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Abstract

Many countries have introduced thresholds for mandatory audits as a measure of reducing complexity and costs for 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 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 change in the size distribution of firms around the revenue threshold after the audit reform. I find that the firms that avoid audit save external services fees by an amount comparable to their estimated lost profits. This suggests that also indirect audit costs, such as management time, play a part in the cost-benefit assessment of audits. I find no significant evidence of firms using real earnings management as a mechanism for size management. This implies that firms stay below the audit threshold through other forms of size management, such as foregoing short term growth opportunities. Total revenue lost due to revenue management in years affected by the audit-reform is, however, estimated to be immaterial.

Keywords: voluntary audit; private firms; size management; revenue threshold

1. Introduction

The possibility to drop audit can be an important measure of cost savings in small private firms. In a consultative statement, Langli (2008) estimates that small private limited liability firms in Norway, under a mandatory audit regime, pay over 40 % of total audit fees in the Norwegian private limited liability firm segment, whereas they only make up 4 % of 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 rent-bearing debt. Small private firms may, in other words, not face the same incentives as large and medium sized private firms for requesting audit services. The possibility of dropping audit may therefore be of high importance in this segment of firms.

Although audit 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 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)

¹ https://www.regjeringen.no/globalassets/upload/fin/fma/horingssvar/2008_07_02_nou_12_revisjonsplikt/bi.pdf

find it likely that the requirements for private firms' financial reporting is more influenced by tax reporting than the information needs of external providers of capital. Many of those that prepare financial statements for private firms find that they cannot justify the costs of preparing and reviewing (e.g., audit) information that do not reflect cash amounts or liquidity.²

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

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

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

I use register data on small private firms' financial accounts, provided by the Norwegian Tax Authority to study the effects of voluntary audit 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 of mandated audits, and missing mass of firms in the area immediately above the threshold of mandated audits 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

² See The U.S Private Company Council (PCC), 2013, paragraph BC13. Downloaded 26th Aug 2019: https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176163703583&acceptedDisclaimer=true

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).

significance of size management. I also study direct cost savings from dropping audit on external services fees, and whether firms use real earnings management to squeeze 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 both before the reform 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 audit. I estimate that firms avoiding audit on average downsize by about 20 000 €. This represents an economic loss, but it also demonstrates that small firms value the opportunity to save audit costs. Total managed revenue among my sample-firms in years affected by the reform is estimated to be approximately 2 million euros.

If I take my estimated coefficients at face value, I find that avoiding audit on average reduces firms' external services fees by approximately 1 700 € net of tax. This amounts to approximately the average revenue managed by firms in the vicinity of the revenue threshold for mandated audit (20 000 €) multiplied by the average profit margin for firms just below the revenue threshold (0.085). Since the service fees saved is not clearly larger than forgone profit, this indicates that size managing firms also take into account indirect audit costs in their cost-benefit assessment of an audit. Using Roychowdhury's (2006) measure of real earnings management, I do not find a significant reduction in output among firms that are just below the threshold for mandated audit. This implies that squeezing just below the audit threshold is accomplished through other forms of size management.

Overall, the introduction of voluntary audit 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 Bernard et al.'s (2018) and Langli's (2015) findings, and adds knowledge to the literature on audit effects for small private firms. Most importantly, the study expands the small literature that analyzes the international trend of reducing costs and complexity of private firm's 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

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

held (Berzins et al., 2008). Where most previous studies have been forced to focus on asset thresholds due to 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 mandated audit (Kausar et al., 2016). The panel structure in my data also allows for a causal interpretation and provides important information on how privately held firms adjust over time.

The paper continues as follows. In section 2, I discuss relevant literature concerning auditing and private firms. Section 3 gives background for the introduction of voluntary audit 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 audit, e.g., lower cost of debt.⁵ The firms, however, see few positive externalities of audits and would prefer that mandated audit is removed. Approximately 65 % of the private firms in their survey would undergo a voluntary audit, regardless of a mandate, but as many as 33 % of the respondents report no benefit from audit at all. Vanstraelen and Schelleman (2017) argue that private firms have incentives to request voluntary audit, and that mandated audit removes part of the signaling effect generated by the voluntary audit choice. Hence, firms around thresholds for mandated audit may have incentives to fall below such thresholds either as a measure of cost savings or by making the audit choice observable.

Bae and Rho (2003), using Korean data, find evidence of asset-size management in response to mandatory audit requirements, in the form of significantly higher growth rates in the year mandatory audit becomes unavoidable compared to matching firms and the growth rates in other years. Kausar et al. (2016) find discontinuity in sales and assets distributions of firms around audit thresholds in the UK and argue that the discontinuity implies that audit represents a non-trivial cost to small private firms. Using a large sample of private firms from 12 European countries, Bernard et al. (2018) find that firms tend to bunch under the

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

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 to auditors. Their findings indicate that at least 4 % of firms that are within a range of 2 % from the threshold for mandated audit, 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, footnote 14) argue that the revenue threshold is likely to be the binding constraint, but the arguments of Kausar et al. also apply to the Norwegian regulation and firm-size distribution. Bernard et al. base their analysis on the *asset* threshold due to income statement data limitation. 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 mandated audit.

2.2 Effects on external services fees

Langli (2015) argues that there may be important indirect effects from opting out of audit 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 of dropping audit 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 1 500 € to 3 160 €, with 95 % confidence, based on firm-fixed-effect regression analysis.

To evaluate saved firm-costs from introducing voluntary audit, I look at changes in external services costs, e.g., costs to external accountants, auditors and advisory, to capture 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 instantaneous effects related to the reform. This is important because Dedman et al. (2014) find that firms need time to adopt to audit reforms, as they document a trend away from audit 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.

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

Another strand of literature has studied drivers of voluntary audit.⁷ Dedman et al.'s (2014) findings suggest that more riskier firms, and firms with, for instance, greater 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 by dropping audit.

2.3 Mechanisms of size management

Bernard et al. (2018) suggest several mechanisms for size management. Firms can, for instance, postpone sales, provide discounts, spilt the firm, and misreport revenue. The authors argue that splitting the firm or misreporting are costly forms of size management. Harju et al. (2015) study size management around the Finnish VAT-threshold. They do not find evidence of tax avoidance or evasion, and hence suggest that firms respond by reducing output. They arrive at this conclusion by evaluating development in, for instance, equity and total expenses around the VAT-threshold. Their basic idea is that underreporting of sales should be revealed through size-managing firms having higher levels of expenses compared to other firms. This is a fair hypothesis in the cases where firms keep sales off the books. However, if firms practice management revenue recognition, Harju et al.'s conclusion may not be accurate. Recognition of expenses is driven by recognition of revenue, as stated by the matching principle. Hence, if firms practice management of revenue recognition, this will also affect 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 towards the real earnings management literature.

Roychowdhury (2006) refers to real earnings management as manipulation of real activities and lists several different measures of such activity. The most relevant measure in this paper's setting is production costs: cost of goods sold adjusted for changes in inventory in the period. By looking at both cost of goods sold and changes in inventory, one gets around the problem encountered in Harju et al.'s (2015) analyses: that revenue recognition affects cost of goods sold. Firms that manage size might, for instance, buy or produce goods that they do not have incentives to sell in order to fall below the revenue threshold. Consequentially, inventory might be higher in a year where firms manage size of sales in order to avoid mandated audit in the year after. This in turn leads to higher production costs. Real earnings management

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

should then be revealed through higher abnormal production costs in periods where firms squeeze below the revenue threshold to be eligible for opting out of audit the following year.

3. Background for the introduction of voluntary audit in Norway

The introduction of voluntary audit for small private limited liability firms in Norway, in 2011, follows the international trend of reducing costs and complexity of private firms' financial reporting.⁸ In the Norwegian reform, small firms were defined as limited liability firms with less than 500 000 € in operating revenue and at the same time less than 2 Million € in total assets and no more than 10 full time employees.⁹ Norway was the last country in the EU/EEA to abolish full statutory audit 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 reduction of costs and complexity, and competitive considerations.¹⁰ In a consultative statement, Langli (2008) estimates that limited liability firms under the revenue threshold paid around 44 % (1.6 BNOK) of total audit fees for limited liability firms, whereas these firms only made up 4 % of total revenue among 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 allowed by the EU.¹² The legal basis for opting out of audit is given in § 7-6 in the Norwegian Act relating to Private Limited Companies. The previous year's numbers on total revenue, total assets and number of employees are decisive to whether a firm can opt out of audit in a

⁸ The audit-reform was based on the green paper NOU2008:12 submitted to the Norwegian Ministry of Finance. The bill was put forth in the cabinet mid-December 2010, and the statute was sanctioned mid-April 2011, with effect from 1st of May 2011.

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

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

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 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.

certain year.¹³ The choice of dropping audit 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 comes from the Norwegian Tax Authority Register and provides information on financial accounts of all Norwegian firms in the period 2006 to 2015.¹⁵ The focus of this study is on non-grouped limited liability firms around the revenue threshold for mandated audit introduced in 2011.¹⁶ I include firms with minimum revenue higher than 1 MNOK, maximum revenue lower than 10 MNOK, and average revenue between 3 MNOK and 7 MNOK in the sample period. In terms of other size variables, I focus on firms with more than 1 MNOK and less than 20 MNOK in total assets, and less 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 included in the legislative amendment that introduced voluntary audit for small limited liability firms, most importantly the finance industry, judicial services, and accounting services.¹⁷ The final sample is presented in Table 1, and consists of about 43 000 firm-year observations, of more than 6 500 firms. All sample firms were established before the reform and therefore have at some point been subjected to mandatory audit. The maximum number of observations per firm is 10, and the average number of observations per firm is about 6.6.

¹³ <https://www.regjeringen.no/no/dokumentarkiv/stoltenberg-ii/fin/Nyheter-og-pressemeldinger/pressemeldinger/2011/unntak-for-revisjonsplikt-fra-mai-i-ar/id641006/> Eligibility among new firms established after the reform, without prior financial statements, is assessed on the grounds of number of employees at the time of the general meeting's decision and initial total assets or share contribution.

¹⁴ According to Asl. § 7-6 the decision must be taken by the general meeting and requires a majority of 2/3 of the votes. The general meeting can then give the board authorization to opt out of audit. 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 reported to the Norwegian Tax Authority.

¹⁶ Parent companies in the data are subject to mandated audit regardless of the threshold values according to the Auditors Act § 2-1 (5). From 1st of July 2017, parent companies in groups with consolidated figures that do not exceed audit threshold can choose to drop audit (Private Limited Companies Act § 7-6). Subsidiaries are also dropped as the audit-decision is most likely not taken at firm-level, but rather at group-level. I consequentially 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 There is 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 \(nøkkel mellom gammel og ny standard\)](https://www.ssb.no/virksomheter-foretak-og-regnskap/naeringsstandard-og-naeringskoder) (EXCEL)): <https://www.ssb.no/virksomheter-foretak-og-regnskap/naeringsstandard-og-naeringskoder> (Collected 21st of March 2020). Some observations with missing industry-code are imputed using info on the firm's SN2007-code in other periods.

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 1 MNOK \geq yearly tot. revenue \geq 10 MNOK, and 3 MNOK \geq avg. tot revenue \geq 7 MNOK	2 170 195	356 569
- less observations with missing tot. revenue	16 331	0
- less firms with 1 MNOK \geq yearly tot. assets \geq 20 MNOK	81 183	11 955
- less firms with yearly tot. employees \geq 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

Table 2 shows an increasing number of opt-out firms throughout the years 2011 to 2015. The somewhat slow adaptation could reflect that firms need time to learn about the relevant cost-benefit ratio of opting out of audit and corresponds to Dedman et al.'s (2014) findings of 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 audit. Such effects may stimulate eligible firms to cut auditor costs. As this type of information reaches the market, more firms will consider the benefit of dropping audits 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 4.8 MNOK up to, but not including 5 MNOK in total revenue), (2) eligible firms with less than 4.8 MNOK in total revenue, (3) eligible non-opt-out firms, (4) opt-out firms, (5) opt-out firms not exerting size management, and (6) opt-out-firms exerting size management. Importantly, firms just below the revenue threshold in period t , that drop audit in period $t+1$ are used as a *proxy* for size managing firms since I cannot identify firms exerting size management accurately.

Eligible firms in the area just below the threshold (JBT) have on average significantly higher growth rates, greater profitability and are younger than firms in the lower end of the revenue distribution, see Columns (1) and (2). Firms dropping audit have 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 corresponds to 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 audit under a voluntary audit regime are less likely to choose a Big 4 auditor.¹⁸ Opt-outs on average also have significantly lower revenue- and asset-growth, lower cumulative loss ratio, higher likelihood to have an external accountant, and less volatility in sales than voluntary auditees. These findings correspond to a hypothesis of more risky firms choosing to be audited (see e.g., Dedman et al., 2014).

Whether or not a firm engages an auditor is of significance for external services fees as seen in Columns (3) and (4). Opt-out-firms exerting size management are on average significantly bigger in size, more profitable, and have significantly higher growth rates than opt-outs not exerting bunching behavior, see Columns (5) and (6). These findings indicate that size-

¹⁸ 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 $t-1$.

managing firms in general are found to be less risky, and hence have lower demand for audit, as expected.

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

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

Table 3 displays means with standard deviations in parentheses of different firm characteristics. Means and standard deviations are calculated based on number of observations in the different subgroups of 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 audit, and 0 otherwise.

5. Main analyses

5.1 Size management

Non-eligible firms may have incentives to manage revenue, assets and/or employees down to become eligible for opting out of audit, as found in Bernard et al. (2018). This down-sizing could create bunching effects where firms that would otherwise fall above a threshold now fall just below – 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's (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 $i + 1$

Results from the standard difference test (SD) are shown in Table 4. The year-by-year-results show few signs of significant bunching effects in 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.¹⁹ Hence, overall findings indicate that audit costs outweigh costs of size management for certain firms around the revenue threshold, and that the possibility to drop audit is of importance in this segment of firms.

¹⁹ 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 audit in 2011 (the first year after the reform). See also footnote 8.

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

Year	Bin Width 50		Bin Width 100		Bin Width 200	
	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 less observations (n_i) in the bin just below the revenue threshold (ranging from $4\,950\,000 \leq \text{Tot. Revenue} < 5\,000\,000$) and just above (ranging from $5\,000\,000 \leq \text{Tot. Revenue} < 5\,050\,000$) 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 100 000 and 200 000 NOK 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) * $p<0.05$, ** $p<0.01$, *** $p<0.001$)

To estimate the counterfactual distribution, with no discontinuity around the revenue threshold, I apply 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):

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

Where,

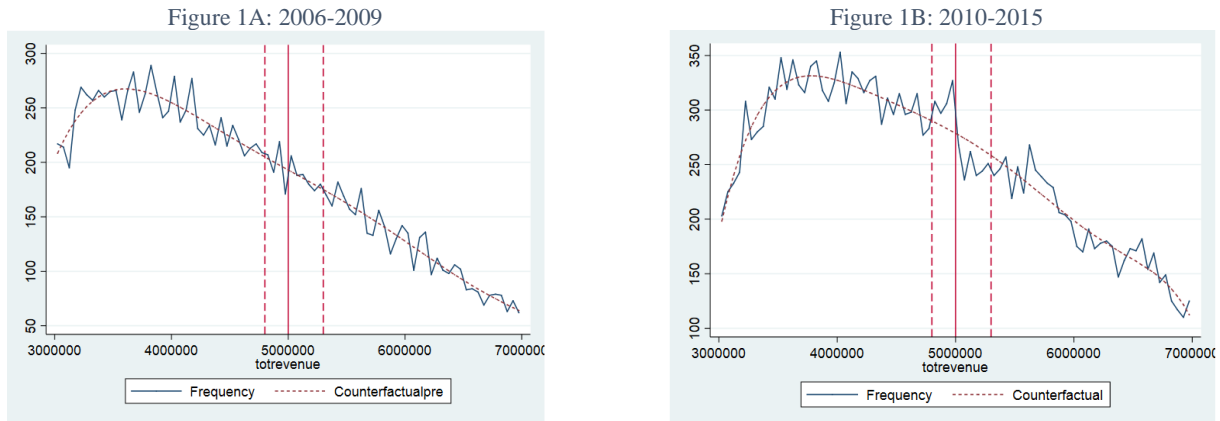
c_j = Number of firms in bin j

z_j = Total revenue in bin j

p = Polynomial (seventh degree in Figure 1)

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 4.8 MNOK up to 5 MNOK in years affected by the reform (2010-2015), leaving a missing mass in the range from 5 MNOK up to 5.3 MNOK.

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



Figures 1A and 1B display 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 mandated audit (1A), and the period where firms had incentives to manage size to avoid mandated audit (1B). The vertical line at 5 MNOK marks the revenue threshold in the post-reform period. The vertical stapled line below the post reform threshold marks 4.8 MNOK, the starting point of where I find an overrepresentation of firms below the revenue threshold in years affected by the audit reform, whereas the vertical stapled line above 5 MNOK marks the end of the area where I find signs of downward size management of total revenue (5.3 MNOK) in years affected by the audit reform.

Comparing the actual distribution of firms to the counterfactual distribution in Figure 1B gives an excess mass of 100 firms just below the threshold, and missing mass of 112 firms just above. According to calculations of the counterfactual distribution of firms, 1 138 firms would naturally lie in the area just below the threshold (4.8 MNOK – 5 MNOK). Hence, there is an estimated excess mass of firms in the area just below the threshold of about 10 %. The average managed firm-revenue is estimated based on Bernard et al.’s (2018) method and found to be approximately 20 000 € (200 000 NOK), which makes an estimate of approximately 2 Million € (20 MNOK) in total revenue managed in years affected by the audit-reform.²⁰ Langli (2015, p. 475) estimates average audit fee saved for opt-outs in 2012 to be under 1 500 € (15 000 NOK). Hence, it seems reasonable that firms are not willing to forgo too many sales to avoid audit – as the savings may be rather limited per firm.

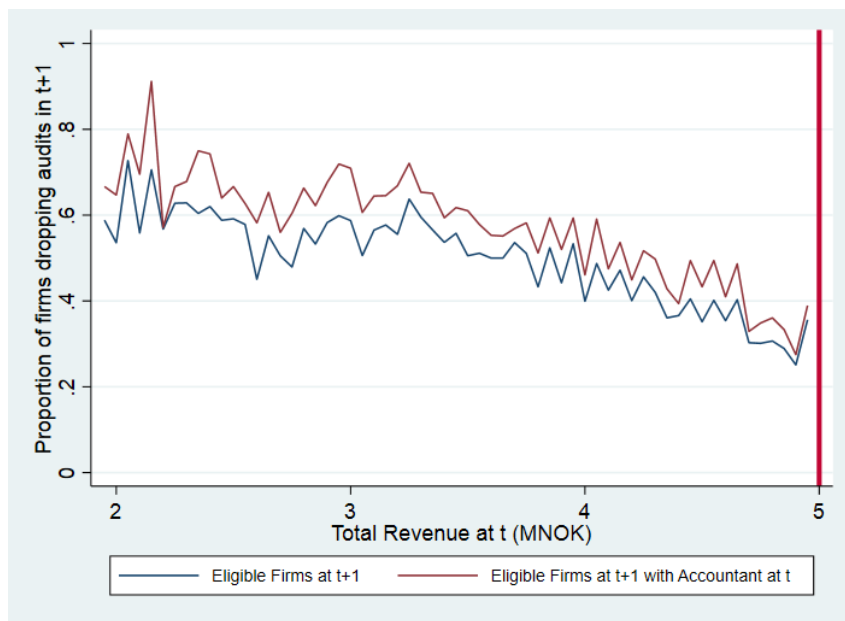
Findings in Figure 2 support the notion of certain firms just below the threshold in period t manipulating revenues downwards in period t to drop audit in period $t+1$, as the proportion of

²⁰ To calculate the weighted average number of bins managed, I first adjust the sum of missing firms above the revenue threshold (112) to equal 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 get 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 with the number of bins from bin 1, respectively. 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 with the portion of missing mass in each bin, respectively, 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 bin size of 50 000 NOK, this amounts to approximately 200 000 NOK in average revenue managed. In total, there are 100 “excess mass firms”, and hence, calculated total revenue managed is about 20 MNOK.

opt-outs in the last revenue-interval before the threshold of 5 MNOK jumps relative to adjacent bins below – both for all eligible firms and eligible firms with external accountants, which consistently have a higher probability of opting out.

These findings indicate that the possibility of dropping audit trumps the possibility of signaling among firms just below the revenue threshold in period t , that drop 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 50 000 NOK. The vertical line at 5 MNOK marks the revenue threshold introduced in 2011.

5.2 Effects on external services fees

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

$$\begin{aligned}
 \text{External Services Fees}_{it} = & \beta_0 + \beta_1 \text{Auditor}_{it} + \beta_2 \text{Accountant}_{it} + \\
 & \beta_3 \text{Auditor}_{it} \times \text{Accountant}_{it} + X_{it}\beta + \theta_t + \gamma_i + \varepsilon_{it}
 \end{aligned} \tag{3}$$

The variables are defined as follows:

*External Services Fees*_{it}: Fees to external services, such as external accountants and auditors, in thousands NOK.

*Auditor*_{it}: 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 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 consist only of firms that are established before the 2011-reform, all firms should have at least one year with 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} × *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 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 pretax-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. Leverage and quick ratio, to account for financial exposure.²¹ See Appendix for more detailed variable definitions.

I use firm-fixed-effects modeling to mitigate potential omitted variable bias caused by unobserved time-invariant heterogeneity among firms.²² Firm-fixed-effects do, however, not account for unobserved *temporary* shocks affecting firms' use of both audit and other external services. Such temporary shocks may cause firm-fixed-effects estimates to be biased upwards

²¹ See e.g., Hay (2013) and Clatworthy and Peel (2006).

²² 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.

as opt-out firms may also cut other external services fees. As a robustness test for such possible upward bias in firm-fixed-effects estimates, I therefore instrument for the choice of engaging an auditor after the reform. I use the following two predetermined variables as instruments:

Instrument 1: *Always_eligible* \times *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* \times *yr*. An indicator variable taking the value 1 if a firm is eligible 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 audit as smaller firms have higher probability of dropping audit, and – as shown in table 2 – the proportion of firms dropping audit increase over time. External services fees in the post-reform period should, however, not be correlated with pre-reform eligibility (whether a firm has more or less than 5 MNOK in total revenue in the pre-reform period), and time passed after the reform.

The firm-fixed-effects regression results of the external services fees analysis are reported in Table 5. In Column (1), external services fees are regressed on the main variables of interest only. In Column (2), the estimate on saved fees from not using audit is almost halved due to inclusion of control variables. The results in Column (2) show that not using audit lowers external services fees by approximately 2 300 € (23 000 NOK). 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 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 services 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 seem to be no consistent significant economies of scope from engaging both an auditor and an accountant in terms of effects on external services fees, or a Big 5-premium on audit fees. This is seen from the coefficients on the variables *Accountant* \times *Auditor*, and *Big5*.

The coefficients for the control variables are as expected. The ratio of pre-tax income to total revenue drives external services fees down. 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 services 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 services fees

VARIABLES	External Services Fees in 1 000 NOK			External Services Fees in 1 000 NOK Trimmed at 1 st and 99 th Percentile		
	(1)	(2)	(3)	(4)	(5)	(6)
	FirmFE	FirmFE	2slsFirmFE	FirmFE	FirmFE	2slsFirmFE
Auditor	41.630*** (11.916)	23.438*** (8.927)	94.166* (55.692)	23.427*** (3.951)	10.295*** (3.579)	104.221*** (26.827)
Accountant	28.786** (13.350)	25.775** (10.877)	73.311 (57.425)	13.044*** (4.125)	9.692** (3.807)	96.106*** (23.222)
Accountant × Auditor	-13.769 (11.452)	-8.938 (8.979)	-56.952 (60.398)	0.559 (3.965)	5.541 (3.640)	-85.069*** (24.140)
Big5		10.213 (8.950)	4.952 (7.907)		5.034*** (1.420)	3.033 (1.928)
Observations	43,282	31,535	30,960	42,418	31,064	30,487
Number of firmid	6,454	5,383	4,808	6,386	5,352	4,775
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 R² are shown in columns (1)-(2), and (4)-(5), whereas overall R² are 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 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 on 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 manage on average 200 000 NOK in total revenue to become eligible for dropping audit the following year. Hence, size management results in approximately 17 000 NOK in lost profits at the firm-level. The after-tax value of the average external services fees' savings is in the area of 17 000 – 7 000 NOK depending on whether extreme observations are included.²³ These findings indicate that firms also take into account indirect costs (such as management time and effort used in relation to an audit) in the cost-benefit ratio assessment of an audit. This finding corresponds to the survey findings in Minnis

²³ Based on a tax rate of 27 % - which was applied in Norway from 2014.

and Shroff (2017) of a majority of mainly small firms (including respondents from Norway) viewing both direct fees (60 %) and indirect cost such as management time (54 %) as important concerns in the assessment of whether an audit is net beneficial. 42 % of the respondents view lack of perceived benefit as an important concern.

5.3 Real earnings management as source of size management

I use of Roychowdhury's (2006) 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 audit. 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:

$$Prod_{it} = \text{Sum of cost of goods sold (COGS) + Change in inventory (}\Delta INV\text{)}$$

$$A_{it-1} = \text{Lagged total assets}$$

$$S_{it} = \text{Sales during period } t$$

$$\Delta S_{it} = \text{Change in sales in period } t (S_{it} - S_{it-1})$$

$$\Delta S_{it-1} = \text{Lagged change in sales } (S_{it-1} - S_{it-2})$$

$$\varepsilon_{it} = \text{Abnormal production costs } (AbnormProdCost_{it})$$

All ratios are trimmed at the 1 %-level.

I test whether size management among firms that drop audit 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 ($4.8 \text{ MNOK} \leq \text{Total revenue} < 5 \text{ MNOK}$), 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 audit, 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 drop audit in period $t+1$, and 0 otherwise. 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 cost could relate 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 inventory.

Table 6 reports firm-fixed-effects results from the real earnings management analysis. 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 findings presented in the main model in Column 2.

Although results in Table 6 show a positive coefficient on the interaction variable $JBT_{it} \times Drop_{it+1} \times Drop_{it}$, I find no significant evidence of firms manipulating revenue through real earnings management. One should, however, keep 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 hence separately study firms where inventory makes up more than 10 % of the total balance sheet and get the same qualitative results as found in Table 6. Another weakness in 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., scale down total activity to stay below the revenue threshold). This implies that actual size managing-effects may be obscured since I

must use a proxy for size management. However, the lack of significant findings seems coherent with the lack of economic effect from size management found in section 5.1 in the sense that relatively few firms exert this type of behavior and that the total managed amount of revenue is immaterial.

Table 6: Real earnings management

VARIABLES	(1) FirmFE	(2) FirmFE	(3) 2slsFirmFE
Just below Threshold (JBT _{it})	-0.005 (0.006)	-0.004 (0.005)	0.913 (2.401)
Drop _{it}	-0.000 (0.004)	-0.000 (0.004)	-0.079 (0.062)
JBT _{it} × Drop _{it+1} (Proxy for Size mgmt. _{it})	-0.015 (0.015)	-0.014 (0.014)	-6.916 (18.208)
JBT _{it} × Drop _{it+1} × Drop _{it}	0.016 (0.017)	0.017 (0.015)	5.482 (14.496)
Observations	20,957	19,202	18,743
Number of firmid	4,285	4,147	3,688
Control variables	NO	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES
R ²	-0.000	0.115	0.008

Adjusted R² are shown in Columns (1)-(2), and overall R² are 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 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 on firm-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6. Conclusions and perspective

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

Analysis of external services fees shows that direct cost savings from dropping 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 audit.

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

Overall, the introduction of voluntary auditing for small private firms in Norway seems to be a well-functioning reform.²⁴ Although some firms forego growth opportunities to avoid crossing the threshold for mandatory audit, 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.

²⁴ See also Aase (2021) and Aase and Møen (2021) who analyze potential effects of the reform on accounting quality and tax reporting, without demonstrating any consistent negative effects.

References

- Aase, Ø. A. S. (2021). Effects of voluntary audit on accounting quality in small private firms: *Unpublished manuscript. Department of Business Administration, Western Norway University of Applied Sciences.*
- Aase, Ø. A. S., & Møen, J. (2021). The effect of private audit on tax compliance: *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.
- 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). <https://biopen.bi.no/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*. 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). https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/300323/Larsen_Loehen.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: Variables' Definitions

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

Assets growth_{it}: $(\text{Total assets}_{it} - \text{Total assets}_{it-1}) / \text{Total assets}_{it-1}$. Trimmed at 1 % level.

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

Big5: Indicator variable, takes the value 1 if 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}: $(\text{Number of observed years with negative profit in data})_{it} / (\text{number of observed years in data})_{it}$

Curr. Totassets_{it}: Current assets / Total assets. Trimmed at 1 % level.

Drop_{it}: Indicator variable, takes the value 1 if firm drop auditor in year t , and 0 otherwise.

Drop_{it+1}: Indicator variable, takes the value 1 if firm drop auditor in year $t+1$, and 0 otherwise

Eligible_{it}: Indicator variable, takes the value 1 if firm is eligible for opting 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 services 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 1 % level.

Inventory_{it}: Inventory_{it} / Total assets_{it-1}. Trimmed at 1 % level.

JBT_{it}: Indicator variable, takes the value 1 if a firm has total revenue of 4.8 MNOK up to, but not including 5 MNOK 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 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 .)

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}: Pretax earnings / Total revenue. Trimmed at 1 % level.

Quick ratio: $(\text{Short term assets} - \text{inventory}) / \text{Short term debt}$. Trimmed at 1 % level.

Revenue growth_{it}: $(\text{Revenue}_{it} - \text{Revenue}_{it-1}) / \text{Revenue}_{it-1}$. Trimmed at 1 % level.

ROA_{it}: Return on assets. Profit scaled by lagged total assets. Trimmed at 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 1 % level.

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

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



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