax compliance than those that I have used to validate these results.

Future research could also focus on other possible factors that may affect general reporting quality. As stated by the Norwegian Tax Administration in the abovementioned consultation submission, both the use of auditors and/or external accountants can reduce the probability of misstatements and fraudulent firm behavior. Clatworthy and Peel (2021, p. 1) state that "little is known about the role of the accounting profession in preparing and validating financial statements of unaudited companies". They emphasize that most firms under a voluntary audit regime avoid audits. However, the majority of these firms have appointed a reporting accountant to prepare annual accounts. Clatworthy and Peel find that such appointments increase the credibility of financial information and decrease the probability of erroneous reporting in the form of restatements. They call for more research on the role and impact of professional reporting accountants in this segment of firms, and on whether firms that have previously appointed an auditor are more likely to appoint a reporting accountant.

Another interesting perspective for future research on private audits could be to investigate different alternatives to full audit engagements, and to study how to cater to different levels of assurance in the small private firm segment. Hay (2015), for example, calls for exploratory studies of review engagements to investigate information needs. Considering the recent IAASB exposure draft, and the abovementioned Danish solution, policymakers seem to be searching for an appropriate level of assurance for small private firms, and future audit research should target this issue.

References

Aase, Ø. A. S. (2022). Size management in response to mandatory audit rules: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics and Department of Business Administration, Western Norway University of Applied Sciences.*

Aase, Ø. A. S. (2022). Effects of voluntary audit on accounting quality in small private firms: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics and Department of Business Administration, Western Norway University of Applied Sciences.*

Aase, Ø. A. S., & Møen, J. (2022). The effects of private audit on tax compliance in small firms: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics.*

Allee, K. D., & Yohn, T. L. (2009). The demand for financial statements in an unregulated environment: An examination of the production and use of financial statements by privately held small businesses. *The Accounting Review*, *84*(1), 1-25.

Badertscher, B. A., Katz, S. P., Rego, S. O., & Wilson, R. J. (2019). Conforming tax avoidance and capital market pressure. *The Accounting Review*, *94*(6), 1-30.

Bernard, D., Burgstahler, D., & Kaya, D. (2018). Size management by European private firms to minimize proprietary costs of disclosure. *Journal of Accounting and Economics*, *66*(1), 94-122.

Bernard, V. L., & Skinner, D. J. (1996). What motivates managers' choice of discretionary accruals? *Journal of Accounting and Economics*, *22*(1-3), 313-325.

Berzins, J., Bøhren, Ø., & Rydland, P. (2008). Corporate finance and governance in firms with limited liability: Basic characteristics. *Available at SSRN 2294269.*

Beuselinck, C., Elfers, F., Gassen, J., & Pierk, J. (2021). Private firm accounting: the European reporting environment, data and research perspectives. *Accounting and Business Research*, 1-45.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99-126.

Byzalov, D., & Basu, S. (2019). Modeling the determinants of meet-or-just-beat behavior in distribution discontinuity tests. *Journal of Accounting and Economics*, *68*(2-3), 101266.

Cassar, G. (2011). Discussion of the value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 507-528.

Chen, F., Hope, O. K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, *86*(4), 1255-1288.

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics*, *95*(1), 41-61.

Clatworthy, M. A., & Peel, M. J. (2013). The impact of voluntary audit and governance characteristics on accounting errors in private companies. *Journal of Accounting and Public Policy*, *32*(3), 1-25.

Clatworthy, M. A., & Peel, M. J. (2021). Reporting accountant appointments and accounting restatements: Evidence from UK private companies. *The British Accounting Review*, *53*(3), 100974.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, *70*(2), 193-225.

Dedman, E., & Kausar, A. (2012). The impact of voluntary audit on credit ratings: evidence from UK private firms. *Accounting and Business Research*, *42*(4), 397-418.

Dedman, E., Kausar, A., & Lennox, C. (2014). The demand for audit in private firms: recent large-sample evidence from the UK. *European Accounting Review, 23*(1), 1-23.

DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, *58*(2-3), 275-326.

Dowd, B. E., Greene, W. H., & Norton, E. C. (2014). Computation of standard errors. *Health Services Research*, *49*(2), 731-750.

Downing, J., & Langli, J. C. (2019). Audit exemptions and compliance with tax and accounting regulations. *Accounting and Business Research*, *49*(1), 28-67.

Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A market-based evaluation of discretionary accrual models. *Journal of Accounting Research*, *34*, 83-105.

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, *16*(1), 1-34.

Hanlon, M. (2003). What can we infer about a firm's taxable income from its financial statements? *National Tax Journal*, 831-863.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*(2-3), 127-178.

Hay, D. (2015). The frontiers of auditing research. *Meditari Accountancy Research*.

Hope, O. K., Thomas, W. B., & Vyas, D. (2013). Financial reporting quality of US private and public firms. *The Accounting Review*, *88*(5), 1715-1742.

Hui, K. W., Klasa, S., & Yeung, P. E. (2012). Corporate suppliers and customers and accounting conservatism. *Journal of Accounting and Economics*, *53*(1-2), 115-135.

Höglund, H., & Sundvik, D. (2019). Do auditors constrain intertemporal income shifting in private companies? *Accounting and Business Research*, *49*(3), 245-270.

Ichev, R., Koren, J., Kosi, U., Sitar Sustar, K., & Valentincic, A. (2020). Cost of debt for private firms revisited: voluntary audits as a reflection of risk. (*Working paper No. 26*). *TRR 266 Accounting for Transparency.*

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193-228.

Kausar, A., Shroff, N., & White, H. (2016). Real effects of the audit choice. *Journal of Accounting and Economics*, *62*(1), 157-181.

Kim, J. B., Simunic, D. A., Stein, M. T., & Yi, C. H. (2011). Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research*, *28*(2), 585-615.

Kleven, H. J., & Waseem, M. (2013). Using notches to uncover optimization frictions and structural elasticities: Theory and evidence from Pakistan. *The Quarterly Journal of Economics*, *128*(2), 669-723.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, *39*(1), 163-197.

Langli, J. C. (2008). *Consultation Statement NOU 2008:12 Revisjonsplikten for små foretak.* Available at:

Langli, J. C. (2009). Hvem er brukerne av årsregnskapene til små aksjeselskaper, og trenger de reviderte regnskaper? *Praktisk økonomi & finans, 25*(01), 104-119.

Langli, J. C., & Svanström, T. (2014). Audits of private companies. *The Routledge Companion to Auditing*, *1*, 148-158.

Langli, J. C. (2015). «Evaluering av unntak for revisjonsplikt i små aksjeselskaper.» *Report to the Ministry of Finance March 26, BI Norwegian Business School.*

Langli, J. C., & Che, L. (2016). Har fravalg av revisor ført til dårligere finansieringsvilkår? *Praktisk økonomi & finans*, *32*(01), 111-125.

Langli, J. C., & Willekens, M. (2017). Tax avoidance, horizontal agency conflicts and high-quality auditing in private firms. *KU Leuven and BI Norwegian Business School*.

Langli, J., & Willekens, M. (2018). The Economics of Auditor Regulation. *Forefront, Looking Ahead. Universitetsforlaget*, 159-176.

Lennox, C. S., & Pittman, J. A. (2011). Voluntary audits versus mandatory audits. *The Accounting Review*, *86*(5), 1655-1678.

Liu, S., & Skerratt, L. (2018). Earnings quality across different reporting regimes: listed, large private, medium-sized, small and micro companies in the UK. *Journal of Applied Accounting Research*, *19*(1), 2-19.

McNichols, M. F. (2000). Research design issues in earnings management studies. *Journal of Accounting and Public Policy*, *19*(4-5), 313-345.

McNichols, M. F., & Stubben, S. R. (2018). Research design issues in studies using discretionary accruals. *Abacus*, *54*(2), 227-246.

Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 457-506.

Minnis, M., & Shroff, N. (2017). Why regulate private firm disclosure and auditing? *Accounting and Business Research*, *47*(5), 473-502.

Ojala, H., Kinnunen, J., Niemi, L., Troberg, P., & Collis, J. (2020). What turns the taxman on? Tax aggressiveness, financial statement audits, and tax return adjustments in small private companies. *The International Journal of Accounting*, *55*(03), 2050011.

Owens, E. L., Wu, J. S., & Zimmerman, J. (2017). Idiosyncratic shocks to firm underlying economics and abnormal accruals. *The Accounting Review*, *92*(2), 183-219.

Peel, M. J. (2019). The impact of filing micro-entity accounts and the disclosure of reporting accountants on credit scores: An exploratory study. *Accounting and Business Research*, *49*(6), 648-681.

RiR 2017: 35. (2017). Abolition of audit obligation for small limited companies – a reform where costs outweigh benefits. Retrieved June 17, 2022 from https://www.riksrevisionen.se/rapporter/granskningsrapporter/2017/avskaffandet-av-revisionsplikten-for-sma-aktiebolag---en-reform-som-kostar-mer-an-den-smakar.html

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*(3), 335-370.

Stewart, D. (2017). 'Auditing private companies': a practitioner view. *Accounting and Business Research*, *47*(5), 585-587.

Stubben, S. R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review*, *85*(2), 695-717.

Thomas, J., & Zhang, X. J. (2000). Identifying unexpected accruals: a comparison of current approaches. *Journal of Accounting and Public Policy*, *19*(4-5), 347-376.

Vanstraelen, A., & Schelleman, C. (2017). Auditing private companies: what do we know? *Accounting and Business Research*, *47*(5), 565-584.

Wooldridge, J. M. (1999). Distribution-free estimation of some nonlinear panel data models. *Journal of Econometrics*, *90*(1), 77-97.

Chapter 2

Size Management in Response to Mandatory Audit Rules

Øivind André Strand Aase*

Abstract

Many countries have introduced thresholds for mandatory audits as a measure of reducing the complexity and costs of private firms' financial reporting. Firms around the size thresholds have incentives to size down in order to avoid audit costs when the perceived benefits of an audit are smaller than the costs. Norway was the last country in the EU/EEA to have a fully regulated audit market for all limited liability firms. Using panel data from this institutional setting, I find clear evidence of a change in the size distribution of firms around the revenue threshold after the audit reform. I find that the firms that avoid audits save on external service fees by an amount comparable to their estimated lost profits on downsized revenue. This suggests that indirect audit costs, such as management time, also play a part in the cost-benefit assessment of audits. I find no consistent, significant evidence of firms using real earnings management as a mechanism for size management. This implies that firms stay below the audit threshold in other ways, or in combination with other forms of size management, such as foregoing short-term growth opportunities. The total revenue lost due to revenue management in years affected by the audit reform is estimated to be immaterial, however.

1. Introduction

The possibility of dropping an audit can be an important measure of saving costs for small private firms. In a consultative submission, Langli (2008) estimates that, under a mandatory audit regime, small private limited liability firms in Norway pay over 40% of the total audit fees in the Norwegian private limited liability firm segment, whereas they only account for 4% of the total revenue in the same firm segment.[1] Langli (2009) argues that the number of stakeholders in small private firms is often exaggerated, as many small private limited liability firms do not have employees or interest-bearing debt. Small private firms may, in other words, not have the same incentives as large and medium-sized private firms to request audit services. The possibility of dropping audit may therefore be of high importance in this firm segment.

* NHH Norwegian School of Economics: Department of Business and Management Science, Norwegian Centre for Taxation (NoCeT), and Western Norway University of Applied Sciences, E-mail: oivind.aase@hvl.no. I am deeply grateful to Jarle Møen and Kjell Henry Knivsflå for providing highly constructive guidance and feedback. I also thank an anonymous referee for very helpful and valuable comments. The article has been presented at the 44th Annual Congress of the European Accounting Association (EAA) in Bergen (2022). I thank the congress attendees for their feedback.

[1] https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf (last accessed December 10, 2022)

Although audits can potentially reduce principal-agent problems in private firms (Jensen and Meckling, 1976), the value of audit services will depend on firm-specific factors such as the owner/management structure, level of external funding, and number of employees. Agency conflicts are typically between owners and creditors – including tax authorities – as described in Langli and Svanström (2014). Ball and Shivakumar (2005), and Burgstahler et al. (2006) find it likely that the requirements for private firms' financial reporting are more influenced by tax reporting needs than the information needs of external providers of capital. Many of those who prepare financial statements for private firms find that they cannot justify the costs of preparing and reviewing (e.g., auditing) information that do not reflect cash amounts or liquidity.[2]

Vanstraelen and Schelleman (2017) review the literature on the costs and benefits of auditing private firms and conclude that there is much heterogeneity in the value derived from an audit, and hence the cost-efficiency of mandatory audits.[3] They argue that making audits mandatory is not an economically optimal solution for all private firms, and that audit costs in small private firms may typically outweigh the benefits – leading to economic inefficiency.

Bernard et al. (2018) find evidence of size management among firms around thresholds for mandatory audits. This type of firm behavior suggests that some firms find the cost of mandatory audits to be higher than the perceived benefits.

In recent decades, many countries have introduced and raised existing thresholds for mandatory audits as a means of reducing the costs and complexity of private firms' financial reporting, as seen, for instance, in Bernard et al. (2018). Norway, which is the setting for this study, introduced thresholds for mandatory audits in 2011 as the last country in the EU/EEA to abolish full statutory auditing for small private firms (Langli, 2015, p. 143). This study therefore evaluates the effects of introducing thresholds for mandatory audits in a market where the benefits of mandatory auditing have been perceived to be particularly large by the government, on one hand, and where deregulation of the audit market may have the potential to be particularly important to the affected firms, on the other.

---

[2] See The U.S Private Company Council (PCC), 2013, paragraph BC13: https://www.fasb.org/Page/ShowPdf?path=Private_Company_Decision-Making_Framework-A_Guide_for_Evaluating.pdf&title=PRIVATE+COMPANY+DECISION-MAKING+FRAMEWORK%3A+A+GUIDE+FOR+EVALUATING+FINANCIAL+ACCOUNTING+AND+REPORTING+FOR+PRIVATE+COMPANIES&acceptedDisclaimer=true&Submit= (last accessed December 10, 2022)

[3] Benefits are, for instance, contingent on firms' level of external financing, management and ownership structure, operational efficiency, and complexity (see, e.g., Vanstraelen and Schelleman, 2017, p. 578).

I use register data on small private firms' financial accounts provided by the Norwegian Tax Authority to study the effects of introducing thresholds for mandatory audits on the size distribution of small private firms. More specifically, I analyze whether there is an excess mass of firms in the area immediately below the revenue threshold for mandatory audits, and a missing mass of firms in the area immediately above the same threshold in the post-reform period from 2011 to 2015. I use Kleven and Waseem's (2013) method to calculate excess and missing mass, and Burgstahler and Dichev's (1997) standardized difference test to calculate the statistical significance of size management. In addition, I use Byzalov and Basu's (2019) model to verify findings relating to size management. I also study direct cost savings on external service fees as a result of dropping audits, and whether firms use real earnings management to squeeze in below the threshold in firm fixed effects analyses. This is possible because I have panel data on firms' financial accounts and observe the firms for five years before and five years after the reform.

I find clear evidence of an overrepresentation of firms just below the revenue threshold, and an underrepresentation of firms just above the revenue threshold in the post-reform period.[4] This finding indicates that some firms forego growth opportunities to avoid crossing the threshold for mandatory audits. I estimate that firms avoiding audits on average downsize by about EUR 20 000. This represents an economic loss, but it also demonstrates that small firms value the opportunity to save audit costs. The total managed revenue among my sample firms in years affected by the reform is estimated to be approximately EUR 2 million.

If I take my estimated coefficients at face value, I find that avoiding an audit on average reduces firms' external service fees by approximately EUR 1700 net of tax. This amounts to approximately the average revenue managed by firms in the vicinity of the revenue threshold for mandatory audits (EUR 20 000) multiplied by the average profit margin for firms just below the revenue threshold (0.085). Since the service fees saved are not clearly larger than foregone profit, this indicates that size-managing firms also take indirect audit costs into account in their cost-benefit assessments of an audit.

Analyses of financial ratios (e.g., revenue growth and profit margins) build on the findings concerning size management. Firms that have at some point dropped audit during the post-reform period are found to have significantly higher revenue growth in non-suspect years, i.e., years in which firms realize that it is too difficult to stay below the revenue threshold and will

[4] This confirms previous unpublished work by master students Larsen and Løchen (2015), and Heide and Aardal (2017).

be subject to a mandatory audit the following year. These findings suggest that size management may be driven by mechanisms such as postponement of sales and use of discounts. Using Roychowdhury's (2006) measure of real earnings management, I do not find signs of a significant reduction in output (e.g., causing higher inventory and production costs) among firms that are just below the threshold for mandatory audits.

Overall, the introduction of thresholds for mandatory audits seems to be a welcome regulatory change for the targeted firms, enabling them to make a rational decision on whether or not to be audited based on the firm-specific, cost-benefit ratio of an audit.

My study supplements the findings of Bernard et al. (2018) and Langli (2015), and adds knowledge to the literature on audit effects for small private firms. Most importantly, the study expands the small body of literature that analyzes the international trend towards reducing the costs and complexity of private firms' financial reporting (see, e.g., Hope et al., 2017). Private firms dominate all market economies in terms of the number of firms, employment, and total assets held (Berzins et al., 2008). Where most previous studies have been forced to focus on asset thresholds due to a lack of income information, no such limitation exists in my data. I focus on the revenue threshold, which is more likely to be the binding constraint for mandatory audits as it is lower than the asset threshold (see also Kausar et al., 2016, p.169). The panel structure in my data also allows for causal interpretation and provides important information about how privately held firms adjust over time.

The paper continues as follows. In Section 2, I discuss relevant literature concerning size management and auditing in the private firm context. Section 3 describes the background to the introduction of thresholds for mandatory audits in Norway. Section 4 describes the data and presents descriptive statistics. Section 5 addresses the main analyses. In Section 6, I evaluate findings and conclude on effects in the wake of the audit reform.

2. Literature and motivation

2.1 Size management

Minnis and Shroff (2017) find that private firms see benefits from audits, e.g., lower cost of debt.[5] The firms, however, see few positive externalities of audits and would prefer that the mandatory audit requirement be removed. Approximately 65% of the private firms in their

[5] See, e.g., Allee and Yohn (2009), Minnis (2011), Dedman and Kausar (2012), and Kausar et al. (2016).

survey would undergo a voluntary audit, regardless of whether it was mandatory, but as many as 33% of the respondents report no benefits whatsoever from audits. Vanstraelen and Schelleman (2017) argue that private firms have incentives to request a voluntary audit, and that making audits mandatory removes part of the signaling effect of making a voluntary audit choice. Hence, firms around the threshold for mandatory audits may have incentives to fall below such thresholds, either as a cost-saving measure or by making the audit choice observable.

Using Korean data, Bae and Rho (2003) find evidence of asset-size management in response to mandatory audit requirements, in the form of significantly higher growth rates in the year a mandatory audit becomes unavoidable compared to matching firms and growth rates in other years. Kausar et al. (2016) find discontinuity in the sales and asset distributions of firms around audit thresholds in the UK, and argue that this discontinuity implies that audits represent a non-trivial cost for small private firms. Using a large sample of private firms from 12 European countries, Bernard et al. (2018) find that firms tend to bunch together under the thresholds for mandatory audits.[6] The authors argue that such size management can be related to direct costs, such as audit fees, as well as indirect costs, such as the time and effort involved in providing information for auditors. Their findings indicate that at least 4% of firms that are within a range of 2 % from the threshold for mandatory audits, manage assets downwards. These findings support the findings of Minnis and Shroff (2017) and imply that many firms may seek to avoid mandatory audits. Kausar et al. (2016, p. 169) argue that the revenue threshold is likely to be the binding constraint, but the arguments of Kausar et al. also apply to the Norwegian regulations and firm-size distribution. Bernard et al. base their analysis on the *asset* threshold due to limited income statement data. In my analysis, I therefore study whether there is an overrepresentation of firms just below, and an underrepresentation of firms just above, the *revenue* threshold for mandatory audits.

2.2 Effects on external service fees

Langli (2015) argues that opting out of audits may have important indirect effects, with both negative and positive implications for firm earnings, e.g., higher fees to external accountants, weaker internal controls, and more time to focus on sales. Langli evaluates the net-savings

[6] The 12 European countries are: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden, and the United Kingdom.

resulting from dropping audits by looking at the development in different key financial ratios among opt-out firms relative to other firms. He concludes that the total net savings are in the area of EUR 1500 to EUR 3160, with 95% confidence, based on a firm fixed effect regression analysis.

To evaluate saved firm costs as a result of introducing thresholds for mandatory audits, I look at changes in external service costs, e.g., the cost of external accountants, auditors, and consultants, to capture the effects on a broad range of external consultant fees. Moreover, Langli only has data until 2012, the first full year after the implementation of the audit reform, whereas I have data until 2015 and can therefore account for more than the immediate effects of the reform. This is important because Dedman et al. (2014) find that firms need time to adapt to audit reforms, and they document a trend away from audits over time.

Hay (2013) studies the audit fee research literature and finds, in a meta-analysis, that factors such as size, complexity, risk, and audit quality (i.e., Big 5) are found to be positively correlated with audit fees. I therefore include control variables for such factors in my analysis.

Another strand of the literature has studied drivers of voluntary audits.[7] Dedman et al.'s (2014) findings suggest that higher-risk firms, and firms with, for instance, higher agency costs are more likely to choose to be audited. Hence, certain types of small private firms may find that there is no net saving to be made by dropping audits.

2.3 Mechanisms of size management

Bernard et al. (2018) suggest several mechanisms for size management. Firms can, for instance, postpone sales, offer discounts, spilt the firm, and misreport revenues. The authors argue that splitting a firm or misreporting are costly forms of size management. Harju et al. (2015) study size management in relation to the Finnish VAT threshold. They do not find evidence of tax avoidance or evasion, and therefore suggest that firms respond by reducing output. They arrive at this conclusion by evaluating developments in, for instance, equity and total expenses around the VAT threshold. Their basic idea is that the underreporting of sales should be apparent through size-managing firms having higher levels of expenses compared to other firms. This is a fair hypothesis in cases where firms keep sales off the books. However, if firms manage the *recognition* of revenue, Harju et al.'s conclusion may not be

[7] See, e.g., Collis (2012), Lennox and Pittman (2011), Niemi et al. (2012), Ojala et al. (2016), and Weik et al. (2018).

accurate. The recognition of expenses is driven by recognition of revenue, as stated in the matching principle. Hence, if firms manage revenue recognition, this will also affect the recognition of expenses: If recognition of sales is postponed, recognition of ancillary expenses will also be postponed, and profit margins or equity will not be severely affected. A more fitting approach could be to look at the literature on real earnings management.

Roychowdhury (2006) refers to real earnings management as the manipulation of real activities and lists several different measures of such activity. Production costs are the most relevant measure in this paper's setting: the cost of goods sold adjusted for changes in inventory during the period. Looking at both the cost of goods sold and changes in inventory circumvents the problem encountered in Harju et al.'s (2015) analyses: that revenue recognition affects the cost of goods sold. Firms that manage size might, for instance, buy or produce goods that they do not have incentives to sell because they wish to fall in below the revenue threshold. As a result, the inventory might be higher in a year where firms manage the size of sales in order to avoid a mandatory audit the year after. This, in turn, leads to higher production costs. Real earnings management should then be evident through higher, abnormal production costs during periods where firms endeavor to squeeze in below the revenue threshold to be eligible to opt out of an audit the following year.

3. Background to the introduction of thresholds for mandatory audits in Norway

In 2011, thresholds for mandatory audits were introduced in Norway. This regulatory change follows the international trend of reducing the costs and complexity of private firms' financial reporting.[8] In the Norwegian reform, limited liability firms with less than EUR 500 000 in operating revenue and, at the same time, less than EUR 2 million in total assets and no more than 10 full-time employees were no longer subject to mandatory audits.[9] Norway was the last country in the EU/EEA to abolish full statutory audits for small private limited liability firms (Langli, 2015, p. 143). The main arguments used by the Norwegian Ministry of Finance for implementing the reform were to reduce costs and complexity, and competitive

[8] The audit reform was based on the green paper NOU 2008:12 submitted to the Norwegian Ministry of Finance. The bill was submitted to the cabinet in mid-December 2010, and the statute was passed in mid-April 2011, taking effect from May 1, 2011.

[9] The threshold values in EUR correspond to NOK 5 million in total revenue and NOK 20 million in total assets, see Prop. 51 L (2010–2011) p. 41. From Jan. 10, 2018, the thresholds were increased to NOK 6 million in operating revenue, and NOK 23 million in total Assets. (*Forskrift om terskelverdier for beslutning om å unnlate revisjon etter aksjeloven § 7-6*)

considerations.[10] In a consultative statement, Langli (2008) estimates that limited liability firms under the revenue threshold paid around 44% (NOK 1.6 billion) of total audit fees for limited liability firms, whereas these firms only accounted for 4% of the total revenue of limited liability firms, and paid 8% of total taxes for limited liability firms.[11]

Compared to the revenue thresholds reported in Bernard et al. (2018), the Norwegian revenue threshold is set relatively low and significantly lower than the maximum thresholds set by the EU.[12] The legal basis for opting out of audits is set out in Section 7-6 of the Norwegian Act relating to Private Limited Companies. The previous year's numbers for total revenue, total assets, and number of employees determine whether a firm can opt out of auditing in a given year.[13] The choice to drop auditing requires administrative action and cannot be put into effect until the decision is reported to the Register of Business Enterprises.[14]

4. Data and descriptive statistics

The data come from the Norwegian Tax Authority Register and provide information about the financial accounts of all Norwegian firms during the period 2006–2015.[15] The focus of this study is on non-grouped limited liability firms around the revenue threshold for mandatory audits introduced in 2011.[16] I include firms with a minimum revenue higher than NOK 1

[10] Prop. 51 L (2010–2011) p. 41.

[11] https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf (last accessed December 10, 2022)

[12] In Bernard et al. (2018), Denmark, Finland, and Sweden had lower thresholds than Norway in 2011, whereas Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, and the United Kingdom had higher thresholds. Paragraph 43 of DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL states that small undertakings should not be covered by an audit obligation. Small undertakings are in Article 3 (2) defined as undertakings not exceeding at least two of the three following criteria: (a) balance sheet total: EUR 4 000 000; (b) net turnover: EUR 8 000 000; (c) average number of employees during the financial year: 50. Member States are allowed to raise the thresholds for the total balance sheet to EUR 6 000 000, and net turnover to EUR 12 000 000. This implies that the turnover threshold in Norway could be about twenty times as large as it is today and that the balance sheet threshold could be roughly tripled.

[13] https://www.regjeringen.no/no/dokumentarkiv/stoltenberg-ii/fin/Nyheter-og-pressemeldinger/pressemeldinger/2011/unntak-for-revisjonsplikt-fra-mai-i-ar/id641006/ (last accessed December 10, 2022). Eligibility among new firms established after the reform, without prior financial statements, is assessed on the basis of the number of employees at the time of the general meeting's decision and initial total assets or share contributions.

[14] According to Section 7-6 of the Limited Liability Companies Act, the decision must be taken by the general meeting and requires a majority of 2/3 of the votes. The general meeting can then authorize the board to opt out of auditing. The board must then decide to opt out and report to the administrative body.

[15] All limited liability firms report financial accounts in the form Income Statement 2 (Næringsoppgave 2, RF 1167), which is submitted to the Norwegian Tax Authority.

[16] Parent companies in the data are subject to mandatory audits regardless of the threshold values according to the Auditors Act Section 2-1 (5). From July 1, 2017, parent companies in groups with consolidated figures that do not exceed the audit threshold can choose to drop audits (Private Limited Companies Act S. 7-6). Subsidiaries are also dropped as the audit decision is most likely not taken at firm-level, but rather at group level. I therefore

million, maximum revenue lower than NOK 10 million, and average revenue of between NOK 3 million and NOK 7 million in the sample period, to retain the most comparable firms and still tolerate some year-to-year variation among them. In terms of other size variables, I focus on firms with more than NOK 1 million and less than NOK 20 million in total assets, and fewer than 10 employees during the sample period. The revenue threshold is therefore the only decisive threshold for my sample of firms.[17] I drop firms in NACE2-industries that are not covered by the legislative amendment that introduced thresholds for mandatory audits, most importantly the finance industry, legal services, and accounting services.[18] The final sample is presented in Table 1. It consists of about 43 000 firm-year observations, of more than 6500 firms. All sample firms were established before the reform and therefore have at some point been subject to a mandatory audit. The maximum number of observations per firm is 10, while the average number of observations per firm is about 6.6.

Table 1: Data selection

	No. of obs.	**No. of firms**
Total sample size	**2 573 941**	**439 713**
- less observations of non-limited liability firms	207 660	55 625
- less firms with MNOK 1 >= yearly tot. revenue >= MNOK 10, and MNOK 3 >= avg. tot revenue >=MNOK 7	2 170 195	356 569
- less observations with missing tot. revenue	16 331	0
- less firms with MNOK 1 >= yearly tot. assets >= MNOK 20	81 183	11 955
- less firms with yearly tot. employees >=10	22 647	3 367
- less observations of non-active firms	28	2
- less firms that did not exist pre-reform	7 443	2 779
- less observations of firms in NACE2-industries not affected by the audit reform	3 279	366
- less observations of group firms	21 893	2 596
Sum dropped observations:	**2 530 659**	**433 259**
Final total sample size:	**43 282**	**6 454**

drop all observations of firms that are listed with a parent, foreign subsidiary, posts on RF1123 (controlled transactions and accounts outstanding) or have posts in the Income statement (RF 1167) balance sheet indicating that a firm is part of a group (e.g., investments in subsidiaries, accounts receivable/payable to group firms).

[17] Table A1 and Figure A1 in Appendix 2 show that there are no signs of size management around the asset threshold, when observations of up to NOK 40 million in total assets are included in the data.

[18] There was a change in industry (NACE2) coding in 2009 (from SN2002 to SN2007), and I use a key developed by Statistics Norway to convert SN2002 to SN2007 (Link SN2002-SN2007 (nøkkel mellom gammel og ny standard) (EXCEL)): https://www.ssb.no/virksomheter-foretak-og-regnskap/naeringsstandard-og-naeringskoder (last accessed December 10, 2022). Some observations with missing industry codes are imputed using information about the firm's SN2007-code in other periods.

Table 2 shows an increasing number of opt-out firms over the years 2011 to 2015. The somewhat slow adaptation could indicate that firms need time to learn about the relevant cost-benefit of opting out of audits, and it is in line with Dedman et al.'s (2014) finding that firms need time to benefit from the audit exemption. Langli and Che (2016) find that opt-out firms do not experience higher financial costs after dropping audits. Such effects may stimulate eligible firms to cut auditor costs. As this type of information reaches the market, more firms will regard the benefit of dropping audits as higher than the costs.

Table 2: Development in share of opt-outs over time in post-reform period

Year	No. of firms in sample	Share of opt-outs in sample	No. of eligible firms in sample	Share of opt-outs among eligible firms
2011	4 336	22%	2 737	34%
2012	4 194	26%	2 438	45%
2013	3 975	29%	2 263	51%
2014	3 920	31%	2 242	54%
2015	3 777	33%	2 120	59%
Total	20 202	28%	11 800	48%

Table 3 shows post-reform descriptive statistics for (1) eligible firms just below the revenue threshold (with NOK 4.8 million up to, but not including NOK 5 million in total revenue), (2) eligible firms with less than NOK 4.8 million in total revenue, (3) eligible non-opt-out firms, (4) opt-out firms, (5) opt-out firms not exercising size management, and (6) opt-out-firms exercising size management. Importantly, firms just below the revenue threshold in period t, that drop an audit in period t+1 are used as a proxy for size-managing firms, since I cannot accurately identify firms exercising size management.

Eligible firms in the area just below the threshold (JBT) have on average significantly higher growth rates and greater profitability, and they are younger than firms at the lower end of the revenue distribution, see Columns (1) and (2). Firms dropping audits have a significantly lower probability of having engaged a Big 5 auditor prior to the opt-out decision relative to voluntary auditees, see Columns (3) and (4). This finding is in line with Lennox and Pittman (2011), who argue that choosing a Big 4 auditor may be used to signal firms' demand for high audit assurance, and find that firms that would drop audits under a voluntary audit regime are

less likely to choose a Big 4 auditor.[19] On average, opt-outs also have significantly lower revenue and asset growth, a lower cumulative loss ratio, a higher likelihood of having an external accountant, and less volatility in sales, than voluntary auditees. These findings support a hypothesis that more risky firms choose to be audited (see, e.g., Dedman et al., 2014). Whether or not a firm engages an auditor is of significance for external service fees as seen in Columns (3) and (4). Opt-out firms exercising size management are on average significantly bigger, more profitable, and have significantly higher growth rates than opt-outs not displaying bunching behavior, see Columns (5) and (6). These findings indicate that size-managing firms in general are found to be less risky, and hence have lower demand for audits, as expected.

[19] I also find the likelihood of having a Big5 auditor to be significantly lower for opt-outs versus voluntary auditees if the variable Big5 for opt-outs is specified as using the audit firm in the last year prior to opting out, instead of using audit firm in period *t-1*.

Table 3: Post-reform descriptive statistics for different subgroups of eligible firms

	(1) Eligible JBTs	(2) Eligible Non-JBTs	(3) Eligible Non-Opt-outs	(4) Eligible Opt-outs	(5) Non-Size-Managing Opt-outs	(6) Size-Managing Opt-outs
Employees	3.672	3.262	3.274	3.297	3.046	3.569
	(1.937)	(1.921)	(1.980)	(1.861)	(1.685)	(1.612)
Tot. Revenue (in NOK 1000s)	4 897.784	3 944.721	4 221.815	3 755.703	3 714.539	4 904.103
	(59.991)	(1 059.245)	(1 108.427)	(928.394)	(850.208)	(61.123)
Tot. Assets (in NOK 1000s)	3 777.838	3 558.839	3 786.745	3 336.577	3 294.164	3 636.568
	(2 712.020)	(2 770.799)	(2 918.266)	(2 573.994)	(2 505.113)	(2 448.735)
Accountant	0.810	0.785	0.675	0.908	0.906	0.903
	(0.393)	(0.411)	(0.468)	(0.290)	(0.292)	(0.297)
Big5	0.160	0.182	0.281	0.072	0.082	0.074
	(0.367)	(0.386)	(0.449)	(0.259)	(0.274)	(0.262)
Ext.Serv.Fees (in NOK 1000)	103.08	101.025	116.853	84.034	83.213	84.293
	(149.643)	(165.109)	(191.445)	(126.095)	(130.084)	(161.993)
Ext.Serv.Fees /Tot. Assets	0.037	0.037	0.040	0.033	0.033	0.031
	(0.035)	(0.033)	(0.037)	(0.028)	(0.027)	(0.029)
ROA	0.134	0.101	0.101	0.105	0.106	0.155
	(0.138)	(0.152)	(0.151)	(0.151)	(0.149)	(0.136)
ROE	0.361	0.268	0.276	0.269	0.274	0.460
	(0.584)	(0.549)	(0.542)	(0.562)	(0.570)	(0.670)
Negative EQ	0.055	0.072	0.073	0.069	0.064	0.051
	(0.229)	(0.258)	(0.260)	(0.253)	(0.245)	(0.220)
Leverage	0.169	0.171	0.178	0.164	0.167	0.161
	(0.241)	(0.244)	(0.247)	(0.240)	(0.239)	(0.246)
Revenue growth	0.211	0.072	0.110	0.047	0.046	0.243
	(0.265)	(0.333)	(0.347)	(0.308)	(0.302)	(0.293)
Asset growth	0.107	0.053	0.063	0.048	0.052	0.137
	(0.217)	(0.212)	(0.223)	(0.200)	(0.199)	(0.233)
Inventory	0.156	0.161	0.154	0.169	0.17	0.140
	(0.239)	(0.251)	(0.245)	(0.257)	(0.258)	(0.220)
Intangibles	0.015	0.016	0.017	0.014	0.014	0.015
	(0.046)	(0.043)	(0.046)	(0.039)	(0.038)	(0.038)
Cum. Loss Ratio	0.171	0.202	0.207	0.193	0.187	0.151
	(0.218)	(0.231)	(0.236)	(0.224)	(0.222)	(0.200)
Age	15.786	17.256	17.380	16.947	16.424	14.19
	(9.767)	(11.405)	(11.607)	(11.002)	(11.011)	(8.792)
Quick Ratio	1.797	1.877	1.794	1.959	1.949	1.837
	(1.393)	(1.520)	(1.424)	(1.601)	(1.577)	(1.378)
Curr. Assets/Tot. Assets	0.738	0.728	0.719	0.738	0.734	0.743
	(0.254)	(0.266)	(0.272)	(0.258)	(0.258)	(0.246)
Pre-tax-inc./Tot. Rev.	0.116	0.109	0.107	0.112	0.112	0.135
	(0.135)	(0.163)	(0.161)	(0.162)	(0.159)	(0.139)
Profit/Tot. Revenue	0.085	0.078	0.077	0.081	0.081	0.100
	(0.102)	(0.124)	(0.123)	(0.122)	(0.120)	(0.105)
Volatility in Sales	866.453	855.146	4 221.815	3 755.703	3 714.539	4 904.103
	(430.448)	(529.167)	(1 108.427)	(928.394)	(850.208)	(61.123)
No. observations	668	11 132	6 151	5 649	3 926	216

Table 3 shows means with standard deviations in parentheses of different firm characteristics. Means and standard deviations are calculated based on the number of observations in the different subgroups in the sample. Some observations have missing variables. Scaled variables such as ROA, ROE, Leverage, Revenue Growth, Asset Growth, Inventory, and Intangibles are trimmed at the 1st and 99th percentile. Big5 is an indicator variable taking the value 1 if auditor in period *t* is Big 5, or auditor in period *t-1* is Big5 if a firm has opted out of an audit, and 0 otherwise.

5. Main analyses

5.1 Size management

Non-eligible firms may have incentives to manage revenue, assets, and/or employees downward to become eligible for opting out of auditing, as found in Bernard et al. (2018). This downsizing could create bunching effects where firms that would otherwise end up above a threshold now fall just below it – creating excess mass just below and missing mass just above the threshold in question. For statistical evaluation of bunching tendencies, I use the standardized difference test as defined by Burgstahler and Dichev (1997):

$$SD = \frac{n_i - 0.5(n_{i-1} + n_{i+1})}{\sqrt{3/2 \times n_i}} \quad (1)$$

Where,

n_i = Number of observations in interval i

n_{i-1} = Number of observations in interval $i - 1$

n_{i+1} = Number of observations in interval $i + 1$

The results from the standard difference test (SD) are shown in Table 4. The year-by-year results show few signs of significant bunching effects during the post-reform period until 2015. Looking at overall pre- and post-periods, however, there is more consistent evidence of bunching below the threshold in years affected by the reform.[20] Hence, the overall findings indicate that audit costs outweigh the costs of size management for certain firms around the revenue threshold, and that the possibility of dropping an audit is of importance in this segment of firms.[21]

[20] 2010 is in this setting included in the post-period, as findings in Table 3 indicate that firms were aware of the reform in 2010 and had incentives to adjust their revenues accordingly to be able to avoid an audit in 2011 (the first year after the reform). See also footnote 8.

[21] Table A2 in Appendix 2 illustrates that the significance in Table 4 is driven by "suspect" firms (i.e., firms dropping audits in period *t+1*), as I find no significant signs of size management among non-suspect firms (i.e., firms not dropping an audit in period *t+1*).

Table 4: Z-values for standard difference test for numbers of observations in bins adjacent to revenue threshold

	Bin Width 50		Bin Width 100		Bin Width 200	
Year	Bin Below	Bin Above	Bin Below	Bin Above	Bin Below	Bin Above
2006	-0.361	1.333	-0.559	0.383	-0.266	0.123
2007	-1.743*	1.244	-0.449	0.478	0.142	0.745
2008	-2.381*	0.187	0.286	-0.559	0.115	-0.724
2009	-0.843	0.170	0.204	0.829	-0.953	1.386
2010	-0.259	0.418	1.289	-0.077	1.683*	-0.422
2011	0.600	-0.417	0.350	-1.107	0.971	-0.825
2012	1.394	0.115	0.330	-0.129	0.437	-0.957
2013	0.357	-1.007	0.701	-1.056	1.364	-0.353
2014	1.402	-0.927	0.750	-1.037	1.783*	-0.864
2015	0.972	-0.069	2.803**	-2.807**	2.258**	-3.655***
2006-2009	-2.591**	1.508*	-0.248	0.596	-0.465	0.798
2010-2015	1.806*	-0.673	2.548**	-2.309**	3.446***	-2.664**

Bin Width 50 tests whether there are significantly more or fewer observations (n_i) in the bin just below the revenue threshold (ranging from 4 950 000 ≤ Tot. Revenue < 5 000 000) and just above (ranging from 5 000 000 ≤ Tot. Revenue < 5 050 000) compared to adjacent bins with a bin width of NOK 50 000. Bin Width 100 and Bin Width 200 perform the same tests but with bin widths of NOK 100 000 and 200 000, respectively. Critical values: p=0.05: 1.645, p=0.01: 2.236 and p=0.001=3.090 (Suda and Shuto,2006, p. 73) * p<0.05, ** p<0.01, *** p<0.001

I also use Byzalov and Basu's (2019) model to verify findings of size management around the revenue threshold in years affected by the audit reform. The results presented in Table A3 in the Appendix show clear signs of size management.

To estimate the counterfactual distribution, with no discontinuity around the revenue threshold, I use Kleven and Waseem's (2013, p. 689) approach. They fit a flexible polynomial to the empirical density, and use predicted values from the following regression where observations close to the notch point z^* are excluded (observations in the range z_L and z_U):

$$c_j = \sum_{i=0}^{p} \beta_i \times (z_j)^i + \sum_{z_L}^{z_U} \gamma_i \times \mathbf{1}[z_j = i] + \boldsymbol{v_j} \quad (2)$$

Where,

c_j = Number of firms in bin j

z_j = Total revenue in bin j

p = Polynomial (seventh degree in Figure 1A and 1B)

In years not affected by the audit reform, bunching below the revenue threshold is not detected graphically, as shown in Figure 1A. Figure 1B, however, indicates that bunching occurs in the range from NOK 4.8 million up to NOK 5 million in years affected by the

reform (2010-2015), leaving a missing mass in the range from NOK 5 million up to NOK 5.3 million.

Figure 1A and 1B: Actual and counterfactual revenue distributions of number of firms around revenue threshold

Figure 1A: 2006-2009

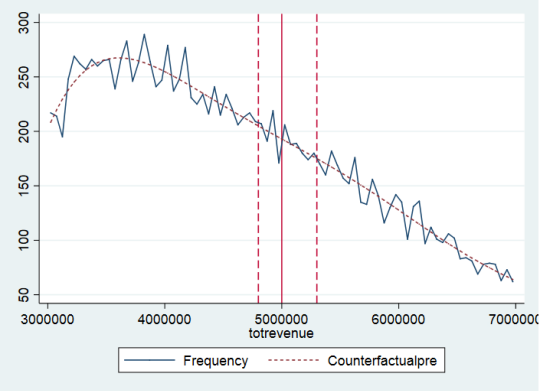
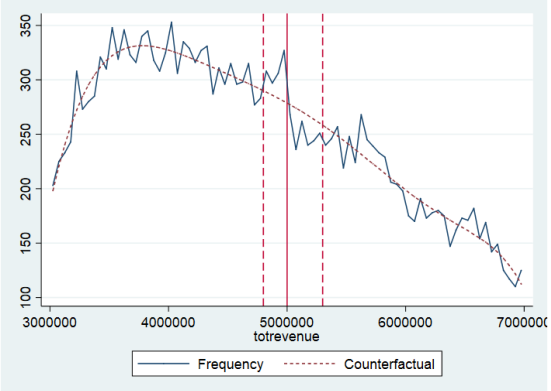


Figure 1B: 2010-2015



Figures 1A and 1B show the actual frequency (whole line) and the counterfactual frequency (stapled line) of firms in the period where firms had no incentives to manage size to avoid a mandatory audit (1A), and the period where firms had incentives to manage size to avoid a mandatory audit (1B). The vertical line at NOK 5 million marks the revenue threshold in the post-reform period. The vertical stapled line below the post-reform threshold marks NOK 4.8 million, the starting point from where I find an overrepresentation of firms below the revenue threshold in years affected by the audit reform, whereas the vertical stapled line above NOK 5 million marks the end of the area in which I find signs of downward size management of total revenue (NOK 5.3 million) in years affected by the audit reform.

Comparing the actual distribution of firms to the counterfactual distribution in Figure 1B yields an excess mass of 100 firms just below the threshold, and a missing mass of 112 firms just above it. According to calculations of the counterfactual distribution of firms, 1138 firms would naturally lie in the area just below the threshold (NOK 4.8 million – NOK 5 million). Hence, there is an estimated excess mass of about 10% of firms in the area just below the threshold. The average managed firm-revenue is estimated based on Bernard et al.'s (2018) method and found to be approximately EUR 20 000 (NOK 200 000), which results in an estimate of approximately EUR 2 million (NOK 20 million) in total revenue managed in years affected by the audit reform.[22] Langli (2015, p. 475) estimates the average audit fee saved by opt-outs in 2012 to be under EUR 1500 (NOK 15 000). Hence, it seems reasonable that firms

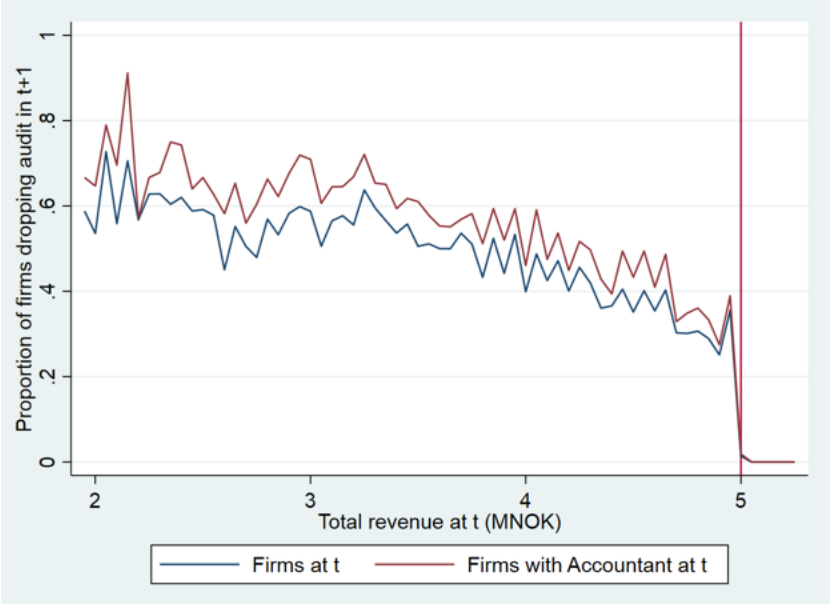
[22] To calculate the weighted average number of bins managed, I first adjust the sum of missing firms above the revenue threshold (112) to equal the excess mass of firms below the revenue threshold (100) by reducing the number of missing mass in bins 5 and 6 above the revenue threshold from 29 to 17. Then, the portion of total excess mass is found in the different bins below the threshold (bins -4 to -1). To obtain the average number of bins managed from the bin just above the threshold (bin 1), I multiply the relative portion in each bin below the threshold by the number of bins from bin 1. I then add 1 for each bin above bin 1 with missing mass (bins 2 to 5) and multiply these different numbers of bins managed from above the threshold by the portion of missing mass in each bin, and add them together to obtain the sum of weighted bins managed from above the threshold. This amounts to about 4 bins managed on average, and with a bin size of NOK 50 000, this amounts to approximately NOK 200 000 in average revenue managed. In total, there are 100 "excess mass firms", and hence, the calculated total revenue managed is about NOK 20 million.

are not willing to forego too many sales to avoid audits – as the savings per firm may be rather limited.

The findings in Figure 2 support the notion that certain firms just below the threshold in period *t* manipulate revenues downward in period *t* to drop an audit in period *t+1*, as the proportion of opt-outs in the last revenue-interval before the threshold of NOK 5 million jumps relative to adjacent bins below – both for all eligible firms and for eligible firms with external accountants, which consistently have a higher probability of opting out.

These findings indicate that the possibility of dropping an audit trumps the possibility of signaling among firms just below the revenue threshold in period *t* that drop an audit in period *t+1*. However, the bunching effect is not estimated to be of any economic significance in terms of total revenue effects.

Figure 2: Proportion of eligible firms dropping audits in period *t+1* in years 2010 to 2014



Average proportion over total revenue intervals of NOK 50 000. The vertical line at MNOK 5 marks the revenue threshold introduced in 2011.

5.2 Effects on external service fees

I use the following model to analyze audit effects on external services.

$$External\ Service\ Fees_{it} = \beta_0 + \beta_1 Auditor_{it} + \beta_2 Accountant_{it} + \beta_3 Auditor_{it} \times Accountant_{it} + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it} \quad (3)$$

The variables are defined as follows:

$External\ Service\ Fees_{it}$: Fees for external services, such as external accountants and auditors, in NOK thousands.

$Auditor_{it}$: An indicator variable taking the value 1 if a firm is audited in period *t*, and 0 otherwise.

$Accountant_{it}$ = An indicator variable taking the value 1 if a firm has an external accountant in period *t*, and 0 otherwise.

X_{it} = Control variables

θ_t = Year fixed effects

γ_i = Firm fixed effects

As the sample only consists of firms that were established before the 2011 reform, all firms should have at least one year with a mandatory audit. The main variables of interest are whether a firm has an auditor or not ($Auditor_{it}$), an external accountant or not ($Accountant_{it}$), or both ($Auditor_{it} \times Accountant_{it}$).

Based on previous findings in the literature, I include the following control variables in the regressions: Big 5 (to account for audit quality), the natural logarithm of total revenue and total assets, and the number of employees (to account for size effects), intangibles, inventory, current assets relative to total assets, growth of sales, growth of total assets, ln(age), and pre-tax income relative to total revenue to account for complexity and inherent risk; return on assets (ROA), return on equity (ROE), negative equity (NegEQ), and a ratio of cumulative years with negative profit (Cum. Loss Ratio) to account for economic performance and

financial risk; and leverage and quick ratio to account for financial exposure.[23] See Appendix 1 for more detailed definitions of variables.

I use firm fixed effects modeling to mitigate potential omitted variable bias caused by unobserved time-invariant heterogeneity among firms.[24] Firm fixed effects do not, however, account for unobserved *temporary* shocks affecting firms' use of both auditors and other external services. Such temporary shocks may cause firm fixed effects estimates to be biased upward since opt-out firms may also cut other external service fees. As a robustness test for such possible upward bias in firm fixed effects estimates, I therefore instrument the choice of engaging an auditor after the reform. I use the following two predetermined variables as instruments:

Instrument 1: *Always_eligible* × *yr*. An indicator variable taking the value 1 if a firm is always eligible in the pre-reform period, and 0 otherwise, multiplied by a variable counting the years after the reform (*yr*).

Instrument 2: *Sometimes_eligible* × *yr*. An indicator variable taking the value 1 if a firm is eligible in some of the years in the pre-reform period, and 0 otherwise, multiplied by a variable counting the years after the reform (*yr*).

These instruments are correlated with the choice of dropping audits since smaller firms have a higher probability of dropping audits, and – as shown in Table 2 – the proportion of firms dropping audits increases over time. However, external service fees in the post-reform period should not be correlated with pre-reform eligibility (whether a firm has more or less than NOK 5 million in total revenue in the pre-reform period), and time elapsed after the reform.

The firm fixed effects regression results for the external service fees analysis are reported in Table 5. In Column (1), external service fees are regressed on the main variables of interest only. In Column (2), the estimate of saved fees from not using an auditor is almost halved due to the inclusion of control variables. The results in Column (2) show that not using an auditor lowers external service fees by approximately EUR 2300 (NOK 23 000). In the robustness test in Column (3), the decision to engage an auditor is instrumented. The coefficient becomes much larger, but has low precision. Since the findings in Column (3) do not suggest that the estimate

[23] See, e.g., Hay (2013) and Clatworthy and Peel (2007).
[24] Amir et al. (2016) recommend a fixed effect design to control for unobserved factors and endogenous regressors when working with panel data. The firm fixed effect model controls for idiosyncratic firm-specific characteristics that are time-invariant.

found in Column (2) is subject to upward bias – and IV-estimates generally have lower precision – I consider the firm fixed effects estimates in Column (2) to be my main results. Columns (4) to (6) show further robustness analyses, where the most extreme observations of external service fees are excluded. The monetary effect is more than halved when extreme observations at the 1%-level are excluded in Column (5). Similar monetary effects are also found for firms not using external accountants. There do not seem to be any consistent significant economies of scope from engaging both an auditor and an accountant in terms of the effect on external service fees, or a Big 5-premium on audit fees. This is seen from the coefficients on the variables Accountant × Auditor, and Big5.

The coefficients for the control variables are as expected. The ratio of pre-tax income to total revenue drives external service fees downward. Clatworthy and Peel (2007) argue that this ratio is a measure of audit risk and expect a negative relationship with audit fees. Size measured by the natural logarithm of total revenue drives external service fees upwards, as found in Hay (2013). More profitable firms, measured by return on assets, and more risky firms, in terms of negative equity, use more money on external services, while growing firms seem to use less money on external services.

Table 5: Effects on external service fees

	External Service Fees in NOK 1000s			External Service Fees in NOK 1000s Trimmed at 1st and 99th Percentile		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FirmFE	FirmFE	2slsFirmFE	FirmFE	FirmFE	2slsFirmFE
Auditor	41.630***	23.438***	94.166*	23.427***	10.295***	104.221***
	(11.916)	(8.927)	(55.723)	(3.951)	(3.579)	(26.842)
Accountant	28.786**	25.775**	73.311	13.044***	9.692**	96.106***
	(13.350)	(10.877)	(57.457)	(4.125)	(3.807)	(23.235)
Accountant × Auditor	-13.769	-8.938	-56.952	0.559	5.541	-85.069***
	(11.452)	(8.979)	(60.431)	(3.965)	(3.640)	(24.154)
Big5		10.213	4.952		5.034***	3.033
		(8.950)	(7.912)		(1.420)	(1.929)
Observations	43,282	31,535	31,535	42,418	31,064	31,064
Number of firmid	6,454	5,383	5,383	6,386	5,352	5,352
Control variables	NO	YES	YES	NO	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
R^2	0.014	0.027	0.018	0.056	0.070	0.048

Adjusted R^2 is shown in Columns (1)-(2), and (4)-(5), whereas overall R^2 is shown in Columns (3) and (6). In 2slsFirmFE regressions, the variable Auditor is instrumented by two interaction variables: *Sometimes_eligible* × *yr*, and *Always_eligible* × *yr*. *Sometimes_eligible* is defined as an indicator variable taking the value 1 if a firm is eligible in some of the years in the pre-reform period, and 0 otherwise, yr is defined as number of years after the audit reform, and *Always_eligible* is defined as an indicator variable taking the value 1 if a firm is always eligible in the pre-reform period, and 0 otherwise. Robust standard errors clustered at firm-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Eligible firms just below the revenue threshold have an average profit margin (Profit /Tot. Revenue) of about 8.5% (see Column 1 in Table 3), and firms around the revenue threshold are, in section 5.1, found to, on average, manage NOK 200 000 in total revenue to become eligible for dropping an audit in the following year. Hence, size management results in approximately NOK 17 000 in lost profits at the firm level. The after-tax value of the average external service fees' savings is in the area of NOK 7000 – 17 000 depending on whether extreme observations are included.[25] These findings indicate that firms also take indirect costs into account (such as management time and effort in connection with an audit) in the cost-benefit assessment of an audit. This finding corresponds to the survey findings in Minnis and Shroff (2017), where a majority of mainly small firms (including respondents from Norway) view both direct fees (60%) and indirect costs such as management time (54%) as important concerns in the assessment of whether an audit yields a net benefit. 42% of the respondents view lack of a perceived benefit as an important concern.

5.3 Size management mechanisms

5.3.1 Financial ratios as indicators of size management

Table 6 shows the development of different financial ratios in years around the first year of mandatory audits after firms have at some point dropped an audit in the post-reform period. The results confirm that revenue is subject to size management two years prior to mandatory audits (*Suspect year*) – i.e., years firms are suspected of being able to manage revenue to avoid a mandatory audit the following year. Column (1) shows that revenue growth is significantly higher in the year prior to mandatory audits – i.e., the year where a firm realizes that it is too difficult to stay below the revenue threshold (*Non-suspect year*) and is subject to a mandatory audit the following year. Although the negative coefficient on the variable *Suspect year* is not significant in Column (1), the findings in Columns (2) and (3) support the assumption that revenue is managed, since profit margins are significantly lower and operating expense margins are significantly higher in suspect years. The findings in Column (4) show that assets are not subject to size management in the data used, since asset growth is not significantly different in years surrounding the first year of mandatory audits. The years after firms are subject to a mandatory audit show no significant effects on either of the financial ratios studied in Table 6.

[25] Based on a tax rate of 27% - which applied in Norway from 2014.

Table 6: Financial ratio effects for firms that have dropped an audit at some point in the post-reform period

VARIABLES	(1) Revenue growth	(2) Profit margin	(3) Operating expense margin	(4) Asset growth
2 years prior to mand. audit (Suspect year)	-0.026	-0.019**	0.029***	-0.001
	(0.028)	(0.008)	(0.009)	(0.005)
1 year prior to mand. audit (Non-suspect year)	0.085*	-0.023**	0.024*	-0.009
	(0.044)	(0.011)	(0.014)	(0.009)
1st year of mand. audit	0.031	-0.003	-0.004	-0.003
	(0.067)	(0.017)	(0.021)	(0.014)
Year after 1st year of mand. audit	-0.062	-0.021	0.018	-0.003
	(0.078)	(0.020)	(0.024)	(0.016)
Observations	2,386	2,355	2,355	2,386
Number of firmid	1,278	1,269	1,271	1,278
Control variables	YES	YES	YES	YES
Years FE	YES	YES	YES	YES
Industry FE	NO	NO	NO	NO
Firm FE	YES	YES	YES	YES
R-squared adj.	0.426	0.358	0.367	0.981
ML	1857	4990	4765	6234

The dependent variables *Revenue growth* and *Asset growth* are defined as the change in the yearly logarithmic values of revenues and assets, respectively. The variable *Suspect year* is an indicator variable that takes the value 1 for firm-years that are two years prior to the first year of mandatory audits after firms have dropped an audit – i.e., the year a firm is suspected of being able to manage revenue in order to avoid a mandatory audit the following year, and 0 for other firm-years. The variable *Non-suspect year* is an indicator variable that takes the value 1 for firm-years that are one year prior to the first year of mandatory audits after firms have dropped an audit – i.e., the year firms are *not* suspected of being able to manage revenue in order to avoid a mandatory audit the following year, and 0 for other firm-years. The variable *1st year of mand. audit* takes the value 1 if a firm is subject to a mandatory audit after having dropped an audit at some point in the post-reform period, and 0 for other firm-years. The variable *Year after 1st year of mand. audit* takes the value 1 for firm-years that are one year after the first year of mandatory audits, as defined above, and 0 for other firm-years. Thirteen of the sixteen control variables are similar to those in Table 5. (*Eligible, Drop*, and $ln(growth\_revenue)_{t-1}$ are not directly included as control variables in Table 5.) Robust standard errors clustered at firm-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.3.2 Real earnings management as a source of size management

Roychowdhury (2006, p. 336) looks at the management of operational activities and defines real activities manipulation as "(…) management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds". I use Roychowdhury's modeling of real earnings management and estimate abnormal production costs ($AbnormProdCost_{it}$) to assess whether firms reduce output to become eligible for opting out of audits. Abnormal production costs are unexplained production costs defined as the residual, ε_{it}, in an industry-year regression, where industry is defined as the first two digits of the NACE-code. Following Hope et al. (2013), only industries with a minimum of 20 yearly observations are included:

$$\frac{Prod_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta_1\left(\frac{S_{it}}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta S_{it}}{A_{it-1}}\right) + \beta_3\left(\frac{\Delta S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \quad (4)$$

The variables are defined as follows:

$Prod_{it}$ = Sum of cost of goods sold (COGS) + Change in inventory (ΔINV)

A_{it-1} = Lagged total assets

S_{it} = Sales during period *t*

ΔS_{it} = Change in sales in period *t* ($S_{it} - S_{it-1}$)

ΔS_{it-1}= Lagged change in sales ($S_{it-1} - S_{it-2}$)

ε_{it} = Abnormal production costs (*AbnormProdCost*$_{it}$)

All ratios are trimmed at the 1%-level.

I first test whether size management among firms that drop audits explains higher abnormal production costs using the following model:

$$AbnormProdCost_{it} = \beta_0 + \beta_1 JBT_{it} + \beta_2 Drop_{it} + \beta_3 JBT_{it} \times Drop_{it+1} + \beta_4 Drop_{it} \times (JBT_{it} \times Drop_{it+1}) + X_{it}\beta + \theta_t + \gamma_i + v_{it} \quad (5)$$

The variables are defined as follows:

JBT_{it} = Indicator variable that takes the value 1, if a firm is just below the threshold (MNOK 4.8 ≤ Total revenue < MNOK 5), in period *t* in years affected by the reform (2010-2015), and 0 otherwise

Drop$_{it}$ = An indicator variable taking the value 1, if an eligible firm opts out of auditing, and 0 otherwise

$JBT_{it} \times Drop_{it+1}$ = Interaction variable that takes the value 1 if a firm is in the JBT-area in period *t and* drops auditing in period *t+1*, and 0 otherwise. It is used as a proxy for size management in year *t.*

Roychowdhury (2006) argues that firms may use overproduction to reduce cost of goods sold (as there is an increase in inventory during the year). In light of the audit reform, I argue that the abnormal production costs could be due to firms reducing output to stay below the revenue threshold. In that case, a firm with normal production will have higher abnormal production costs as goods that otherwise would be sold now stay in the inventory.

Panel A in Table 7 reports firm fixed effects results from the real earnings management analysis based on model (5) above. In Column (1), abnormal production costs are regressed on the main variables of interest only, whereas I also include control variables in Column (2) – representing the main model of interest. As the decision to drop audit is not exogenous and may be correlated with omitted variables affecting abnormal production costs in the main model, I include a robustness test in Column 3, where I instrument the decision to drop audit

as explained in section 5.2. The robustness test reveals no endogeneity problems of concern relating to the findings presented in the main model in Column 2. Although the results in Panel A show a positive coefficient on the interaction variable $JBT_{it} \times Drop_{it+1} \times Drop_{it}$ – i.e., opt-out-firms suspected of downsizing revenue – I find no significant evidence of firms manipulating revenue through real earnings management.

The findings in Table 6 indicate size management in suspect years, and panel B in Table 7 presents results from the following model specification:

$$AbnormProdCost_{it} = \beta_0 + \beta_1 JBT_{it} + \beta_2 Drop_{it} + \beta_3 Suspect\ year_{it} + \beta_4 JBT_{it} \times Suspect\ year_{it} + \beta_5 Drop_{it} \times (JBT_{it} \times Suspect\ year_{it}) + X_{it}\beta + \theta_t + \gamma_i + v_{it} \quad (6)$$

The variable *Suspect year* is defined as an indicator variable that takes the value 1 for firm-years that are two years prior to the first year a firm is subject to a mandatory audit after having dropped audit at some point in the post reform period – i.e., years firms are suspected of being able to manage revenue to avoid a mandatory audit the following year, and 0 for other firm-years.[26]

The results in the main regression in Column (2) show no significant increase in abnormal production costs in suspect years, whereas the results in Columns (1) and (3) in Panel B do. However, it should be kept in mind that the definition of real earnings management does not fit size management strategies in industries producing services rather than goods. In untabulated firm fixed effects analyses, I therefore separately study firms where inventory makes up more than 10% of the total balance sheet. There are still no consistent significant findings regarding the proxies for size management measured either by (1) the interaction term $JBT_{it} \times Drop_{it+1}$ with related interaction variables in Panel A, or (2) the variable *Suspect year* with related interaction variables in Panel B.

Another weakness of modeling production costs as above is that firms may have alternative size-management strategies, such as earnings management or adjusting both sales and production costs (i.e., scaling down total activity to stay below the revenue threshold). This implies that actual size-managing effects may be obscured, since I must use proxies for size management. However, the lack of consistent significant findings seems to be coherent with

[26] Firm-years in this context span from 2009 to 2013. There are a total of 232 observations of suspect years in the data, ranging from 2010 to 2013. Of these 232 observations, 48 observations are of suspect years among firms in the area just below the revenue threshold, while 43 observations are of suspect years among opt-out firms in the area just below the revenue threshold.

the lack of an economic effect from size management found in section 5.1 in the sense that relatively few firms display this type of behavior and that the total managed amount of revenue is immaterial.

Table 7: Real earnings management

Panel A: Size management

VARIABLES	(1) FirmFE	(2) FirmFE	(3) 2slsFirmFE
Just below Threshold (JBT_{it})	-0.005	-0.004	0.913
	(0.006)	(0.005)	(2.404)
$Drop_{it}$	-0.000	-0.000	-0.079
	(0.004)	(0.004)	(0.062)
$JBT_{it} \times Drop_{it+1}$ (Proxy for Size mgmt.$_{it}$)	-0.015	-0.014	-6.916
	(0.015)	(0.014)	(18.224)
$JBT_{it} \times Drop_{it+1} \times Drop_{it}$	0.016	0.017	5.482
	(0.017)	(0.015)	(14.508)
Observations	20,957	19,202	19,202
Number of firmid	4,285	4,147	4,147
Control variables	NO	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES
Adj. R^2	0.000	0.115	0.008

Panel B: Suspect years

VARIABLES	(1) FirmFE	(2) FirmFE	(3) 2slsFirmFE
JBT_{it}	-0.006	-0.009	-0.010
	(0.010)	(0.010)	(0.010)
$Drop_{it}$	0.002	-0.004	-0.031***
	(0.004)	(0.004)	(0.012)
Suspect $year_{it}$	0.015*	0.012	0.020**
	(0.009)	(0.009)	(0.010)
$JBT_{it} \times$ Suspect $year_{it}$	0.030	0.053	0.010
	(0.059)	(0.060)	(0.074)
$JBT_{it} \times$ Suspect $year_{it} \times Drop_{it}$	-0.049	-0.090	-0.043
	(0.061)	(0.062)	(0.079)
Observations	5,431	5,016	5,016
Number of firmid	1,402	1,366	1,366
Control variables	NO	YES	YES
Year FE	NO	NO	NO
Firm FE	YES	YES	YES
Adj. R^2	0.000	0.117	0.072

Adjusted R^2 is shown in Columns (1)-(2), and overall R^2 is shown in Colum 3. In 2slsFirmFE regressions, the variable Drop is instrumented by two interaction variables: *Sometimes_eligible* × *yr*, and *Always_eligible* × *yr*. *Sometimes_eligible* is defined as an indicator variable taking the value 1 if a firm is eligible in some of the years in the pre-reform period, and 0 otherwise, yr is defined as the number of years after the audit reform, and *Always_eligible* is defined as an indicator variable taking the value 1 if a firm is always eligible in the pre-reform period, and 0 otherwise. Robust standard errors clustered at firm-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6. Conclusions and perspectives

This study finds evidence of firms bunching below the revenue threshold after the introduction of thresholds for mandatory audits for small private limited liability firms, creating an excess mass of firms just below the threshold and a missing mass of firms just above the threshold. This finding indicates size management among firms around the revenue threshold and suggests that mandatory audits may entail costs that outweigh the benefits for certain small private firms. The total revenue lost due to revenue management in the post-reform period is estimated to be immaterial.

An analysis of external service fees shows that direct cost savings from dropping an audit are comparable to lost profits on managed revenue. Hence, firms practicing size management also seem to consider indirect audit costs, such as management time, in cost-benefit analyses of audits.

I find no consistent significant evidence of size management of revenue through so called real earnings management – such as building up inventory. As a result, other measures for managing size seem to be more plausible – either through management of accounts or reducing both output and input.

Overall, the introduction of thresholds for mandatory audits in Norway seems to be a well-functioning reform.[27] Although some firms forego growth opportunities to avoid crossing the threshold for mandatory audits, this effect is estimated to be immaterial. It represents an economic loss, but it also demonstrates that small firms value the opportunity to save both direct and indirect audit costs.

[27] See also Aase (2022), and Aase and Møen (2022), who analyze potential effects of the reform on accounting quality and tax compliance, without demonstrating any consistent negative effects.

References

Aase, Ø. A. S. (2022). Effects of voluntary audit on accounting quality in small private firms: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics and Department of Business Administration, Western Norway University of Applied Sciences.*

Aase, Ø. A. S., & Møen, J. (2022). The effects of private audit on tax compliance in small firms: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics.*

Allee, K. D., & Yohn, T. L. (2009). The demand for financial statements in an unregulated environment: An examination of the production and use of financial statements by privately held small businesses. *The Accounting Review*, *84*(1), 1-25.

Amir, E., Carabias, J. M., Jona, J., & Livne, G. (2016). Fixed-effects in empirical accounting research. *Available at SSRN 2634089*.

Bae, G. S., & Rho, J. (2003). Asset size management by small private firms in response to the mandatory audit requirement in Korea. *Asia-Pacific Journal of Accounting & Economics*, *10*(1), 101-115.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics*, *39*(1), 83-128.

Bernard, D., Burgstahler, D., & Kaya, D. (2018). Size management by European private firms to minimize proprietary costs of disclosure. *Journal of Accounting and Economics*, *66*(1), 94-122.

Berzins, J., Bøhren, Ø., & Rydland, P. (2008). Corporate finance and governance in firms with limited liability: Basic characteristics. *Available at SSRN 2294269.*

Burgstahler, D. C., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review*, *81*(5), 983-1016.

Burgstahler, D., & Chuk, E. (2014). Detecting earnings management using discontinuity evidence. *Unpublished working paper, University of Washington*. (page 10/11)

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99-126.

Byzalov, D., & Basu, S. (2019). Modeling the determinants of meet-or-just-beat behavior in distribution discontinuity tests. *Journal of Accounting and Economics*, *68*(2-3), 101266.

Chaney, P. K., Jeter, D. C., & Shivakumar, L. (2004). Self-selection of auditors and audit pricing in private firms. *The Accounting Review*, 79(1), 51-72.

Che, L., Hope, O. K., & Langli, J. C. (2020). How Big-4 firms improve audit quality. *Management Science, 66*(10), 4552-4572.

Clatworthy, M. A., & Peel, M. J. (2007). The effect of corporate status on external audit fees: Evidence from the UK. *Journal of Business Finance & Accounting*, *34*(1-2), 169-201.

Clatworthy, M. A., & Peel, M. J. (2013). The impact of voluntary audit and governance characteristics on accounting errors in private companies. *Journal of Accounting and Public Policy*, *32*(3), 1-25.

Collis, J. (2010). Audit exemption and the demand for voluntary audit: A comparative study of the UK and Denmark. *International Journal of Auditing*, *14*(2), 211-231.

Collis, J. (2012). Determinants of voluntary audit and voluntary full accounts in micro- and non-micro small companies in the UK. *Accounting and Business Research*, *42*(4), 441-468.

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2-3), 344-401.

Dedman, E., & Kausar, A. (2012). The impact of voluntary audit on credit ratings: evidence from UK private firms. *Accounting and Business Research*, *42*(4), 397-418.

Dedman, E., Kausar, A., & Lennox, C. (2014). The demand for audit in private firms: recent large-sample evidence from the UK. *European Accounting Review, 23*(1), 1-23.

Downing, J., & Langli, J. C. (2019). Audit exemptions and compliance with tax and accounting regulations. *Accounting and Business Research*, *49*(1), 28-67.

Francis, J. R. (2011). A framework for understanding and researching audit quality. *Auditing: A Journal of Practice & Theory*, *30*(2), 125-152.

Gaeremynck, A., Van Der Meulen, S., & Willekens, M. (2008). Audit-firm portfolio characteristics and client financial reporting quality. *European Accounting Review, 17*(2), 243-270.

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics, 95*(2), 347-361.

Harju, J., Matikka, T., & Rauhanen, T. (2015, March). The effect of VAT threshold on the behavior of small businesses: Evidence and implications. In *Conference Journal: CESifo Area Conferences on Public Sector Economics*.

Hay, D. (2013). Further evidence from meta-analysis of audit fee research. *International Journal of Auditing*, *17*(2), 162-176.

Heide, J. C., & Aardal, K. Ø. (2017). Size management at regulatory thresholds by Norwegian companies (Master's thesis, BI Norwegian Business School). Available at: https://biopen.bi.no/bi-xmlui/bitstream/handle/11250/2484293/1758982.pdf?sequence=1

Hope, O. K., Thomas, W. B., & Vyas, D. (2013). Financial reporting quality of US private and public firms. *The Accounting Review*, *88*(5), 1715-1742.

Hope, O. K., Thomas, W., & Vyas, D. (2011). Financial credibility, ownership, and financing constraints in private firms. *Journal of International Business Studies*, *42*(7), 935-957.

Hope, O. K., Thomas, W. B., & Vyas, D. (2017). Stakeholder demand for accounting quality and economic usefulness of accounting in US private firms. *Journal of Accounting and Public Policy*, *36*(1), 1-13.

Hope, O. K., & Vyas, D. (2017). Private company finance and financial reporting. *Accounting and Business Research*, 47(5), 506-537.

Höglund, H., & Sundvik, D. (2016). Financial reporting quality and outsourcing of accounting tasks: Evidence from small private firms. *Advances in Accounting*, *35*, 125-134.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Kausar, A., Shroff, N., & White, H. (2016). Real effects of the audit choice. *Journal of Accounting and Economics*, *62*(1), 157-181.

Kim, J. B., Simunic, D. A., Stein, M. T., & Yi, C. H. (2011). Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research*, *28*(2), 585-615.

Kleven, H. J., & Waseem, M. (2013). Using notches to uncover optimization frictions and structural elasticities: Theory and evidence from Pakistan. *The Quarterly Journal of Economics*, *128*(2), 669-723.

Langli, J. C. (2008). *Consultation Statement NOU 2008:12 Revisjonsplikten for små foretak.* Available at: https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf

Langli, J. C. (2009). Hvem er brukerne av årsregnskapene til små aksjeselskaper, og trenger de reviderte regnskaper? *Praktisk økonomi & finans, 25*(01), 104-119.

Langli, J. C. (2015). «Evaluering av unntak for revisjonsplikt i små aksjeselskaper.» *Report to the Ministry of Finance March 26, BI Norwegian Business School.*

Langli, J. C. (2016). Resultatføring av inntekter og kostnader før og etter fravalg av revisor i små AS–Tyder utviklingen på økte skatteunndragelser? *Praktisk økonomi & finans*, *32*(02), 200-214.

Langli, J. C., & Che, L. (2016). Har fravalg av revisor ført til dårligere finansieringsvilkår? *Praktisk økonomi & finans, 32*(01), 111-125.

Langli, J. C., & Svanström, T. (2014). Audits of private companies. *The Routledge Companion to Auditing*, *1*, 148-158.

Larsen, C. K., & Løchen, J. A. (2015). The Effect of Introducing Voluntary Audit on Accounting Quality and Firm Behaviour. (Master's thesis, Norwegian School of Economics). Available at: https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/300323/Larsen_Lochen.pdf?sequence=1

Lennox, C. S., Francis, J. R., & Wang, Z. (2012). Selection models in accounting research. *The Accounting Review*, *87*(2), 589-616.

Lennox, C. S., & Pittman, J. A. (2011). Voluntary audits versus mandatory audits. *The Accounting Review*, *86*(5), 1655-1678.

Melumad, N. D., & Thoman, L. (1990). On auditors and the courts in an adverse selection setting. *Journal of Accounting Research*, *28*(1), 77-120.

Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 457-506.

Minnis, M., & Shroff, N. (2017). Why regulate private firm disclosure and auditing? *Accounting and Business Research*, *47*(5), 473-502.

Niemi, L., Kinnunen, J., Ojala, H., & Troberg, P. (2012). Drivers of voluntary audit in Finland: to be or not to be audited? *Accounting and Business Research*, *42*(2), 169-196.

Ojala, H., Collis, J., Kinnunen, J., Niemi, L., & Troberg, P. (2016). The demand for voluntary audit in micro-companies: Evidence from Finland. *International Journal of Auditing*, *20*(3), 267-277.

Peek, E., Cuijpers, R., & Buijink, W. (2010). Creditors' and shareholders' reporting demands in public versus private firms: Evidence from Europe. *Contemporary Accounting Research*, *27*(1), 49-91.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*(3), 335-370.

Suda, K., & Shuto, A. (2006). Earnings management to meet earnings benchmarks: Evidence from Japan. *Neelan, M.H. (Ed.), Focus on Finance and Accounting Research. Nova Science Publishers Inc, New York, 67–85.*

Vanstraelen, A., & Schelleman, C. (2017). Auditing private companies: what do we know? *Accounting and Business Research*, *47*(5), 565-584.

Weik, A., Eierle, B., & Ojala, H. (2018). What drives voluntary audit adoption in small German companies? *International Journal of Auditing*, *22*(3), 503-521.

Appendix 1: Definitions of Variables

Accountant$_{it}$: Indicator variable, takes the value 1 if the firm has an external accountant in current year, and 0 otherwise

Assets growth$_{it}$: (Total assets$_{it}$ – Total assets$_{it-1}$)/ Total assets$_{it-1}$. Trimmed at 1% level.

Auditor$_{it}$: Indicator variable, takes the value 1 if the firm had an auditor in year *t*, and 0 otherwise

Big5: Indicator variable, takes the value 1 if the firm was audited by one of the Big 5 audit firms (based on number of audit clients) in year *t*, or in year *t-1* if Drop$_{it}$ equals 1, and 0 otherwise

Cum. loss ratio$_{it}$: (Number of observed years with negative profit in data)$_{it}$ /(number of observed years in data)$_{it}$

Curr. Totassets$_{it}$: Current assets / Total assets. Trimmed at the 1% level.

Drop$_{it}$: Indicator variable, takes the value 1 if a firm drops auditor in year *t*, and 0 otherwise.

Drop$_{it+1}$: Indicator variable, takes the value 1 if a firm drops auditor in year *t+1*, and 0 otherwise

Eligible$_{it}$: Indicator variable, takes the value 1 if a firm is eligible to opt out of audit in year *t* (e.g., total revenue in year *t-1* < 5 MNOK)

Employees$_{it-1}$: Number of employees in year *t-1*.

External service fees: Taken from the post 6700 (External services) in the tax income statement in year *t*

Intangibles$_{it}$: Intangible assets$_{it}$ /Total assets$_{it-1}$. Trimmed at the 1% level.

Inventory$_{it}$: Inventory$_{it}$ /Total assets$_{it-1}$. Trimmed at the 1% level.

JBT$_{it}$: Indicator variable, takes the value 1 if a firm has total revenue of MNOK 4.8 up to, but not including MNOK 5 in year *t* in years affected by the reform (2010-2015), and 0 otherwise

Leverage$_{it}$: Long term debt$_{it}$/Total assets$_{it}$. Trimmed at the 1% level.

Ln (age$_{it}$): Natural logarithm to (Age of firm$_{it}$)

Ln(Tot. Assets$_{it}$): Natural logarithm to (Total assets in period t.)

Ln (Tot. Rev$_{it}$): Natural logarithm to (Total revenue in period t.)

Ln (growth Rev$_{it}$): Ln(Total revenue$_{t}$) – Ln(Total revenue$_{t-1}$)

NegEQ$_{it}$: Indicator variable, takes the value 1 if a firm has negative equity in period *t* or *t-1,* and 0 otherwise

Pretax_totrev$_{it}$: Pre-tax earnings / Total revenue. Trimmed at the 1% level.

Quick ratio: (Short-term assets – inventory)/Short-term debt. Trimmed at the 1% level.

Revenue growth$_{it}$: (Revenue$_{it}$ – Revenue$_{it-1}$)/ Revenue$_{it-1}$. Trimmed at the 1% level.

ROA$_{it}$: Return on assets. Profit scaled by lagged total assets. Trimmed at the 1% level.

ROE$_{it}$: Return on equity: Profit scaled by average equity for firms with non-negative equity in period *t* and *t-1.* For observations with negative equity in period *t* or *t-1*, ROE is set to zero. Trimmed at the 1% level.

sq_Employees$_{it-1}$: Squared number of employees in period t-1

Volatility in sales: Std. dev. of sales. Trimmed at the 1% level.

Appendix 2: Supplementary Figures and Tables

To test whether size management occurs around the total assets threshold, I use data including observations of firms with up to NOK 40 million in total assets.

Table A1 shows results from the standard difference test (SD) around the total assets threshold of NOK 20 million, in cases where the asset threshold is the binding constraint. There are no signs of size management around the total asset threshold in the post-reform period.

Table A1 Z-values for standard difference test for numbers of observations of firms in bins adjacent to asset threshold

	Bin width: 50		Bin width: 100		Bin width: 200	
Year	Bin below	Bin above	Bin below	Bin above	Bin below	Bin above
2006	0,000	-0,289	-0,816	-0,548	-0,492	0,655
2007	-1,225	1,234	1,231	-0,544	-0,873	0,548
2008	0,000	0,333	0,236	0,129	1,083	-0,297
2009	0,000	-0,816	-1,826*	1,246	-1,886*	0,766
2010	-1,225	0,667	0,943	-1,291	-0,866	1,697
2011	-0,612	0,333	-0,816	0,707	0,356	0,267
2012	-1,732*	0,365	-1,852*	0,615	0,348	-0,178
2013	0,612	-0,471	-1,667*	0,309	0,624	-1,132
2014	0,926	0,000	-1,769*	0,492	1,289	-1,095
2015	0,500	-0,408	0,615	-1,010	-0,274	-0,639
2006-2009	-0,632	0,468	-0,144	0,336	-0,784	0,854
2010-2015	-0,236	0,298	-1,556	0,000	0,713	-0,221

Bin Width 50 tests whether there are significantly more or fewer observations (n_i) in the bin just below the asset threshold (ranging from 19 950 000 ≤ Tot. Assets < 20 000 000) and just above (ranging from 20 000 000 ≤ Tot. Assets < 20 050 000) compared to adjacent bins of bin width of NOK 50 000. Bin Width 100 and Bin Width 200 perform the same tests but with bin widths of NOK 100 000 and 200 000, respectively. Critical values: p=0.05: 1.645, p=0.01: 2.236 and p=0.001=3.090 (Suda and Shuto (2006, p. 73) * p<0.05, ** p<0.01, *** p<0.001

Figure A1 shows the actual and counterfactual distribution of firms around the asset threshold of NOK 20 million, where the asset threshold is the binding constraint. The counterfactual distribution is calculated using the same method as reported in Figures 1A and 1B in the paper (Kleven and Waseem, 2013, p. 689). No visual sign of assets size management is detected.

The findings in Table A1 and Figure A1 show that total revenue is more likely to be the binding constraint in the Norwegian audit reform setting, and that size management does not occur around the total asset threshold.

Figure A1 Actual and counterfactual asset distributions of number of firms around asset threshold, where the asset threshold is the binding constraint

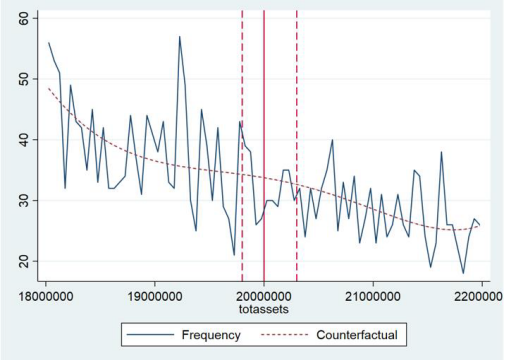


Figure 1 shows the actual frequency (whole line) and the counterfactual frequency (stapled line) of firms in the period where firms had incentives to manage size to avoid mandatory audits. The vertical line at MNOK 20 marks the asset threshold in the post-reform period. The vertical stapled line below the post reform threshold marks MNOK 19.8, whereas the vertical stapled line above MNOK 20 marks MNOK 20.3.

Table A2 shows the results from the standard difference test (SD) around the revenue threshold for firms keeping audits in the period t+1, i.e., firms not suspected of size management. The results reveal no signs of downward size management. In fact, there are signs of overrepresentation of such firms just above the revenue threshold. The significant results of size management presented in Table 4 in the paper are therefore driven by firms that drop audits in period t+1.

Table A2 Z-values for standard difference test for numbers of observations of firms not suspected of size management in bins adjacent to revenue threshold

	Bin width: 50 TNOK		Bin width: 100 TNOK		Bin width: 200 TNOK	
Year	Bin below	Bin above	Bin below	Bin above	Bin below	Bin above
2010	-1,26	0,87	0,24	1,13	1,21	0,64
2011	-0,97	0,74	-0,66	0,09	-1,05	0,95
2012	-1,55	2,02*	-3,28***	1,85*	-1,64	1,14
2013	-0,85	-0,07	-0,47	0,24	-0,07	1,44
2014	-0,82	1,09	-1,11	0,85	-1,19	1,76*
2006-2009	-2,48**	1,55	0,04	0,63	-0,26	0,73
2010-2014	-2,43**	2,13*	-2,03*	1,88*	-1,02	2,59**

Bin Width 50 tests whether there are significantly more or fewer observations (n_i) in the bin just below the revenue threshold (ranging from 4 950 000 ≤ Tot. Revenue < 5 000 000) and just above (ranging from 5 000 000 ≤ Tot. Revenue < 5 050 000) compared to adjacent bins of bin width of 50 000 NOK. Bin Width 100 and Bin Width 200 perform the same tests but with bin widths of NOK 100 000 and 200 000, respectively. Critical values: p=0.05: 1.645, p=0.01: 2.236 and p=0.001=3.090 (Suda and Shuto (2006, p. 73) * p<0.05, ** p<0.01, *** p<0.001

Table A3 shows the results from Byzalov and Basu's (2019) model (STATA-command: *kinkyX*), combining Burgstahler and Dichev's (1997) distribution discontinuity intuition and flexibility in the distribution shape by letting the revenue distribution vary with multiple explanatory variables. Byzalov and Basu use local polynomial approximation and interact the polynomial terms with explanatory variables to implement conditioning on these explanatory variables. Data adjacent to the area affected by size management are used to identify the pre-managed revenue distribution conditional on the explanatory variables, which is then interpolated in the area affected by size management through the smoothness assumption (first stage). Abnormal revenue distribution conditional on the explanatory variables can thereby be identified in the area affected by size management as the deviation of the observed bin dummies from the predicted bin probabilities in the targeted areas in stage one. The conditional abnormal revenue distribution is then used to predict the conditional earnings management probability (second stage) by regressing the deviation on the product of 1) earnings management probability – which affects the height of the deviations, and 2) a synthetic explanatory variable – which determines the shape of the deviations and separates the effect of the explanatory variables on the earnings management probability and the pre-managed distribution, so that the coefficients on the explanatory variables only capture the relevant incremental effect of the explanatory variables through the earnings management probability. As stated in the Appendix in Byzalov and Basu (2019, p. 27), the dependent variable (i.e., deviation from the revenue threshold) must be scaled appropriately (i.e., by lagged total assets). To accustom the setting of firms' incentives to size down (instead of sizing up), the sign of the dependent variable must be inverted "such that managed values just below the benchmark correspond to the interval just above zero for the inverted dependent variable in estimation".

The results in Table A3 shows clear signs of earnings management in the years affected by the reform. This confirms the main results obtained using Burgstahler and Dichev's (1997) standard difference test and Kleven and Waseem's (2013) estimation of a counterfactual distribution. The findings in Column (3) show that, on average, 11% of revenue (scaled by lagged total asset) just above the revenue threshold is managed downwards into the area just below the revenue threshold during this period. When control variables are included, the probability of earnings management among firm observations within 2% of the revenue threshold (scaled by lagged total assets) is much higher. Findings in Column (4) indicate that size management is much more common among firms without auditors.

Table A3 Size management estimates using Byzalov and Basu (2019)

VARIABLES	(1) Pre-reform	(2) Pre-reform	(3) Reform	(4) Reform
1) Polynomial coefficient in the probability density function of pre-managed earnings				
smooth0	0.014***	0.015***	0.015***	0.009***
	(0.001)	(0.004)	(0.000)	(0.002)
smooth1	0.016***	0.071***	0.013***	0.136***
	(0.004)	(0.026)	(0.003)	(0.018)
smooth2	-0.006*	-0.024	-0.006**	0.014
	(0.004)	(0.027)	(0.002)	(0.016)
smooth3	-0.002**	-0.010	-0.001**	-0.015***
	(0.001)	(0.006)	(0.001)	(0.004)
smooth4	0.001	0.004	0.000	-0.001
	(0.001)	(0.004)	(0.000)	(0.002)
smooth5	0.000	0.000	0.000*	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
smooth6	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
2) Earnings management probability for just above threshold observations				
Earnings_mgmt_prob.	-0.078**	-0.380	0.107***	0.596***
	(0.040)	(0.355)	(0.028)	(0.208)
Earnings_mgmt_prob._Auditor				-0.522***
				(0.106)
Earnings_mgmt_prob._Big5adj		-0.015		-0.045
		(0.148)		(0.064)
Earnings_mgmt_prob._Accountant		0.026		0.116*
		(0.115)		(0.069)
Earnings_mgmt_prob._sc_NoncashCA$_{t-1}$		-0.030		-0.057
		(0.240)		(0.144)
Earnings_mgmt_prob._sc_NIBCL $_{t-1}$		-0.060		0.227
		(0.355)		(0.190)
Earnings_mgmt_prob._sc_Intangibles $_{t-1}$		2.463*		0.416
		(1.258)		(0.603)
Earnings_mgmt_prob._Leverage $_{t-1}$		0.052		-0.055
		(0.277)		(0.135)
Earnings_mgmt_prob._sc_Accaudfee $_{t-1}$		-1.311		-1.276
		(2.421)		(1.301)
Earnings_mgmt_prob._ROA $_{t-1}$		0.422		-0.163
		(0.447)		(0.268)
Earnings_mgmt_prob._Growthrev $_{t-1}$		0.009		-0.091
		(0.186)		(0.103)
Earnings_mgmt_prob._lnAge		0.090		-0.038
		(0.081)		(0.050)
Observations	5,899	3,307	12,663	10,857
Year FE	NO	NO	NO	NO
Industry FE	NO	NO	NO	NO
Firm FE	NO	NO	NO	NO
R-squared adj.	0.0003	0.0005	0.0004	0.0020

Table A3 presents Byzalov and Basu's (2019) model I estimates of (1) 6th order polynomial coefficients in the probability density function of pre-managed earnings, and (2) earnings management probability for just above threshold observations in years not affected by the reform (Pre-reform) and years affected by the reform (Reform). In Byzalov and Basu's model I, the conditional earnings management probability and the incremental probability density function of managed revenue just below the revenue threshold can vary with explanatory variables, but they are flat (for a given explanatory variable) throughout the area just above and below the revenue threshold (see further explanations in Byzalov and Basu (p. 5). The dependent variable is the difference between reported revenue and the revenue threshold, scaled by lagged total assets. Following Byzalov and Basu (p. 27), the sign of the dependent variable is inverted "such that managed values just below the benchmark correspond to the interval just above zero for the inverted dependent variable in estimation". In Columns (2) and (4), I include explanatory variables inspired by those found in Table 4 in Byzalov and Basu's tests of major determinants of earnings discontinuity. For brevity, I only tabulate the coefficients that determine the earnings management probability as a function of the explanatory variables (prescript: *Earnings_mgmt_prob.*), as each explanatory variable also affects the untabulated polynomial coefficients in the probability density function of pre-managed earnings. All scaled variables are trimmed at the 1st and 99th percentile. The basic code is: kinkyX dependent_variable explanatory_variables if yr>/≤2009, binwidth(0.005) est_bins(40) em_bins(4) em_type(i) degree(6) cluster (firmid). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Chapter 3

Effects of Voluntary Audit on Accounting Quality in Small Private Firms

Øivind André Strand Aase*

Abstract

Many countries have adopted size thresholds for mandatory audits, but empirical evaluations of how deregulation of the audit market affects reporting quality are scarce. I analyze a Norwegian audit reform adopted in 2011 that introduced voluntary audits for small private limited liability firms. I find no consistent signs of negative effects on accounting quality for the firms that drop audits. Nor do I find significantly lower accounting quality among opt-out firms with higher incentives to manage their earnings, i.e., firms with a high increase in long-term interest-bearing debt. Some firms around the size thresholds for voluntary audits size down to avoid the cost of auditing when the perceived benefits of audits are smaller than the costs. If such downsizing takes place by manipulating the accounts rather than actual output, lower accounting quality would be expected among the firms just below the threshold. I find some indications of lower accounting quality among these firms, but the finding is not robust. I conclude that the reform has not had any significant negative effects on accounting quality.

1. Introduction

There is a growing international trend of reducing the costs and complexity of private firms' financial reporting duties. Although research has indicated that the quality of accounting is lower for private firms than public firms, private firms' accounting quality has been found to be important to potential and existing stakeholders' decision-making, and private firms' financial costs and constraints.[1] Private firms dominate all market economies in terms of the number of firms, employment, and total assets held.[2] If well-intended reforms lead to lower reporting quality, the benefits in the form of cost savings may soon be lost, for instance in the form of higher capital costs due to higher information uncertainty. Spillover effects into tax reporting may also be of concern, as financial reports often make up the basis for tax filings.[3]

* NHH Norwegian School of Economics: Department of Business and Management Science, Norwegian Centre for Taxation (NoCeT), and Western Norway University of Applied Sciences, E-mail: oivind.aase@hvl.no. I am deeply grateful to Jarle Møen and Kjell Henry Knivsflå for providing highly constructive guidance and feedback. I also thank Jeffrey Pittman and two anonymous referees for very helpful and valuable comments.

[1] See e.g., Allee and Yohn (2009), Hope et al. (2011), Minnis (2011), Chen et al. (2011), Hope et al. (2013), and Hope et al. (2017).

[2] See e.g., Berzins et al. (2008).

[3] Ball and Shivakumar (2005) and Burgstahler et al. (2006) argue that private firms' financial reporting obligations are more influenced by tax reporting than the information needs of external capital providers.

In the literature, audits are found to have a positive effect on accounting quality and act as a mitigating factor on restrained access to capital and investment opportunities.[4] For small private firms, however, some findings indicate that opting out of auditing has no or little effect on the cost of capital and earnings quality (Langli, 2015; Langli and Che, 2016; and Liu and Skerratt, 2018). Langli (2009) argues that the number of stakeholders in small private firms is often exaggerated, as many small private limited liability firms do not have employees or interest-bearing debt. In other words, small private firms may not face the same incentives as larger private firms for requesting auditing services.

In a companion paper, Aase (2022), I find an overrepresentation of firms in the area just below the adopted revenue threshold for mandatory audits and an underrepresentation of firms just above the threshold during the post-reform period. Estimates of saved external service fees from the decision to drop audits correspond to lost profits among this particular segment of firms. This finding suggests that indirect audit costs are important in firms' cost-benefit assessment of auditing, supporting the findings of e.g., Minnis and Shroff (2017) and Bernard et al. (2018), and implies that firms of a certain size may seek to avoid mandatory audits.

The broad international adoption of voluntary auditing for small private firms demonstrates that governments have acknowledged the lower demand for auditing in the small private firm sphere, leaving the audit decision to be made at firm level based on individual cost-benefit assessments.[5] However, evaluations of how such audit reforms affect accounting quality in the targeted firms are scarce.[6]

I use register data on small private firms' financial accounts, provided by the Norwegian Tax Authority, to investigate the effects of introducing voluntary auditing on small private firms' accounting quality. The identification strategy is to use regression analysis with firm fixed effects. This is possible on the basis of panel data on firms' financial accounts during the period 2006–2015, where the reform was put into effect from 2011.[7] Before the reform, *all* limited liability firms in Norway were subject to mandatory audits, while the reform entitled limited liability firms under certain size thresholds to opt out of auditing.[8]

[4] See e.g., Allee and Yohn (2009), Minnis (2011), Dedman and Kausar (2012), and Kausar et al. (2016).
[5] See e.g., Bernard et al. (2018).
[6] See e.g., Clatworthy and Peel (2013), Downing and Langli (2019), and Langli (2015).
[7] All limited liability firms report their financial accounts in the form Income Statement 2 (*Næringsoppgave 2,* RF 1167), which is submitted to the Norwegian Tax Authority.
[8] https://www.regjeringen.no/no/dokumenter/nou-2008-12/id520230/ (last accessed December 11, 2022)

The treatment group comprises firms that decide to drop audits. I use two different control groups: firms that can opt out of auditing but choose not to (control group 1 – eligible firms), and firms that cannot opt out of auditing (control group 2 – non-eligible firms). In additional analyses, I focus on (i) opt-out firms with higher incentives to manage earnings, i.e., firms with a high increase in long-term interest-bearing debt, and (ii) opt-out firms that display bunching behavior, i.e., firms that lie just below the size threshold in year *t* and drop audits in year *t+1*.

Firm fixed effects are included to reduce omitted variable bias by removing unobserved time-invariant heterogeneity among the firms, e.g., internal controls or corporate governance mechanisms that correlate with the main explanatory variables (Amir et al., 2016). Obviously, opting out is still a choice variable and to control for potential selection, I instrument the opt-out decision using combinations of pre-reform eligibility (i.e., whether a firm is counterfactually eligible to opt out during the pre-reform period) and the time elapsed since the reform, as instrumental variables.

My main outcome variable for testing the effects on accounting quality is discretionary accruals, which is a well-known measure of accounting quality. In robustness analyses, I use several alternative measures for accruals quality and timely loss recognition to study different aspects of accounting quality among private firms. Hui et al. (2012) argue that conservatism is particularly important in private firms since stakeholders do not have access to signals of firms' performance, such as stock prices.

Langli (2015) analyzes accounting quality in the wake of the Norwegian audit reform. However, his conclusions are based on cross-sectional analyses and capture more instantaneous effects as he does not have data post-2012, which was the first year after the reform. Dedman et al. (2014) find evidence to suggest that firms need time to benefit from audit exemptions, and Langli (2015, p. 381) recognizes the shortcomings of his data. He therefore emphasizes that the results should be interpreted with caution.

Clatworthy and Peel (2013) find that audits have a significant positive effect on accounting quality. Their findings indicate that audited accounts are approximately half as likely to contain errors as unaudited accounts. However, Clatworthy and Peel's measure of accounting quality is dependent on self-reporting since the dependent variable is a binary variable that takes the value 1 if firms have filed amended accounts, and 0 otherwise. Overall, only 0.6% of the firms they observed had filed such amended accounts. The measures of accounting quality used in this study are not contingent on self-reporting.

My regression analyses reveal no consistent deterioration of accounting quality among opt-out firms after the audit reform. Moreover, I find no robust evidence of lower accounting quality among opt-out firms with higher incentives to manage earnings or opt-out firms that display bunching behavior. Overall, the introduction of voluntary audits seems to be a welcome regulatory change for the targeted firms, without any consistent, significant negative effects on accounting quality. In other words, a deregulation of the audit market seems to come at a low cost in relation to lower accounting quality in the small private firm segment.

My study contributes to the literature in several ways. First, there is limited systematic empirical evidence concerning private firms' accounting quality practices (see e.g., Hope and Vyas, 2017), and I add to the general knowledge in this area of research. Most importantly, the study expands the literature on the effects of the international trend of reducing the costs and complexity of private firms' financial reporting duties (see e.g., Hope et al., 2017). The unique panel dataset also provides important information on how private firms adjust over time.[9]

The paper continues as follows. In Section 2, I discuss relevant literature concerning auditing and private firms, and formulate test hypotheses. Section 3 describes the background to the introduction of voluntary audits in Norway. Section 4 describes the research design and presents descriptive statistics. Section 5 addresses the main tests of the hypotheses, and Section 6 focuses on robustness tests. Finally, in Section 7, I evaluate the findings and conclude on effects in the wake of the audit reform.

2. Literature and hypothesis development

2.1 The effects of auditing on private firms' accounting quality

Several studies have found that auditing increases accounting quality in private firms.[10] Hence, introducing voluntary audits may lead to lower accounting quality in firms that opt out of auditing, with implications for e.g., cost of capital.

Kausar et al. (2016) look at the positive effects stemming from voluntary auditing and refer to two different theories. First, audits are a costly signal chosen by low-risk firms to separate them from other firms (e.g., Jensen and Meckling, 1976, and Melumad and Thoman, 1990),

[9] Langli (2015, Chapter 8) does not use firm fixed effects or instrumental variables.
[10] See e.g., Allee and Yohn (2009), Minnis (2011), and Clatworthy and Peel (2013).

and second, external financiers can use audits as a screening mechanism to separate the good debtors from the bad in terms of credit risk (Guasch and Weiss, 1981).

Kausar et al. embrace both theories and argue that the choice to be audited signals a firms' future investment opportunities: Only firms that foresee themselves generating sufficient profits from investment opportunities to recover the cost of the audit will choose to be voluntarily audited. The authors find that voluntarily choosing to be audited significantly increased firms' access to debt financing, investment, and operating performance. They also argue that in addition to an increase in quality and reliability of financial statements, the observable choice to be audited in itself provides incremental information to creditors. Hence, their findings support the notion that audits seem to increase the perceived accounting quality among stakeholders. Lennox and Pittman (2011) find similar results with respect to credit ratings.

Langli and Che (2016), on the other hand, find no sign of an increase in financial costs for firms that opt out of voluntary auditing relative to audited firms. In cross sectional analyses, Langli (2015) finds certain indications of lower accounting quality among firms that drop audits in the wake of the Norwegian audit reform – primarily for firms with high inventory levels and/or accounts receivable. However, he also shows that firms with external accountants do not experience a significant drop in the quality of their tax papers after opting out of auditing. Hence, accountants may mitigate the effects on reporting quality for opt-out firms.

Ichev et al. (2020) find that voluntary audits facilitate access to financial debt for firms with higher information risk that may otherwise have limited access to external capital. This finding supports their hypothesis that the effect of voluntary audits on the cost of debt is dependent on a firm's reporting incentives – i.e., whether reported numbers are closer to the underlying cash flow and able to predict future cash flows, as creditors will likely require audited financial statements from firms with higher information risk (i.e., poor predictability of future cash flows).

Auditing research has also found that the size of an audit firm affects accounting quality in audit clients (see e.g., Clatworthy and Peel, 2013). However, findings are mixed. Basu et al. (2001), for instance, find that firms using the Big 8 auditors recognize losses in a timelier manner and are more conservative, while Francis (2011) argues that this result depends on the distribution of client firms. He only finds clear evidence of difference in the most extreme

deciles of the distribution of signed accruals, and addresses self-selection bias as a problem. Audit firms are not randomly assigned to audit clients, and findings may suffer from omitted variable bias. He therefore recommends controlling for firm fixed effects. Kim et al. (2011) find no Big 4 effect on the interest cost of borrowing for privately held firms, and argue that audit presence trumps auditor choice in terms of factors that matter to banks and other private lenders. Che et al. (2020), using a fixed audit partner and audit client effects research design, find evidence of less discretionary accruals in private firms that switch from a non-Big 4 to a Big 4 auditor. Lennox and Pittman (2011) argue that choosing a Big 4 auditor may be used to signal firms' demand for high audit assurance.

This mixed empirical evidence calls for more research on the topic of auditing and its effect on accounting quality in private firms.

The key question in this study is whether dropping audits leads to lower accounting quality among small private firms. In Norway, a client's tax filings must be signed off by the engaged auditor. By signing off, the auditor confirms compliance with accounting and tax regulations, and that the legality of the client's tax dispositions has been assessed.[11] Hence, auditors have incentives to scrutinize both financial and tax accounts, typically by reviewing and verifying assessments made by the firms' management (e.g., discretionary accruals and timely loss recognition). Firms that opt-out of auditing are not obliged to have their tax filings assessed and signed by an auditor. The risk of reporting errors could therefore be higher among opt-out firms relative to audited firms. My main hypothesis is formulated as follows:

H_1: Firms that choose to drop audits have lower accounting quality than other comparable firms.

Firms in need of financing may have higher incentives to manipulate accounts in order to attract creditors. I therefore also target a segment of firms with a high increase in debts to see whether auditing affects accounting quality among firms that arguably have higher incentives to manipulate financial accounts:

H_{1A}: Firms with a high increase in debts and that choose to drop audits have lower accounting quality than other comparable firms.

[11] https://www.skatteetaten.no/rettskilder/type/skattedirektoratets-meldinger/revisors-plikter-i-forbindelse-med-signering-av-naringsoppgave-og-kontrolloppstilling-over-bokforte-og-innberettede-lonnsopplysninger-mv/ (last accessed December 11, 2022)

2.2 Threshold effects on the size distribution of firms

Firms that would naturally fall just above the size thresholds for mandatory audits have high incentives to squeeze in below these thresholds if the perceived benefits of auditing are found to be smaller than the costs. As such, the size distribution of firms may show signs of excess mass in the area just below size thresholds and missing mass in the area just above.

Bernard et al. (2018) study size management around thresholds for mandatory audits based on a sample of 503 666 observations of private firms from 12 European countries (not including Norway). Their findings indicate that at least 4% of firms within a range of 2% from the threshold for mandatory audits manage assets downwards by an average of 3.35 bins of a 2% width. Although size management could be indicative of lower accounting quality, this is not the focal point of Bernard et al.'s study as they claim that misreporting is unlikely to be common in firms that display such behavior. The premises for their conclusion are that financial statements are scrutinized by tax authorities, and that national laws penalize managers and directors for misleading or false financial reporting. However, it is difficult to estimate the risk of being caught, and although sanctions may be severe, it is not obvious that such measures serve to deter firms from earnings management. Misreporting is therefore a compelling dimension to investigate further in order to test whether opt-out firms that display bunching behavior (i.e., that have a total revenue just below the threshold in year *t* and drop audits in year *t+1*) differ in accounting quality compared to other firms.

In a companion paper, Aase (2022), I find evidence of revenue size management in the Norwegian setting and estimate that external service fees are reduced by approximately EUR 1 700 for firms that choose to avoid audits – an amount comparable to lost profits as a result of size management. These findings indicate that indirect audit costs, such as management time, also play a part in a firm's specific cost-benefit assessment of auditing. I find no consistent significant evidence of size management being driven by real earnings management. As such, other means of size management seem more plausible – either through the management of accounts or by reducing both output and input. In this paper, I target the possibility of downsizing revenue through discretionary accruals. This leads to my second hypothesis:

H_2: The negative effect on accounting quality from dropping audits (H_1) is strengthened if the firm exercises size management.

3. Background to the introduction of voluntary audits in Norway

The introduction of voluntary audits for small private limited liability firms in Norway in 2011 is an example of the international trend of reducing the costs and complexity of private firms' financial reporting duties.[12] In the Norwegian reform, small firms were defined as limited liability firms with less than NOK 5 million (EUR 0.5 million) in total revenue, less than NOK 20 million (EUR 2 million) in total assets and no more than 10 full-time employees.[13] Norway was the last country in the EU/EEA to abolish full statutory audits for small private firms (Langli, 2015, p. 143). The Norwegian Ministry of Finance's main arguments for implementing the reform were the reduction of costs and complexity and competitive considerations.[14] Compared to the revenue thresholds reported in Bernard et al. (2018), the Norwegian revenue threshold is relatively low.[15] The legal basis for opting out of auditing is given in Section 7-6 of the Norwegian Act relating to Private Limited Companies. The previous year's figures for total revenue, total assets, and number of employees are decisive as to whether a firm is entitled to opt out of auditing in year *t*.[16] The choice of opting out requires administrative action and cannot be put into effect until the decision has been reported to the Register of Business Enterprises.[17] In a consultative statement, Langli (2008) estimates that limited liability firms under the revenue threshold paid around 44% (NOK 1.6 billion) of the total audit fees for limited liability firms, while these firms only account for 4% of the total revenue among limited liability firms and paid 8% of the total taxes.[18] There are therefore benefits to be gained in the form of cost reductions for small firms. However, the costs in terms of lower accounting quality are unclear and must be taken into account.

---

[12] The audit reform was based on the green paper NOU 2008:12 submitted to the Norwegian Ministry of Finance. The bill was put forth in the cabinet in mid-December 2010, and the statute was sanctioned in mid-April 2011, with effect from May 1, 2011.

[13] See Prop. 51 L (2010–2011) p. 41. From Jan. 10, 2018, the thresholds were increased to NOK 6 million in operating revenue, and NOK 23 million in total assets. (*Forskrift om terskelverdier for beslutning om å unnlate revisjon etter aksjeloven § 7-6)*

[14] Prop. 51 L (2010–2011) p. 41.

[15] Denmark, Finland, and Sweden had lower thresholds than Norway in 2011, whereas Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, and the United Kingdom had higher thresholds.

[16] See e.g., https://www.regjeringen.no/no/dokumentarkiv/stoltenberg-ii/fin/Nyheter-og-pressemeldinger/pressemeldinger/2011/unntak-for-revisjonsplikt-fra-mai-i-ar/id641006/ (last accessed December 11, 2022). Eligibility among new firms established after the reform, without prior financial statements, is assessed on the basis of the number of employees at the time of the general meeting's decision and the initial total assets or share contribution.

[17] According to Section 7-6 of the Limited Liability Companies Act, the decision must be made by the general meeting and requires a majority of 2/3 of the votes. The general meeting can then authorize the board to opt out of auditing and the board must report its decision to the administrative body.

[18] https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf (last accessed December 11, 2022)

4. Research design and descriptive statistics

4.1 Data

The data comes from the Norwegian Tax Authority Register and provides information on the financial accounts of all Norwegian firms for the period 2006–2015. The focus of this study is on non-grouped limited liability firms that lie in the area around the adopted revenue threshold for mandatory audits.[19] This is because the revenue threshold is the binding constraint for the vast majority of firms that are still subject to mandatory audits, and I wanted to compare firms of similar size. I include firms with a minimum revenue higher than NOK 1 million, maximum revenue lower than NOK 10 million, and average revenue between NOK 3 million and 7 million in the sample period, to retain the most comparable firms while tolerating some year-to-year variation among them. I focus on firms with more than NOK 1 million and less than NOK 20 million in total assets, and fewer than 10 employees during the sample period. Consequentially, the revenue threshold is the only decisive threshold for my sample of firms. I drop firms in NACE2 industries that are not covered by the legislative amendment that introduced voluntary audits for small limited liability firms, most importantly the finance industry, legal services, and accounting services.[20] The final sample is presented in Table 1 and consists of about 42 000 firm-year observations of more than 5 500 firms. All sample firms are established before the reform and have at some point been subject to mandatory audits. The maximum number of observations per firm is 10, and the average number of observations per firm is 7.5.

Table 2 shows an increasing number of opt-out firms during the years 2011–2015. The somewhat slow adaptation could reflect the fact that firms need time to learn about the relevant cost-benefit ratio of opting out of audits. It also corresponds with Dedman et al.'s

[19] Parent companies in the data are subject to mandatory audits regardless of the threshold values, according to Section 2-1 (5) of the Auditors Act. This provision was adjusted on July 1, 2017 so that only firms with an obligation to prepare consolidated financial statements are subject to mandatory audits. Subsidiaries are also dropped as the audit decision is most likely not taken at firm level, but rather at group level. As such, I drop all observations of firms that are listed with a parent, foreign subsidiary, posts in RF 1123 (controlled transactions and accounts outstanding) or that have posts in the income statement (RF 1167) balance sheet indicating that a firm is part of a group (e.g., investments in subsidiaries, accounts receivable/payable to group firms).

[20] There was a change in industry (NACE2) coding in 2009 (from SN2002 to SN2007), and I use a key developed by Statistics Norway to convert SN2002 to SN2007 (Link SN2002-SN2007 (nøkkel mellom gammel og ny standard) (EXCEL)): https://www.ssb.no/virksomheter-foretak-og-regnskap/naeringsstandard-og-naeringskoder (last accessed December 11, 2022). Some observations with missing industry codes are imputed by using info on the firm's SN2007 code from other periods. Observations of firms with (old) SN2002 coding and missing SN2007 coding, and no observations in 2009 and onwards, are dropped as it is not possible to sufficiently determine the SN2007 code. Observations with unrecognizable NACE2 coding are also dropped.

(2014) findings concerning firms needing time to benefit from the audit exemption. Langli and Che (2016) find that opt-out firms do not experience higher financial costs after dropping audits. Such effects may encourage eligible firms to cut auditor costs. As this type of information reaches the market, more firms will consider the benefits to be gained from dropping audits as higher than the costs.

Table 1: Data selection

	No. of obs.	**No. of firms**
Total sample size	**2 573 941**	**439 713**
- less observations of non-limited liability firms	207 660	55 625
- less firms with MNOK 1 >= yearly tot. Revenue >= MNOK 10, and MNOK 3 >= avg. tot revenue >= MNOK 7	2 170 195	356 569
- less observations with missing tot. revenue	16 331	0
- less firms with MNOK 1 >= Yearly tot. Assets >= MNOK 20	81 183	11 955
- less firms with yearly tot. employees >=10	22 647	3 367
- less observations of non-active firms	28	2
- less firms that did not exist pre reform	7 443	2 779
- less observations of firms missing industry code	3 135	1 744
- less observations of firms in NACE2 industries not affected by the audit reform	3 279	366
- less observations of group firms	20 275	1 762
Sum dropped observations:	**2 532 176**	**434 169**
Final total sample size:	**41 765**	**5 544**

Table 2: Development in the share of opt-out firms over time in the post-reform period

Year	No. of Firms in Sample	Share of Opt-outs in Sample	No. of Eligible firms in Sample	Share of Opt-outs among Eligible firms
2011	4 334	22%	2 737	34%
2012	4 191	26%	2 436	45%
2013	3 974	29%	2 262	51%
2014	3 919	31%	2 241	54%
2015	3 776	33%	2 119	59%
Total	20 194	28%	11 795	48%

4.2 Test methodology and variable construction

4.2.1 Measures of accounting quality

I use the level of discretionary accruals as the measure of accounting quality. Auditors will, for instance, be concerned with the completeness of revenue recognition and the validity of related accounts receivable. This could restrict the management's scope of revenue recognition and potentially materialize in the level of discretionary accruals.

Discretionary accruals are estimated based on the Kothari et al. (2005) model, and are defined as the unexplained variation, ε_{it} , from the following industry-year regression:[21]

$$TA_{it} = \delta_0 + \delta_1 \left(\frac{1}{Assets_{it-1}}\right) + \delta_2 \Delta Sales_{it} + \delta_3 PPE_{it} + \delta_4 ROA_{it} + \varepsilon_{it}, \quad (1)$$

Where:

TA_{it} = Total accruals in firm *i* in year *t*, scaled by lagged total assets

Total accruals are defined as: Δ non-cash current assets – Δ non-interest-bearing current liabilities – depreciation – amortization. In essence, total accruals account for non-cash effects on profit since: Profit = net cash-flow + total accruals

$\Delta Sales_{it}$ = Yearly change in sales in firm *i* in year *t,* scaled by lagged total assets

PPE_{it} = Property, plant, and equipment in firm *i* in year *t,* scaled by lagged total assets

ROA_{it} =Return on assets in firm *i* in year *t*, scaled by lagged total assets

ε_{it} = The discretionary part of total accruals – a proxy for accounting quality

Industries are defined by the first two digits of the NACE code. In line with Hope et al. (2013), only industries with a minimum of 20 yearly observations are included, and the negative absolute value of the error term ($|\varepsilon_{it}| \times -1$) is used as the dependent variable in the analysis below of how discretionary accruals are affected by the audit reform. With this measure, a higher value of the proxy for discretionary accruals indicates less discretionary accruals and better accounting quality.

[21] Kothari et al. (2005) augment and modify the Jones (1991) model.

4.2.2 Main model

I use the following model to evaluate the effects of dropping audits on accounting quality:

$$Discretionary\ Accruals_{it} = \beta_0 + \beta_1 Eligible_{it} + \beta_2 Drop_{it} + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it} \quad (2)$$

Where:

i = firm, t = time (year)

$Discretionary\ Accruals_{it}$ = The negative absolute value of the error term ($|\varepsilon_{it}| \times -1$) from equation (1).

$Eligible_{it}$ = An indicator variable taking the value 1 if a firm is eligible to opt out of auditing, and 0 otherwise

$Drop_{it}$ = An indicator variable taking the value 1 if an eligible firm opts out of auditing, and 0 otherwise

X_{it} = Control variables

θ_t = Year fixed effects

γ_i = Firm fixed effects

As the sample consists of firms that were established before the 2011 reform, all firms should have at least one year during which they were subject to mandatory audits. The main treatment variable is whether an eligible firm opts out of auditing or not ($Drop_{it}$) and captures the effect of dropping audits on accounting quality. Due to the research design, I operate with two control groups: non-eligible firms (baseline comparison, β_0), and eligible firms that choose to be audited ($Eligible_{it}$). The effect of opting out of auditing can hence be compared with voluntary auditees (coefficient on $Drop_{it}$) and non-eligible firms (coefficient on $Drop_{it}$ + coefficient on $Eligible_{it}$). Based on hypothesis H_1 of firms in the treatment group (firms that choose to drop audits) having lower accounting quality than firms in the different control groups, I expect $\beta_2 < 0$.

To test audit effects on accounting quality among firms that have a high increase in debt during year *t*, I create an indicator variable that takes the value 1 if a firm has a high increase in debt during year *t*, and 0 otherwise.[22] Based on hypothesis H_{1A}, I expect non-audited firms

[22] High increase in debt is defined as a firm-year where the increase in long-term interest-bearing debt scaled by lagged total assets (trimmed at the 1st and 99th percentile) is in the 90th percentile of the distribution of firm-years.

that have a high increase in long-term interest-bearing debt to have lower accounting quality than audited firms with a similar increase in debts.

With reference to previous findings in the literature, I include the following control variables in the regressions: Accountant, to account for effects driven by external accountants performing the bookkeeping; Big 5, to account for audit quality; Total revenue in year *t-1* scaled by lagged total assets and employees, to account for size effects; Return on equity (ROE), negative equity (NegEQ), and a ratio of cumulative years with negative profit (Cum. Loss Ratio), to account for economic performance and financial risk; Leverage, to account for financial exposure; Revenue growth and assets growth, to account for growth; Inventory scaled by lagged total assets; and finally ln(age).[23]

To mitigate potential omitted variable bias in the OLS estimates, I use firm fixed effects modeling.[24] However, firm fixed effects do not account for unobserved *temporary* shocks affecting, for instance, internal controls. Such temporary shocks may affect both accounting quality and the decision to drop auditing, resulting in selection bias in firm fixed effects estimates. To account for potential selection bias, I develop four instruments for the variable *Drop*, i.e., the decision to opt out:

Instrument 1: *Always_eligible*. An indicator variable taking the value 1 if a firm is always (counterfactually) eligible in the pre-reform period, and 0 otherwise.

Instrument 2: *Always_eligible* × *Yr*. An interaction variable taking the value 1 if a firm is always (counterfactually) eligible in the pre-reform period, and 0 otherwise, multiplied by a variable counting the years after the reform.

Instrument 3: *Sometimes_eligible*. An indicator variable taking the value 1 if a firm is (counterfactually) eligible for some years of the pre-reform period, and 0 otherwise.

Instrument 4: *Sometimes_eligible* × *Yr*. An indicator variable taking the value 1 if a firm is (counterfactually) eligible for some years of the pre-reform period, and 0 otherwise, multiplied by a variable counting the years after the reform.

[23] See e.g., Hope et al. (2013), and Langli (2015). See Appendix 2 for more detailed definitions of the variables.
[24] Lennox et al. (2012) suggest using a fixed effects design to control for unobservable factors that are correlated with endogenous regressors. Amir et al. (2016) recommend a fixed effect design to control for unobserved factors and endogenous regressors when working with panel data. The firm fixed effect model controls for idiosyncratic firm-specific characteristics that are time invariant.

These instruments are correlated with the choice of dropping auditing as smaller firms have a higher probability of opting out and – as shown in Table 2 – the proportion of firms that opt out of auditing increases over time. Accounting quality should not, however, be correlated with pre-reform eligibility during the post-reform period (whether a firm has more or less than NOK 5 million in total revenue during the pre-reform period) or the time elapsed since the reform.

4.2.3 Modeling bunching behavior among opt-out firms

To test hypothesis H_2 of whether the negative effect on accounting quality from dropping auditing (H_1) is strengthened if the firm displays bunching behavior, I employ the same test procedures as for the main model described above. In addition, I include a proxy for bunching behavior based on the findings in Aase (2022).[25] The main variable of interest here is an interaction variable capturing whether an opt-out firm ($Drop_{it}$) that also displays bunching behavior ($JBT_{it} \times Drop_{it+1}$) has stronger negative effects on accounting quality:

$$Discretionary\ Accruals_{it} = \beta_0 + \beta_1 Eligible_{it} + \beta_2 Drop_{it} + \beta_3 (JBT_{it} \times Drop_{it+1}) + \beta_4 Drop_{it} \times (JBT_{it} \times Drop_{it+1}) + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it} \quad (3)$$

Where:

JBT_{it}: An indicator variable that takes the value 1 if a firm is just below the threshold (4.8 MNOK ≤ Total revenue < 5 MNOK) in year *t* in the years affected by the reform (2010–2015), and 0 otherwise

$JBT_{it} \times Drop_{it+1}$: An interaction variable that takes the value 1 if a firm is in the JBT area in year *t* and drops auditing in year *t+1*, and 0 otherwise. A proxy for bunching behavior in year *t*.

In line with hypotheses H_2, I expect $\beta_4 < 0$.

[25] Using similar data to that used in this paper, Aase (2022) finds evidence of an excess mass of firms in the area just below the adopted revenue threshold – ranging from NOK 4.8 million up to NOK 5 million. Size management in year *t* is attributed to those firms that have reported between NOK 4.8 million and NOK 5 million in total revenues in year *t* and that drop audits the following year (*t+1*). Hence, the interaction variable $Drop_{it} \times (JBT_{it} \times Drop_{it+1})$ takes the value 1 for opt-out firms in year *t* that exhibit bunching behavior in year *t*, and 0 otherwise.

4.3 Descriptive statistics

Table 3 shows post-reform descriptive statistics for (1) non-eligible firms, (2) eligible firms, (3) eligible non-opt-out firms (voluntary auditees), (4) opt-out firms, (5) opt-out firms not displaying bunching behavior, and (6) opt-out-firms displaying bunching behavior. Untabulated t-tests clustered at firm level show that, on average, opt-out firms, relative to voluntary auditees, seem to be smaller firms that have lower revenue and asset growth, a lower cumulative loss ratio, are more likely to have an external accountant, less likely to have been audited by a Big 5 auditor, and have less volatility in sales. In general, the findings correspond to the hypothesis that more risky firms have a higher demand for audits (see e.g., Dedman et al., 2014). In relation to choosing Big 5 auditors, the findings correspond with Lennox and Pittman's (2011) finding that firms that opt out of auditing under a voluntary audit regime have a lower probability of choosing a Big 4 auditor since they have a lower demand for high audit assurance.[26]

Opt-out firms that display bunching behavior are on average bigger in size, more profitable, and have higher growth rates than opt-out firms that do not display bunching behavior.

[26] I also find the likelihood of having a Big 5 auditor to be significantly lower for opt-outs versus non-opt-outs if the variable Big5 for opt-outs is specified as using the audit firm in the last year prior to opting out, instead of using the audit firm in year *t-1*.

Table 3: Descriptive statistics (post-reform period)

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Eligible	Eligible	Eligible Non-Opt-outs	Eligible Opt-outs	Non-Bunching Opt-outs	Bunching Opt-outs
Employees	4.381	3.285	3.274	3.298	3.047	3.569
	(2.143)	(1.924)	(1.98)	(1.861)	(1.685)	(1.612)
Tot. Revenue	6 079 378	3 998 839	4 222 189	3 755 757	3 714 605	4 904 103
	(1 302 613)	(1 052 424)	(1 108 690)	(928 467)	(850 306)	(61 123)
Tot. Assets	4 067 552	3 571 518	3 787 395	3 336 569	3 294 142	3 636 568
	(2 770 876)	(2 768 317)	(2 918 947)	(2 574 222)	(2 505 431)	(2 448 735)
Size (ln (tot. assets))	15.046	14.882	14.935	14.824	14.818	14.95
	(0.563)	(0.603)	(0.615)	(0.584)	(0.573)	(0.530)
ROA	0.100	0.104	0.102	0.105	0.107	0.155
	(0.146)	(0.150)	(0.150)	(0.151)	(0.149)	(0.136)
ROE	0.290	0.273	0.277	0.269	0.274	0.460
	(0.585)	(0.551)	(0.541)	(0.562)	(0.570)	(0.670)
Negative EQ	0.066	0.071	0.073	0.069	0.064	0.051
	(0.249)	(0.257)	(0.260)	(0.253)	(0.245)	(0.220)
Leverage	0.146	0.171	0.177	0.164	0.167	0.161
	(0.209)	(0.243)	(0.246)	(0.240)	(0.239)	(0.246)
Long-term interest-bearing debt	0.102	0.111	0.117	0.103	0.105	0.109
	(0.181)	(0.201)	(0.205)	(0.195)	(0.196)	(0.209)
Revenue growth	-0.004	0.079	0.107	0.046	0.045	0.243
	(0.317)	(0.326)	(0.340)	(0.306)	(0.300)	(0.293)
Asset growth	0.035	0.056	0.063	0.048	0.052	0.133
	(0.201)	(0.211)	(0.221)	(0.199)	(0.198)	(0.224)
Inventory	0.185	0.160	0.153	0.168	0.170	0.140
	(0.251)	(0.250)	(0.245)	(0.256)	(0.257)	(0.220)
Cum. Loss Ratio	0.182	0.200	0.207	0.193	0.187	0.151
	(0.225)	(0.231)	(0.236)	(0.224)	(0.222)	(0.200)
Age	17.177	17.177	17.388	16.947	16.423	14.190
	(10.793)	(11.323)	(11.607)	(11.003)	(11.012)	(8.792)
Accountant	0.731	0.786	0.675	0.908	0.906	0.903
	(0.443)	(0.410)	(0.468)	(0.290)	(0.292)	(0.297)
Big5	0.323	0.181	0.281	0.072	0.082	0.074
	(0.467)	(0.385)	(0.450)	(0.259)	(0.274)	(0.262)
Volatility in Sales	1 128 619	855 925	911 825	794 925	783 359	881 245
	(558 125)	(524 095)	(544 820)	(493 374)	(484 890)	(416 124)
No. of observations	8 399	11 795	6 147	5 648	3 925	216

Table 3 displays means with standard deviations in parentheses for different firm characteristics. Means and standard deviations are calculated based on the number of observations in the different subgroups in the sample. Some observations have missing variables. Scaled variables such as ROA, ROE, Leverage, Revenue Growth, Asset Growth, and Inventory are trimmed at the 1st and 99th percentile. Big5 is an indicator variable taking the value 1 if the auditor in year *t* is Big 5, or auditor in year *t-1* is Big 5 if a firm has opted out of auditing, and 0 otherwise.

Untabulated correlation matrix results show that in eligible firms and opt-out firms, accounting quality is positively correlated with leverage and the size of inventory scaled by lagged total assets. This could imply that creditors may restrict the scope of discretion implemented in financial accounts among borrowing firms, and that the relative size of inventory may restrict the use of discretion. The latter finding implies that more of the variation in inventory is explained by non-discretionary factors as the relative size of inventory increases, and that managers may use more discretion when inventory is of lower significance relative to total assets. Accounting quality is significantly negatively correlated

with size measured by the natural log of assets among eligible firms, but not among opt-out firms. Accounting quality is also significantly negatively correlated with the growth of assets both for eligible and opt-out firms. These findings imply that there is room for more use of discretion in larger and growing firms.

Table 4 compares the average accounting quality for different segments of the data during the post-reform period. On average, there is only a significant difference among non-bunching opt-out firms and opt-out firms that display bunching behavior (i.e., firms in the area just below the adopted threshold that drop auditing the following year), indicating that accounting quality is lower among opt-out firms that display bunching behavior.

Table 4: Comparing accounting quality across subgroups in the data

	All firms post reform (2011-2015)		
	Non-eligible	Eligible	Diff.
Discretionary Accruals	-0.112	-0.110	-0.001
Std. Error.	(0.001)	(0.001)	
N	6,888	9,936	
	Eligible firms		
	Non-Opt-outs	Opt-outs	
Discretionary Accruals	-0.110	-0.110	0.000
Std. Error.	(0.001)	(0.002)	
N	5,213	4,723	
	Opt-out firms		
	Opt-outs with accountant	Opt-outs without accountant	
Discretionary Accruals	-0.111	-0.106	-0.005
Std. Error.	(0.002)	(0.005)	
N	4,296	427	
	Opt-out firms		
	Non-high debt increase	High debt increase	
Discretionary Accruals	-0.110	-0.110	0.000
Std. Error.	(0.002)	(0.006)	
N	4,379	344	
	Opt-out firms		
	Non-Bunchers	Bunchers	
Discretionary Accruals	-0.108	-0.129	0.021**
Std. Error.	(0.002)	(0.009)	
N	3,316	186	

Discretionary Accruals are trimmed at the 1% level. T-test are clustered at firm level. *** p<0.01, ** p<0.05, * p<0.1.

5. Main tests of the hypotheses

5.1 Test of hypothesis H_1

Table 5 shows the effects of opting out of auditing on discretionary accruals. The OLS regressions in Columns (1) and (2) show no significant effects on the quality of accruals from opting out of auditing, consistent with the findings in Table 4. To mitigate any potential omitted variable bias, I use firm fixed effects models in Columns (3) and (4). The coefficients on *Drop* remain non-significant. The results from the instrument variable (IV) regressions presented in Columns (5)–(8) suggest no significant negative effect from opting out of auditing on the quality of the accruals. Hence, the overall results reveal no significant loss of accounting quality in opt-out firms.

The findings in Columns (2), (4), (6), and (8) show that having an external accountant does not appear to have any consistent significant impact on opt-out firms' accounting quality. This finding may reflect that the decision to outsource the accounting function is a source of selection bias, as firms with more complex accounting tasks may choose to engage an external accountant. Untabulated t-tests clustered at firm level show that the level of total accruals relative to lagged total assets, in absolute value, is significantly higher in firms with external accountants than in firms without external accountants. The findings relating to Big 5 auditor effects may indicate that the size of the auditing firm is of less significance in the small private firm segment. This finding corresponds to Gaeremynck et al.'s (2008) finding that reporting quality is driven by other portfolio and client characteristics rather than the size of the audit portfolio.

Most of the other control variables have consistent and expected effects on the quality of accruals. Both growth measures seem to have negative effects on accounting quality, indicating that growth may trigger more use of discretion in accounting. Leverage is sometimes found to have negative effects on accounting quality. However, the literature also shows that there is a positive association between accounting quality and access to capital (see e.g., Allee and Yohn, 2009). External creditors typically focus on cash flows and may demand less discretion in financial reporting from borrowers, which could in turn affect reporting quality. Inventory could be a source of earnings manipulation through discretionary accruals such as write-offs. However, the size of inventory relative to lagged assets consistently seems to affect accounting quality positively, implying that inventory is a type of asset that is subject to less discretion as its significance relative to other assets increases. More risky firms, in terms of having negative equity and a higher ratio of cumulative years of negative profit,

seem to exhibit poorer accounting quality, indicating that discretion may be used to a higher extent in firms with low performance.

Table 5: Effect on discretionary accruals

VARIABLES	(1) OLS	(2) OLS	(3) FirmFE	(4) FirmFE	(5) 2sls	(6) 2sls	(7) 2slsFE	(8) 2slsFE
$Eligible_{it}$	0.000	0.002	0.003	0.004	-0.022	0.004	0.001	0.030
	(0.002)	(0.003)	(0.003)	(0.004)	(0.020)	(0.043)	(0.013)	(0.026)
$Drop_{it}$	-0.001	-0.006	0.000	0.001	0.046	-0.013	0.006	-0.141
	(0.002)	(0.006)	(0.003)	(0.007)	(0.044)	(0.214)	(0.035)	(0.142)
$Accountant_{it}$	-0.002	-0.001	-0.006*	-0.005	-0.006	-0.001	-0.006	-0.007*
	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)	(0.002)	(0.005)	(0.004)
$Accountant_{it}$ x $Eligible_{it}$		-0.003		-0.002		-0.033		-0.030
		(0.004)		(0.004)		(0.036)		(0.024)
$Accountant_{it}$ x $Drop_{it}$		0.006		-0.000		0.067		0.144
		(0.006)		(0.008)		(0.193)		(0.128)
Big5	0.001	0.001	-0.001	-0.001	0.006	0.006	0.000	-0.004
	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.007)	(0.007)	(0.008)
Tot. $Revenue_{it-1}$ sc.	-0.075***	-0.074***	-0.071**	-0.071**	-0.079***	-0.074***	-0.071**	-0.069**
	(0.020)	(0.020)	(0.028)	(0.028)	(0.020)	(0.024)	(0.028)	(0.029)
sq_ Tot. $Revenue_{it-1}$ sc.	0.037**	0.037**	0.039*	0.038*	0.040**	0.036**	0.038*	0.038*
	(0.015)	(0.015)	(0.021)	(0.021)	(0.016)	(0.018)	(0.021)	(0.021)
cub_ Tot. $Revenue_{it-1}$ sc.	-0.009*	-0.009*	-0.009	-0.009	-0.009*	-0.008	-0.009	-0.009
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
quad_ Tot. $Revenue_{it-1}$ sc.	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$Employees_{it-1}$	0.003**	0.003**	0.002	0.002	0.003*	0.003*	0.002	0.002
	(0.001)	(0.001)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)	(0.003)
sq_ $Employees_{it-1}$	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE_{it}	-0.010***	-0.010***	-0.001	-0.001	-0.010***	-0.010***	-0.001	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
$NegEQ_{it}$	-0.031***	-0.031***	-0.023***	-0.023***	-0.032***	-0.032***	-0.023***	-0.023***
	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
$Leverage_{it}$	0.040***	0.040***	0.024***	0.024***	0.041***	0.041***	0.024***	0.020**
	(0.004)	(0.004)	(0.008)	(0.008)	(0.004)	(0.005)	(0.008)	(0.010)
Revenue $growth_{it}$	-0.011***	-0.011***	-0.010***	-0.010***	-0.008**	-0.008*	-0.010***	-0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Assets $growth_{it}$	-0.042***	-0.042***	-0.055***	-0.055***	-0.043***	-0.042***	-0.055***	-0.054***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
$Inventory_{it}$	0.032***	0.032***	0.047***	0.047***	0.032***	0.033***	0.047***	0.050***
	(0.004)	(0.004)	(0.013)	(0.013)	(0.004)	(0.004)	(0.013)	(0.014)
Cum. Loss $Ratio_{it}$	-0.017***	-0.017***	-0.026***	-0.026***	-0.017***	-0.017***	-0.026***	-0.026***
	(0.004)	(0.004)	(0.009)	(0.009)	(0.004)	(0.005)	(0.009)	(0.009)
$Ln(Age_{it})$	0.008***	0.008***	0.010	0.010	0.008***	0.008***	0.009	0.007
	(0.001)	(0.001)	(0.007)	(0.007)	(0.001)	(0.001)	(0.008)	(0.007)
Constant	-0.084***	-0.084***	-0.096***	-0.097***	-0.081***	-0.088***		
	(0.012)	(0.012)	(0.022)	(0.022)	(0.012)	(0.013)		
Observations	24,226	24,226	24,226	24,226	24,226	24,226	23,883	23,883
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES	NO	NO	YES	YES
Adj. R^2	0.070	0.070	0.017	0.017	0.051	0.051	-0.192	-0.213
Number of firmid			4,524	4,524			4,181	4,181

In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by two interaction variables: *Sometimes_eligible * yr* and *Always_eligible_instr * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.1.1 Test of hypothesis H_{1A}

As expected, the results presented in Table 5a show that firms with a high increase in long-term interest-bearing debt during a year have lower accounting quality. However, the

insignificant coefficient on the interaction variable *Drop* × *High debt increase* indicates that audits are not of significance to accounting quality in these circumstances either. Audit quality (*Big 5*) and external accountants are also not found to be of significance to accounting quality – consistent with the findings from the test of hypothesis H_1.

Table 5a: Effect on discretionary accruals

VARIABLES	(1) OLS	(2) FirmFE	(3) 2sls	(4) 2slsFE
Eligible	0.002	0.004	-0.006	0.025
	(0.003)	(0.004)	(0.043)	(0.025)
Drop	-0.006	0.001	0.031	-0.115
	(0.006)	(0.007)	(0.215)	(0.139)
High debt increase	-0.013***	-0.010***	-0.014***	-0.012***
	(0.003)	(0.003)	(0.004)	(0.004)
Drop x High debt increase	0.005	0.004	0.023	0.023
	(0.007)	(0.007)	(0.021)	(0.019)
Accountant	-0.001	-0.005	-0.001	-0.007*
	(0.002)	(0.004)	(0.002)	(0.004)
Accountant x Eligible	-0.003	-0.001	-0.026	-0.026
	(0.004)	(0.004)	(0.036)	(0.023)
Accountant x Drop	0.006	-0.001	0.023	0.120
	(0.007)	(0.008)	(0.194)	(0.125)
Big5	0.001	-0.001	0.007	-0.002
	(0.002)	(0.003)	(0.007)	(0.008)
Observations	24,226	24,226	24,226	23,883
Control variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES
Adj. R^2	0.071	0.018	0.048	-0.206
Number of firmid		4,524		4,181

Control variables are the same as presented in Table 5. In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by two interaction variables: *Sometimes_eligible * yr* and *Always_eligible_instr * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.2 Test of hypothesis H_2

The findings shown in Columns (1) and (2) of Table 6 reveal a significant negative effect on accounting quality among opt-out firms that display bunching behavior (coefficient on $Drop_t \times JBT_{it} \times Drop_{it+1}$) in OLS and firm fixed effects models. However, these findings are not robust in 2sls models with or without fixed effects, as seen in Columns (3) and (4). Hence, no robust significant effect is found on accounting quality from the introduction of voluntary audits. The effects of other control variables on accounting quality are consistent with that described above. Aase (2022) suggests that the total managed revenues from bunching behavior are immaterial during the years after the reform, which supports the notion that deregulation of the lower segment of the audit market comes at a low cost in terms of lower reporting quality.

Table 6: Effect on discretionary accruals for opt-out firms that display bunching behavior

VARIABLES	(1) OLS	(2) FE	(3) 2sls	(4) 2slsFE
$Eligible_t$	0.003	0.006	-0.018	0.036
	(0.004)	(0.004)	(0.052)	(0.032)
$Drop_t$	-0.005	-0.004	0.104	-0.174
	(0.007)	(0.008)	(0.270)	(0.183)
JBT_t x $Drop_{t+1}$ ($Buncher_t$)	0.011	0.011	0.136	0.101
	(0.011)	(0.010)	(0.348)	(0.282)
$Drop_t$ x JBT_t x $Drop_{t+1}$	-0.023*	-0.027**	-0.120	-0.081
	(0.013)	(0.013)	(0.269)	(0.222)
$Accountant_t$	-0.002	-0.006	-0.001	-0.007*
	(0.002)	(0.004)	(0.002)	(0.004)
$Accountant_t$ x $Eligible_t$	-0.002	-0.003	-0.025	-0.038
	(0.004)	(0.005)	(0.047)	(0.031)
$Accountant_t$ x $Drop_t$	0.006	0.005	-0.020	0.186
	(0.007)	(0.009)	(0.252)	(0.170)
$Big5_t$	0.002	0.001	0.010	-0.002
	(0.002)	(0.003)	(0.006)	(0.008)
Observations	20,221	20,221	20,221	19,807
Control variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES
Adj. R^2	0.073	0.021	0.009	-0.251
Number of firmid		4,257		3,843

Control variables are the same as presented in Table 5. In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by two interaction variables: *Sometimes_eligible * yr* and *Always_eligible_instr * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

6. Robustness tests

The method of using measures of accruals as indicators of accounting quality has long been criticized (e.g., Dechow et al., 1995; Bernard and Skinner, 1996; Guay et al., 1996; McNichols, 2000; Thomas and Zhang, 2000; Kothari et al., 2005, Stubben, 2010; Owens et al., 2017; McNichols and Stubben, 2018). In line with Hope et al. (2013), I therefore use alternative measures of financial reporting quality (FRQ) to test the robustness of the derived results. In Appendix 1, I elaborate on one measure of discretionary revenue – a specific, rather than aggregated measure of accruals – and three measures of conditional conservatism, used in the robustness analysis. Hui et al. (2012) argue that accounting conservatism is especially important in private firms, as stakeholders do not have access to signals of firms' performance, such as stock prices. Since measures of conditional conservatism have also been criticized in the research literature (see Dechow et al., 2010), I use three different measures of timely loss recognition to test whether the audit reform affects accounting quality. The results are reported in Tables 7–11.

The robustness analysis does not show consistent significant negative opt-out effects across the alternative measures of accounting quality in Table 7 and Table 8. Nor do I find

significant negative effects relating to bunching behavior for the alternative measures of accounting quality, as shown in Tables 9 and 10. As firms just below the threshold may have incentives to manage revenue downwards, I test for bunching effects using signed discretionary revenues, as shown in Table 11, and find no significant effects. In untabulated robustness tests, I also use discretionary accruals from the modified Jones Model developed by Dechow et al. (1995), and estimation errors based on the model developed by Dechow and Dichev (2002). I find no consistent significant negative effects on these measures of accounting quality among opt-out firms or opt-out firms that display bunching behavior. In addition, I look at signed discretionary accruals and only negative discretionary accruals from the main models presented in Equation 1 and 2, and find no signs of lower accounting quality among opt-out firms.

Table 7: Robustness analysis of the results presented in Table 5

VARIABLES	(1) DiscrRev OLS	(2) DiscrRev FirmFE	(3) DiscrRev 2sls	(4) DiscrRev 2slsFE	(5) LNEG OLS	(6) LNEG FirmFE	(7) LNEG 2sls	(8) LNEG 2slsFE
Eligible	-0.001	-0.000	0.046	0.024	0.007	-0.001	0.020	-0.004
	(0.003)	(0.003)	(0.053)	(0.021)	(0.004)	(0.005)	(0.046)	(0.028)
Drop	0.003	0.004	-0.245	-0.139	-0.009	0.000	-0.075	0.011
	(0.005)	(0.005)	(0.279)	(0.118)	(0.009)	(0.011)	(0.228)	(0.154)
Accountant	0.003**	-0.002	0.003*	-0.003	0.001	0.002	-0.000	0.004
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.005)
Accountant x Eligible	-0.004	-0.001	-0.054	-0.024	-0.003	0.004	0.033	0.031
	(0.003)	(0.003)	(0.045)	(0.020)	(0.005)	(0.005)	(0.038)	(0.025)
Accountant x Drop	0.001	-0.005	0.254	0.132	0.005	-0.004	-0.022	-0.070
	(0.005)	(0.005)	(0.259)	(0.111)	(0.009)	(0.011)	(0.200)	(0.136)
Big5	0.001	-0.000	-0.002	-0.004	0.001	0.002	-0.009	-0.005
	(0.001)	(0.002)	(0.006)	(0.005)	(0.002)	(0.004)	(0.008)	(0.009)
Observations	21,924	21,924	21,924	21,558	27,007	27,007	27,007	26,655
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES	NO	YES	NO	YES
Adj. R^2	0.251	0.027	0.127	-0.259	0.112	0.069	0.070	-0.134
Number of firmid		4,499		4,133		4,873		4,521

Control variables are the same as presented in Table 5. Discretionary revenues (DiscrRev) are defined as in Stubben (2010). Large negative results (LNEG) are defined as an indicator variable taking the value 1 if net income before extraordinary items divided by lagged total assets is less than -0.2, and 0 otherwise. The regression model is the same as in the tests of the main hypotheses. In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by two interaction variables: *Sometimes_eligible * yr* and *Always_eligible_instr * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Robustness analysis of the results presented in Table 5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Accruals				Change in net income			
VARIABLES	OLS	FE	2sls	2slsFE	OLS	FE	2sls	2slsFE
CFO1 sc.	-0.489***	-0.628***	-0.488***	-0.621***				
	(0.007)	(0.007)	(0.007)	(0.007)				
Neg. CFO	0.012***	0.006**	0.012***	0.007**				
	(0.003)	(0.003)	(0.003)	(0.003)				
Neg. CFO x CFO sc.	-0.244***	-0.170***	-0.241***	-0.187***				
	(0.022)	(0.022)	(0.022)	(0.023)				
Eligible	-0.007**	0.004	-0.103***	0.016	0.012***	0.030***	0.033	0.072***
	(0.003)	(0.003)	(0.031)	(0.019)	(0.003)	(0.004)	(0.024)	(0.026)
Drop	0.006	0.004	0.213***	-0.059	-0.007*	-0.002	-0.047	-0.123**
	(0.004)	(0.004)	(0.066)	(0.040)	(0.004)	(0.005)	(0.048)	(0.055)
Neg. CFO x Eligible	0.008	0.009	0.044	0.134***				
	(0.007)	(0.006)	(0.045)	(0.045)				
Neg. CFO x Drop	-0.016**	-0.020***	-0.106	-0.276***				
	(0.008)	(0.008)	(0.091)	(0.093)				
CFO sc. x Eligible	0.000	0.008	0.054	0.084				
	(0.014)	(0.014)	(0.101)	(0.085)				
CFO sc. x Drop	-0.001	-0.014	-0.125	-0.194				
	(0.019)	(0.018)	(0.209)	(0.183)				
Neg. CFO x CFO sc. x Eligible	0.089*	0.091*	0.415	0.152				
	(0.053)	(0.049)	(0.316)	(0.303)				
Neg. CFO x CFO sc. x Drop	-0.197***	-0.186***	-0.917	-0.253				
	(0.065)	(0.063)	(0.671)	(0.640)				
Ch.NI (t-1) sc.					-0.270***	-0.311***	-0.270***	-0.305***
					(0.014)	(0.017)	(0.014)	(0.018)
Neg. Ch. NI(t-1)					-0.002	-0.003	-0.002	-0.005*
					(0.002)	(0.003)	(0.002)	(0.003)
Neg. Ch. NI(t-1) x Ch.NI (t-1)sc.					-0.160***	-0.195***	-0.162***	-0.209***
					(0.027)	(0.034)	(0.027)	(0.036)
Neg. Ch. NI(t-1) x Eligible					-0.002	-0.004	0.019	0.033
					(0.005)	(0.006)	(0.028)	(0.034)
Neg. Ch. NI(t-1) x Drop					0.014**	0.015**	-0.031	-0.055
					(0.006)	(0.007)	(0.059)	(0.071)
Ch.NI (t-1) sc. x Eligible					0.114***	0.107***	0.435**	0.466*
					(0.031)	(0.035)	(0.220)	(0.262)
Ch.NI (t-1) sc. x Drop					-0.008	-0.032	-0.665	-0.789
					(0.041)	(0.047)	(0.446)	(0.531)
Neg. Ch. NI(t-1) x Ch.NI (t-1)sc. x Elig.					-0.179***	-0.175***	-0.434	-0.577*
					(0.053)	(0.063)	(0.301)	(0.345)
Neg. Ch. NI(t-1) x Ch.NI (t-1)sc. x Drop					-0.004	0.037	0.576	1.093
					(0.070)	(0.087)	(0.697)	(0.817)
Constant	0.020**	0.078***			-0.010*	-0.005		
	(0.008)	(0.002)			(0.006)	(0.003)		
Observations	34,343	34,343	34,343	34,066	28,690	28,690	28,690	28,378
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES	NO	YES	NO	YES
Adj. R^2	0.516	0.630	0.399	0.488	0.123	0.168	0.063	-0.160
Number of firmid		5,235		4,958		4,935		4,623

Accruals are defined as: (Δ non-cash current assets – Δ non-interest-bearing current liabilities – depreciation – amortization) scaled by lagged total assets. *CFO sc.* is defined as net income before extraordinary items less accruals, scaled by lagged total assets. *Neg. CFO* is defined as an indicator variable taking the value 1 if CFO is negative, and 0 otherwise. *Ch.NI (t-1)* sc. is defined as the change in net income before extraordinary items scaled by lagged total assets. *Neg. Ch. NI(t-1)* is defined as an indicator variable taking the value 1 if last year's change in net income was negative, and 0 otherwise. In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by two interaction variables: *Sometimes_eligible * yr* and *Always_eligible_instr * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Robustness analysis of the results presented in Table 6

VARIABLES	(1) Accruals OLS	(2) Accruals FE	(3) Accruals 2sls	(4) Accruals 2slsFE
Eligible	-0.006	0.006	-0.084***	-0.069**
	(0.004)	(0.004)	(0.031)	(0.029)
Drop	0.006	0.003	0.176***	0.195***
	(0.005)	(0.005)	(0.068)	(0.067)
JBT x $Drop_{t+1}$	-0.027	0.003	0.166	0.467
	(0.044)	(0.036)	(0.144)	(0.527)
JBT x $Drop_{t+1}$ x Drop	0.056	0.026	-0.064	-0.170
	(0.046)	(0.038)	(0.185)	(0.372)
CFO scaled	-0.516***	-0.661***	-0.514***	-0.658***
	(0.008)	(0.007)	(0.008)	(0.008)
Neg. CFO	0.006**	-0.000	0.007**	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Neg. CFO x CFO scaled	-0.314***	-0.213***	-0.314***	-0.212***
	(0.025)	(0.025)	(0.025)	(0.027)
Neg. CFO x Eligible	0.008	0.010	0.035	0.079
	(0.007)	(0.007)	(0.081)	(0.074)
Neg. CFO x Drop	-0.016*	-0.022**	-0.073	-0.173
	(0.009)	(0.009)	(0.182)	(0.167)
Neg. CFO x JBT x $Drop_{t+1}$	-0.006	0.008	-0.076	-0.291
	(0.052)	(0.043)	(0.191)	(0.568)
Neg. CFO x JBT x $Drop_{t+1}$ x Drop	-0.050	-0.027	-0.070	0.126
	(0.056)	(0.049)	(0.258)	(0.426)
CFO scaled x Eligible	0.007	0.015	-0.076	-0.086
	(0.017)	(0.016)	(0.128)	(0.120)
CFO scaled x Drop	-0.011	-0.024	0.181	0.222
	(0.023)	(0.022)	(0.278)	(0.265)
CFO scaled x JBT x $Drop_{t+1}$	0.373	0.209	-0.259	1.165
	(0.328)	(0.266)	(0.900)	(1.420)
CFO scaled x JBT x $Drop_{t+1}$ x Drop	-0.436	-0.277	-0.077	-1.772
	(0.334)	(0.272)	(1.047)	(1.427)
Neg. CFO x CFO scaled x Eligible	0.076	0.066	0.402	0.105
	(0.063)	(0.060)	(0.507)	(0.532)
Neg. CFO x CFO scaled x Drop	-0.186**	-0.170**	-0.890	-0.327
	(0.080)	(0.075)	(1.127)	(1.187)
Neg. CFO x CFO scaled x JBT x $Drop_{t+1}$	-0.407	0.230	0.185	-2.000
	(0.458)	(0.335)	(1.433)	(2.645)
Neg. CFO x CFO scaled x JBT x $Drop_{t+1}$ x Drop	0.073	-0.332	0.055	2.502
	(0.480)	(0.379)	(1.664)	(2.433)
Constant	0.022***	0.086***		
	(0.008)	(0.003)		
Observations	29,085	29,085	29,085	28,807
Year FE	YES	YES	YES	YES
Industry FE	YES	NO	NO	NO
Firm FE	YES	YES	YES	YES
Adj. R^2	0.536	0.650	0.420	0.452
Number of firmid		4,955		4,677

Accruals are defined as: (Δ non-cash current assets – Δ non-interest-bearing current liabilities – depreciation – amortization) scaled by lagged total assets. *CFO scaled* is defined as Net Income before ex. ordinary items less Accruals, scaled by lagged total assets. *Neg. CFO* is defined as an indicator variable taking the value 1 if CFO is negative, and 0 otherwise. In 2sls regressions, the variable *Drop* is instrumented by four variables: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by: *Sometimes_eligible * yr* and *Always_eligible * yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Robustness analysis of the results presented in Table 6

VARIABLES	(1) Change Net Income OLS	(2) Change Net Income FE	(3) Change Net Income 2sls	(4) Change Net Income 2slsFE
Eligible	0.006	0.025***	0.065**	0.079**
	(0.005)	(0.006)	(0.031)	(0.037)
Drop	-0.004	0.005	-0.131**	-0.128
	(0.005)	(0.007)	(0.065)	(0.082)
JBT x $Drop_{t+1}$	0.018	0.046	0.175	0.610
	(0.031)	(0.034)	(0.447)	(0.593)
JBT x $Drop_{t+1}$ x Drop	0.027	-0.007	-0.112	-0.632
	(0.033)	(0.039)	(0.423)	(0.561)
Ch.NI (t-1) scaled	-0.331***	-0.360***	-0.328***	-0.347***
	(0.021)	(0.023)	(0.021)	(0.025)
Neg. Ch. NI(t-1)	-0.009***	-0.010***	-0.008***	-0.009**
	(0.003)	(0.003)	(0.003)	(0.003)
Neg. Ch. NI(t-1) x Ch.NI (t-1)scaled	-0.174***	-0.214***	-0.174***	-0.229***
	(0.036)	(0.045)	(0.037)	(0.047)
Neg. Ch. NI(t-1) x Eligible	0.011	0.010	-0.014	0.026
	(0.007)	(0.008)	(0.039)	(0.051)
Neg. Ch. NI(t-1) x Drop	0.002	-0.003	0.044	-0.047
	(0.009)	(0.010)	(0.088)	(0.112)
Neg. Ch. NI(t-1) x JBT x $Drop_{t+1}$	-0.000	-0.017	-0.155	-0.751
	(0.039)	(0.049)	(0.526)	(0.722)
Neg. Ch. NI(t-1) x JBT x $Drop_{t+1}$ x Drop	-0.019	-0.002	0.181	0.745
	(0.044)	(0.056)	(0.476)	(0.645)
Ch.NI (t-1) scaled x Eligible	0.227***	0.214***	0.257	0.541
	(0.048)	(0.058)	(0.255)	(0.410)
Ch.NI (t-1) scaled x Drop	-0.100*	-0.131*	-0.168	-0.899
	(0.058)	(0.069)	(0.553)	(0.907)
Ch.NI (t-1) scaled x JBT x $Drop_{t+1}$	-0.063	-0.066	-0.377	-0.807
	(0.219)	(0.236)	(0.893)	(1.425)
Ch.NI (t-1) scaled x JBT x $Drop_{t+1}$ t x Drop	-0.005	0.107	0.608	3.038
	(0.252)	(0.340)	(1.297)	(2.220)
Neg. Ch. NI(t-1) x Ch.NI (t-1)scaled x Eligible	-0.298***	-0.260***	0.121	-0.129
	(0.075)	(0.093)	(0.462)	(0.539)
Neg. Ch. NI(t-1) x Ch.NI (t-1)scaled x Drop	-0.005	-0.032	-1.131	-0.386
	(0.098)	(0.123)	(1.141)	(1.323)
Neg. Ch. NI(t-1) x Ch.NI (t-1) scaled x JBT x $Drop_{t+1}$	0.249	0.322	0.503	0.428
	(0.398)	(0.502)	(2.029)	(2.466)
Neg. Ch. NI(t-1) x Ch.NI (t-1) scaled x JBT x $Drop_{t+1}$ x Drop	-0.125	-0.317	0.412	-2.242
	(0.564)	(0.685)	(2.319)	(3.151)
Constant	-0.007	0.001		
	(0.007)	(0.004)		
Observations	24,043	24,043	24,043	23,675
Year FE	YES	YES	YES	YES
Industry FE	YES	NO	NO	NO
Firm FE	NO	YES	YES	YES
Adj. R^2	0.126	0.161	0.072	-0.142
Number of firmid		4,654		4,286

Change Net Income is defined as the change in net income before extraordinary items scaled by lagged total assets. *Ch.NI (t-1)* scaled is defined as lagged *Change Net Inc. Neg. Ch. NI(t-1)* is defined as an indicator variable taking the value 1 if last year's change in net income was negative, and 0 otherwise. In 2sls regressions, the variable *Drop* is instrumented by: *Sometimes_eligible, Sometimes_eligible * yr, Always_eligible,* and *Always_eligible * yr.* In 2slsFE regressions, the variable *Drop* is instrumented by: *Sometimes_eligible * yr* and *Always_eligible *yr*. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Robustness analysis of the results presented in Table 6

Panel A:	Discretionary Revenue (unsigned)				Discretionary Revenue (signed)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	FE	2sls	2slsFE	OLS	FE	2sls	2slsFE
Eligible	-0.001	0.001	0.028	0.011	0.001	-0.001	-0.009	-0.029
	(0.003)	(0.003)	(0.040)	(0.022)	(0.003)	(0.004)	(0.044)	(0.035)
Drop	0.002	0.004	-0.148	-0.058	-0.003	-0.006	0.050	0.159
	(0.005)	(0.005)	(0.210)	(0.128)	(0.005)	(0.007)	(0.233)	(0.199)
JBT x $Drop_{t+1}$	0.003	-0.003	0.273	0.112	-0.010	-0.007	-0.535	-0.444
	(0.007)	(0.007)	(0.344)	(0.231)	(0.012)	(0.016)	(0.597)	(0.521)
JBT x $Drop_{t+1}$t x Drop	-0.011	-0.002	-0.238	-0.099	0.005	-0.008	0.408	0.310
	(0.009)	(0.009)	(0.277)	(0.183)	(0.014)	(0.019)	(0.480)	(0.417)
Accountant	0.003**	-0.002	0.003*	-0.002	-0.002	-0.004	-0.001	-0.005
	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.004)	(0.002)	(0.005)
Accountant x Eligible	-0.005*	-0.002	-0.037	-0.010	0.001	0.001	0.016	0.023
	(0.003)	(0.003)	(0.036)	(0.022)	(0.003)	(0.005)	(0.039)	(0.035)
Accountant x Drop	0.003	-0.004	0.160	0.052	0.003	0.006	-0.059	-0.142
	(0.005)	(0.005)	(0.196)	(0.120)	(0.005)	(0.008)	(0.218)	(0.190)
Big5	0.001	0.000	-0.001	-0.003	-0.002	-0.003	-0.001	0.005
	(0.001)	(0.002)	(0.005)	(0.006)	(0.001)	(0.003)	(0.005)	(0.008)
Observations	20,670	20,670	20,670	20,281	20,670	20,670	20,670	20,281
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES	NO	YES	NO	YES
Adj. R^2	0.252	0.028	0.172	-0.228	0.066	0.080	-0.021	-0.230
Number of firmid		4,278		3,889		4,278		3,889

Panel B:	Only Negative Discretionary Revenue				Large Negative Result			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	FE	2sls	2slsFE	OLS	FE	2sls	2sls FE
Eligible	0.002	0.005	-0.020	0.013	0.005	-0.003	0.066	0.011
	(0.003)	(0.004)	(0.030)	(0.026)	(0.004)	(0.005)	(0.071)	(0.035)
Drop	-0.003	-0.009	0.128	-0.039	-0.006	0.001	-0.323	-0.087
	(0.006)	(0.008)	(0.171)	(0.160)	(0.009)	(0.010)	(0.370)	(0.196)
JBT x $Drop_{t+1}$	-0.001	-0.014*	0.112	0.395	-0.008	0.007	-0.122	-0.046
	(0.009)	(0.008)	(0.208)	(0.444)	(0.013)	(0.012)	(0.078)	(0.059)
JBT x $Drop_{t+1}$t x Drop	-0.009	0.006	-0.141	-0.352	0.005	-0.004	0.149	0.070
	(0.011)	(0.011)	(0.177)	(0.367)	(0.014)	(0.013)	(0.102)	(0.077)
Accountant	0.002	-0.002	0.002	-0.001	0.002	0.004	0.001	0.004
	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.005)
Accountant x Eligible	-0.008**	-0.005	0.004	-0.009	-0.006	0.002	-0.028	0.007
	(0.003)	(0.004)	(0.030)	(0.027)	(0.005)	(0.005)	(0.061)	(0.032)
Accountant x Drop	0.008	0.005	-0.100	0.032	0.006	-0.003	0.245	0.037
	(0.006)	(0.008)	(0.165)	(0.155)	(0.009)	(0.011)	(0.342)	(0.182)
Big5	0.000	-0.002	0.004	-0.005	0.002	0.001	-0.008	-0.007
	(0.002)	(0.003)	(0.004)	(0.008)	(0.002)	(0.004)	(0.009)	(0.009)
Observations	10,594	10,594	10,594	9,768	22,414	22,414	22,414	22,013
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	NO	YES	NO	YES	NO	YES	NO
Firm FE	NO	YES	NO	YES	YES	YES	YES	YES
Adj. R^2	0.266	0.020	0.213	-0.694	0.087	0.056	-0.040	-0.181
Number of firmid		3,933		3,107		4,561		4,160

Control variables are the same as presented in Table 5. Discretionary revenue is defined as in Stubben (2010). Large negative result is defined as an indicator variable taking the value 1 if Net income before Ex. items divided by lagged total assets is less than -0.2, and 0 otherwise. The regression model is the same as in the tests of the main hypotheses. In 2sls regressions, the variable Drop is instrumented by four variables: Sometimes_eligible, Sometimes_eligible * yr, Always_eligible, and Always_eligible * yr. In 2slsFE regressions, the variable Drop is instrumented by: Sometimes_eligible * yr and Always_eligible * yr. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

7. Conclusions and perspectives

This study shows no consistent evidence of significantly lower accounting quality among firms that opt out of auditing relative to comparable firms that choose to be audited, measured by proxies for the quality of accruals and conditional conservatism. This finding implies that the cost of introducing voluntary audits for small private firms in terms of lower reporting quality is low.

Firms just below the threshold for mandatory audits may have higher incentives than other firms to manage their earnings (i.e., revenues) to avoid mandatory auditing. However, even in the segment of opt-out firms that are just below the threshold for mandatory audits in year *t* and that drop audits in year *t+1* (which proxies bunching behavior), I find no robust significant evidence of lower accounting quality.

Overall, my analysis confirms previous evaluations by Langli (2015) and Langli and Che (2016). The introduction of voluntary audits for small private firms in Norway seems to be a well-functioning reform that is actively used by firms without causing any serious detriments in the form of reduced accounting quality.

References

Aase, Ø. A. S. (2022). Size management in response to mandatory audit rules: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics and Department of Business Administration, Western Norway University of Applied Sciences.*

Allee, K. D., & Yohn, T. L. (2009). The demand for financial statements in an unregulated environment: An examination of the production and use of financial statements by privately held small businesses. *The Accounting Review*, *84*(1), 1-25.

Amir, E., Carabias, J. M., Jona, J., & Livne, G. (2016). Fixed-effects in empirical accounting research. *Available at SSRN 2634089*.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics*, *39*(1), 83-128.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, *46*(3), 467-498.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics*, *24*(1), 3-37.

Basu, S., Hwang, L. S., & Jan, C. L. (2001). Differences in conservatism between big eight and non-big eight auditors. *Available at SSRN 2428836*.

Bernard, D., Burgstahler, D., & Kaya, D. (2018). Size management by European private firms to minimize proprietary costs of disclosure. *Journal of Accounting and Economics*, *66*(1), 94-122.

Bernard, V. L., & Skinner, D. J. (1996). What motivates managers' choice of discretionary accruals? *Journal of Accounting and Economics*, *22*(1-3), 313-325.

Berzins, J., Bøhren, Ø., & Rydland, P. (2008). Corporate finance and governance in firms with limited liability: Basic characteristics. *Available at SSRN 2294269.*

Burgstahler, D. C., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review*, *81*(5), 983-1016.

Burgstahler, D., & Chuk, E. (2014). Detecting earnings management using discontinuity evidence. *Unpublished working paper, University of Washington*.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99-126.

Chaney, P. K., Jeter, D. C., & Shivakumar, L. (2004). Self-selection of auditors and audit pricing in private firms. *The Accounting Review, 79*(1), 51-72.

Che, L., Hope, O. K., & Langli, J. C. (2020). How Big-4 firms improve audit quality. *Management Science, 66*(10), 4552-4572.

Chen, F., Hope, O. K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, *86*(4), 1255-1288.

Clatworthy, M. A., & Peel, M. J. (2013). The impact of voluntary audit and governance characteristics on accounting errors in private companies. *Journal of Accounting and Public Policy*, *32*(3), 1-25.

Coppens, L., & Peek, E. (2005). An analysis of earnings management by European private firms. *Journal of International Accounting, Auditing and Taxation*, *14*(1), 1-17.

Criscuolo, C., Gal, P. N., & Menon, C. (2014). The dynamics of employment growth: New evidence from 18 countries. *CEP Discussion Paper No 1274.*

Culvenor, J., Godfrey, J. M., & Byrne, G. (1999). Modeling total accruals in an international environment: the impact of alternative measures of PPE. *Journal of International Accounting, Auditing and Taxation*, *8*(2), 289-313.

Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, 77(s-1), 35-59.

Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, *25*(2), 133-168.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, *70*(2), 193-225.

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2-3), 344-401.

Dedman, E., & Kausar, A. (2012). The impact of voluntary audit on credit ratings: evidence from UK private firms. *Accounting and Business Research*, *42*(4), 397-418.

Dedman, E., Kausar, A., & Lennox, C. (2014). The demand for audit in private firms: recent large-sample evidence from the UK. *European Accounting Review, 23*(1), 1-23.

Downing, J., & Langli, J. C. (2019). Audit exemptions and compliance with tax and accounting regulations. *Accounting and Business Research*, *49*(1), 28-67.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics, 39(2*), 295-327.

Francis, J. R. (2011). A framework for understanding and researching audit quality. *Auditing: A Journal of Practice & Theory*, *30*(2), 125-152.

Gaeremynck, A., Van Der Meulen, S., & Willekens, M. (2008). Audit-firm portfolio characteristics and client financial reporting quality. *European Accounting Review, 17*(2), 243-270.

Guasch, J. L., & Weiss, A. (1981). Self-selection in the labor market. *American Economic Review*, *71*(3), 275-284.

Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A market-based evaluation of discretionary accrual models. *Journal of Accounting Research*, *34*, 83-105.

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics, 95*(2), 347-361.

Harju, J., Matikka, T., & Rauhanen, T. (2015, March). The effect of VAT threshold on the behavior of small businesses: Evidence and implications. In *Conference Journal: CESifo Area Conferences on Public Sector Economics*.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society, 47*(1), 153-161.

Heide, J. C., & Aardal, K. Ø. (2017). Size management at regulatory thresholds by Norwegian companies (Master's thesis, BI Norwegian Business School). Available at: https://biopen.bi.no/bi-xmlui/bitstream/handle/11250/2484293/1758982.pdf?sequence=1

Hope, O. K., Thomas, W. B., & Vyas, D. (2013). Financial reporting quality of US private and public firms. *The Accounting Review*, *88*(5), 1715-1742.

Hope, O. K., Thomas, W., & Vyas, D. (2011). Financial credibility, ownership, and financing constraints in private firms. *Journal of International Business Studies*, *42*(7), 935-957.

Hope, O. K., Thomas, W. B., & Vyas, D. (2017). Stakeholder demand for accounting quality and economic usefulness of accounting in US private firms. *Journal of Accounting and Public Policy*, *36*(1), 1-13.

Hope, O. K., & Vyas, D. (2017). Private company finance and financial reporting. *Accounting and Business Research, 47*(5), 506-537.

Höglund, H., & Sundvik, D. (2016). Financial reporting quality and outsourcing of accounting tasks: Evidence from small private firms. *Advances in Accounting*, *35*, 125-134.

Hui, K. W., Klasa, S., & Yeung, P. E. (2012). Corporate suppliers and customers and accounting conservatism. *Journal of Accounting and Economics*, *53*(1-2), 115-135.

Ichev, R., Koren, J., Kosi, U., Sitar Sustar, K., & Valentincic, A. (2020). Cost of debt for private firms revisited: voluntary audits as a reflection of risk. *Working paper No. 26. TRR 266 Accounting for Transparency.*

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193-228.

Kausar, A., Shroff, N., & White, H. (2016). Real effects of the audit choice. *Journal of Accounting and Economics*, *62*(1), 157-181.

Kim, J. B., Simunic, D. A., Stein, M. T., & Yi, C. H. (2011). Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research*, *28*(2), 585-615.

Kleven, H. J., & Waseem, M. (2013). Using notches to uncover optimization frictions and structural elasticities: Theory and evidence from Pakistan. *The Quarterly Journal of Economics*, *128*(2), 669-723.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, *39*(1), 163-197.

Lang, M., Raedy, J. S., & Wilson, W. (2006). Earnings management and cross listing: Are reconciled earnings comparable to US earnings? *Journal of Accounting and Economics*, *42*(1-2), 255-283.

Langli, J. C. (2008). *Consultation Statement NOU 2008:12 Revisjonsplikten for små foretak.* Available at: https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf

Langli, J. C. (2009). Hvem er brukerne av årsregnskapene til små aksjeselskaper, og trenger de reviderte regnskaper? *Praktisk økonomi & finans, 25*(01), 104-119.

Langli, J. C. (2015). «Evaluering av unntak for revisjonsplikt i små aksjeselskaper.» *Utredning på oppdrag fra Finansdepartementet 26. mars, Handelshøyskolen BI.*

Langli, J. C. (2016). Resultatføring av inntekter og kostnader før og etter fravalg av revisor i små AS–Tyder utviklingen på økte skatteunndragelser? *Praktisk økonomi & finans*, *32*(02), 200-214.

Langli, J. C., & Che, L. (2016). Har fravalg av revisor ført til dårligere finansieringsvilkår? *Praktisk økonomi & finans, 32*(01), 111-125.

Larsen, C. K., & Løchen, J. A. The Effect of Introducing Voluntary Audit on Accounting Quality and Firm Behaviour. (Master's thesis, Norwegian School of Economics). Available at: https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/300323/Larsen_Lochen.pdf?sequence=1

Lennox, C. S., Francis, J. R., & Wang, Z. (2012). Selection models in accounting research. *The Accounting Review*, *87*(2), 589-616.

Lennox, C. S., & Pittman, J. A. (2011). Voluntary audits versus mandatory audits. *The Accounting Review*, *86*(5), 1655-1678.

Liu, S., & Skerratt, L. (2018). Earnings quality across different reporting regimes: listed, large private, medium-sized, small and micro companies in the UK. *Journal of Applied Accounting Research*, *19*(1), 2-19.

McNichols, M. F. (2000). Research design issues in earnings management studies. *Journal of Accounting and Public Policy*, *19*(4-5), 313-345.

McNichols, M. F. (2002). Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, *77*(s-1), 61-69.

McNichols, M. F., & Stubben, S. R. (2018). Research design issues in studies using discretionary accruals. *Abacus*, *54*(2), 227-246.

Melumad, N. D., & Thoman, L. (1990). On auditors and the courts in an adverse selection setting. *Journal of Accounting Research*, *28*(1), 77-120.

Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 457-506.

Minnis, M., & Shroff, N. (2017). Why regulate private firm disclosure and auditing? *Accounting and Business Research*, *47*(5), 473-502.

Owens, E. L., Wu, J. S., & Zimmerman, J. (2017). Idiosyncratic shocks to firm underlying economics and abnormal accruals. *The Accounting Review*, *92*(2), 183-219.

Peek, E., Cuijpers, R., & Buijink, W. (2010). Creditors' and shareholders' reporting demands in public versus private firms: Evidence from Europe. *Contemporary Accounting Research*, *27*(1), 49-91.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*(3), 335-370.

Rokkan, O. K., & Østrem, O. K. (2018). Does opting out from auditing decrease earnings quality and/or increase tax aggressiveness? An analysis of small companies from Norway (Master's thesis, BI Norwegian Business School). Available at: https://biopen.bi.no/bi-xmlui/bitstream/handle/11250/2577636/2037641.pdf?sequence=3

Stubben, S. R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review*, *85*(2), 695-717.

Thomas, J., & Zhang, X. J. (2000). Identifying unexpected accruals: a comparison of current approaches. *Journal of Accounting and Public Policy*, *19*(4-5), 347-376.

Vanstraelen, A., & Schelleman, C. (2017). Auditing private companies: what do we know? *Accounting and Business Research*, *47*(5), 565-584.

Appendix 1 Alternative measures of accounting quality

Dechow et al. (2010) emphasize different aspects of the problem of measuring accounting quality: the difficulty of measuring the fundamental performance, the contingency of the decision context, and the lack of convergent results among the numerous proxies developed for accounting quality. Below, I elaborate on a measure of discretionary revenue and three measures of conditional conservatism used in the robustness analysis to strengthen the validity of the derived results.

(i) *Discretionary revenue*

Stubben (2010) developed an alternative model for accounting quality based on a measure of discretionary revenue – defined as the unexplained variation, ω_{it} , in the change in accounts receivable. The analysis starts by estimating the industry-year regression:

$$\Delta AR_{it} = \beta_0 + \beta_1 \Delta Rev_{it} + \omega_{it},$$

Where,

ΔAR_{it} =Change in accounts receivable scaled by lagged total assets

ΔRev_{it} = Change in revenue scaled by lagged total assets

ω_{it} = The discretionary part of revenue – a proxy for accounting quality

Industry is defined as in the main analysis, and $|\omega_{it}| \times -1$ is used as a dependent variable – meaning that a higher value indicates less discretionary revenue and better accounting quality (Hope et al., 2013).

(ii) *Large negative results*

Inspired by Barth et al. (2008), large negative results are defined as an indicator variable taking the value 1 if net income before extraordinary items is less than -0.2 of lagged total assets, and 0 otherwise. A negative coefficient on the variable Drop signals that opt-out firms recognize large losses less frequently than other firms, which may be indicative of less timely loss recognition among opt-outs.

(iii) *Accruals-based test of loss recognition*

In addition to the noise-mitigating effect – a source of negative correlation between accruals and cash flows – Ball and Shivakumar (2005) propose that timely recognition of economic gains and losses is a source of positive correlation between accruals and cash flows. The reasoning lies in that cash flows from individual durable assets are persistent over time, and that the revision of current period cash flows is positively related to the current period revision of expected future cash flows, which is

accomplished through accruals (i.e., timely gain/loss recognition). Hence, timely gain and loss recognition attenuates the negative correlation predicted by the Dechow et al. (1998) model. Ball and Shivakumar's (2005) piecewise linear model builds on Basu (1997) and takes into account the asymmetry in the recognition of unrealized gains and losses since unrealized economic losses are more likely to be recognized on a timely basis relative to unrealized gains (i.e., conditional conservatism/timely loss recognition). Hence, the incremental effect on effect from β_3 (when the cash flow is negative) is expected to be positive in the following model, based on Ball and Shivakumar (2005), and Basu (1997):

$$\mathrm{Acc_{it}} = \beta_0 + \beta_1 \mathrm{CFO_{it}} + \beta_2 \mathrm{NegCFO_{it}} + \beta_3 \mathrm{NegCFO_{it}} \times \mathrm{CFO_{it}} + \beta_4 \mathrm{eligible_{it}} + \beta_5 drop_{\mathrm{it}} + \beta_6 \mathrm{eligible_{it}} \times \mathrm{NegCFO_{it}} + \beta_7 drop_{\mathrm{it}} \times \mathrm{NegCFO_{it}} + \beta_8 \mathrm{eligible_{it}} \times \mathrm{CFO_{it}} + \beta_9 drop_{\mathrm{it}} \times \mathrm{CFO_{it}} + \beta_{10} \mathrm{eligible_{it}} \times \mathrm{NegCFO_{it}} \times \mathrm{CFO_{it}} + \beta_{11} drop_{\mathrm{it}} \times \mathrm{NegCFO_{it}} \times \mathrm{CFO_{it}} + \theta_t + \omega_j + \gamma_i + \varepsilon_{\mathrm{it}}$$

Where,

$\mathrm{Acc_{it}}$ = Accruals: Change in non-cash current assets – change in non-interest-bearing current liabilities – depreciation – amortization, scaled by lagged total assets

$\mathrm{CFO_{it}}$ = Cash flow: Net income – change in non-cash current assets + change in non-interest-bearing current liabilities + depreciation + amortization, scaled by lagged total assets

$NegCFO_{it}$ = An indicator variable equal to 1 if cash flow is negative and 0 otherwise

$\mathrm{eligible_{it}}$ = An indicator variable equal to 1 if a firm is eligible to opt out of auditing, and 0 otherwise

$\mathrm{drop_{it}}$ = An indicator variable taking the value 1 if a firm opts out of auditing, and 0 otherwise

The coefficient on β_{11} is of particular interest in this study as it reveals whether there is significant positive or negative correlation between accruals and negative cash flow in year *t* for opt-out firms relative to other eligible firms. A positive correlation would indicate more timely loss recognition, as negative cash flows today may indicate negative changes in future cash flows (future loss), which should be accounted for today through negative accruals.

(iv) *Time series test of timeliness in loss recognition*

Due to asymmetric recognition of gain and loss (loss should in theory be more timely recognized than gains), Basu (1997) argues that negative income changes should be less persistent than positive net

income changes. The basis of this argument is that in cases where future loss is anticipated, conditional conservatism leads to recognizing all expected loss as a transitive loss in the current period. In the case of expected gains, however, this is not recognized as a transitive post in the current year's net income. Instead, future gains are recognized more cautiously over time. Hence, such expected gains lead to more persistent changes in net income relative to expected losses. Due to the asymmetry between recognition of economic gains and economic losses, firms are expected to incorporate unrealized losses earlier than unrealized gains, which in turn leads to relatively more reversals of losses in subsequent income. Hence, future losses are recognized as transitory income decreases and subsequently reverse: $\beta_1 + \beta_3 < 0$ in the following model based on Basu (1997), and Ball and Shivakumar (2005):

$$\Delta NI_{it} = \beta_0 + \beta_1 \Delta NI_{it-1} + \beta_2 Neg\Delta NI_{it-1} + \beta_3 Neg\Delta NI_{it-1} \times \Delta NI_{it-1} + \beta_4 eligible_{it} + \beta_5 drop_{it} + \beta_6 eligible_{it} \times Neg\Delta NI_{it-1} + \beta_7 drop_{it} \times Neg\Delta NI_{it-1} + \beta_8 eligible_{it} \times \Delta NI_{it-1} + \beta_9 drop_{it} \times \Delta NI_{it-1} + \beta_{10} eligible_{it} \times Neg\Delta NI_{it-1} \times \Delta NI_{i,t-1} + \beta_{11} drop_{it} \times Neg\Delta NI_{it-1} \times \Delta NI_{it-1} + \theta_t + \omega_j + \gamma_i + \varepsilon_{it}$$

Where,

ΔNI_{it} = Change in net income from fiscal year *t-1* to *t*, scaled by lagged total assets (*t-1*)

ΔNI_{it-1} = Change in net income from fiscal year *t-2* to *t-1*, scaled by lagged total assets (*t-2*)

$Neg\Delta NI_{it-1}$ = An indicator variable set equal to 1 if the prior year change ΔNI_{it-1} is negative, and 0 otherwise. The interaction term $Neg\Delta NI_{it-1} \times \Delta NI_{it-1}$ reflects firms with a negative change in Net Income.

The coefficient on β_{11} is of particular interest in this study as it reveals whether there is a significant positive or negative correlation between ΔNI_{it} and a negative ΔNI_{it-1} for opt-out firms relative to other eligible firms. A positive correlation ($\beta_{11} > 0$) would indicate more persistent loss recognition, i.e., spreading future losses over time instead of recognizing them at once. Such behavior indicates less timely loss recognition, as losses (both current and future) should be recognized during the period in which they accrue.

Under asymmetric loss recognition, which applies in Norway, firms should through accruals incorporate future expected losses in the current period's income to a greater extent than future expected gains.[27]

[27] Ball and Shivakumar (2005) argue that Basu's (1997) mean reversion of the net income model is unable to separate transitory gain or loss components in net income from random errors in accruals and certain types of earnings managements. The model can only identify the existence of transitory components, and not whether they are recognized in a timely manner (Ball and Shivakumar, 2005, p. 93). Peek et al. (2010) choose not to use the time series test of timeliness in loss recognition based on these arguments.

Appendix 2 Definitions of independent variables

Accountant$_{it}$: Indicator variable, takes the value 1 if the firm has an external accountant in the current year, and 0 otherwise.

Assets growth$_{it}$: (Total Assets$_{it}$ – Total Assets$_{it-1}$)/ Total Assets$_{it-1}$. Trimmed at the 1% level.

Big5: Indicator variable, takes the value 1 if the firm was audited by one of the Big 5 audit firms (based on number of audit clients) in year *t*, or in year *t-1* if drop equals 1, and 0 otherwise.

CFO (scaled): Profit before extraordinary items$_{it}$ – (Δ noncash current assets$_{it}$ – Δ non-interest-bearing current liabilities$_{it}$ – depreciations$_{it}$ – amortizations$_{it}$) scaled by lagged total assets. Trimmed at the 1% level.

Ch.NI (t-1) scaled: (Change in net income)$_{it-1}$ scaled by total assets$_{it-2}$. Trimmed at the 1% level.

Cum. loss ratio$_{it}$: (Number of observed years with negative profit in data)$_{it}$ /(number of observed years in data)$_{it}$

Drop$_{it}$: Indicator variable, takes the value 1 if a firm drops auditing in the current year, and 0 otherwise.

Eligible$_{it}$: Indicator variable, takes the value 1 if a firm is eligible to opt out of auditing in the current year (e.g., last year's total revenue < 5 MNOK), and 0 otherwise.

Employees$_{it-1}$: Number of employees in year t-1.

sq_Employees$_{it-1}$: Squared number of employees in year t-1.

High debt increase$_{it}$: Indicator variable, takes the value 1 if the increase in long-term interest-bearing debt scaled by lagged total assets (trimmed at the 1st and 99th percentile) in the current year is in the 90th percentile, and 0 otherwise.

Inventory$_{it}$: Inventory$_{it}$ /Total Assets$_{it-1}$. Trimmed at the 1% level.

JBT$_{it}$: Indicator variable, takes the value 1 if a firm has a total revenue of MNOK 4.8 up to, but not including MNOK 5 in year *t* in years affected by the reform (2010–2015), and 0 otherwise.

Leverage$_{it}$: Long term debt$_{it}$/total assets$_{it}$. Trimmed at the 1% level.

Ln (Age$_{it}$): Natural logarithm to (Age of firm$_{it}$).

LNEG$_{it}$: Indicator variable, takes the value 1 if Net income before Ex. items divided by lagged total assets is less than -0.2, and 0 otherwise.

Long-term interest-bearing debt$_{it}$: Long-term interest-bearing debt scaled by lagged total assets (trimmed at the 1st and 99th percentile).

Neg. CFO: Indicator variable, takes the value 1 if CFO is negative, and 0 otherwise.

Neg. Ch. NI(t-1): Indicator variable, takes the value 1 if last year's change in net income < 0, and 0 otherwise.

NegEQ$_{it}$: Indicator variable, takes the value 1 if a firm has negative equity in year *t* or *t-1* and 0 otherwise.

Revenue growth$_{it}$: (Revenue$_{it}$ – Revenue$_{it-1}$)/ Revenue$_{it-1}$. Trimmed at the 1% level.

ROA$_{it}$: Return on Assets. Profit scaled by lagged total assets. Trimmed at the 1% level.

ROE$_{it}$: Return on Equity: Profit scaled by average equity for firms with non-negative equity in year *t* and *t-1*. For observations with negative equity in year *t* or *t-1*, ROE is set to zero. Trimmed at the 1% level.

Tot. Revenue$_{it-1}$ sc.: Total revenue in year t-1 scaled by lagged total assets. Trimmed at the 1% level.

sq_Tot. Revenue$_{it-1}$ sc: Tot. Revenue$_{it-1}$ sc * Tot. Revenue$_{it-1}$ sc.

cub_Tot. Revenue$_{it-1}$ sc: Tot. Revenue$_{it-1}$ sc * Tot. Revenue$_{it-1}$ sc* Tot. Revenue$_{it-1}$ sc.

quad_Tot. Revenue$_{it-1}$ sc: Tot. Revenue$_{it-1}$ sc * Tot. Revenue$_{it-1}$ sc* Tot. Revenue$_{it-1}$ sc* Tot. Revenue$_{it-1}$ sc.

Volatility in sales: Std. dev. of sales. Trimmed at the 1% level.

Chapter 4

The Effects of Private Audit on Tax Compliance in Small Firms

by Øivind Andre Strand Aase* and Jarle Møen**

* Western Norway University of Applied Sciences and the Norwegian Centre for Taxation at NHH Norwegian School of Economics

** Norwegian Centre for Taxation at NHH Norwegian School of Economics

Abstract

In order to reduce the administrative burden on small firms, many countries have adopted a size threshold for mandatory audits. The reforms have generally been considered beneficial, but fewer third-party control mechanisms may have undesirable effects on tax compliance. Norway was the last country in the EU/EEA to abolish mandatory auditing for all private limited liability firms. Based on confidential tax audit and tax return data from the Norwegian Tax Administration, we evaluate the effect of private auditing on tax compliance. We find no consistent negative effects on the quality of tax reporting from adopting a threshold for mandatory audits. There are indications that the reform led to a reduction in the effective tax rate for firms that drop private audits, but the revenue effect is very modest and may be driven by selection. We conclude that mandatory auditing is not an efficient measure for ensuring high tax compliance in small firms.

1. Introduction

To what extent governments should impose mandatory auditing is a recurring regulatory issue. On the one hand, mandatory auditing obscures the audit decision, limiting possible signaling and screening effects among debtors and creditors.[1] The requirement also inflicts audit costs on segments of firms that receive few benefits from auditing due to, e.g., uncomplicated reporting issues. On the other hand, mandatory auditing may reduce economic crime, improve tax compliance, and aid credit decisions.

In recent decades, many countries have raised the bar for mandatory audits and left the demand for audits in small firms to the market.[2] Such reforms have been highly appreciated by the firms they have targeted. The number of audited firms in affected segments has fallen

[1] See e.g., Kausar et al. (2016).
[2] See e.g., Langli (2015).

sharply during the post-reform years, and firms have been found to bunch below the thresholds for mandatory audits, see e.g., Dedman et al. (2014), Bernard et al. (2018), and Aase (2022). Thus, from a private sector point of view, the reforms have generally been considered beneficial.

However, fewer third-party control mechanisms may have undesirable effects on tax compliance and public income. In this study, we use confidential tax audit and tax return data from the Norwegian Tax Administration to assess the potential downside effects of deregulating the audit market for small firms. Our data provide insights into the effects on tax compliance from the Tax Administration's point of view and allow us to overcome the data selection bias cautioned against by Vanstraelen and Schelleman (2017, p. 579), since all Norwegian limited liability firms, regardless of their size, file income statement information.

The audit reform we utilize as a natural experiment was implemented in 2011 and introduced size thresholds for mandatory auditing, allowing limited liability firms below these thresholds to drop audits.

Norway was the last country in the EU/EEA to abolish mandatory auditing for small private limited liability firms (Langli, 2015, p. 143). The motivation for allowing this size-dependent audit exemption was primarily to reduce small private firms' reporting costs and to increase competitiveness by aligning Norwegian regulation with international regulation.[3]

However, concerns were expressed with regard to the reform potentially lowering reporting quality and tax compliance.[4] In Norway, auditors have incentives to scrutinize their clients' tax and financial accounts. These incentives may both secure public income and reduce public spending on control mechanisms.[5]

Vanstraelen and Schelleman (2017) argue that mandatory auditing for small private firms is not necessarily an economically optimal solution. If private auditing is not efficient in preserving tax compliance, raising the threshold for mandatory auditing could increase economic market efficiency. Targeted firms are then able to make a rational decision on

[3] In a consultative statement, Langli (2008) estimates that limited liability firms under the size threshold for mandatory audits paid around 44% of the total auditing fees for limited liability firms (NOK 1.6 billion), whereas these firms made up only 4% of total revenue among limited liability firms and paid only 8% of total taxes for these firms.
[4] Prop. 51 L (2010–2011) p. 58.
[5] According to Norwegian legislation, the client's tax filings are to be signed off by the engaged auditor. By signing off, the auditor confirms compliance with accounting and tax regulations, and that the legality of the client's tax dispositions has been assessed.

whether or not to be audited. Vanstraelen and Schelleman find that there is much heterogeneity in the value derived from private auditing, and, consequently, the cost-efficiency of mandatory audits.[6] Moreover, Kausar et al. (2016) argue that the observable *choice* to obtain an audit provides incremental information to creditors – with implications for firms' financial frictions and performance.

Our data include reported VAT and tax figures for the period 2008–2015 and information on firms' late VAT filings, tax audit findings, and overdue amounts. Overdue amounts include unpaid VAT, income tax, payroll tax, and withholding tax. Based on this information, we develop measures of reporting quality that are not subject to the pitfalls of standard quality proxies used in the literature.[7]

We focus on non-grouped, VAT-registered limited liability firms with financial figures around the adopted revenue threshold for mandatory auditing. We study whether private auditing affects (1) timeliness in VAT reporting, (2) timeliness in payment of VAT and general taxes, (3) tax audit findings, and (4) firms' level of tax avoidance measured by their cash effective tax rates.

Overall, our results show few signs of lower tax compliance associated with the adoption of thresholds for mandatory audits. In cases where we see a drop in tax compliance for firms that opt out of auditing, the effects are very modest and mitigated for firms with external accountants. In our IV analysis, we also find that an estimated small drop in cash effective tax rates may be caused by selection on unobserved transitory shocks that are not attributable to the audit decision per se. We therefore conclude that mandatory auditing is not an efficient measure to ensure high tax compliance among small private firms.

Our study evaluates the effects of introducing thresholds for mandatory auditing in a market where, on the one hand, the government has perceived the benefits of mandatory audits to be particularly great and on the other, where deregulation of the audit market could potentially play a very important role for the firms affected. This study therefore focuses on the "boundary conditions" for the importance of external private auditing and adds knowledge on

[6] They find that the benefits of auditing are e.g., contingent on the firm's level of external financing, management and ownership structure, operational efficiency, and complexity (p. 578).
[7] See the critique of accounting quality proxies in e.g., Dechow et al. (2010), Owens et al. (2017), and Vanstraelen and Schelleman (2017). Our study also relates to Francis (2011) and others, who state that earnings quality metrics are not necessarily appropriate measures of audit quality.

"why audit?". This fundamental question is still far from being resolved according to Hay (2015).

The paper continues as follows. In Section 2, we briefly discuss relevant literature concerning auditing and private firms. Section 3 provides the background to the introduction of voluntary auditing in Norway. Section 4 describes the data and presents descriptive statistics. Section 5 addresses the research design and results. Finally, we evaluate the findings and conclude in Section 6.

2. Related literature

Our study relates to prior literature on the consequences of private firms' auditing choices. One strand of the literature studies the effect of audits on tax avoidance. Hanlon and Heitzman (2010, p. 137) define tax avoidance broadly as "the reduction of explicit taxes." Ojala et al. (2020) point out the scarcity of research on the effect of voluntary audit on e.g., firms' tax behavior. The literature is not conclusive, but most studies suggest a negative effect of introducing voluntary audits.

Höglund and Sundvik (2019) analyze a Finnish corporate tax rate reduction in 2014, and find suggestive evidence that auditing constrains intertemporal income shifting. Similarly, Ojala et al. (2020) find that voluntary auditing reduces the probability of the Finnish Tax Administration making tax adjustments. A major weakness in their approach, however, is that they measure tax aggressiveness as the difference between taxable net income and net income before taxes. This implies that they do not account for conforming tax avoidance, i.e., the simultaneous reduction of both accounting and tax income. In this study, we account for conforming tax avoidance by using cash effective tax rates as a measurement of tax avoidance.[8]

The Swedish National Audit Office (2017) has also found indications of increased tax evasion. The study makes use of conditional difference-in-difference analyses on Swedish data from 2007 to 2015.[9] Further, in a report solicited by FSR (Danish Auditors), Copenhagen Economics finds evidence of a 9% lower income tax revenue, and 3% lower VAT revenue in

[8] See discussion of our measure of tax avoidance in Section 4.
[9] Sweden adopted a reform in 2010 that abolished mandatory audits for firms with less than MSEK 3 in total revenue, MSEK 1.5 in total assets, and an average of not more than 3 employees. See https://www.riksrevisionen.se/download/18.26c2548c1616574394b157/1518435480894/RiR_2017_35_REVISIONSPLIKT_SUMMARY.PDF (last accessed December 11, 2022).

firms affected by a 2011 audit reform.[10] The report emphasizes potential omitted variable bias and includes robustness tests with more control variables to mitigate such concerns. However, controls for factors that, according to the literature, affect tax payments, such as leverage, profitability, growth, tax loss carry forwards, and property, plant, and equipment, are not included in these tests.[11] Our analysis contains a rich set of variables that allow us to control for potential confounding factors.

Dong et al. (2022) argue that auditors may face impaired auditor independence under a voluntary audit regime, and that this may result in increased tax avoidance. Analyzing the Swedish audit reform adopted in 2010, they find that voluntary auditees exhibit a 19% decrease in total tax burden relative to mandated auditees. They also find that voluntary auditees seem to be more tax aggressive than firms that drop audits. They measure the tax burden as tax payable relative to lagged total assets.

Langli (2016) studies whether Norwegian firms that choose not to be audited are more likely to hide sales or claim more deductible costs than comparable firms that are audited. Contrary to the reports from e.g., Sweden and Denmark, he finds no evidence of increased tax evasion. We complement his study by using a different, and more comprehensive, measure of tax avoidance. Our study also includes more years of data.

In addition to analyzing tax avoidance, we look at measures of tax compliance. The most closely related paper on compliance is by Downing and Langli (2019), which finds that firms that opt out of auditing have lower compliance with tax and accounting regulations than firms that are voluntarily audited. However, the difference is small and mitigated for firms with external accountants. Downing and Langli use a representative sample collected from on-site and off-site inspections of 2117 private Norwegian firms performed by the Norwegian Tax Administration. Our study complements Downing and Langli by looking at more fine-tuned measures of reporting quality, targeting e.g., numerical reporting errors detected in tax audits.[12] Moreover, while Downing and Langli analyze a sample that covers only two years before and one year after the reform, our data cover the full population of firms and span three years before and five years after the reform.

[10] See https://www.fsr.dk/Files/Files/Dokumenter/Politik%20og%20analyser/Analyser/2018/20181109_Samlet%20skattetab%20af%20%C3%A6ndret%20revisionspligt.pdf. (last accessed December 11, 2022).
[11] See e.g., Chen et al. (2010), and Langli and Willekens (2017).
[12] Downing and Langli (2019) use compliance score, CQS – defined as total points given in tax inspections divided by maximum obtainable points (equal to the number of questions the firm was evaluated on).

Finally, our study relates to the literature on accounting quality in private firms. Using standard proxies for accounting quality (i.e., discretionary accruals or measures of conditional conservatism), some studies find no consistent negative effect from dropping audits while others do.[13] The same inconsistency can be found in the literature focusing on more indirect measures of accounting quality, such as cost of capital.[14]

Ball and Shivakumar (2005) argue that private firms' accounting choices are more likely to be influenced by taxation than the choices made by public firms. This is because the markets for financial reporting differ substantially. This statement seems to be supported by Badertscher et al. (2019) who find that conforming tax avoidance is more common in private firms than in public firms.

Clatworthy and Peel (2013) study how voluntary audits impact accounting errors measured by private firms' subsequent filings of amendment accounts to the UK repository for accounting information. They find that audited accounts are half as likely to contain errors relative to unaudited accounts and argue that voluntary audits are valuable in the form of more accurate reporting.[15]

Several authors argue that proxies for accounting quality may suffer from low validity.[16] Vanstraelen and Schelleman (2017, p. 575) point to Hope and Vyas (2017) and emphasize that measures for financial reporting quality used in public firms may not necessarily apply to private firms.[17] They specifically call for more evidence on whether and how audit exemptions for private firms affect financial reporting quality over time, and caution against data selection bias. Our study is not subject to their critique, as all Norwegian limited liability firms file income statement information regardless of their size. Nor are our measures affected by firms' self-reporting of errors. This is contrary to e.g., Clatworthy and Peel (2013) who

[13] See e.g., Aase (2022), Langli (2015), and Liu and Skerratt (2018), who find no consistent negative effect, whereas Dedman and Kausar (2012) do.
[14] See e.g., Dedman and Kausar (2012), Kausar et. al. (2016), Kim et al. (2011), Lennox and Pittman (2011), and Minnis (2011) who find that audits reduce such costs. On the other hand, e.g., Allee and Yohn (2009), Cassar et al. (2015), and Langli and Che (2016) find no such effects.
[15] Clatworthy and Peel (2016), using a regulatory change in a statutory reporting deadline, find that private firms that are audited have timelier financial reporting. Clatworthy and Peel (2021) find in a cross-sectional analysis that unaudited firms are significantly less likely to have their annual accounts restated when financial accounts are prepared by an external accountancy firm compared to other unaudited firms.
[16] See e.g., Dechow et al. (2010), Owens et al. (2017), McNichols and Stubben (p. 227, 2018), and Vanstraelen and Schelleman (2017). Owens et al. emphasize factors that reduce accrual models' goodness of fit. McNichols and Stubben argue that "a correlation between discretionary accruals and a hypothesized factor is generally not an adequate basis for valid inferences about earnings management."
[17] See e.g., Ball and Shivakumar (2005). Cassar (2011, p. 524) also emphasizes that estimations of accruals and cash flows depend heavily on the measurement accuracy of balance sheet posts, which is lower in private firms.

perform a cross-sectional analysis and test for potential selection bias using e.g., propensity score matching. The present study, however, uses panel data and we can therefore account for unobserved firm effects in reporting quality, which may be correlated with the audit choice, and for long-term effects.

3. Background to the introduction of thresholds for mandatory audits in Norway

In 2011, Norway became the last country in the EU/EEA to abolish full statutory audits for small private limited liability firms (Langli, 2015, p. 143). The audit reform, which introduced thresholds for mandatory audits, was based on the green paper NOU 2008:12 submitted to the Norwegian Ministry of Finance. The bill was put forth in the cabinet in mid-December 2010, and the statute was sanctioned in mid-April 2011, with effect from May 1, 2011. The reform was primarily motivated by reducing firms' reporting costs, and by adjusting the national regulation to be more comparable to international regulations.[18]

Prior to the reform, all limited liability firms were subject to mandatory audits. The audit reform enabled firms with less than NOK 5 million (EUR 0.5 million) in lagged total revenue to opt out of auditing if they had less than NOK 20 million (EUR 2 million) in lagged total assets, and not more than 10 full-time employees in the prior year.[19] Compared to the revenue thresholds reported in Bernard et al. (2018), the Norwegian revenue threshold is set relatively low and significantly lower than the maximum thresholds allowed by the EU.[20]

The legal basis for dropping audits is given in Section 7-6 of the Norwegian Act relating to Private Limited Companies. The choice to opt out of auditing requires administrative action

[18] Prop. 51 L (2010-2011) p. 41.

[19] https://www.regjeringen.no/no/dokumentarkiv/stoltenberg-ii/fin/Nyheter-og-pressemeldinger/pressemeldinger/2011/unntak-for-revisjonsplikt-fra-mai-i-ar/id641006/ (last accessed December 11, 2022). Eligibility among new firms established after the reform, without prior financial statements, is assessed on the basis of the number of employees at the time of the general meeting's decision and initial total assets or share contribution. See also prop. 51 L (2010–2011) p. 41. From January 10, 2018, the thresholds were increased to NOK 6 million in operating revenue and NOK 23 million in total assets. (*Forskrift om terskelverdier for beslutning om å unnlate revisjon etter aksjeloven § 7-6).*

[20] In Bernard et al. (2018), Denmark, Finland, and Sweden had lower thresholds than Norway in 2011, whereas Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, and the United Kingdom had higher thresholds. Paragraph 43 of DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL states that small undertakings should not be covered by an audit obligation. Small undertakings are in Article 3 (2) defined as undertakings not exceeding at least two of the three following criteria: (a) balance sheet total: EUR 4 000 000; (b) net turnover: EUR 8 000 000; (c) average number of employees during the financial year: 50. Member States are allowed to raise the thresholds for the balance sheet total to EUR 6 000 000 and net turnover to EUR 12 000 000. This implies that the turnover threshold in Norway could be about twenty times as large as it is today and that the balance sheet threshold could be roughly tripled.

and cannot be put into effect until the decision is reported to the Register of Business Enterprises.[21]

4. Data and descriptive statistics

Our data contains VAT and tax reports from firms registered in the Norwegian VAT system during the period 2008–2015. Norwegian firms that have more than NOK 50 000 (EUR 5 000) in sales subject to VAT over the course of twelve months are required to register as taxable VAT entities. As a result, such firms are required to report and pay VAT on their sales and are entitled to deduct VAT on related purchases. The standard interval of VAT reporting to the Tax Administration is six times per year – similar to the payment intervals of payroll taxes and withholding taxes.

To evaluate the effect of private auditing on tax compliance, we concentrate on non-grouped limited liability firms in the area around the adopted revenue threshold, that were established prior to the reform, and that are subject to six yearly VAT reporting periods to the Tax Administration. We include firms with a minimum revenue higher than NOK 1 million, maximum revenue lower than NOK 10 million, and average revenue between NOK 3 million and NOK 7 million in the sample period, to retain the most comparable firms while tolerating some year-to-year variation among them. We focus on firms with more than NOK 1 million and less than NOK 20 million in total assets, and fewer than 10 employees during the sample period. As such, the revenue threshold is the only decisive threshold for our sample of firms. This is because the revenue threshold is the binding constraint for the vast majority of firms that are still subject to mandatory audits, and we want to compare firms of similar size. We exclude firms in NACE2 industries that are not included in the legislative amendment that introduced voluntary audits for small, limited liability firms, most importantly the finance industry, legal services, and accounting services. We also trim the data for observations with missing values on total revenue, as seen in Table 1. The final sample consists of about 42 000 observations (firm-years), and about 7 000 individual firms.

[21] According to Section 7-6 of the Limited Liability Companies Act, the decision must be made by the general meeting and requires a majority of 2/3 of the votes. The general meeting can then authorize the board to opt out of auditing. The board must then make the decision on auditing and report it to the administrative body.

Table 1 Data selection

	No. of obs.	No. of firms
Total sample size of VAT-registered firms	**1 096 102**	**212 149**
- less firms with more than six reporting periods a year	1 890	88
- less observations with no data on the last reporting period of a year (term six)	85 979	7 929
- less observations of non-limited liability firms	759	24
- less firms with MNOK 1 >=yearly tot. revenue >= MNOK 10, and MNOK 3 >= avg. Tot revenue >= MNOK 7	842 991	175 439
- less observations missing information on revenue	9 890	0
- less firms with MNOK 1 >= Yearly tot. Assets >= MNOK 20	64 697	11 666
- less firms with max tot. employees >=10	20 416	3 675
- less firms that did not exist pre-reform	7 752	3 092
- less observations of firms in industries not affected by the audit reform	3 227	470
- less observations of group firms	16 129	2 377
Final sample size:	**42 372**	**7 389**

Table 2 shows the development in the share of firms that drop audits in the post-reform period. The figures suggest a somewhat slow adaption, corresponding to findings in Dedman et al. (2014).

Table 2 Share of firms that drop audits in the post-reform period

Year	No. of Firms	Share of firms that drop audits	Firms eligible to drop audits	Share of firms that drop audits among the eligible firms
2011	5 464	21%	3 547	32%
2012	5 192	25%	3 125	42%
2013	4 945	28%	2 885	48%
2014	4 701	30%	2 755	51%
2015	4 525	31%	2 575	55%
Total	24 827	27%	14 887	45%

Table 3 shows descriptive statistics for the different segments of firms in our data. As expected, firms subject to mandatory audits are larger than those that are eligible to drop audits, and those that are voluntarily audited are slightly larger than those that opt out. With respect to using an external accountant, we see the opposite pattern. Firms above the threshold for mandatory audits use external accountants to a lesser extent than those that are eligible to drop audits, and firms that voluntarily choose to be audited use an external accountant to a lesser extent than those that opt out. Almost 90% of firms that opt out of auditing use an external accountant, compared to 71% of firms subject to mandatory audits. With respect to

the choice of auditor, firms subject to mandatory audits more often use one of the "Big 5" auditing companies than those below the threshold. Among those below the threshold, we see that firms that choose to be audited use the Big 5 more often than those that opt out. This is probably a size effect, but it is also consistent with voluntary audits being used as a signal of quality. Using a Big 5 auditor will strengthen such a signal.

Profitability (*ROE*) is quite similar across the groups, but firms above the threshold for mandatory audits have less loss-carryforwards as a share of total assets than those below the threshold. Interestingly, this pattern is reversed for firms below the threshold. Firms that choose to be audited have more loss-carryforwards than those that opt out. Corresponding with the findings in Dedman et al. (2014), we can also see that firms that are voluntarily audited seem to be more risky along other dimensions since a higher proportion of these firms have negative equity, more cumulative years of loss, and higher volatility in sales.

Table 3 Post-reform descriptive statistics

	(1)	(2)	(3)	(4)
	All firms		Firms eligible to drop audits	
	Firms with mandatory audits	Firms eligible to drop audits	Firms with voluntary audits	Firms that drop audits
Employees	4.290	3.235	3.243	3.226
	(2.176)	(1.966)	(2.028)	(1.887)
Total Revenue	5 974 405	4 041 669	4 254 743	3 777 026
	(1 337 570)	(1 084 496)	(1 142 045)	(943 775)
Total Assets	3 778 859	3 421 672	3 649 267	3 138 995
	(2 566 787)	(2 761 160)	(2 958 342)	(2 465 789)
Ln (Tot. Assets)	14.978	14.835	14.890	14.768
	(0.552)	(0.601)	(0.618)	(0.572)
Accountant	0.710	0.760	0.653	0.892
	(0.454)	(0.427)	(0.476)	(0.311)
Big5	0.316	0.192	0.284	0.078
	(0.465)	(0.394)	(0.451)	(0.269)
ROE	0.237	0.239	0.249	0.227
	(0.504)	(0.490)	(0.502)	(0.474)
Negative Equity	0.089	0.088	0.097	0.076
	(0.284)	(0.283)	(0.295)	(0.266)
ROA	0.080	0.090	0.090	0.092
	(0.142)	(0.148)	(0.151)	(0.145)
Leverage	0.145	0.172	0.177	0.165
	(0.210)	(0.244)	(0.248)	(0.239)
Revenue Growth	-0.021	0.098	0.129	0.059
	(0.365)	(0.363)	(0.381)	(0.336)
Assets Growth	0.027	0.061	0.067	0.053
	(0.213)	(0.224)	(0.235)	(0.208)
Inventory	0.197	0.176	0.166	0.188
	(0.253)	(0.257)	(0.251)	(0.264)
Cum. Loss Ratio	0.223	0.233	0.244	0.220
	(0.263)	(0.260)	(0.266)	(0.250)
Age	16.768	16.565	16.614	16.504
	(11.018)	(11.067)	(11.317)	(10.750)
St. Dev. in Sales	1 095 026	860 694	926 209	778 866
	(605 728)	(554 904)	(581 104)	(508 656)
Loss Carry Forward	0.059	0.082	0.091	0.072
	(0.164)	(0.192)	(0.202)	(0.176)
Property, Plant, and Equipment	0.177	0.205	0.208	0.200
	(0.221)	(0.250)	(0.256)	(0.241)
Short-term Financial Investments	0.005	0.007	0.007	0.007
	(0.031)	(0.038)	(0.037)	(0.038)
Max no. of obs.	9 940	14 887	8 247	6 640

Table 3 displays means with standard deviations in parentheses for different firm characteristics in the post-reform period. Means and standard deviations are calculated based on the number of observations in the different subgroups in the sample. Some observations have missing variables. See Appendix 1 for definitions of the variables. Scaled variables such as ROE, ROA, Leverage, Revenue growth, Asset growth, Inventory, Loss Carry Forward, PPE, and Short-term Financial Investments are trimmed at the 1st and 99th percentile. Big5 is an indicator variable taking the value 1 if the auditor in year *t* is Big 5, (or auditor in year *t-1* is Big5 if a firm has opted out of auditing) and 0 otherwise. *** p<0.01, ** p<0.05, * p<0.1.

Table 4 Post-reform characteristics of tax-audited and non-tax-audited firms

	Post-reform		Tax-audited firms post-reform	
	(1)	(2)	(3)	(4)
	Non-tax-audited firms	Tax-audited firms	Non-erroneous reporting	Erroneous reporting
Eligible to drop audit	0.600	0.594	0.615	0.537
	(0.490)	(0.491)	(0.487)	(0.499)
Drop audit	0.270	0.220	0.230	0.194
	(0.444)	(0.415)	(0.421)	(0.396)
Employees	3.684	3.087	3.085	3.091
	(2.112)	(2.137)	(2.109)	(2.214)
Total Revenue	4 816 476	4 794 326	4 785 086	4 818 487
	(1 516 352)	(1 650 206)	(1 624 527)	(1 718 008)
Total Assets	3 541 878	4 048 671	4 046 328	4 054 798
	(2 663 226)	(3 181 615)	(3 142 945)	(3 285 771)
Ln (Tot. assets))	14.888	14.990	14.993	14.980
	(0.583)	(0.636)	(0.632)	(0.650)
Accountant	0.744	0.661	0.688	0.589
	(0.437)	(0.474)	(0.464)	(0.493)
Big5	0.242	0.240	0.250	0.214
	(0.428)	(0.427)	(0.433)	(0.411)
ROE	0.241	0.180	0.183	0.173
	(0.497)	(0.468)	(0.428)	(0.568)
NegEQ	0.085	0.141	0.120	0.197
	(0.280)	(0.349)	(0.325)	(0.399)
ROA	0.088	0.061	0.067	0.042
	(0.145)	(0.155)	(0.151)	(0.166)
Leverage	0.161	0.173	0.171	0.180
	(0.231)	(0.243)	(0.243)	(0.245)
Revenue growth	0.052	0.053	0.061	0.032
	(0.366)	(0.420)	(0.401)	(0.471)
Asset growth	0.047	0.068	0.068	0.067
	(0.219)	(0.256)	(0.258)	(0.250)
Inventory	0.185	0.171	0.169	0.176
	(0.256)	(0.245)	(0.242)	(0.252)
Cum. Loss Ratio	0.226	0.287	0.265	0.342
	(0.259)	(0.294)	(0.283)	(0.314)
Age	16.702	15.471	15.684	14.913
	(11.036)	(11.226)	(11.574)	(10.257)
Std. Dev. in Sales	945 992	1 126 535	1 101 141	1 194 649
	(582 084)	(660 933)	(642 194)	(705 369)
Loss Carry Forward	0.072	0.091	0.090	0.094
	(0.180)	(0.206)	(0.209)	(0.195)
PPE	0.193	0.211	0.213	0.208
	(0.239)	(0.246)	(0.246)	(0.245)
Short-term fin. inv.	0.006	0.008	0.009	0.007
	(0.035)	(0.044)	(0.048)	(0.033)
Max no. observations	23 710	1 117	808	309

Table 4 displays means with standard deviations in parentheses for different firm characteristics. Means and standard deviations are calculated based on the number of observations in the different subgroups in the sample. See Appendix 1 for definitions of the variables. Some observations have missing variables. Scaled variables such as ROA, ROE, Leverage, Revenue Growth, Asset Growth, Inventory, Loss Carry Forward, PPE, and Short-term Financial Investments are trimmed at the 1st and 99th percentile. Big5 is an indicator variable taking the value 1 if the auditor in year t is Big 5, or auditor in year t-1 is Big5 if a firm has opted out of auditing, and 0 otherwise.

Table 5 Comparing post-reform tax compliance across subgroups in data

	All firms			Firms eligible to drop audit			Firms that drop audit		
	Firms with mandatory audit	Firms eligible to drop audit	Diff.	Firms with voluntary audit	Firms that drop audit	Diff.	Firms w/ accountant	Firms w/o accountant	Diff.
No. of missed VAT reporting deadlines	0.233	0.218	0.015	0.239	0.192	0.046**	0.181	0.288	-0.107**
	(0.738)	(0.716)		(0.751)	(0.668)		(0.633)	(0.897)	
Overdue VAT and tax payment.	0.022	0.022	0.001	0.024	0.019	0.005**	0.019	0.021	-0.002
	(0.092)	(0.091)		(0.096)	(0.085)		(0.085)	(0.086)	
Errors detected in tax-audits	0.315	0.250	0.065**	0.254	0.244	0.010	0.235	0.280	-0.045
	(0.465)	(0.434)		(0.436)	(0.430)		(0.425)	(0.454)	
Restatements in tax-audits	0.246	0.202	0.044*	0.204	0.198	0.006	0.195	0.211	-0.016
	(0.432)	(0.394)		(0.392)	(0.396)		(0.398)	(0.393)	
Short-term cash effective tax rate	0.208	0.190	0.018***	0.188	0.192	-0.004	0.196	0.156	0.040***
	(0.209)	(0.203)		(0.207)	(0.198)		(0.199)	(0.179)	
Long-term cash effective tax rate	0.263	0.246	0.017***	0.244	0.248	-0.004	0.252	0.218	0.034*
	(0.194)	(0.191)		(0.195)	(0.187)		(0.186)	(0.197)	
Max observations	9 940	14 887		8 247	6 640		5 922	718	
Max observations of tax-audits	454	663		417	246		196	50	

Table 5 displays means with standard deviations in parentheses for different measures of tax compliance in different sub-groups of our data. The scaled variables *Overdue VAT and tax payments.* and *Restatements in tax-audits* are trimmed at the 1st and 99th percentile. *Short-term cash effective tax rate* is a one-year tax avoidance measure including observations with positive cash flows from operations. *Long-term cash effective tax rate* is a measure where we sum tax payable over the pre- and post-reform periods and divide these amounts by sum of cash flows from operations in the same periods, respectively. We have consequentially maximum two firm-observations of this latter measure of tax avoidance. Only observations with positive sum of cash-flows from operations are included. Both tax avoidance measures are truncated to be in the area [0, 1]. Some observations have missing variables. T-test are clustered at firm level. *** p<0.01, ** p<0.05, * p<0.1.

Columns (1) and (2) in Table 4 summarize the characteristics of non-tax-audited and tax-audited firms in the post-reform period. Somewhat surprisingly, we see that there are fewer firms that drop private auditing among the firms that were tax audited than among those that were not tax audited. This suggests that the Tax Administration is not particularly suspicious of firms that drop private auditing. Tax-audited firms have on average fewer employees, but more assets, and notably, they have lower profitability and more losses than those that are not tax audited. There are also fewer firms that use an external accountant among those that are tax audited, and audited firms are younger.

In Columns (3) and (4) in Table 4, we compare tax-audited firms that received a clean report from the Tax Administration with those that had errors in their reporting. We see that private auditing is not associated with receiving a clean report, as the opt-out rate is higher in this segment compared to the segment found to have errors in their reporting. This is surprising, but consistent with the finding that the Tax Administration does not specifically target firms that have opted out of auditing. Using an external accountant, on the other hand, seems to be associated with receiving a clean report, while low profitability and loss-making are found to be risk factors.

In Table 5, we compare tax compliance for the different subgroups in more detail on the basis of two sample T-tests. We see that more errors are detected in the tax audits of firms subject to mandatory auditing and they have significantly higher scaled restatements relative to firms that are eligible to drop audits.[22] This may be driven by size and a larger volume of transactions in firms above the threshold for mandatory audits, and in particular, by the fact that these firms use external accountants more seldomly than smaller firms.

With respect to tax avoidance, we find that firms subject to mandatory audits have lower levels of tax avoidance than firms that are eligible to drop audits. Similar to Gupta and Newberry (1997), we measure tax avoidance as the short-term cash effective tax rate, i.e., income tax payable relative to cash flow from operations.[23] In line with Chen et al. (2010), we truncate the short-term cash effective tax rates to be in the interval [0, 1]. Using cash flow rather than pretax earnings as a denominator in the measure of tax avoidance eliminates the

[22] Tax audits are performed on one or multiple reporting periods during a year. However, only 21 observations have errors detected over multiple reporting periods (ranging from 2 to 6). We therefore focus on whether or not errors are detected during a year (0/1). Scaled restatements are defined as the absolute value of the size of restatement, scaled by final VAT amount in tax audited periods, trimmed at the 1st and 99th percentile.
[23] Gupta and Newberry's numerator is defined as total income taxes minus deferred taxes, whereas we use the income tax payable amount.

concern of not picking up on accrual-based tax avoidance, where pretax earnings are lower due to negative accruals.[24]

When comparing firms that voluntarily choose private auditing to those that opt out of auditing, we see that voluntary auditees are, on average, less timely in their VAT reporting and VAT payment compared to firms that opt out.[25] There are no significant differences between the groups when it comes to errors detected in tax audits, nor with respect to tax compliance measured by the cash effective tax rates.

Finally, looking at firms that drop audits, we see that firms using an external accountant tend to be more tax compliant than those that do not.

Seen together, the findings in Tables 3–5 suggest that external accountants may have a higher impact on tax compliance than auditors. One possible explanation could be the lack of recurring contact between auditors and their clients throughout a current fiscal year. In the small private firm audit market, the main part of the audit takes place after the fiscal year has ended.

5. Research design and results

We continue our analysis using a regression framework in order to account for confounding factors and potential selection issues. We use the following model throughout:

$$Tax\ compliance_{it} = \beta_0 + \beta_1 Eligible_{it} + \beta_2 Drop_{it} + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it} \quad (1)$$

Where:

i = firm, t = time (year)

[24] As Hanlon and Heitzman (2010) point out, private firms, facing lower financial accounting constraints than public firms, can avoid taxes by reporting lower accounting income – referred to as conforming tax avoidance. Badertscher et al. (2019) also find that private firms have more conforming tax avoidance than public firms. However, both Hanlon and Heitzman (2010) and Badertscher et al. (2019) argue that using cash flows in the denominator does not take into account tax avoidance that also affects cash flow negatively. This is seemingly a more costly form of tax avoidance as it affects firms' liquidity – not just accounting profit – and it is questionable to what extent private firms are willing to reduce cash flow for the benefit of tax savings. Over time, we do not expect such a strategy to be attractive for small private firms. Inspired by Dyreng et al. (2008), we therefore also study more long-term cash effective tax rates before and after the audit reform. Due to the construction of, e.g., operating cash flow, we only have data from 2009 and 2010 to calculate average cash effective tax rates before the audit reform. After the reform, we use the years 2011–2015.

[25] We measure timeliness in VAT reporting as the number of missed reporting deadlines during a year. Timeliness in payment of VAT and general taxes is measured as overdue payments of VAT and general taxes (including payroll tax, withholding taxes and income tax), scaled by the final total positive yearly VAT amount, as we do not have data on the final reported yearly amount of general taxes. We trim scaled overdue VAT and general tax payments at the 1st and 99th percentile.

$Tax\ compliance_{it}$= Measures for either missed VAT reporting deadlines, overdue payments to the Tax Administration, findings in tax audits, or tax avoidance.

$Eligible_{it}$ = An indicator variable taking the value 1 if a firm is eligible to drop auditing, and 0 otherwise

$Drop_{it}$ = An indicator variable taking the value 1 if an eligible firm drops auditing, and 0 otherwise

X_{it} = Control variables

θ_t = Year fixed effects

γ_i = Firm or industry fixed effects

Our main treatment variable is *Drop*, which takes the value of 1 if a firm drops auditing, and 0 otherwise. As the sample consists of firms that were established before the 2011 reform, all firms should have at least one year where they were subject to mandatory auditing.

To mitigate potential omitted variable bias caused by unobserved time-invariant heterogeneity among firms, we use firm fixed effects modeling.[26] However, firm fixed effects do not account for unobserved *temporary* shocks affecting, for instance, internal controls. Such temporary shocks may affect both tax compliance and the decision to drop auditing, resulting in selection bias in firm fixed effects estimates. As robustness tests for possible selection bias, we therefore developed two instruments for the variable *Drop* to be used in two-stage least squares regressions (2SLS) and as exclusion restrictions in first-stage probit regressions on the binary choice of whether or not to drop auditing. The residual from this first-stage probit regression is included in the second-stage regression (two-stage residual inclusion estimation – 2SRI).[27]

Our instruments are as follows:

Instrument 1: *Always_eligible*. An indicator variable taking the value 1 if a firm is always eligible to drop auditing in the pre-reform period (counterfactually), and 0 otherwise.

[26] Lennox et al. (2012) suggest using a fixed effects design to control for unobservable factors that are correlated with endogenous regressors. Amir et al. (2016) recommend a fixed effect design to control for unobserved factors and endogenous regressors when working with panel data. The firm fixed effect model controls for idiosyncratic firm-specific characteristics that are time invariant.

[27] As most of our models are non-linear, with a binary endogenous regressor, two-stage least square may result in inconsistent estimates of parameters, and we therefore supplement with the two-stage residual inclusion model, see Terza et al. (2008), Terza (2018), and Wooldridge (2014).

Instrument 2: *Sometimes_eligible*. An indicator variable taking the value 1 if a firm is eligible to drop auditing for some years of the pre-reform period (counterfactually), and 0 otherwise.

These instruments are correlated with the choice of dropping auditing since smaller firms have a higher probability of opting out. Post-reform tax compliance, however, should not be correlated with pre-reform eligibility (whether a firm has more or less than NOK 5 million in total revenue in the pre-reform period).

Whether a firm is below the size threshold for dropping auditing (*Eligible*), and whether a firm has an external accountant (*Accountant*) are particularly important control variables. The latter is interacted with *Drop* in order to explore whether the effect of dropping audits differs systematically between firms with and without an external accountant.

Our choice of control variables is based on previous literature. To account for size effects, we include total revenue in NOK million, total assets in NOK million, employees, and total revenue in year *t* scaled by lagged total assets. To account for economic performance and financial risk, we include return on equity (*ROE*), negative equity (*NegEQ*), a ratio of cumulative years with negative profit (*Cum. Loss Ratio*), and variables related to loss carry forwards. We include leverage to account for financial exposure, and revenue growth and assets growth to account for growth. Finally, we also include ln(*age*), inventory scaled by lagged total assets, and in the tax avoidance regressions, property, plant, and equipment (*PPE*), and short-term and long-term financial investments.[28]

5.1 Missed VAT reporting deadlines

In Table 6, we explore the effect of dropping audits on the number of missed VAT reporting deadlines. Missed VAT reporting deadlines is a count variable, ranging from 0 to 6 per firm on a yearly basis. Our main focus is therefore on the Poisson regressions presented in Columns (3), (4), (7) and (8).

Our findings show consistently that dropping private auditing does not lead to a significant increase in missed VAT reporting deadlines. On the contrary, the odd-numbered columns show that dropping audits is associated with a lower number of missed deadlines. In the even-numbered columns, we see that this is driven by firms that use an external accountant. Opting

[28] See e.g., Hope et al. (2013), Langli (2015), and Langli and Willekens (2017). Appendix 1 gives more detailed definitions of the variables.

out of auditing in itself has no significant effects on VAT reporting when this is properly controlled for.[29]

Since more than 85% of the observations have zero missed reporting deadlines, we use zero inflated Poisson regressions and negative binomial regressions in the robustness analysis. These results are not tabulated, but they fully support the results presented in Table 6.

In Appendix 2, we also include regressions with related compliance measures. In Table A2, we look at the number of incidents where a penalty has been imposed for late filing of statements, and in Table A3, we look at the number of reassessments made by the Tax Administration. These results also support the finding that dropping audits has no significant negative effects on tax reporting.[30]

Among the control variables, we see that economic performance stands out as an important predictor of delayed VAT reporting. The coefficients on the variable *NegEQ* and cumulative loss ratio are positive and significant in all model specifications.

[29] In the two-stage residual model, we include residuals from the first-stage probit regression, where *Drop* is the dependent variable, in the second stage Poisson regression. We use bootstrapping to calculate standard errors, see e.g., Terza (2018) and Dowd et al. (2014). Table A1 in Appendix 2 addresses three different specifications of the first-stage probit model used in different specifications of the second-stage modeling.

[30] According to Section 12-2 of the Norwegian Tax Administration Act, the Tax Administration may estimate firms' tax figures based on an assessment both in cases of missing reports and when reported figures do not provide a sound basis for determining the tax.

Table 6 Number of missed VAT-reporting deadlines

VARIABLES	(1) OLS	(2) OLS	(3) Poisson	(4) Poisson	(5) FE	(6) FE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Poisson 2SRI	(12) Poisson 2SRI
Eligible	0.039***	0.033	0.194***	0.163	0.031**	0.023	0.153**	0.119	-0.229	0.148	0.165**	0.098
	(0.015)	(0.022)	(0.073)	(0.103)	(0.013)	(0.021)	(0.068)	(0.099)	(0.307)	(0.317)	(0.076)	(0.109)
Drop	-0.046***	0.000	-0.246***	-0.004	-0.047***	-0.015	-0.250***	-0.116	0.678	-0.441	-0.466**	-0.231
	(0.016)	(0.042)	(0.084)	(0.181)	(0.015)	(0.041)	(0.076)	(0.177)	(0.835)	(1.740)	(0.217)	(0.324)
Accountant	-0.019	-0.018	-0.082	-0.075	-0.009	-0.009	-0.047	-0.046	-0.098	-0.012	-0.048	-0.068
	(0.013)	(0.014)	(0.060)	(0.071)	(0.022)	(0.023)	(0.090)	(0.098)	(0.092)	(0.016)	(0.069)	(0.077)
Accountant x Elig.		0.009		0.048		0.011		0.051		-0.404		0.099
		(0.022)		(0.104)		(0.023)		(0.104)		(0.431)		(0.117)
Accountant x Drop		-0.054		-0.292		-0.039		-0.166		1.027		-0.282
		(0.043)		(0.187)		(0.043)		(0.188)		(1.777)		(0.199)
Big5	-0.033***	-0.033***	-0.167***	-0.168***	-0.011	-0.011	-0.040	-0.039	0.047	0.017	-0.170***	-0.169***
	(0.012)	(0.012)	(0.064)	(0.064)	(0.015)	(0.015)	(0.077)	(0.077)	(0.093)	(0.065)	(0.059)	(0.059)
Employees	-0.037	-0.037	-0.105	-0.107	-0.022	-0.022	-0.111	-0.118	-0.075	-0.056	-0.092	-0.095
	(0.038)	(0.038)	(0.153)	(0.153)	(0.049)	(0.049)	(0.205)	(0.206)	(0.056)	(0.047)	(0.147)	(0.149)
sq_Employees	0.007	0.007	0.004	0.005	0.009	0.009	0.052	0.054	0.021	0.014	0.014	0.015
	(0.017)	(0.016)	(0.071)	(0.071)	(0.020)	(0.020)	(0.088)	(0.089)	(0.023)	(0.020)	(0.077)	(0.077)
cub_Employees	-0.000	-0.000	0.002	0.002	-0.001	-0.001	-0.008	-0.008	-0.003	-0.001	-0.000	-0.000
	(0.003)	(0.003)	(0.012)	(0.012)	(0.003)	(0.003)	(0.015)	(0.015)	(0.004)	(0.003)	(0.014)	(0.014)
quad_Employees	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
RevenueMNOK	0.189	0.190	0.856	0.859	-0.246	-0.247	-0.968	-0.969	0.061	0.079	1.070	1.075
	(0.187)	(0.187)	(0.827)	(0.828)	(0.177)	(0.177)	(0.895)	(0.894)	(0.255)	(0.231)	(0.930)	(0.939)
sq_RevenueMNOK	-0.045	-0.045	-0.210	-0.211	0.047	0.047	0.180	0.181	0.034	0.018	-0.241	-0.243
	(0.050)	(0.050)	(0.223)	(0.224)	(0.048)	(0.048)	(0.249)	(0.249)	(0.107)	(0.086)	(0.257)	(0.261)
cub_RevenueMNOK	0.006	0.006	0.029	0.029	-0.004	-0.004	-0.015	-0.015	-0.006	-0.003	0.030	0.030
	(0.006)	(0.006)	(0.028)	(0.028)	(0.006)	(0.006)	(0.031)	(0.031)	(0.015)	(0.012)	(0.032)	(0.032)
quad_RevenueMNOK	-0.000	-0.000	-0.001	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AssetsMNOK	-0.133	-0.132	-0.584	-0.579	0.072	0.073	0.215	0.222	-0.236	-0.229*	-0.896**	-0.889**
	(0.086)	(0.086)	(0.413)	(0.412)	(0.085)	(0.085)	(0.410)	(0.408)	(0.149)	(0.126)	(0.424)	(0.426)
sq_AssetsMNOK	0.015	0.014	0.063	0.062	-0.003	-0.003	0.003	0.002	0.026	0.026	0.101*	0.101*
	(0.012)	(0.012)	(0.060)	(0.059)	(0.012)	(0.012)	(0.062)	(0.062)	(0.019)	(0.016)	(0.052)	(0.052)
cub_AssetsMNOK	-0.001	-0.001	-0.003	-0.003	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.005	-0.005
	(0.001)	(0.001)	(0.004)	(0.004)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.003)	(0.003)
quad_AssetsMNOK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tot. Rev._scaled	-0.291	-0.289	-1.204	-1.204	0.453	0.454	1.907	1.921	-0.813	-0.652	-2.402	-2.406
	(0.296)	(0.296)	(1.390)	(1.388)	(0.278)	(0.278)	(1.326)	(1.324)	(0.681)	(0.516)	(1.559)	(1.567)
sq_Tot. Rev._scaled	0.084	0.084	0.327	0.331	-0.198	-0.198	-0.853	-0.857	0.340	0.247	0.952	0.959
	(0.143)	(0.143)	(0.678)	(0.677)	(0.135)	(0.135)	(0.648)	(0.648)	(0.335)	(0.253)	(0.718)	(0.721)
cub_Tot. Rev._ scaled	-0.017	-0.016	-0.061	-0.063	0.043	0.044	0.187	0.188	-0.077	-0.054	-0.225	-0.227
	(0.035)	(0.035)	(0.166)	(0.166)	(0.033)	(0.033)	(0.161)	(0.160)	(0.080)	(0.061)	(0.170)	(0.171)

quad_Tot. Rev._ scaled	0.001	0.001	0.005	0.005	-0.003	-0.003	-0.015	-0.015	0.007	0.005	0.021	0.021
	(0.003)	(0.003)	(0.015)	(0.015)	(0.003)	(0.003)	(0.015)	(0.015)	(0.007)	(0.005)	(0.015)	(0.015)
ROE	-0.023**	-0.023**	-0.147**	-0.147**	0.009	0.009	0.034	0.034	-0.027**	-0.024**	-0.121*	-0.121*
	(0.010)	(0.010)	(0.061)	(0.061)	(0.012)	(0.012)	(0.050)	(0.050)	(0.012)	(0.011)	(0.069)	(0.069)
NegEQ	0.259***	0.259***	0.733***	0.731***	0.085**	0.085**	0.201**	0.196**	0.250***	0.258***	0.727***	0.723***
	(0.040)	(0.040)	(0.104)	(0.104)	(0.035)	(0.035)	(0.094)	(0.095)	(0.042)	(0.042)	(0.092)	(0.091)
Leverage	-0.040	-0.040	-0.155	-0.152	-0.005	-0.005	-0.021	-0.019	-0.029	-0.035	-0.100	-0.095
	(0.029)	(0.029)	(0.120)	(0.120)	(0.043)	(0.043)	(0.181)	(0.181)	(0.034)	(0.035)	(0.105)	(0.105)
Revenue growth	-0.025*	-0.025*	-0.126**	-0.125*	-0.035**	-0.035**	-0.136**	-0.136**	-0.022	-0.025	-0.077	-0.077
	(0.015)	(0.015)	(0.064)	(0.064)	(0.015)	(0.015)	(0.061)	(0.061)	(0.015)	(0.015)	(0.123)	(0.122)
Assets growth	0.247**	0.245**	1.100**	1.093**	-0.088	-0.088	-0.286	-0.300	0.353**	0.346**	1.446***	1.437***
	(0.098)	(0.098)	(0.440)	(0.439)	(0.094)	(0.093)	(0.427)	(0.426)	(0.159)	(0.135)	(0.543)	(0.544)
Inventory	0.005	0.005	0.066	0.061	-0.059	-0.059	-0.291	-0.290	0.005	0.022	0.065	0.058
	(0.032)	(0.032)	(0.150)	(0.150)	(0.056)	(0.056)	(0.255)	(0.254)	(0.034)	(0.045)	(0.146)	(0.146)
Cum. Loss	0.175***	0.175***	0.749***	0.748***	0.131***	0.131***	0.550***	0.550***	0.182***	0.184***	0.789***	0.786***
	(0.031)	(0.031)	(0.123)	(0.123)	(0.047)	(0.047)	(0.200)	(0.200)	(0.033)	(0.031)	(0.123)	(0.125)
Ln(Age)	-0.031***	-0.031***	-0.148***	-0.148***	-0.019	-0.019	-0.097	-0.095	-0.029***	-0.027***	-0.178***	-0.179***
	(0.009)	(0.009)	(0.044)	(0.044)	(0.033)	(0.033)	(0.170)	(0.170)	(0.010)	(0.010)	(0.042)	(0.041)
Loss Carry Forward	-0.035	-0.035	-0.082	-0.082	0.002	0.001	0.021	0.029	0.011	-0.006	-0.094	-0.090
	(0.053)	(0.053)	(0.174)	(0.174)	(0.063)	(0.063)	(0.232)	(0.233)	(0.072)	(0.061)	(0.196)	(0.195)
ΔTaxlcf	-0.087	-0.086	-0.428	-0.422	0.015	0.015	-0.016	-0.009	-0.033	-0.075	-0.690**	-0.679**
	(0.089)	(0.089)	(0.296)	(0.296)	(0.079)	(0.079)	(0.267)	(0.268)	(0.109)	(0.108)	(0.280)	(0.278)
First stage residual											0.247	0.239
											(0.235)	(0.269)
Constant	0.544**	0.539**	-0.204	-0.220	0.143	0.143					0.846	0.843
	(0.254)	(0.254)	(1.135)	(1.137)	(0.260)	(0.260)					(1.267)	(1.270)
Number of firmid					6,232	6,232	1,935	1,935				
Observations	30,943	30,943	30,943	30,943	30,943	30,943	10,735	10,735	30,943	30,943	21,448	21,448
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.031	0.031	0.050	0.050	0.003	0.003			-0.096	-0.061	0.049	0.049
ML	-29997	-29996	-17184	-17180	-18374	-18373	-6156	-6156	-31741	-31237	-11690	-11687

The dependent variable takes values from 0 up to 6, reflecting the number of delayed reports during a year. Scaled variables such as *Tot.Rev_sc*., *ROE*, *Leverage*, *Revenue growth*, *Assets growth*, *Inventory*, *Loss Carry Forward,* and Δ*Taxlcf* are trimmed at the 1st and 99th percentile. *Big5* is an indicator variable taking the value one if auditor in year *t* is Big 5, or auditor in year *t-1* is Big5 if a firm has dropped audit, and zero otherwise. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.2 Overdue payment of VAT and general taxes

In Table 7, we explore the effect of dropping audits on overdue amounts to the Tax Administration. The overdue amounts include both VAT and general taxes, including payroll taxes, withholding taxes, and income taxes. The total overdue amount is scaled by the final yearly positive reported VAT, trimmed at the 1st and 99th percentile.[31] This measure ranges from 0 to 0.89, with almost 68% of our observations being zero. We therefore consider the Tobit regressions presented in Columns (3) and (4) to be a better cross-sectional specification than OLS, which is nonetheless presented as a baseline in Columns (1) and (2). When controlling for firm fixed effects, we consider the Poisson fixed effects regressions in Columns (7) and (8) to be our main specification.[32] Dropping audits is not found to significantly increase overdue VAT or general tax payments to the Tax Administration in any specification.

Among the untabulated control variables, positive significant coefficients on the variables *Neg. EQ, Cum. Loss Ratio,* and change in loss carry forwards are found in all model specifications*,* indicating that poor performance over time will affect liquidity and the ability to pay debts. Leverage is found to significantly decrease payment of overdue VAT and general taxes to the Tax Administration, indicating some degree of substitutability between debt to the Tax Administration and other creditors. Growth in revenue is also found to significantly decrease the amount of overdue VAT and general tax payments.

[31] We scale by the final reported positive VAT amount as we do not have data on final reported general taxes. VAT represents about 65% of total overdue tax payments.

[32] Tobit fixed effects regression is not applicable. Wooldridge (1999, p. 78) offers "a direct proof that the multinomial QCMLE, also known as the fixed effects Poisson (FEP) estimator, consistently estimates the conditional mean parameters" in this case, and "shows that the fixed effects Poisson estimator is consistent very generally." On page 82, he states that "(t)he response y_{it} could be a binary variable, a proportion, a nonnegative continuously distributed random variable, or could have discrete and continuous characteristics: its distribution is not restricted, nor is its temporal dependence." Wooldridge (1999, p. 94-95) proves that the "fixed effects Poisson estimator is fully robust in the sense that only the structural conditional mean assumption, (…), is needed for consistency and asymptotic normality."

Table 7 Overdue payments of VAT and general taxes scaled by end of year total VAT

VARIABLES	(1) OLS	(2) OLS	(3) Tobit	(4) Tobit	(5) Firm FE	(6) Firm FE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Tobit 2SRI	(12) Tobit 2SRI
Eligible	0.002	-0.001	0.009*	0.003	0.000	-0.000	0.015	-0.052	-0.013	0.013	0.005	-0.000
	(0.002)	(0.003)	(0.005)	(0.007)	(0.002)	(0.002)	(0.083)	(0.136)	(0.015)	(0.015)	(0.005)	(0.006)
Drop	-0.005**	-0.005	-0.013**	-0.015	0.002	0.004	0.125	0.182	0.036	-0.069	0.005	-0.002
	(0.002)	(0.004)	(0.006)	(0.014)	(0.002)	(0.004)	(0.105)	(0.253)	(0.039)	(0.085)	(0.016)	(0.018)
Accountant	0.003**	0.002	0.003	-0.000	0.001	0.001	0.040	0.020	-0.001	0.002	0.001	-0.002
	(0.002)	(0.002)	(0.005)	(0.005)	(0.002)	(0.003)	(0.125)	(0.133)	(0.004)	(0.002)	(0.004)	(0.006)
Accountant x Eligible		0.005*		0.008		0.001		0.091		-0.030*		0.007
		(0.003)		(0.008)		(0.003)		(0.137)		(0.016)		(0.007)
Accountant x Drop		-0.000		0.002		-0.003		-0.076		0.108		0.001
		(0.004)		(0.015)		(0.004)		(0.267)		(0.072)		(0.010)
Observations	29,030	29,030	29,030	29,030	29,030	29,030	16,002	16,002	29,030	29,030	20,156	20,156
Number of firmid					5,989	5,989	2,976	2,976				
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO
Adj. R^2 / Pseudo R^2	0.056	0.056	0.123	0.123	0.012	0.012			0.031	0.024	0.131	0.131
ML	30076	30078	-5707	-5706	42004	42004	-706.6	-706.5	29780	29671	-3371	-3371

The unreported control variables are similar to control variables reported in Table 6. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.3 Findings in tax audits

In the next two tables, we focus on findings in tax audits performed by the Tax Administration. We do not include firm fixed effects in these analyses as only 229 firms have been tax audited multiple times, and only 48 of these have dropped auditing at some point.

5.3.1 Errors in VAT reports detected in tax audits

In Table 8, we explore errors in VAT reports that were detected during a tax audit. If an error is detected, the Tax Administration will file a tax restatement so as to change the firm's tax bill.[33]

From Table 8, we see that dropping audits is not associated with more errors in VAT reports. The negative significant coefficient on the variable *Accountant* in Columns (1) and (3), however, indicate that firms with an external accountant make fewer errors than firms without an external accountant. Columns (2) and (4) suggest that this is driven by firms that have voluntary private auditing, but the coefficients are not significant.

To save space, we have not reported the control variables, but again, we find that financial distress and poor economic performance are contributing factors to poor tax compliance. In particular, firms with negative equity (*NegEQ*) are found to have more erroneous VAT reports.

[33] Since only 21 out of 1 823 tax audits in our sample concern firms with errors in more than one reporting period in the same year, we use whether or not there has been an error as the outcome variable. To retain observations with missing control variables, we impute zeros and add indicator variables to capture the average effect for observations with missing values.

Table 8 Errors in VAT reports detected in tax audits

VARIABLES	(1) OLS	(2) OLS	(3) Logit	(4) Logit	(5) 2SLS	(6) 2SLS	(7) Logit 2SRI	(8) Logit 2SRI
Eligible	-0.017	0.032	-0.066	0.185	0.656	0.349	-0.050	0.080
	(0.036)	(0.052)	(0.193)	(0.253)	(0.871)	(0.222)	(0.238)	(0.320)
Drop	-0.019	-0.051	-0.115	-0.258	-2.008	-1.239	-1.275	-1.364
	(0.036)	(0.073)	(0.204)	(0.366)	(2.561)	(0.932)	(0.780)	(0.869)
Accountant	-0.062***	-0.040	-0.345***	-0.226	0.067	-0.046	-0.232	-0.155
	(0.023)	(0.029)	(0.122)	(0.150)	(0.170)	(0.031)	(0.179)	(0.239)
Accountant x Eligible		-0.078		-0.432		-1.216		-0.216
		(0.054)		(0.284)		(0.842)		(0.362)
Accountant x Drop		0.052		0.264		3.261		0.216
		(0.083)		(0.438)		(2.082)		(0.465)
Observations	1,823	1,823	1,796	1,796	1,823	1,823	1,032	1,032
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.035	0.035	0.072	0.073	-1.704	-1.486	0.100	0.100
ML	-1004	-1003	-964.7	-963.5	-1908	-1830	-545.5	-545.3

The dependent variable is binary, taking the value 0 when no errors are detected in any of the tax-audited reporting periods, and 1 when erroneous VAT reporting is detected in one or more of the tax-audited reporting periods. The unreported control variables are the same control variables as used in Table 6. However, to keep as many observations of tax audits as possible in our regressions, we impute missing variables to be zero, and add an indicator variable for whether or not the variable was missing before our imputation. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first-stage probit regression as exclusion restrictions. Robust standard errors clustered at firm-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.3.2 Restatements in tax audits

In Table 9, we explore the effect of dropping audits on the size of restatements following tax audits. The motivation for this analysis is to capture the importance of the errors detected. We measure restatements by the absolute value of the sum of restatements in tax audits scaled by the sum of the final reported VAT amount in the tax-audited reporting periods (trimmed at the 1st and 99th percentile):

$$\left| \frac{Sum\_restatements_{Taxaudits}}{Sum\_final\ reported\ VAT_{Taxaudits}} \right|$$

The outcome range of our dependent variable is from 0 to 1.2, where most observations take the value zero (1 338 out of 1 776 observations) or one (159 out of 1 776 observations). In other words, about 84% of tax-audited firms either have no restatements, or the total VAT amount in the tax-audited reporting periods is a result of a restatement. Due to the many zero-observations, we consider Tobit to be the preferred specification.

Our findings in Table 9 do not indicate that dropping audits is associated with the detection of more severe errors in tax audits. This finding is consistent across all model specifications, including weighted least squares (WLS) as a robustness check and IV regressions to account

for potential endogeneity.[34] Once again, we see a positive effect from using an external accountant although the effect is only significant in some of the specifications.

Most coefficients on the control variables are non-significant. However, variables capturing poor economic performance, such as *NegEQ, missing_ROE,* and *loss carry forwards*, are generally associated with the detection of more severe errors in tax audits.

The overall conclusion is that the result of a tax audit is not contingent on the use of private auditing among small private limited liability firms.

Table 9 Restatements following tax audits scaled by the total final reported VAT amount (absolute values)

VARIABLES	(1) OLS	(2) OLS	(3) Tobit	(4) Tobit	(5) WLS	(6) WLS	(7) 2SLS	(8) 2SLS	(9) Tobit 2SRI	(10) Tobit 2SRI
Eligible	-0.016	0.008	-0.019	0.078	-0.008	-0.010	0.231	0.276	-0.009	0.044
	(0.034)	(0.047)	(0.121)	(0.155)	(0.010)	(0.012)	(0.476)	(0.196)	(0.156)	(0.230)
Drop	-0.011	-0.030	-0.084	-0.134	-0.002	-0.004	-0.742	-1.070	-0.638	-0.619
	(0.033)	(0.065)	(0.128)	(0.231)	(0.006)	(0.012)	(1.409)	(0.812)	(0.404)	(0.549)
Accountant	-0.041**	-0.031	-0.198***	-0.151*	-0.009	-0.010	0.006	-0.032	-0.131	-0.091
	(0.021)	(0.026)	(0.074)	(0.091)	(0.007)	(0.011)	(0.093)	(0.026)	(0.119)	(0.181)
Accountant x Eligible		-0.038		-0.164		0.003		-0.736		-0.086
		(0.049)		(0.171)		(0.012)		(0.635)		(0.252)
Accountant x Drop		0.030		0.093		0.002		2.129		0.029
		(0.075)		(0.275)		(0.013)		(1.599)		(0.335)
Observations	1,776	1,776	1,776	1,776	1,823	1,823	1,776	1,776	1,015	1,015
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.033	0.032	0.064	0.064	-0.003	-0.004	-0.290	-0.612	0.078	0.078
ML	-792.8	-792.5	-1211	-1210	1827	1796	-1015	-1211	-702.2	-702.2

The unreported control variables are the same as in Table 6. However, to keep as many observations of tax audits as possible in our regressions, we impute missing variables to be zero, and add an indicator variable for whether or not the variable was missing before our imputation. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first-stage probit regression as exclusion restrictions. Columns (1) to (8) include robust standard errors clustered at firm level in parentheses, while Columns (9) and (10) include bootstrapped standard errors (50 replications, and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

[34] In WLS, we weight all variables in accordance with Park's (1966) suggested method to reduce heteroscedasticity. This procedure is used as an alternative to scale the restatements with the sum of the final reported VAT amount. In order to run WLS, we first run ordinary OLS on the unweighted absolute value of the sum of restatements on the explanatory variables to obtain the residuals. We then regress the natural logarithm of the squared residuals on the natural logarithm of total assets, and finally, we scale all variables in the ordinary OLS regression with total assets (in NOK million) to the power of the obtained coefficient on ln(Total Assets) divided by 2.

5.4 The effect of dropping audit on tax avoidance

In Table 10, we present the tax avoidance analyses. Graham et al. (2014) find that private firms view cash taxes paid (tax payable) as far more important than effective tax rates based on generally accepted accounting principles (GAAP). We therefore use the cash effective tax rate as the dependent variable:

$$Cash\ effective\ tax\ rate_{it} = \frac{Tax\ payable_{it}}{Cash\ flow\ from\ operations_{it}}$$

In line with Chen et al. (2010), we truncate short-term cash effective tax rates to be in the interval [0, 1]. As 28% of our observations of cash effective tax rates take the value zero, we consider the Tobit regressions in Columns (3) and (4) and the Poisson fixed effects regressions in Columns (7) and (8) to be our preferred specifications. In Table A4 in Appendix 2, the same model specifications are used in robustness tests where the dependent variable is calculated as tax payable relative to non-negative pretax income.[35]

The control variables included in Table 10 and Table A4 are the same as the control variables presented in Table 6, with four exceptions that are inspired by the literature on tax avoidance in private firms, such as Chen et al. (2010), and Langli and Willekens (2017). First, we replace our measurement of scaled tax loss carry forwards with an indicator variable for whether or not a firm has tax loss carry forwards at the beginning of the year. Second, we add a variable controlling for property, plant, and equipment (scaled by total assets) to control for potential tax planning relating to assets. Third, we add a variable controlling for short-term financial investments as most of the returns of these types of assets are tax exempted. Finally, we add a variable controlling for long-term financial investments as most of the returns of these types of assets are tax exempted.

The main finding in Table 10 is that firms that drop audits have a somewhat lower short-term cash effective tax rate. Putting the IV regressions in Columns (9) to (12) aside for now, the effect is significant in all specifications that include an interaction between dropping audit and using an external accountant. From the interaction terms, we see that the negative effect of dropping audit is clearly mitigated for firms with external accountants. However, the fixed effects estimates in Columns (6) and (8) only correspond to a 3-percentage point reduction in the cash effective tax rate for firms that both drop audits and do not use an external

[35] See Chen et al. (2010) and Langli and Willekens (2017).

accountant.[36] Since about 90% of firms that drop audits use external accountants, the total accumulated predicted tax revenue lost in the five post-reform years 2011–2015 is less than NOK 10 million (EUR 1 million). Although statistically significant, this is a very small amount.[37]

There are no significant signs of more tax avoidance among firms that drop audits in the IV regressions where we attempt to control for potential unobserved transitory effects. Two-stage least squares estimations in Columns (9) and (10) resemble the OLS regressions in Columns (1) and (2), but with less precision. In Columns (11) and (12), we use the two-stage residual inclusion approach, including residuals from the first-stage probit regression, to control for unobserved effects related to the opt-out choice in a Tobit model. The negative coefficient on the first-stage residuals is highly significant in both model specifications, signaling that estimates in non-IV regressions may in fact be driven by unobserved effects correlated with the audit choice, and may therefore suffer from selection bias. Taken at face value, the results in Columns (11) and (12) show less tax avoidance among firms that drop audits. This is somewhat counterintuitive, but consistent with Ojala et al. (2016) and Dong et al. (2022). Tax planning and the need for tax expertise can be a driver of voluntary audits for small companies, and voluntary audits may also be used as an indication of compliance by tax aggressive firms.

[36] The Poisson fixed effects model estimates can be interpreted as semi-elasticities. With an average cash effective tax rate of about 19% among opt-out firms (cf. Table 5), a 15.5% reduction in the cash effective tax rate resembles a 3-percentage point reduction, as estimated in the linear fixed effects regression model in Column (6).

[37] Firms that drop audits, do not use external accountants, and also have a cash effective tax rate in the interval [0, 1], pay on average about NOK 123 000 in income taxes and have an average of about NOK 672 000 in cash flow from operations. A 3-percentage point drop in the cash effective tax rate equals a reduction of about NOK 20 000 (672 000 × 0.03) in tax payable for these firms. As there are 432 observations of such firms in our data, the total income effect is calculated to be NOK 20 000 × 432 = NOK 8.7 million in reduced tax income in the post-reform period (2011–2015). Keeping the finance and power-related industries out of the total picture (as we do not include these industries in our sample), total income taxes from limited liability firms is NOK 295 796 million during the period 2011–2015 (https://www.ssb.no/statbank/table/07603, last accessed October 28, 2022). Our estimate of lost income tax makes up 0.003% of this amount.

Table 10 One-year cash effective tax rate: Payable tax relative to operating cash flow

VARIABLES	(1) OLS	(2) OLS	(3) Tobit	(4) Tobit	(5) LinFE	(6) LinFE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Tobit2SRI	(12) Tobit2SRI
Eligible	-0.005	-0.003	-0.010*	-0.009	-0.002	-0.005	-0.007	-0.022	0.080	-0.004	-0.005	0.007
	(0.004)	(0.006)	(0.006)	(0.008)	(0.005)	(0.007)	(0.025)	(0.038)	(0.069)	(0.058)	(0.006)	(0.009)
Drop	-0.007*	-0.027***	-0.006	-0.035**	-0.009	-0.030**	-0.051*	-0.155**	-0.241	-0.026	0.066***	0.050**
	(0.004)	(0.009)	(0.005)	(0.014)	(0.006)	(0.013)	(0.029)	(0.071)	(0.190)	(0.339)	(0.019)	(0.025)
Accountant	0.006**	0.005	0.008**	0.006	-0.005	-0.009	-0.028	-0.045	0.033	0.005	-0.001	0.004
	(0.003)	(0.004)	(0.004)	(0.005)	(0.007)	(0.007)	(0.035)	(0.038)	(0.022)	(0.004)	(0.006)	(0.007)
Accountant x Eligible		-0.002		-0.002		0.003		0.022		-0.001		-0.017**
		(0.006)		(0.008)		(0.008)		(0.040)		(0.084)		(0.009)
Accountant x Drop		0.023**		0.033**		0.023*		0.110		0.019		0.027**
		(0.010)		(0.015)		(0.014)		(0.076)		(0.335)		(0.014)
First-stage residuals											-0.077***	-0.084***
											(0.019)	(0.021)
Observations	20,995	20,995	20,995	20,995	20,995	20,995	17,965	17,965	20,995	20,995	14,594	14,594
Number of firmid					5,779	5,779	4,202	4,202				
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.324	0.324	1.026	1.026	0.108	0.109			0.174	0.299	1.027	1.027
ML	7570	7573	167.3	170.4	11767	11769	-4237	-4237	5844	7572	120	122.7

In 2SLS regressions the variable Drop is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In robustness tests, we look at different definitions of tax avoidance. In Table A4 in Appendix 2, we use tax payable relative to *pretax income* as the dependent variable. Using this specification, we do not find consistent significant signs of more tax avoidance among firms that drop audits. Inspired by Dyreng et al. (2008), we have also studied longer-term tax avoidance where we define the dependent variable as the sum of tax payable relative to sum of cash flow from operations in the pre- and post-reform period. These regressions are not reported, but the results are similar to the findings in Table 10. Finally, we have defined the cash effective tax rate as tax payable relative to lagged total assets, in line with Badertscher et al. (2019). These results, also untabulated, are similar to the findings in Table A4 in that they show no signs of increased tax avoidance among firms that drop audits.

Looking at the control variables, tax losses and scaled fixed assets are found to significantly decrease cash effective tax rates in all model specifications in Table 10 and Table A4. This is as expected and consistent with findings in, e.g., Langli and Willekens (2017).

6. Conclusions and perspectives

Our study adds knowledge on how audit exemptions for small private firms affect tax compliance using data from the Norwegian Tax Administration's registers and measures of reporting quality that are not subject to the same validity concerns as traditional measures.

Taken together, our results strongly suggest that the gains from reintroducing mandatory auditing for all segments of private limited liability firms would be very low in terms of the effect on tax compliance. For firms around the size thresholds for mandatory audits, private auditing is not found to be of significant importance to the quality of VAT or tax reporting – neither with respect to timeliness and accuracy in VAT reporting, nor overdue VAT and tax amounts. We find indications of increased tax avoidance among firms that drop audits and at the same time do not use an external accountant, but the tax revenue effect is calculated to be very modest. Moreover, the IV results suggest that these results may be driven by selection. We therefore conclude that mandatory auditing is not an efficient measure to ensure high tax compliance among small private firms. Given that the threshold for mandatory audits in Norway is low compared to EU regulations, this conclusion suggests that a higher threshold should be given serious consideration.

References

Aase, Ø. A. S. (2022). Effects of voluntary audit on accounting quality in small private firms: *Unpublished manuscript. Department of Business and Management Science, Norwegian School of Economics and Department of Business Administration, Western Norway University of Applied Sciences.*

Allee, K. D., & Yohn, T. L. (2009). The demand for financial statements in an unregulated environment: An examination of the production and use of financial statements by privately held small businesses. *The Accounting Review*, *84*(1), 1-25.

Amir, E., Carabias, J. M., Jona, J., & Livne, G. (2016). Fixed-effects in empirical accounting research. Available at SSRN 2634089.

Ang, James S., Rebel A. Cole, and James Wuh Lin. "Agency costs and ownership structure." *The Journal of Finance* 55.1 (2000): 81-106.

Badertscher, B. A., Katz, S. P., Rego, S. O., & Wilson, R. J. (2019). Conforming tax avoidance and capital market pressure. *The Accounting Review*, *94*(6), 1-30.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of accounting and economics*, *39*(1), 83-128.

Ball, R., & Shivakumar, L. (2006). The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research*, *44*(2), 207-242.

Bauwhede, H. V., & Willekens, M. (2004). Evidence on (the lack of) audit-quality differentiation in the private client segment of the Belgian audit market. *European Accounting Review*, *13*(3), 501-522.

Bernard, D., Burgstahler, D., & Kaya, D. (2018). Size management by European private firms to minimize proprietary costs of disclosure. *Journal of Accounting and Economics*, *66*(1), 94-122.

Berzins, J., Bøhren, Ø., & Rydland, P. (2008). Corporate finance and governance in firms with limited liability: Basic characteristics.*Research report No. 1. Centre for Corporate Governance Research.*

Cassar, G. (2011). Discussion of the value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 507-528.

Cassar, G., Ittner, C. D., & Cavalluzzo, K. S. (2015). Alternative information sources and information asymmetry reduction: Evidence from small business debt. *Journal of Accounting and Economics*, *59*(2-3), 242-263.

Chaney, P. K., Jeter, D. C., & Shivakumar, L. (2004). Self-selection of auditors and audit pricing in private firms. *The Accounting Review*, *79*(1), 51-72.

Chen, F., Hope, O. K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, *86*(4), 1255-1288.

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics*, *95*(1), 41-61.

Clatworthy, M. A., & Peel, M. J. (2013). The impact of voluntary audit and governance characteristics on accounting errors in private companies. *Journal of Accounting and Public Policy, 32*(3), 1-25.

Clatworthy, M. A., & Peel, M. J. (2016). The timeliness of UK private company financial reporting: Regulatory and economic influences. *The British Accounting Review*, *48*(3), 297-315.

Clatworthy, M. A., & Peel, M. J. (2021). Reporting accountant appointments and accounting restatements: Evidence from UK private companies. *The British Accounting Review*, *53*(3), 100974.

Correia, S., Guimarães, P., Zylkin, T. (2019). “Verifying the existence of maximum likelihood estimates for generalized linear models”. Available at: arXiv:1903.01633

Correia, S., Guimarães, P., Zylkin, T. (2019). "ppmlhdfe: Fast Poisson Estimation with High-Dimensional Fixed Effects", 2019. Available at: arXiv:1903.01690.

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2-3), 344-401.

Dedman, E., & Kausar, A. (2012). The impact of voluntary audit on credit ratings: evidence from UK private firms. *Accounting and Business Research*, *42*(4), 397-418.

Dedman, E., Kausar, A., & Lennox, C. (2014). The demand for audit in private firms: recent large-sample evidence from the UK. *European Accounting Review, 23*(1), 1-23.

DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics*, *58*(2-3), 275-326.

Dong, T., Tylaite, M., & Wilson, R. (2022). Voluntary vs. mandatory: the role of auditing in constraining corporate tax avoidance in small private firms. *Accounting and Business Research*, 1-33.

Dowd, B. E., Greene, W. H., & Norton, E. C. (2014). Computation of standard errors. *Health Services Research*, *49*(2), 731-750.

Downing, J., & Langli, J. C. (2019). Audit exemptions and compliance with tax and accounting regulations. *Accounting and Business Research*, *49*(1), 28-67.

Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2008). Long-run corporate tax avoidance. *The Accounting Review*, *83*(1), 61-82.

European Union (EU). DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC.

Fallan, E., Antonsen, S., Fallan, L., & Olsen, T. E. (2018). Abolition of statutory audit obligation of small limited liability companies in Norway. Should tax evasion Inclined industries be excepted? *International Journal of Accounting and Taxation, 6*(1), 18-30.

Francis, J. R. (2011). A framework for understanding and researching audit quality. *Auditing: A Journal of Practice & Theory*, *30*(2), 125-152.

Gallani, S., Krishnan, R., & Wooldridge, J. M. (2015). *Applications of fractional response model to the study of bounded dependent variables in accounting research*. Working Paper 16-016. Harvard Business School.

Graham, J. R., Hanlon, M., Shevlin, T., & Shroff, N. (2014). Incentives for tax planning and avoidance: Evidence from the field. *The Accounting Review*, *89*(3), 991-1023.

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, *16*(1), 1-34.

Hanlon, M. (2003). What can we infer about a firm's taxable income from its financial statements? *National Tax Journal*, 831-863.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*(2-3), 127-178.

Hay, D. (2015). The frontiers of auditing research. *Meditari Accountancy Research, 23*(2), 158-174.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 153-161.

Hope, O. K., Langli, J. C., & Thomas, W. B. (2012). Agency conflicts and auditing in private firms. *Accounting, Organizations and Society*, *37*(7), 500-517.

Hope, O. K., Thomas, W., & Vyas, D. (2011). Financial credibility, ownership, and financing constraints in private firms. *Journal of International Business Studies*, *42*(7), 935-957.

Hope, O. K., Thomas, W. B., & Vyas, D. (2013). Financial reporting quality of US private and public firms. *The Accounting Review*, *88*(5), 1715-1742.

Hope, O. K., Thomas, W. B., & Vyas, D. (2017). Stakeholder demand for accounting quality and economic usefulness of accounting in US private firms. *Journal of Accounting and Public Policy, 36*(1), 1-13.

Hope, O. K., & Vyas, D. (2017). Private company finance and financial reporting. *Accounting and Business Research*, *47*(5), 506-537.

Höglund, H., & Sundvik, D. (2019). Do auditors constrain intertemporal income shifting in private companies? *Accounting and Business Research*, *49*(3), 245-270.

Ichev, R., Koren, J., Kosi, U., Sitar Sustar, K., & Valentincic, A. (2020). Cost of debt for private firms revisited: voluntary audits as a reflection of risk. *Working paper No. 26. TRR 266 Accounting for Transparency.*

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193-228.

Kausar, A., Shroff, N., & White, H. (2016). Real effects of the audit choice. *Journal of Accounting and Economics*, *62*(1), 157-181.

Kim, J. B., Simunic, D. A., Stein, M. T., & Yi, C. H. (2011). Voluntary audits and the cost of debt capital for privately held firms: Korean evidence. *Contemporary Accounting Research*, *28*(2), 585-615.

Koren, J., Kosi, U., & Valentincic, A. (2014). Does financial statement audit reduce the cost of debt of private firms? *Available at SSRN 2373987*.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, *39*(1), 163-197.

Langli, J. C. (2008). *Consultation Statement NOU 2008:12 Revisjonsplikten for små foretak.* Available at: https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf

Langli, J. C. (2009). Hvem er brukerne av årsregnskapene til små aksjeselskaper, og trenger de reviderte regnskaper? *Praktisk økonomi & finans*, *25*(01), 104-119.

Langli, J. C. (2015). Evaluering av unntak for revisjonsplikt i små aksjeselskaper. *Utredning på oppdrag fra Finansdepartementet*, *26*.

Langli, J. C. (2016). Resultatføring av inntekter og kostnader før og etter fravalg av revisor i små AS–Tyder utviklingen på økte skatteunndragelser? *Praktisk økonomi & finans*, *32*(02), 200-214.

Langli, J. C., & Che, L. (2016). Har fravalg av revisor ført til dårligere finansieringsvilkår? *Praktisk økonomi & finans*, *32*(01), 111-125.

Langli, J. C., & Svanström, T. (2014). Audits of private companies. *The Routledge Companion to Auditing*, *1*, 148-158.

Langli, J. C., & Willekens, M. (2017). Tax avoidance, horizontal agency conflicts and high-quality auditing in private firms. *KU Leuven and BI Norwegian Business School*.

Lennox, C. S., & Pittman, J. A. (2011). Voluntary audits versus mandatory audits. *The Accounting Review*, *86*(5), 1655-1678.

Lennox, C. S., Francis, J. R., & Wang, Z. (2012). Selection models in accounting research. *The Accounting Review*, *87*(2), 589-616.

Liu, S., & Skerratt, L. (2018). Earnings quality across different reporting regimes. *Journal of Applied Accounting Research*.

Mandal, M. F. (2022). Beviskravet ved ileggelse av tilleggsskatt ved skjønnsfastsetting–kan det i praksis være en fordel for skattepliktige å begå vesentlige brudd på opplysningsplikten? *Skatterett*, (3-4), 201-219.

McNichols, M. F. (2000). Research design issues in earnings management studies. *Journal of Accounting and Public Policy*, *19*(4-5), 313-345.

McNichols, M. F., & Stubben, S. R. (2018). Research design issues in studies using discretionary accruals. *Abacus*, *54*(2), 227-246.

Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, *49*(2), 457-506.

NOU 2008:12 (2008) *Revisjonsplikten for små foretak*. Available at: https://www.regjeringen.no/no/dokumenter/nou-2008-12/id520230/

Nygaard, A. A. (2016). Skatteatferd i små aksjeselskap: revisjon, ekstern regnskapsfører og eierandel styreleder sin sammenheng med skatteatferd (Master's thesis).

Næss-Schmidt, S., Jensen, J. B., Kilsdal, L., Christiansen, B., Sørensen, P. (2018). *Effekten af lempet revisionspligt på det samlede skattegab* (Copenhagen Economics). Available at: https://www.fsr.dk/Files/Files/Dokumenter/Politik%20og%20analyser/Analyser/2018/20181109_Samlet%20skattetab%20af%20%C3%A6ndret%20revisionspligt.pdf

Ojala, H., Collis, J., Kinnunen, J., Niemi, L., & Troberg, P. (2016). The demand for voluntary audit in micro-companies: Evidence from Finland. *International Journal of Auditing*, *20*(3), 267-277.

Ojala, H., Kinnunen, J., Niemi, L., Troberg, P., & Collis, J. (2020). What turns the taxman on? Tax aggressiveness, financial statement audits, and tax return adjustments in small private companies. *The International Journal of Accounting*, *55*(03), 2050011.

Owens, E. L., Wu, J. S., & Zimmerman, J. (2017). Idiosyncratic shocks to firm underlying economics and abnormal accruals. *The Accounting Review*, *92*(2), 183-219.

Park, R. E. (1966). Estimation with heteroscedastic error terms. *Econometrica (pre-1986)*, *34*(4), 888.

Papke, L. E., & Wooldridge, J. M. (2008). Panel data methods for fractional response variables with an application to test pass rates. *Journal of Econometrics*, *145*(1-2), 121-133.

RiR 2017:35 (2017). *Abolition of audit obligation for small limited companies – a reform where costs outweigh benefits.* Available at: https://www.riksrevisionen.se/en/audit-reports/audit-reports/2017/abolition-of-audit-obligation-for-small-limited-companies---a-reform-where-costs-outweigh-benefits.html

Rokkan, O. K., & Østrem, O. K. (2018). Does opting out from auditing decrease earnings quality and/or increase tax aggressiveness? An analysis of small companies from Norway (Master's thesis, Handelshøyskolen BI).

Stubben, S. R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review*, *85*(2), 695-717.

Terza, J. V. (2018). Two-stage residual inclusion estimation in health services research and health economics. *Health Services Research*, *53*(3), 1890-1899.

Terza, J. V., Basu, A., & Rathouz, P. J. (2008). Two-stage residual inclusion estimation: addressing endogeneity in health econometric modeling. *Journal of Health Economics*, *27*(3), 531-543.

Ministry of Finance (2010). Endringer i revisorloven og enkelte andre lover (unntak fra revisjonsplikt for små aksjeselskaper). (Prop. 51 L (2010-2011)). Available at: https://www.regjeringen.no/no/dokumenter/prop-51-l-20102011/id628867/

Vanstraelen, A., & Schelleman, C. (2017). Auditing private companies: what do we know? *Accounting and Business Research*, *47*(5), 565-584.

Van Tendeloo, B., & Vanstraelen, A. (2008). Earnings management and audit quality in Europe: Evidence from the private client segment market. *European Accounting Review*, *17*(3), 447-469.

Wooldridge, J. M. (1999). Distribution-free estimation of some nonlinear panel data models. *Journal of Econometrics*, *90*(1), 77-97.

Wooldridge, J. M. (2001). Econometric Analysis of cross section and panel data. The MIT Press

Wooldridge, J. M. (2014). Quasi-maximum likelihood estimation and testing for nonlinear models with endogenous explanatory variables. *Journal of Econometrics*, *182*(1), 226-234.

Young, S. (1999). Systematic measurement error in the estimation of discretionary accruals: An evaluation of alternative modelling procedures. *Journal of Business Finance & Accounting*, *26*(7-8), 833-862.

Appendix 1: Definitions of independent variables

Accountant$_{it}$: Indicator variable, takes the value 1 if the firm has an external accountant in the current year, and 0 otherwise

Age: Age of firm.

Assets growth$_{it}$: (Total Assets$_{it}$ – Total Assets$_{it-1}$)/ Total Assets$_{it-1}$. Trimmed at the 1% level.

AssetsMNOK$_{it}$: Total Assets (MNOK) in year t.

sq_ AssetsMNOK$_{it}$: (Total Assets (MNOK)$_{it}$)^2

cub_ AssetsMNOK$_{it}$: (Total Assets (MNOK)$_{it}$)^3

quad_ AssetsMNOK$_{it}$: (Total Assets (MNOK)$_{it}$)^4

Big5: Indicator variable, takes the value 1 if the firm was audited by one of the Big 5 audit firms (based on number of audit clients) in year *t*, or in year *t-1* if drop equals 1, and 0 otherwise

Cum. loss ratio$_{it}$: (Number of observed years with negative profit in data)$_{it}$ /(number of observed years in data)$_{it}$

Drop$_{it}$: Indicator variable, takes the value 1 if the firm drops auditing in the current year, and 0 otherwise.

Eligible$_{it}$: Indicator variable, takes the value 1 if the firm is eligible to opt out of auditing in the current year (e.g., last year's total revenue < 5 MNOK)

Employees$_{it}$: Number of employees in year t.

sq_Employees$_{it}$: (Employees$_{it}$)^2.

cub_Employees$_{it}$: (Employees$_{it}$)^3.

quad_Employees$_{it}$: (Employees$_{it}$)^4.

Inventory$_{it}$: Inventory$_{it}$ /Total Assets$_{it-1}$. Trimmed at the 1% level.

Leverage$_{it}$: Long term debt$_{it}$/total assets$_{it}$. Trimmed at the 1% level.

Ln (Age$_{it}$): Natural logarithm to (Age of firm$_{it}$)

Long-term fin. inv$_{it}$: Long-term financial investments scaled by total assets. Trimmed at the 1% level.

Loss Carry Forward: Tax loss carry forward$_{it-1}$/Total assets$_{t-1}$

NegEQ$_{it}$: Indicator variable, takes the value 1 if the firm has negative equity in year *t* or *t-1*, and 0 otherwise.

PPE$_{it}$: Property, plant, and equipment scaled by total assets. Trimmed at the 1% level.

Revenue growth$_{it}$: (Revenue$_{it}$ – Revenue$_{it-1}$)/ Revenue$_{it-1}$. Trimmed at the 1% level.

RevenueMNOK$_{it}$: Total Revenue (MNOK) in year t.

sq_RevenueMNOK$_{it}$: (Total Revenue (MNOK) in year t)^2.

cub_RevenueMNOK$_{it}$: (Total Revenue (MNOK) in year t)^3.

quad_RevenueMNOK$_{it}$: (Total Revenue (MNOK) in year t)^4.

ROA$_{it}$: Return on Assets. Profit scaled by Total Assets$_{it-1}$. Trimmed at the 1% level.

ROE$_{it}$: Return on Equity: Profit scaled by average equity for firms with non-negative equity in year *t* and *t-1*. For observations with negative equity in year *t* or *t-1*, ROE is set to zero. Trimmed at the 1% level.

Short-term fin. inv$_{it}$: Short-term financial investments scaled by total assets. Trimmed at the 1% level.

Std. dev. of sales: Standard deviation of sales. Trimmed at the 1% level.

Tot. Revenue$_{it}$ scaled: Total revenue in year t scaled by Total Assets$_{it-1}$. Trimmed at the 1% level.

sq_Tot. Revenue$_{it}$ scaled: (Tot. Revenue$_{it}$ scaled)^2.

cub_Tot. Revenue$_{it}$ scaled: (Tot. Revenue$_{it}$ scaled)^3.

quad_Tot. Revenue$_{it}$ scaled: (Tot. Revenue$_{it}$ scaled)^4.

Tax loss: Indicator variable, takes the value 1 if the firm has tax losses carry forwards at the beginning of current year, and 0 otherwise.

ΔTaxlcf: (Tax loss carry forward$_{it}$ - Tax loss carry forward$_{it-1}$) / Total assets$_{t-1}$

Appendix 2: First-stage probit estimation of the decision to drop audit

Table A1 shows three different specifications of the probit regression model for factors affecting the decision to drop audit. The variables *Always_eligible* and *Sometimes_eligible* are used as exclusion restrictions (see e.g., Lennox et al., 2012). The obtained residuals from these first-stage regressions are included in the second-stage regressions (2SRI) presented in the paper, in line with e.g., Terza (2018), Wooldridge (2014), and Dowd et al. (2014).

$$Drop_{it} = \alpha_0 + \alpha_1 Always\_eligible_i + \alpha_2 Sometimes\_eligible_i + X_{it}\alpha + \theta_t + \gamma_i + \varepsilon_{it}$$

Table A1 First-stage Probit

VARIABLES	(1) 2SRI_VAT	(2) 2SRI_Taxaud	(3) 2SRI_Taxavoid
Always_eligible	0.190***	0.290**	0.192***
	(0.050)	(0.138)	(0.050)
Sometimes_eligible	0.106*	0.144	0.107*
	(0.060)	(0.165)	(0.061)
Accountant	0.831***	0.493***	0.838***
	(0.053)	(0.123)	(0.054)
Observations	21,448	1,041	20,838
Control variables	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Firm FE	NO	NO	NO
Pseudo R^2	0.372	0.307	0.375
ML	-7893	-391.8	-7620

Table A1 shows three specifications of first-stage probit regressions with *Drop* as the dependent variable. The variables *Always_eligible* and *Sometimes_eligible* are the exclusion restrictions included only in the first stage, and not in the second-stage regressions. Control variables are the same as presented in the paper. Column (1) contains the specifications used to obtain the residuals to be included in two-stage residual inclusion regressions (2SRI) testing private auditing effects on VAT reporting quality in terms of timeliness in reporting and payment. Column (2) contains the specifications used to obtain the residuals to be included in two-stage residual inclusion regressions (2SRI) for testing private auditing effects on tax audit findings. Column (3) contains the specifications used to obtain the residuals to be included in two-stage residual inclusion regressions (2SRI) for testing private auditing effects on tax avoidance. Robust standard errors clustered at firm level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix 3: Supplementary robustness analysis of tax compliance

Table A2 Penalty for late filings

VARIABLES	(1) OLS	(2) OLS	(3) Poisson	(4) Poisson	(5) FE	(6) FE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Poisson 2SRI	(12) Poisson 2SRI
Eligible	0.062*	0.001	0.141**	0.024	0.012	-0.049	0.040	-0.061	0.162	0.214	0.149	0.025
	(0.034)	(0.054)	(0.071)	(0.103)	(0.034)	(0.053)	(0.072)	(0.100)	(0.244)	(0.382)	(0.097)	(0.129)
Drop	-0.202***	0.030	-0.549***	0.055	-0.216***	-0.172	-0.545***	-0.298	-0.471	-1.172	-0.703***	-0.035
	(0.035)	(0.109)	(0.093)	(0.184)	(0.040)	(0.122)	(0.099)	(0.217)	(0.653)	(2.170)	(0.260)	(0.318)
Accountant	-0.116***	-0.124***	-0.226***	-0.233***	0.028	0.005	0.069	0.050	-0.086	-0.127***	-0.195**	-0.221**
	(0.031)	(0.034)	(0.060)	(0.066)	(0.053)	(0.056)	(0.105)	(0.112)	(0.078)	(0.035)	(0.080)	(0.093)
Accountant x Eligible		0.091		0.182*		0.089		0.159		-0.059		0.188
		(0.058)		(0.109)		(0.056)		(0.109)		(0.324)		(0.135)
Accountant x Drop		-0.280**		-0.774***		-0.067		-0.330		0.758		-0.771***
		(0.113)		(0.205)		(0.126)		(0.232)		(1.852)		(0.152)
Observations	30,943	30,943	30,943	30,943	30,943	30,943	6,434	6,434	30,943	30,943	21,448	21,448
Number of firmid					6,232	6,232	1,209	1,209				
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.064	0.065	0.118	0.119	0.0131	0.0132			0.056	0.049	0.125	0.127
ML	-56812	-56805	-35280	-35223	-47772	-47770	-12655	-12647	-56857	-56960	-23235	-23179

The dependent variable takes the values from 0 up to 6, reflecting the number of penalties for late filings during a year. The unreported control variables are similar to control variables reported in Table 6. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A3 Reassessments made by the Tax Administration

VARIABLES	(1) OLS	(2) OLS	(3) Poisson	(4) Poisson	(5) FE	(6) FE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Poisson 2SRI	(12) Poisson 2SRI
Eligible	0.047***	0.064***	0.185***	0.251***	0.026*	0.050**	0.101*	0.192**	0.045	0.329*	0.207***	0.206**
	(0.015)	(0.022)	(0.060)	(0.086)	(0.014)	(0.020)	(0.055)	(0.075)	(0.120)	(0.196)	(0.069)	(0.105)
Drop	-0.075***	-0.029	-0.356***	-0.105	-0.072***	-0.088**	-0.338***	-0.384**	-0.068	-1.433	-0.817***	-0.548**
	(0.017)	(0.049)	(0.082)	(0.206)	(0.016)	(0.039)	(0.070)	(0.159)	(0.319)	(1.116)	(0.192)	(0.244)
Accountant	0.006	0.019	0.034	0.086	0.017	0.027	0.057	0.097	0.006	0.018	0.075	0.092
	(0.014)	(0.015)	(0.056)	(0.060)	(0.021)	(0.022)	(0.074)	(0.080)	(0.036)	(0.016)	(0.057)	(0.071)
Accountant x Eligible		-0.024		-0.093		-0.035		-0.135		-0.361**		0.003
		(0.023)		(0.092)		(0.022)		(0.082)		(0.165)		(0.110)
Accountant x Drop		-0.048		-0.273		0.025		0.077		1.483		-0.242
		(0.050)		(0.212)		(0.041)		(0.167)		(0.950)		(0.192)
Observations	30,943	30,943	30,943	30,943	30,943	30,943	13,781	13,781	30,943	30,943	21,448	21,448
Number of firmid					6,232	6,232	2,461	2,461				
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.043	0.043	0.056	0.057	0.008	0.009			0.032	-0.033	0.058	0.058
ML	-31861	-31858	-19389	-19382	-19636	-19634	-7486	-7484	-31861	-32861	-12779	-12777

The dependent variable takes the values from 0 up to 6, reflecting the number of reassessments made by the Tax Administration during a year. The unreported control variables are similar to control variables reported in Table 6. In 2SLS regressions, the variable *Drop* is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A4 One-year cash effective tax rate measured as payable tax relative to pretax income

VARIABLES	(1) OLS	(2) OLS	(3) Tobit	(4) Tobit	(5) LinFE	(6) LinFE	(7) Poisson FE	(8) Poisson FE	(9) 2SLS	(10) 2SLS	(11) Tobit2SRI	(12) Tobit2SRI
Eligible	-0.007**	-0.012***	-0.008**	-0.014***	-0.003	-0.007	-0.018	-0.036*	0.002	0.062	-0.006	-0.006
	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.015)	(0.021)	(0.049)	(0.062)	(0.005)	(0.007)
Drop	-0.001	-0.009	-0.000	-0.012	-0.009**	-0.007	-0.033*	-0.054	-0.026	-0.387	0.054***	0.043**
	(0.003)	(0.008)	(0.003)	(0.010)	(0.004)	(0.009)	(0.017)	(0.043)	(0.131)	(0.348)	(0.010)	(0.018)
Accountant	-0.002	-0.006**	-0.001	-0.005*	-0.001	-0.003	-0.003	-0.012	0.001	-0.005	-0.008***	-0.009**
	(0.002)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.019)	(0.021)	(0.016)	(0.003)	(0.003)	(0.004)
Accountant x Eligible		0.008*		0.008		0.005		0.026		-0.125		-0.001
		(0.005)		(0.005)		(0.006)		(0.024)		(0.090)		(0.007)
Accountant x Drop		0.007		0.012		-0.003		0.017		0.504		0.010
		(0.008)		(0.010)		(0.010)		(0.046)		(0.355)		(0.010)
First-stage residuals											-0.059***	-0.056***
											(0.010)	(0.013)
Observations	18,694	18,694	18,694	18,694	18,694	18,694	16,776	16,776	18,694	18,694	13,135	13,135
Number of firmid					5,410	5,410	4,061	4,061				
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO
Adj. R^2 / Pseudo R^2	0.380	0.381	-1.632	-1.633	0.184	0.184			0.364	0.196	-1.748	-1.748
ML	14803	14806	8553	8557	19363	19364	-4450	-4450	14758	12568	6006	6007

In 2SLS regressions the variable Drop is instrumented by the variables *Always_eligible* and *Sometimes_eligible*. In 2SRI (two-stage residual inclusion) regressions, the instruments are included in the first stage probit regression as exclusion restrictions. Columns (1) to (10) include robust standard errors clustered at firm-level in parentheses, whereas Columns (11) and (12) include bootstrapped standard errors (50 replications and seed 12) in parentheses. *** p<0.01, ** p<0.05, * p<0.1.