The Impact of Voluntary Audit on Credit Ratings and Financial Reporting Quality: Evidence from UK private firms

Abstract

The UK has recently allowed progressive, size-based audit exemption for private firms. While the government argues that smaller firms need to be relieved of regulatory burden, accounting bodies have expressed concern, arguing this could diminish user confidence in reported accounting numbers, and lead to a reduction in financial statement quality.

To assess the effect on user confidence of making audit optional, we analyse the credit scores of a sample of UK private firms which qualified for audit exemption after substantial threshold changes in 2004. We find that firms which opt out of audit have significantly lower credit scores than those which retain an audit. Voluntary audit is significantly positively associated with credit score, even after controlling for firm size and several measures of financial health, indicating that the audit provides valuable assurance to external users of financial information.

We then examine the quality of financial reporting in our sample firms, using accounting conservatism tests. The results show that opting out of audit is associated with more aggressive accounting, consistent with the concerns of the accounting bodies.

This study contributes to an important policy debate by providing large sample evidence that the audit confers benefits on both firms and users of accounts.

Keywords: small companies; voluntary audit; credit ratings; financial reporting quality.

1. Introduction

The traditional role of the audit has been to provide independent third-party verification of an organisation's accounts and reports. Though the audit is prepared on behalf of the members of the company[1], it provides valuable assurance to external users of financial reports, such as investors and other finance providers (Watts and Zimmerman, 1983; Davies, 2008). This assurance has been found to provide direct benefits to companies. For example, newly public firms have been found to benefit from lower borrowing costs if they engage a high-quality auditor to verify their accounts (Pittman and Fortin, 2004).

The UK has historically adopted a policy of universal mandatory audit. Changes to the Companies Act 1989, which increased the costs of audit, prompted the government to reconsider this practice, however, as it was felt the changes had imposed a disproportionate cost burden on very small companies. Further, it may be argued that in small companies, the closer and longer-standing auditor/client relationship, coupled with the fact the auditor is often auditing accounts s/he has actually prepared, reduces any assurance benefits (Seow, 2001). The considerable increase in cost - for something of limited benefit - lent strength to the case for exempting smaller firms from audit (Keasey *et al*., 1988). In 1994, the UK therefore applied the EU Fourth Directive, which allows Member States to exempt small companies from audit, and allowed very small private companies to opt out of audit for the first time (Collis *et al*., 2004). Since then, the audit exemption thresholds have increased considerably, with the most notable changes occurring to firms reporting after 30 January 2004.[2] These substantial threshold changes were ex-ante estimated to reduce the regulatory burden of 69,000 companies, saving them collective audit fees of £94m per year, in line with the government's stated objective, which was to reduce the audit burden faced by small companies.[3]

Such reforms are commonplace across Europe (ICAEW, 2009), which appears to be moving towards US-style policy, where private firms have never been required to undergo audit (Allee and Yohn, 2009). A major frictional issue associated with the sudden exemption of large numbers of firms from a statutory audit arises from users of accounts having come to rely on the assurance provided by the audit. In order to address this abrupt loss of assurance in the private

[1] Caparo Industries plc v Dickman 1990 2 AC 605.
[2] For example, the initial audit exemption threshold, in respect of annual turnover, was set at £90,000 in 1994; raised to £300,000 in 1997; increased to £1m in 2000 then to £5.6m in 2004 (Davies, 2008).
[3] BERR, 2003

company sector, in 2006 the ICAEW undertook a two-year consultation on potential alternatives to audit. An important finding from this process was that credit rating agencies (CRAs) felt their ability to generate reliable credit ratings was compromised by the relaxation of the audit requirement, an opinion they had already expressed in earlier consultations (Iwasaki, 2008). The CRAs indicated that the diminished assurance provided by unaudited accounts could lead to reduced credit scores[4]. Interestingly, and contrary to the findings of earlier research (e.g. Berry *et al*., 1987) *banks* felt that their ability to assess loan creditworthiness was not affected adversely by the audit exemptions, as they had their own sources of information (e.g. bank records, relationships with clients) and could ask the company to supply full accounts. The banks did acknowledge, however, that "there may be an impact on the robustness and cost of external credit ratings which is one of the information sources that banks use."[5] Both banks and CRAs expressed concern that small companies may not be aware of the "negative impact of not having any independent assessment of the credibility of their accounts."[6]

Audit firms themselves have argued that a further consequence of widespread audit exemption may be a reduction in the quality of financial reporting. The (then) ICAEW president, David Illingworth, commenting to the media, said:

> "We welcome the government's overall objective of cutting red tape for smaller businesses. However we remain concerned that this decision to increase the audit exemption turnover threshold from £1m to £5.6m is being made without sufficient evidence to demonstrate the benefits.
>
> In our response to government we cautioned against an increase of the magnitude proposed at the present time. We believe that it could have a long-term impact on the business environment, including standards of business behaviour, the quality of financial information available to stakeholders and levels of economic crime."[7]

Similarly, the ACCA commented,

> "Government should be taking into account the impact on society of moving to a largely unaudited corporate sector – the increased risk of fraud and error and potential damage to

[4] ICAEW 2009, finding 3.7.
[5] ICAEW 2009, finding 2.2.
[6] ICAEW 2009, finding 3.2.
[7] "ICAEW Slams Threshold Rise", Accountancy Magazine online, 19 November 2003.

confidence generally is not easy to measure. It is too easy to focus just on the audit fees saved."[8]

This study contributes to the ongoing debate by examining the credit scores and financial reporting quality of a sample of 4,873 UK private firms following a major threshold change which exempts them from audit for the first time. In the first year of exemption, 1,354 (28%) of our sample companies opt out of audit, with the trend for voluntary audit declining further in 2005 and 2006. We analyse the associations between sample firms' audit choice, credit scores, and their financial statement numbers in the years following the initial change in their exemption status.

Our univariate tests suggest that firms which retain an audit in the voluntary regime enjoy significantly higher credit scores than those which opt out. Using the Qui Score measure reported in the FAME[9] database, which is on the scale 0-100 (with 100 indicating firms with the lowest estimated failure risk), we find that firms which retained an audit in 2004 were awarded a mean (median) score of 71 (76), compared to a mean (median) score of 58 (58) for audit opt out firms. The results of multivariate tests on the determinants of Qui Score, which control for several firm characteristics previously found to affect credit score, provide additional evidence that voluntary audit is positively associated with credit score. The addition of a voluntary audit dummy to a model which predicts Qui Score has the effect of significantly increasing the model's predictive ability (R^2 increases from 21% to 28%), with a large and significant positive coefficient on the voluntary audit dummy. Similar results are obtained when we repeat the tests on a later sample period (2005 and 2006). These results are consistent with the CRA regarding the audit as providing valuable assurance about the financial position of the firm and corroborate the concerns expressed in the ICAEW consultation.

Given the audit community's disquiet about diminutions in the quality of unaudited financial reporting, combined with our observation that audited financial statement numbers appear to be better predictors of credit score, we go on to examine the quality of financial reporting in our sample firms. We do this using the timeliness of loss and gain recognition measures developed by Basu (1997) and Ball and Shivakumar (2005). The results indicate that mandatory audit encourages conservatism in the reporting of net income. Audit opt out firms

[8] "Audit Aftershock", in Accountancy magazine, 20 December, 2006
[9] Financial Analysis Made Easy

report gains sooner, and losses later, in the voluntary regime, whereas voluntary audit firms exhibit no significant changes in the timeliness of reporting either gains or losses.

The rest of the paper is structured as follows: section 2 reviews relevant literature and introduces the hypotheses; section 3 contains the research methodology; section 4 reports the results; section 5 explains our robustness checks; and section 6 concludes the paper.

2. Literature Review

History suggests that, absent regulation, many organisations will voluntarily subject their accounts to independent inspection. Watts and Zimmerman (1983) trace the development of demand-led audits in the UK. They provide evidence of external checks on accounts prior to the fourteenth century; by the nineteenth century, they show that enterprises regularly organised voluntary audits to mitigate the agency problems arising from the growing separation of ownership and control.

> "Thus, when the UK Companies Act of 1844 required directors to keep accounts and required these accounts to be audited by persons other than the directors (or their clerks), Parliament was merely incorporating into the law a version of a practice that had existed for six hundred years" [p.626].

Though the compulsory audit requirement was dropped in the Companies Act of 1856, it was re-established in the Act of 1900 and universal mandatory audit remained in place in the UK until 1994, when the first size-based exemptions were introduced. The rationale behind the relaxation of audit regulation for smaller companies involves an assumption that companies will be able to effectively self-select into voluntary audit such that those which would benefit from the audit will retain it. Evidence from outside of the UK suggests voluntarily audited firms enjoy increased access to capital and lower borrowing costs. Allee and Yohn (2009) analyze the data produced by the Federal Reserve Board's 2003 National Survey of Small Business Finances and report that firms with audited financial statements are much more likely to have access to credit than other small firms. Blackwell *et al.* (1998) gain access to information on revolving credit agreements relating to 212 private firms in the US and find that private firms gain a significant interest rate advantage if they undergo voluntary audit. Simunic *et al.* (2010) extend this work by examining the interest rates applied to a large sample of private companies in Korea, where many private companies are exempt from mandatory audit but are obligated to file full financial

statements. Using a sample including over 70,000 firm years from 1987 to 2002, they find that those firms (around 4% of the sample) which undergo voluntary audit benefit from interest cost savings of around 56 basis points after controlling for several firm financial characteristics and firm fixed effects. Though there appear to be observable benefits to having an audit, they find no evidence to suggest that private firms gain from employing a larger ('high-quality') auditor, which is consistent with earlier research. For instance, Fortin and Pittman (2007) find that private firms with a Big4 auditor enjoy no cost of capital benefits in terms of yield spreads or credit ratings, as compared to similar firms which do not engage a Big4 auditor. Simunic *et al.* (2010) therefore argue that it is the audit *per se* which enhances the credibility of financial statements to external users of accounts. They also find evidence to support the argument that a *voluntary* audit has a more powerful effect than a mandatory audit, as firms which voluntarily undergo an audit enjoy greater interest rate reduction benefits than those which switch from no audit into a mandatory audit due to their growth.

Research in the UK has examined directors' perceptions of the impact of audit. Collis and Jarvis (2000) surveyed 385 small companies and found 63% of directors predicted they would retain an audit even if they were granted exemption. The main determinant of this decision was the directors' belief that the audit improved the quality of financial information. Marriott *et al.* (2006) report case study evidence that companies consider their credit rating when deciding whether they need an audit, while Collis (2003) reports that credit ratings are an important factor in firms' decisions about filing full accounts. The survey responses in Collis (2010), however, are contrary to these earlier findings. In asking companies whether they believe an audit will increase their firms' credit scores, she finds the most common response to be 3 (where 5 = agree; 1 = disagree), with the mean and median responses being 3.35 and 3, respectively. This suggests that those in control of small companies do not perceive their audit choice to have any impact on their credit score and resonates with the concerns expressed by banks and credit rating agencies to the ICAEW:

> "Banks and CRAs thought SMEs should be more aware of the negative impact of not having any independent assessment of the credibility of their accounts. CRAs see independent opinions as important in strengthening third-party confidence in financial information. If more SMEs understood the value of having an independent assessment, some companies…may switch back to having one." (ICAEW, 2009, p.26)

Systematic evidence on the *actual* consequences of opting out of audit is therefore important to the audit exemption debate but is currently unavailable. Although credit score is not a perfect measure of cost of capital, there are advantages to using credit scores to supplement the interest expense evidence presented in previous literature (e.g. Simunic *et al*., 2010). As loans are not necessarily renegotiated each year, and some firms do not require loans at all, comparing average interest expense rates immediately following the change in audit exemption threshold seems inadequate. However, credit scoring agencies do update their firm scores regularly so comparing credit scores after the change is likely to provide an informative and less noisy measure of audit assurance, as well as being available for firms which do not have debt or seek further debt. Further, the availability and cost of capital to private firms may be influenced by the directors' ability to provide personal security for business loans, a factor which does not affect company credit ratings constructed from publicly available information. The above discussion leads us to our first hypothesis, expressed in alternative form below:

> H1: *If audit increases the credibility of financial statements then firms retaining a voluntary audit will receive higher credit scores than firms which opt out of audit, ceteris paribus.*

Our next hypothesis addresses the concerns of the professional bodies and examines whether exempting firms from the audit leads to a reduction in financial statement quality. Of course, the bodies which represent the providers of audits have a vested interest in protecting the market for their products, which may reduce the credibility of their claims. There is, however, strong evidence that auditors improve financial reporting quality in client firms. For example, Nelson, Elliott and Tarpley (2002), interview 253 auditors from a large firm about 515 earnings management attempts. They find that auditors tend to insist on adjustments to income increasing earnings management attempts, particularly in small firms. We therefore conjecture that opting out of audit will lead to a reduction in financial reporting quality and test this with our second hypothesis:

> H2: *If audit increases the quality of financial reporting then the financial statements of firms retaining a voluntary audit will be of higher quality than those of firms which opt out of audit, ceteris paribus.*

Our study seeks to contribute to the ongoing debate on the benefits of voluntary audit by investigating our two hypotheses using a large sample of firms which have recently become eligible to opt out of the statutory audit.

The next section describes our sample and methodology.

3. Research Design

The sample we use is drawn from the FAME database, which contains financial statement information for a large proportion of the population of UK firms. In the UK, even private firms must file financial statements in line with the same accounting standards as those applied to public firms (Ball and Shivakumar, 2005), which is similar to the situation in Korea as described by Simunic *et al.* (2010). In order to limit confounding effects which occur as the time from our event of interest increases, we initially analyse the financial statements of firms immediately following the exemption threshold change which occurred in January 2004, extending the sample to incorporate later years in additional tests

To be included in our sample, each firm must become newly qualified for exemption in January 2004, so it must be an independent, small[10], private company and it must have: £1m < sales < £5.6m; £1.4m < total assets < £2.8m in both 2003 and 2004. Our search yields a sample of 4,873 firms for which FAME has full data for 2003 and 2004, of which 1,354 (28%) opted out of the audit in 2004, the first year in which they were exempt.[11]

Our first set of tests is designed to examine whether external credit rating agencies value the assurance provided by the audit. We test this by looking at whether firms which opt out of the audit receive lower credit scores than their audited counterparts using both univariate and multivariate tests. The FAME database reports the Qui Score of its constituent firms, which is a credit rating calculated by Qui Credit Assessment Ltd using publicly available data. The Qui Score is measured on a 0-100 scale and is an estimate of the likelihood a firm will fail in the next 12 months. A higher score indicates that the firm is *less* likely to fail imminently. Doumpos and Pasiouras (2005) replicate the Qui Scores of a sample of 500 UK non-financial companies, and

[10] To be classed as small by the regulator, companies must satisfy 2 out of 3 size criteria over a period of two years, the first two criteria being the same as the turnover and total asset audit exemption thresholds and the third being a maximum average number of employees of 50.

[11] It should be noted here that our data requirements preclude the inclusion in our sample of firms which opted to file abbreviated accounts.

find they are partially predicted by measures of profitability, liquidity, indebtedness and size. We include similar financial measures but also control for the nature of assets (tangibility), sales growth and negative equity, in line with Simunic *et al.* (2010). Further, following Pittman and Fortin (2004), we include firm age, interest coverage, and a cash flow measure as control variables.

We therefore examine whether financial measures predict Qui Scores for our sample firms, and whether there is any difference in the predictive relationship between audited and opt out firms. The models we use are as below:

$$QuiScore_t = \beta_0 + \beta_1 Profit_t + \beta_2 OPCF_t + \beta_3 IntCov_t + \beta_4 Quick_t + \beta_5 Lev_t + \beta_6 SalesGrowth_t + \beta_7 Assets_t + \beta_8 Intangible_t + \beta_9 NegEquity_t + \beta_{10} Age_t + \varepsilon_t \quad (1)$$

$$\Delta QuiScore_t = \beta_0 + \beta_1 \Delta Profit_t + \beta_2 \Delta OPCF_t + \beta_3 \Delta IntCov_t + \beta_4 \Delta Quick_t + \beta_5 \Delta Lev_t + \beta_6 \Delta SalesGrowth_t + \beta_7 \Delta Assets_t + \beta_8 \Delta Intangible_t + \beta_9 \Delta NegEquity_t + \beta_{10} \Delta Age_t + \varepsilon_t \quad (1a)$$

$$QuiScore_t = \beta_0 + \beta_1 VolAud_t + \beta_2 Profit_t + \beta_3 OPCF_t + \beta_4 IntCov_t + \beta_5 Quick_t + \beta_6 Lev_t + \beta_7 SalesGrowth_t + \beta_8 Assets_t + \beta_9 Intangible_t + \beta_{10} NegEquity_t + \beta_{11} Age_t + \varepsilon_t \quad (2)$$

$$\Delta QuiScore_t = \beta_0 + \beta_1 \Delta VolAud_t + \beta_2 \Delta Profit_t + \beta_3 \Delta OPCF_t + \beta_4 \Delta IntCov_t + \beta_5 \Delta Quick_t + \beta_6 \Delta Lev_t + \beta_7 \Delta SalesGrowth_t + \beta_8 \Delta Assets_t + \beta_9 \Delta Intangible_t + \beta_{10} \Delta NegEquity_t + \beta_{11} \Delta Age_t + \varepsilon_t \quad (2a)$$

where:

QuiScore =	credit score reported by FAME;
Profit =	net income after extraordinary and exceptional items, deflated by average book value of total assets;
OPCF =	operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital;
IntCov =	EBIT/interest expense;
Quick =	the ratio of current assets (excluding inventory) to current liabilities;
Lev =	total liabilities/total assets;
SalesGrowth =	% change in sales from previous year;

Assets =	the natural log of closing shareholder funds;
Intangible =	intangible assets/total assets;
NegEquity =	1 if total liabilities exceeds the book value of total assets, otherwise zero;
Age =	natural log of the number of years since incorporation;
VolAud =	a dummy variable, coded one if the company undergoes a voluntary audit in the current year, zero otherwise;
*Δ*Variable=	value of variable measured in 2004 *less* value of same variable measured in 2003.

All data is collected from FAME. To mitigate the effects of outlying observations, we winsorize all continuous variables at 95%. Even after this treatment, we observe that the interest cover measure is highly skewed, with some observations having very large values relative to the median value. We therefore restrict the maximum value of this variable to be 11 (the median value before treating the variable was 6).

Following Doumpos and Pasiouris (2005), we make the following predictions with respect to the sign of association between Qui Score and reported accounting numbers. We predict that firms with higher profits will be given higher credit scores, so we expect a positive association between profit and Qui Score. Similarly, firms with higher levels of operating cash flow are better able to meet their short term obligations so we expect a positive relationship between OPCF and Qui Score. Firms with higher earnings relative to interest costs are less likely to suffer financial distress so we expect a positive association between IntCov and credit score. We use the quick (or acid test) ratio, excluding inventory from current assets, as our measure of liquidity, and expect its relationship to Qui Score to be positive. If a firm has a low amount of debt relative to its assets, then it is likely to have a lower risk of failure so we predict a negative association between Qui Score and our leverage measure, Lev. Following Simunic *et al.* (2010), we control for growth potential using sales growth, and expect any relationship to be positive. Suppliers of finance are more likely to retrieve their money, even if the company runs into difficulties, if there are more assets to sell. We therefore anticipate that companies with higher total assets are scored more highly by the credit agency, but that tangible assets are favoured, resulting in a positive association between Assets and Qui Score and a negative association

between our Intangible variable and credit score. Simunic *et al.* (2010) also find that firms with negative equity face higher borrowing costs so we control for this in our tests and expect a negative association between the negative equity indicator variable and credit score. Pittman and Fortin (2004) argue that information asymmetry between borrowers and lenders decreases with firm age so we anticipate a positive association between firm age and credit score, all else equal.

Following Simunic *et al* (2010), we calculate interest rate as interest expense divided by average total debt and employ this as an alternative dependent variable in robustness tests.

In order to test our second hypothesis, we are required to measure the financial reporting quality of sample firms. We do this by measuring accounting conservatism in our cohort, comparing the financial reporting behaviour of voluntarily audited firms to audit opt out firms.

Conservatism in accounting is argued to offer many benefits to both users of accounts and the owners of firms (Watts, 2003a, b). The concept, described as "a stronger verifiability requirement for the recognition of gains than for the recognition of losses" (Watts, 2003b, p.287) reduces the amount of current reported income, thereby reducing the net present value of tax payments. The lower net asset values reported under conservatism enable managers to exercise abandonment options in a more timely manner, thus reducing losses incurred by unprofitable divisions, for example. More importantly for our study, conservatism reduces the risk to the firm's creditors by causing accelerated covenant violations which allows creditors to take protective actions to reduce their risk. This is beneficial to firms and it is associated with a reduction in the ex-ante cost of capital in public firms (Zhang, 2008). Measures of conservatism are therefore employed to assess the quality of a firm's financial statements (Ball and Shivakumar, 2005).

Auditors impose conservatism on the accounts of client firms, by ensuring they have been prepared in compliance with GAAP, which itself is conservative (Basu, 1997). For example, income-decreasing changes in long-term contracts are immediately recognized but this is not the case for increases in expected income, and there is similar asymmetric treatment of changes in value of physical assets. If income decreasing events are recognised immediately, e.g. by asset writedowns, then they are more likely to be transitory and reverse next period. If audit opt out firms do not recognise losses in a timely fashion, then there will be less reversal of income decreases in opt out firms relative to companies undergoing voluntary audit.

We use the following models, adaptations of those developed by Basu (1997) and Ball and Shivakumar (2005), to measure the timeliness of loss recognition in the financial statements of sample firms:

$$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_4 POST2003 + \alpha_5 POST2003 \times D\Delta NI_{t-1} + \alpha_6 POST2003 \times \Delta NI_{t-1} + \alpha_7 POST2003 \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \epsilon_t \quad (3)$$

$$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_4 POST2003 + \alpha_5 D2003 \times D\Delta NI_{t-1} + \alpha_6 POST2003 \times \Delta NI_{t-1} + \alpha_7 POST2003 \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_8 DOPT + \alpha_9 DOPT \times D\Delta NI_{t-1} + \alpha_{10} DOPT \times \Delta NI_{t-1} + \alpha_{11} DOPT \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \epsilon_t \quad (4)$$

where:

ΔNI_t = the change in net income (after exceptional and extraordinary items) from fiscal year t_{-1} to t, scaled by beginning book value of total assets;

ΔNI_{t-1} = the change in net income for the prior year;

$D\Delta NI_{t-1}$ = one if $\Delta NI_{t-1} < 0$, zero otherwise;

POST2003 = a dummy variable that equals one if the observation is from the voluntary time period, otherwise zero;

OPT = one if the company opts out of audit after 2004, otherwise zero.

Model 3 tests for differential mean reversion in earnings changes between the voluntary and mandatory audit periods. Model 4 enables us to isolate any changes in the reporting behaviour of audit opt out firms in the voluntary period.

Under conservatism, gains are not recognized until they are likely to represent permanent increases in income; as such an increase in reported income is not likely to reverse in the next time period. Conversely, losses are recognized immediately and are therefore more likely to reverse in the next time period. If the introduction of audit exemption is associated with a general reduction in financial reporting quality, then we would expect to see lower levels of conservatism in reporting of net income after 2003 in our sample firms. We also predict that opt-

out firms will become less conservative than audited firms in their accounting in 2004 and beyond. Our predictions with respect to all the variables are explained and summarized below:

	Description	Prediction
α_0	General intercept.	?
α_1	Intercept for negative change in last year's earnings.	?
α_2	Relationship between this year's income change and last year's income change. If gains are recognized only when they are deemed permanent, then gains are not likely to reverse and so the coefficient on ΔNI_{t-1}, α_2, will be non-negative. If gains are recognized early, then they are more likely to reverse and α_2 will be negative.	?
α_3	Incremental relationship between this year's income change and last year's income change, *if* this was negative. If losses are recognized early (i.e. in a conservative fashion) then they are more likely to reverse, in which case α_3 will be negative. If losses are not recognized in a timely way, then α_3 will be positive, as the losses in this case are only recognized once they are likely persistent.	?
α_4	Post-2003 dummy.	?
α_5	Post-2003 × negative income change last year.	?
α_6	Equivalent to α_2 but only for the voluntary time period, when we expect firms to delay recognition of gains less, making them more likely to reverse. We therefore predict a zero or negative coefficient on both audit and opt-out firms.	≤ 0
α_7	Equivalent to α_3 but only for the voluntary time period. We expect firms to recognize losses later in this time period, when they are more likely permanent, and we therefore predict a positive coefficient.	$0 <$
α_8	Opt out dummy.	?
α_9	Opt out dummy × negative earnings change last year.	?

α_{10}	Captures changes to the timeliness of gain recognition for opt-out firms in 2004 and beyond. We predict a negative coefficient, which would indicate that opt-out firms are accelerating the recognition of gains more than they did in the mandatory audit period.	< 0
α_{11}	Captures changes to the timeliness of loss recognition for opt-out firms in 2004 and beyond. We predict a positive coefficient, which would indicate that opt-out firms are delaying the recognition of losses more than they did in the mandatory audit period.	> 0

The next section reports results from our analyses of the data.

4. Analysis

Table One contains descriptive statistics for all sample firms for 2004. In 2004, the first year of exemption, 72% of firms retained a voluntary audit. The mean (median) Qui Score was 68 (71). Most firms were in profit, earning a mean (median) 7.5% (6.1%) return on assets, and had positive cash flows. Interest cover tends to be healthy in the sample, measuring 6% on average, after our treatment for skewness (above). On average, firms reported £1.073m of assets. Assets were financed by liabilities at the mean (median) rate of 70% (65%) in terms of book values, with current assets (excluding inventory) being valued a little higher than current liabilities, on average. Firms reported low levels of intangible assets, with the mean (median) value of our measure being only 1.1% (0). On average, firms were experiencing positive sales growth of 5.7% (median 3.3%) in 2004, though some firms were suffering sales decline (Q1=-7.1%). Over 10% of our sample firms were in the position of book value of liabilities exceeding that of assets. Interest rate expense in 2004 was a mean (median) 9.4% (4.5%) according to our estimate. Sample firms had been incorporated for a mean (median) of 18 (14) years in 2004.

TABLE ONE HERE

In Table 2, we conduct univariate tests of our first hypothesis by comparing the credit scores of audit and opt out firms. As predicted, the firms undergoing voluntary audit receive a significantly higher credit score than opt out firms, with the mean (median) Qui Score for audited

firms being 71 (76) while opt out firms only received scores of 58 (58), (t=-21.3; p=-23.3). Table 2 also reveals that firms in our subsets vary in several other respects, however. Voluntary audit firms tend to be less profitable than opt out firms, with lower operating cash flows, lower levels of interest cover and higher leverage. Audited firms are also, in general, larger, report a greater proportion of their assets as intangible, and are slightly older than firms which exercise their right to audit exemption. We therefore reserve judgement about the relationship between audit and credit scores until we have conducted our multivariate tests. Interestingly, there is no difference in interest rates between audit and opt out firms. This may be due to noise in the measure or unobservable factors, such as directors offering personal assets as collateral.

TABLE 2 HERE

Table 3 presents Spearman correlations between our variables. The strongest association is between our negative equity dummy and the leverage variable, with a correlation coefficient of 0.721 ($p<0.001$). While we include both of these variables in our main tests, we also footnote the results of excluding each of these variables in turn.

TABLE 3 HERE

Next, we conduct multivariate tests of the determinants of credit score in private firms to ascertain whether having a voluntary audit is associated with a higher Qui Score, as predicted by our first hypothesis. The results of tests on Models 1 and 2 are reported in Table 4. Model 1 tests the determinants of our credit score measure, using various firm characteristics suggested by prior literature. In line with our expectations, profit is significantly positively related to Qui Score, though operating cash flow is not. Firms with greater levels of interest cover tend to receive higher credit scores as do firms with a greater level of current assets (excluding inventory) relative to current liabilities. Leverage is of the predicted negative sign but is only marginally significant (p=0.104 but note these are 2-tailed p-values). Firms experiencing sales growth and larger firms are likely to receive higher credit scores, as are larger firms, both

consistent with our predictions. The proportion of assets reported as intangible is not associated with credit score. As expected, firms with more liabilities than book value of assets receive significantly lower Qui Scores, on average. In line with earlier work by Pittman and Fortin (2004), we find that older firms receive higher credit scores. Model 1 predicts 21.88% of the variation in credit scores in our sample. Model 2 varies from Model 1 only in that we now include the voluntary audit dummy variable, which is coded one if the firm has an audit in the first year of the voluntary regime, 2004. As predicted the coefficient is positive and highly significant ($p<0.0001$), indicating that, after controlling for firm financial characteristics, firms undergoing voluntary audit in 2004 received a higher credit score by almost 12 points, on average, compared to similar firms which opted out of audit. The performance of the control variables in Model 2 is very similar to their behaviour in Model 1, with the exception that the leverage variable (LEV) increases in significance under Model 2 ($p=0.002$). The explanatory power of Model 2 is substantially higher than that of Model 1; Model 2 R-squared is 28.57%, an increase of 6.7%.

TABLE 4 HERE

In Table 5, we report the results of changes tests. Our independent variables are measured as the difference between financial performance and firm characteristic measures in 2004 compared to 2003. The results of Model 1a suggest that increases in measures of financial health between 2004 and 2003 (profit, cash flow, interest cover and sales growth) are all significantly positively associated with increases in credit score over the same time period. Increases in leverage and intangible assets are associated with significant decreases in credit scores. The positive intercept (coeff=4.035, $p<0.0001$) suggests a general increase in credit scores over these two years, perhaps reflecting macroeconomic factors[12]. Changes in our firm characteristics explain 9.27% of the variation in changes to Qui Scores. In Model 2a, we include the voluntary audit dummy, which is again positive and significant (coeff=5.989, $p<0.0001$), and which enhances the explanatory power of the model to 11.03%. In Model 2a, the introduction of the

[12] UK GDP rose from £1140bn in 2003 to £1203bn in 2004; inflation was around 3% over this time period; one and 3 year survival rates for new businesses were increasing and peaked in 2003 (source: Dept for Business, Innovation & Skills).

voluntary audit dummy renders the model intercept small and insignificant, suggesting it is only voluntary audit firms which enjoy increased credit scores in 2004.

TABLE 5 HERE

Our first set of tests therefore provide consistent evidence, in support of H1, that firms which retain a voluntary audit in the first year of exemption enjoy significantly higher credit scores than those which opt out of the audit in the same year. Our robustness tests, reported later in the paper, use longer time series and look at lagged accounting data to provide corroborative evidence.

Our second set of tests is designed to assess the validity of our second hypothesis:

H2: *If audit increases the quality of financial reporting then the financial statements of firms retaining a voluntary audit will be of higher quality than those of firms which opt out of audit, ceteris paribus.*

We examine the timeliness of loss and gain recognition in sample firms, using Models 3 and 4, which are tested using firm information from 3 years prior to, and 3 years post, exemption (i.e. 2001-2006). The results are reported in Table 6. Model 3 tests for differential timeliness in gain and loss recognition in the voluntary audit period, and is run separately on voluntary audit and opt out firm sub-sets. If firms recognise gains earlier in the voluntary period, then they are more likely to reverse next period, leading to a negative coefficient on α_6. Table 6 reports that this is indeed the case, but only for audit opt out firms, which are recognising more transient gains once they withdraw from audit (coeff=-0.272; t=-9.55). If firms recognise income reducing events later in the voluntary audit period, then negative earnings changes are more likely to persist into next period, and the coefficient on α_7 will be positive. Again, Table 6 reports that this is the case for opt out firms only (coeff=0.408; t=8.885). Model 4 pools the samples. If opting out of audit is associated with firms recognising gains (losses) sooner (later) then α_{10} (α_{11}) will be negative (positive). We find that these predictions are supported. Table 6 therefore provides evidence that firms which withdraw from audit become less conservative in their accounting.

TABLE 6 HERE

The tests of financial reporting quality support our second hypothesis and suggest that unaudited firms are less conservative than audited firms. These findings are as predicted by earlier research (Nelson *et al*., 2002; Collis *et al*., 2004; ICAEW, 2009) and are consistent with the credit rating agency valuing the assurance that audit provides of the financial statement of private firms.

5. Robustness Checks

We use a variety of tests to check the robustness of our reported results. In case credit scores are updated using lagged accounting data (due to financial reports being actually filed sometime after the year end), we repeat the tests in Table 4, adapting Models 1 and 2 as follows:

Model 1b: $QuiScore_t = \beta_0 + \beta_1 Profit_{t-1} + \beta_2 OPCF_{t-1} + \beta_3 IntCov_{t-1} + \beta_4 Quick_{t-1} + \beta_5 Lev_{t-1} + \beta_6 SalesGrowth_{t-1} + \beta_7 Assets_{t-1} + \beta_8 Intangible_{t-1} + \beta_9 NegEquity_{t-1} + \beta_{10} Age_{t-1} + \varepsilon_t$

Model 2b: $QuiScore_t = \beta_0 + \beta_1 VolAud_{t-1} + \beta_2 Profit_{t-1} + \beta_3 OPCF_{t-1} + \beta_4 IntCov_{t-1} + \beta_5 Quick_{t-1} + \beta_6 Lev_{t-1} + \beta_7 SalesGrowth_{t-1} + \beta_8 Assets_{t-1} + \beta_9 Intangible_{t-1} + \beta_{10} NegEquity_{t-1} + \beta_{11} Age_{t-1} + \varepsilon_t$

The results are qualitatively similar to those presented in Table 4, in that the same variables are significant, and of the same sign, in both sets of tests. The explanatory power of the lag models is lower than that of the contemporaneous models in Table 4, with Model 1b having R^2 of 18.4% (compared to 21.9% for Model 1) and Model 2b returning R^2 of 24.5% (compared to 28.6% for Model 2).

We also test Model 4 using sample firms which remain eligible for audit exemption in 2005 and 2006, running the model on firm data for those two years. The results are again similar to those presented in Table 4, with the exception of our sales growth and liquidity measures, which are not significantly associated with Qui Score in the later and longer time period.

6. Summary and conclusions

This study examines the effects of introducing audit exemption to a large set of private firms, which have previously been mandated to file full audited financial statements annually. To do this, it compares the credit scores and financial reporting quality of firms which opt out of audit

immediately following exemption, to those which voluntarily retain an audit. There are two main findings. Firstly, even after controlling for firm characteristics (age, size, leverage, asset structure) and measures of performance (profitability, liquidity, interest coverage, sales growth), firms which retain a voluntary audit receive significantly higher credit scores than those which opt out of the audit in 2004. This finding is robust to the inclusion of later time periods, to lagging the independent variables in our models, and to the use of changes models.

Our second main finding relates to the concern expressed by professional bodies that moving to a largely unaudited private sector may lead to reductions in the quality of private company financial reporting. Our findings support those of earlier studies (e.g. Nelson *et al*., 2002), which provide evidence that auditors reduce earnings manipulation by managers. Using measures of the timeliness of loss and gain recognition developed in prior literature (Basu, 1997; Ball and Shivakumar, 2005) we find evidence that opt out firms tend to recognise gains earlier, and losses later, once they exercise their right to audit exemption.

This study therefore contributes to the ongoing debate about whether (and the extent to which) private firms should be exempted from audit, by demonstrating that companies which give up the audit receive lower credit scores; we also present evidence of a reduction in financial statement quality following exercise of audit exemption rights.

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Table One: Descriptive Statistics

The sample comprises 4,873 firms which newly qualify for audit exemption in 2004 due to the change in exemption thresholds. All firms are subject to a mandatory audit in 2003 but 1,354 sample firms opt out of audit in 2004.

	Mean	SD	Q1	Median	Q3
VolAud	0.722	0.448	0.000	1.000	1.000
QuiScore	67.778	19.947	54.000	71.000	86.000
Profit	0.075	0.167	0.007	0.061	0.147
OPCF	0.161	0.264	0.026	0.115	0.256
IntCov	6.037	3.771	3.000	6.000	11.000
Quick	1.293	0.913	0.698	1.068	1.615
Lev	0.700	0.400	0.448	0.650	0.850
SalesGrowth	0.057	0.295	-0.071	0.033	0.155
Assets £000	1073	661.6	540	911	1518
LnAssets	6.752	0.739	6.292	6.815	7.325
Intangible	0.011	0.041	0.000	0.000	0.000
NegEquity	0.103	0.304	0.000	0.000	0.000
IntRate	0.094	0.163	0.000	0.045	0.102
Age	18.3	15.2	8	14	23
LnAge	2.636	0.728	2.079	2.639	3.135

Variables: VolAud=1 if the company undergoes a voluntary audit in the current year, zero otherwise; QuiScore=credit score reported by FAME; Profit= net income after extraordinary and exceptional items, deflated by average book value of total assets; OPCF= operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital; IntCov= EBIT/interest expense; Quick=the ratio of current assets (excluding inventory) to current liabilities; Lev=total liabilities/total assets; SalesGrowth=% change in sales from previous year; Assets£000=closing shareholder funds; LnAssets= the natural log of closing shareholder funds; Intangible= intangible assets/total assets; NegEquity=1 if total liabilities exceeds the book value of total assets, otherwise zero; Age= number of years since firm incorporation; LnAge= natural log of the number of years since incorporation.

All continuous variables are winsorized at 95%, with the exception of IntCov, which is restricted to have a maximum value of 11.

Table 2: Univariate Tests of Audit vs Opt Out Firms in 2004

The sample comprises 4,873 firms which newly qualify for audit exemption in 2004 due to the change in exemption thresholds. All firms are subject to a mandatory audit in 2003 but 1,354 sample firms opt out of audit in 2004.

	No Audit n=1,354		Audit n=3,519			
	Mean	Median	Mean	Median	t-stat	z-stat
QuiScore	58.398	58.300	71.387	76.000	-21.285	-23.277
Profit	0.095	0.075	0.067	0.057	5.140	5.170
OPCF	0.175	0.128	0.156	0.110	2.281	3.013
IntCov	6.358	6.000	5.913	6.000	3.692	3.557
Quick	1.285	1.034	1.297	1.074	-0.415	-1.091
Lev	0.660	0.632	0.716	0.654	-4.380	-2.583
SalesGrowth	0.061	0.030	0.056	0.033	0.527	-0.207
Assets	6.554	6.584	6.829	6.908	-11.783	-12.486
Intangible	0.007	0.000	0.013	0.000	-4.040	-2.366
NegEquity	0.082	0.000	0.111	0.000	-3.026	-3.023
IntRate	0.098	0.043	0.093	0.047	1.067	-0.514
Ln(AGE)	2.605	2.565	2.648	2.639	-1.847	-1.845

Variables: QuiScore=credit score reported by FAME; Profit= net income after extraordinary and exceptional items, deflated by average book value of total assets; OPCF= operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital; IntCov= EBIT/interest expense; Quick=the ratio of current assets (excluding inventory) to current liabilities;
Lev=total liabilities/total assets; SalesGrowth=% change in sales from previous year; Assets= the natural log of closing shareholder funds; Intangible= intangible assets/total assets; NegEquity=1 if total liabilities exceeds the book value of total assets, otherwise zero; Ln(Age)= natural log of the number of years since incorporation.
All continuous variables are winsorized at 95%, with the exception of IntCov, which is first winsorized then further restricted to have a maximum value of 11.

Table 3: Correlations

Variables: QuiScore=credit score reported by FAME; Profit= net income after extraordinary and exceptional items, deflated by average book value of total assets; OPCF= operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital; IntCov= EBIT/interest expense; Quick=the ratio of current assets (excluding inventory) to current liabilities; Lev=total liabilities/total assets; SalesGrowth=% change in sales from previous year; Assets= the natural log of closing shareholder funds; Intangible= intangible assets/total assets; NegEquity=1 if total liabilities exceeds the book value of total assets, otherwise zero; Age= natural log of the number of years since incorporation; VolAud=1 if the company undergoes a voluntary audit in the current year, zero otherwise. All continuous variables are winsorized at 95%, with the exception of IntCov, which is first winsorized then further restricted to have a maximum value of 11.

	VolAud	Quiscore	Profit	OPCF	IntCov	Quick	Lev	Sales Growth	Assets	Intan	Neg Eq	Intrate	Age
VolAud	1.000												
Quiscore	0.292	1.000											
	(0.000)												
Profit	-0.073	0.166	1.000										
	(0.000)	(0.000)											
OPCF	-0.033	0.072	0.576	1.000									
	(0.023)	(0.000)	(0.000)										
IntCov	-0.053	0.209	0.550	0.288	1.000								
	(0.000)	(0.000)	(0.000)	(0.000)									
Quick	0.006	0.183	0.199	0.010	0.205	1.000							
	(0.678)	(0.000)	(0.000)	(0.505)	(0.000)								
Lev	0.063	-0.266	-0.350	-0.086	-0.295	-0.507	1.000						
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)							
SalesGrowth	-0.008	0.065	0.217	0.247	0.163	-0.037	-0.005	1.000					
	(0.598)	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)	(0.732)						
Assets	0.167	0.258	-0.079	-0.059	-0.020	0.076	-0.206	0.047	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.169)	(0.000)	(0.000)	(0.001)					
Intangible	0.058	-0.034	-0.053	-0.014	-0.065	-0.091	0.052	-0.002	0.050	1.000			
	(0.000)	(0.017)	(0.000)	(0.333)	(0.000)	(0.000)	(0.000)	(0.871)	(0.001)				
NegEquity	0.043	-0.212	-0.310	-0.125	-0.259	-0.233	0.721	-0.050	-0.137	0.046	1.000		
	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.002)			
Intrate	-0.015	-0.025	-0.021	0.013	-0.025	-0.103	0.057	0.017	0.020	0.020	0.034	1.000	
	(0.286)	(0.084)	(0.140)	(0.371)	(0.079)	(0.000)	(0.000)	(0.250)	(0.168)	(0.174)	(0.017)		
Age	0.027	0.291	-0.104	-0.123	-0.046	0.025	-0.206	-0.117	0.172	-0.153	-0.137	0.015	1.000
	(0.065)	(0.000)	(0.000)	(0.000)	(0.001)	(0.080)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.306)	

Table 4: Determinants of Qui Score

The sample comprises 4,873 firms which newly qualify for audit exemption in 2004 due to the change in exemption thresholds. All firms are subject to a mandatory audit in 2003 but 1,316 sample firms opt out of audit in 2004. All observations are taken from 2004.

Model 1: $QuiScore_t = \beta_0 + \beta_1 Profit_t + \beta_2 OPCF_t + \beta_3 IntCov_t + \beta_4 Quick_t + \beta_5 Lev_t + \beta_6 SalesGrowth_t + \beta_7 Assets_t + \beta_8 Intangible_t + \beta_9 NegEquity_t + \beta_{10} Age_t + \varepsilon_t$

Model 2: $QuiScore_t = \beta_0 + \beta_1 VolAud_t + \beta_2 Profit_t + \beta_3 OPCF_t + \beta_4 IntCov_t + \beta_5 Quick_t + \beta_6 Lev_t + \beta_7 SalesGrowth_t + \beta_8 Assets_t + \beta_9 Intangible_t + \beta_{10} NegEquity_t + \beta_{11} Age_t + \varepsilon_t$

	Model 1			**Model 2**		
	Coeff	t-stat	p-value	Coeff	t-stat	p-value
VolAud				11.899	21.350	0.000
Profit	9.891	4.390	0.000	10.541	4.900	0.000
OPCF	0.536	0.450	0.656	0.493	0.430	0.668
IntCov	0.735	9.000	0.000	0.744	9.530	0.000
Quick	1.591	4.600	0.000	1.387	4.190	0.000
Lev	-1.835	-1.630	0.104	-3.406	-3.150	0.002
SalesGrowth	3.191	3.540	0.000	3.279	3.810	0.000
Assets	5.348	14.670	0.000	4.083	11.550	0.000
Intangible	6.381	1.000	0.317	1.117	0.180	0.855
NegEquity	-2.924	-2.350	0.019	-2.555	-2.150	0.032
Ln(AGE)	7.670	20.180	0.000	7.353	20.210	0.000
Intercept	6.810	2.250	0.024	8.314	2.880	0.004
Industry Dummies		Yes			Yes	
Adj. R-squared		21.88%			28.57%	
F-value		81.27			109.28	
n		4,873			4,873	

Variables: QuiScore=credit score reported by FAME; Profit= net income after extraordinary and exceptional items, deflated by average book value of total assets; OPCF= operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital; IntCov= EBIT/interest expense; Quick=the ratio of current assets (excluding inventory) to current liabilities; Lev=total liabilities/total assets; SalesGrowth=% change in sales from previous year; Assets= the natural log of closing shareholder funds; Intangible= intangible assets/total assets; NegEquity=1 if total liabilities exceeds the book value of total assets, otherwise zero; Age= natural log of the number of years since incorporation; VolAud=1 if the company undergoes a voluntary audit in the current year, zero otherwise. All continuous variables are winsorized at 95%, with the exception of IntCov, which is first winsorized then further restricted to have a maximum value of 11.

Table 5: Determinants of Qui Score (Change Models)

The sample comprises 4,873 firms which newly qualify for audit exemption in 2004 due to the change in exemption thresholds. All firms are subject to a mandatory audit in 2003 but 1,316 sample firms opt out of audit in 2004. All observations are taken from 2004.

Model 1a: $\Delta QuiScore_t = \beta_0 + \beta_1 \Delta Profit_t + \beta_2 \Delta OPCF_t + \beta_3 \Delta IntCov_t + \beta_4 \Delta Quick_t + \beta_5 \Delta Lev_t + \beta_6 SalesGrowth_t + \beta_7 \Delta Assets_t + \beta_8 \Delta Intangible_t + \varepsilon_t$

Model 2a: $\Delta QuiScore_t = \beta_0 + \beta_1 VolAud_t + \beta_2 \Delta Profit_t + \beta_3 \Delta OPCF_t + \beta_4 \Delta IntCov_t + \beta_5 \Delta Quick_t + \beta_6 \Delta Lev_t + \beta_7 SalesGrowth_t + \beta_8 \Delta Assets_t + \beta_9 \Delta Intangible_t + \varepsilon_t$

	Model 1a			**Model 2a**		
	Coeff	t-stat	p-value	Coeff	t-stat	p-value
VolAud				5.989	9.870	0.000
ΔProfit	7.798	4.140	0.000	7.278	3.900	0.000
ΔOPCF	7.104	9.230	0.000	7.094	9.310	0.000
ΔIntCov	0.770	9.370	0.000	0.767	9.420	0.000
ΔQuick	1.816	2.970	0.003	1.812	3.000	0.003
ΔLev	-7.933	-4.490	0.000	-8.255	-4.720	0.000
SalesGrowth	2.782	2.880	0.004	2.904	3.040	0.002
ΔLn(TA)	-0.823	-1.030	0.301	-0.855	-1.080	0.278
ΔIntangible	-33.174	-2.380	0.018	-33.912	-2.450	0.014
Intercept	4.035	8.040	0.000	-0.595	-0.870	0.384
Industry Dummies		YES			YES	
Adj. R-squared		9.27%			11.03%	
F-value		34.17			38.76	
n		4,873			4,873	

Variables: QuiScore=credit score reported by FAME; Profit= net income after extraordinary and exceptional items, deflated by average book value of total assets; OPCF= operating cashflow, calculated as earnings before interest and tax, adjusted for depreciation and changes in working capital; IntCov= EBIT/interest expense; Quick=the ratio of current assets (excluding inventory) to current liabilities; Lev=total liabilities/total assets; SalesGrowth=% change in sales from previous year; Assets= the natural log of closing shareholder funds; Intangible= intangible assets/total assets; NegEquity=1 if total liabilities exceeds the book value of total assets, otherwise zero; Age= natural log of the number of years since incorporation; VolAud=1 if the company undergoes a voluntary audit in the current year, zero otherwise. The delta (Δ) symbol indicates the variable is measured as the value for 2004 *less* the value for the same variable in 2003.

All continuous variables are winsorized at 95%, with the exception of IntCov, which is first winsorized then further restricted to have a maximum value of 11.

Table 6: Differences in Conservatism between Audit and Opt Out Firms

Model 3: $\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_4 POST2003 + \alpha_5 POST2003 \times D\Delta NI_{t-1} + \alpha_6 POST2003 \times \Delta NI_{t-1} + \alpha_7 POST2003 \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \epsilon_t$

Model 4: $\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_4 POST2003 + \alpha_5 POST2003 \times D\Delta NI_{t-1} + \alpha_6 POST2003 \times \Delta NI_{t-1} + \alpha_7 POST2003 \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \alpha_8 DOPT + \alpha_9 DOPT \times D\Delta NI_{t-1} + \alpha_{10} DOPT \times \Delta NI_{t-1} + \alpha_{11} DOPT \times D\Delta NI_{t-1} \times \Delta NI_{t-1} + \epsilon_t$

		Model 3: All years AUDIT OPT OUT FIRMS		**Model 3: All years AUDITED FIRMS**		**Model 4: All years ALL FIRMS**	
	Prediction	**Coeff**	**t-stat**	**Coeff**	**t-stat**	**Coeff**	**t-stat**
(α_0) Intercept	?	-0.006	-1.66 *	-0.010	-3.57 ***	-0.010	-4.49 ***
(α_1) $D\Delta NI_{t-1}$	?	-0.014	-2.66 ***	-0.004	-1.10	-0.007	-2.24 **
(α_2) ΔNI_{t-1}	?	-0.036	-2.09 **	-0.040	-3.08 ***	-0.039	-3.73 ***
(α_3) $D\Delta NI_{t-1} \times \Delta NI_{t-1}$	?	-0.626	-20.89 ***	-0.524	-24.82 ***	-0.553	-32.15 ***
(α_4) POST2003	?	0.003	0.54	-0.004	-0.92	-0.001	-0.39
(α_5) POST2003 $\times D\Delta NI_{t-1}$	?	0.003	0.33	0.006	0.97	0.008	1.41
(α_6) POST2003 $\times \Delta NI_{t-1}$	-	-0.272	-9.55 ***	0.002	0.08	-0.002	-0.09
(α_7) POST2003 $\times D\Delta NI_{t-1} \times \Delta NI_{t-1}$	+	0.408	8.85 ***	0.055	1.58	0.092	2.92 ***
(α_8) OPT	?					0.006	2.38 **
(α_9) OPT $\times$ POST2003 $\times D\Delta NI_{t-1}$	?					-0.011	-1.67 *
(α_{10}) OPT $\times$ POST2003 $\times \Delta NI_{t-1}$	-					-0.261	-10.57 ***
(α_{11}) OPT $\times$ POST2003 $\times D\Delta NI_{t-1} \times \Delta NI_{t-1}$	+					0.227	5.25 ***
Adjusted R-sq (%)		13.98%		10.64%		11.75%	
No. of obs		10,723		18,422		29,145	