

**AUDIT QUALITY, MATERIALITY &
THRESHOLD-INDUCED EARNINGS MANAGEMENT**

VAN CANEGHEM Tom[#]

UNIVERSITY OF ANTWERP

Department of Accounting and Finance

Abstract

Several prior studies (see e.g. Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999; Gore, Pope and Singh, 2001; Holland and Ramsay, 2003) document statistically significant discontinuities in the distribution of reported earnings figures around certain targets (i.e. zero earnings, analysts' earnings forecasts and prior year's earnings). These discontinuities are then ascribed to threshold-induced earnings management. Relying on a sample of listed UK firms and employing a similar methodology, I examine whether high-quality audits serve as a constraint on such threshold-induced earnings management practices. In order to proxy for audit quality, I rely on both the traditional brand name variable (i.e. Big5 vs. non-Big5) and a measure for Big5 auditors' industry expertise (i.e. specialist Big5 vs. non-specialist Big5). Whereas results clearly show that high-quality audits (i.e. specialist Big5 audits) serve as a constraint on loss avoidance, this is clearly not true for earnings management aimed at meeting last year's earnings figure. This discrepancy in obtained results might be attributable to the fact that the latter type of earnings enhancement will often not be quantitatively material (i.e. as opposed to loss avoidance) and that auditors (i.e. both high- and low-quality auditors) neglect qualitative factors in assessing materiality.

[#] Correspondence Address: Tom Van Caneghem, Department of Accounting and Finance, University of Antwerp, Prinsstraat 13, Office B321, Antwerp, Belgium.
E-mail: tom.vancaneghem@ua.ac.be

1. INTRODUCTION

As discussed in McNichols (2000), there are three popular research designs employed in the empirical earnings management literature: those based on aggregate accruals (see e.g. Healy, 1985; DeAngelo, 1986; Jones, 1991; Dechow, Sloan and Sweeney, 1995), those based on specific accruals (see e.g. McNichols and Wilson, 1988; Petroni, 1992; Beaver and Engel, 1996; Beneish, 1997) and those based on the distribution of earnings after management (see e.g. Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999; Gore, Pope and Singh, 2001; Holland and Ramsay, 2003). While the former two research designs have already been employed in order to assess the impact of audit quality on earnings management (see e.g. Petroni and Beasley, 1996; Becker *et al.*, 1998; Francis, Maydew and Sparks, 1999; Gaver and Paterson, 2001; Krishnan, 2003; Balsam, Krishnan and Yang, 2003), the latter research design has not been used for this purpose yet. Inspired by the fact that results obtained in the aforementioned studies are rather inconclusive, I decided to examine whether differences in audit quality affect the distribution of reported earnings after management around both zero earnings and prior year's earnings. In order to proxy for audit quality, I rely on both the traditional brand name variable (i.e. Big5 vs. non-Big5) and a measure for Big5 auditors' industry expertise (i.e. specialist Big5 vs. non-specialist Big5). Whereas results clearly show that high-quality audits (i.e. specialist Big5 audits) serve as a constraint on loss avoidance, this is clearly not true for earnings management aimed at meeting last year's earnings. The latter discrepancy might be attributable to the fact that the latter type of earnings enhancement will often not be quantitatively material (i.e. as opposed to loss avoidance) and that auditors (i.e. both high- and low-quality auditors) neglect qualitative factors in assessing materiality. The main contributions of this paper can be summarised as follows. Firstly, I rely on an alternative research design in an attempt to assess the impact of audit quality on

earnings management. Secondly, I relate my research to the ongoing materiality debate (i.e. qualitative vs. quantitative materiality).

The remainder of the paper is organised as follows. A brief review of the literature relevant to the current study is provided in Section 2. In Section 3, I discuss both the research design and the sample selection procedures. Empirical results are provided in Section 4 and conclusions are presented in Section 5.

2. PREVIOUS LITERATURE

2.1. The Distribution of Earnings After Management

As mentioned before, various studies (see e.g. Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999; Gore, Pope and Singh, 2001, Holland and Ramsay, 2003) scrutinise the distribution of actually reported earnings figures in an attempt to bare earnings management practices. More specifically, these studies examine the distribution of earnings around specific targets (i.e. zero earnings, prior year's earnings and analysts' earnings forecasts). Results obtained in these studies reveal significant discontinuities around the aforementioned targets. In other words, all studies observe fewer (more) observations that just fall below (exceed) the threshold than would normally be expected under a smooth distribution. Results therefore clearly suggest that firms' managers manage reported earnings in order to (1) report a profit; (2) sustain recent performance; and/or (3) meet analysts' earnings forecasts. Degeorge, Patel and Zeckhauser (1999) argue that this behaviour is attributable to the fact that stakeholders typically rely on 'rules of thumb' in their evaluation of company performance (e.g. whether the aforementioned thresholds are met).

2.2. *Audit Quality*

2.2.1. Audit Quality Proxies

In the literature, it is argued that audit quality is conditional upon both the auditor's competence (i.e. the probability that an auditor discovers a given breach) and the auditor's independence (i.e. the probability that an auditor actually reports a discovered breach) (see e.g. Watts and Zimmerman, 1986). Based on these considerations, large audit firms are assumed to provide audits of a higher quality than small audit firms (see e.g. DeAngelo, 1981; Watts and Zimmerman, 1986). That is, large audit firms are assumed to be less dependent upon their clients due to the fact that they have a greater number of clients and that they have more to lose (i.e. termination of other clients, reduced fees for remaining clients, loss of reputation, ...) when they give in to clients' pressures to not report a discovered breach. Typically, empirical studies rely on a dichotomous variable (i.e. Big5 vs. non-Big5 audit firms) to proxy for differences in audit quality between large and small audit firms. Using different methodologies, various studies (see e.g. Nichols and Smith, 1983; Francis and Wilson, 1988; Palmrose, 1988; DeFond and Jiambalvo, 1991; DeFond, 1992; Teoh and Wong, 1993; Craswell, Francis and Taylor, 1995; Francis, Maydew and Sparks, 1999; Piot, 2001; Blokdiijk *et al.*, 2003) assess the accuracy of this so-called '*brand name*' proxy. Overall, results reported in these studies suggest that the brand name proxy adequately captures differences in audit quality. For example, accounting errors are less likely to be observed in financial statements of Big5 clients (see DeFond and Jiambalvo, 1991), Big5 audit firms are confronted with lower litigation rates (see Palmrose, 1988), earnings response coefficients (ERCs) are significantly higher for Big5 clients (see e.g. Teoh and Wong, 1993) and Big5 audit firms use lower quantitative materiality levels (see Blokdiijk *et al.*, 2003).

While the brand name proxy is certainly creditable, it is mainly inspired by assumptions regarding auditors' independence. That is, Big5 audit firms are expected to provide audits of a higher quality due to the fact that they are assumed to be less dependent on their clients. However, as mentioned before, there are two determinants to audit quality: (1) independence; and

(2) competence. While the brand name proxy clearly takes into account the first determinant, it certainly does not fully control for the second. Some recent studies (see e.g. Krishnan, 2003; Balsam, Krishnan and Yang, 2003) rely on industry expertise in an attempt to control for auditor competence. That is, various empirical studies (see e.g. Bonner and Lewis, 1990; O'Keefe, King and Gaver, 1994; Wright and Wright, 1997a; Solomon, Shields and Whittington, 1999; Owthoso, Messier and Lynch, 2002) clearly document a positive relationship between Big5 audit firms' industry-specific knowledge (i.e. industry expertise) and the effectiveness of an audit engagement (e.g. the detection of financial statement errors). To put it another way, findings suggest a positive relationship between industry expertise and an auditor's competence.

2.2.2. Audit Quality and Earnings Management

Becker *et al.* (1998) and Francis, Maydew and Sparks (1999) rely on the brand name proxy and the discretionary component of aggregate accruals (DACC) in order to establish the relationship between audit quality and earnings management. Results obtained in both studies reveal that non-Big6 clients have significantly larger DACC relative to Big6 clients. Krishnan (2003) and Balsam, Krishnan and Yang (2003) also rely on DACC and find that these are significantly smaller for specialist Big5 clients than for non-specialist Big5 clients. Results obtained in all of the aforementioned studies are therefore consistent with high-quality audits constraining earnings management.

Petroni and Beasley (1996) and Gaver and Paterson (2001) rely on a specific accrual (i.e. claim loss reserve) for a sample of property-casualty insurers and find that audit quality differences (i.e. based on the brand name proxy) do not have a statistically significant impact on the accuracy of this accrual. Based on the assumption that managers of property-casualty insurance firms will typically rely on the claim loss reserve for earnings management purposes (i.e. given the fact that this accrual is typically sizable and subject to substantial discretion), results are inconsistent with high-quality audits restricting earnings management.

The aforementioned findings are clearly inconclusive. More specifically, while studies relying on aggregate accruals obtain evidence consistent with high-quality audits constraining earnings management, this is clearly not true for studies using specific accruals. Results seem therefore sensitive to the research design employed. From this, it should be clear that the impact of audit quality on earnings management remains an empirical matter that requires further exploration. In order to gain an additional insight into this issue, I will rely on an alternative research design in the current study (i.e. the distribution of earnings after management).

3. RESEARCH DESIGN

3.1. Research Design and Hypothesis Development

In this paper I empirically assess the impact of differences in audit quality on the distribution of reported earnings after management. As prior studies (see e.g. Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999), I scrutinise the distribution of reported earnings and test for discontinuities around a target (i.e. zero earnings and prior year's earnings). That is, I look at the number of small profits and small losses and the number of small earnings increases and small earnings decreases. One speaks about a small profit (small loss) if its value scaled by total assets falls within a pre-specified interval. I rely on a cut-off level that is based on both the interquartile range (IR) and the number of observations (N). That is, the cut-off level is defined as $2IR(N^{-1/3})$ (see e.g. Scott, 1992). Small profits (losses) are then defined to be in the interval $]0.00, 2IR(N^{-1/3}]$ ($[-2IR(N^{-1/3}), 0.00[$). Quite analogously, one speaks about a small earnings increase (small earnings decrease) if the earnings change (i.e. $earnings_t - earnings_{t-1}$, where t denotes a year subscript) scaled by total assets falls within the interval $]0.00, 2IR(N^{-1/3}]$ ($[-2IR(N^{-1/3}), 0.00[$). In order to assess the significance of observed discontinuities, I rely on the test statistic employed by Burgstahler and Dichev (1997). This test statistic is calculated as the difference between the actual and the expected number of

observations in an interval, divided by the estimated standard deviation of this difference. In order to obtain an estimate of the expected number of observations in a particular interval, Burgstahler and Dichev rely on the average of the two immediately adjacent intervals. Discontinuities around both targets are then compared between different audit quality sub-samples (e.g. non-Big5 clients vs. Big5 clients).

Next to the aforementioned analyses, I estimate the following logistic regression model:

$$\begin{aligned} Pr_{it} = & \delta_0 + \delta_1 AUD_{it} + \delta_2 DE_{it} + \delta_3 SIZE_{it} + \delta_4 XLIST_{it} \\ & + \delta_5 WCACC_{it} + \delta_6 IND_{it} + \varepsilon_{it} \end{aligned} \quad (3.1.1)$$

Where

- Pr* the probability of reporting a small profit (small earnings increase) vs. a small loss (small earnings decrease);
- AUD* categorical variable that distinguishes between non-Big5 and Big5 clients (non-Big5, non-specialist Big5 and specialist Big5 clients);
- DE* debt-to-equity ratio (i.e. long-term debt/equity);
- SIZE* natural logarithm of total assets;
- XLIST* dummy variable that equals one for cross-listed firms and zero otherwise;
- WCACC* the absolute value of working capital accruals¹ scaled by total assets;
- IND* categorical variable that distinguishes between various industry classes (i.e. based on two-digit SIC industry codes)²;
- i, t* denote firms and years.

¹ Working capital accruals are then defined as $(CA_t - CA_{t-1}) - (CL_t - CL_{t-1})$; where CA = current assets excluding cash and short-term investments; and CL = current liabilities excluding short-term debts (i.e. short-term debts and maturities of long-term debt).

² The following industry classes are discerned:

- SIC1 Agriculture, Forestry and Fishing (i.e. SIC 01-09)
- SIC2 Mining and Construction (i.e. SIC 10-17)
- SIC3 Manufacturing (i.e. SIC 20-39)
- SIC4 Utility Companies (i.e. SIC 40-49)
- SIC5 Wholesale Trade (i.e. SIC 50-59)

I distinguish between specialist Big5 and non-specialist Big5 audits relying on auditor portfolio shares (henceforth PS). As posited by O’Keefe, King and Gaver (1994), the number of clients in an industry (i.e. auditor PS) should be a valid proxy for industry expertise. The PS of audit firm i in industry k is defined as:

$$PS_{ik} = \frac{\text{number of clients of audit firm } i \text{ in industry } k}{\text{total number of clients of audit firm } i}$$

The value of i ranges from 1 to 5, representing the Big5 audit firms. Two-digit SIC industry codes identify industry categories. Both the numerator and the denominator of the equation are based on sample data. Analogous to Krishnan, I code a Big5 audit firm’s top-three PS as its speciality (i.e. a specialist Big5 auditor).

All other variables included in equation (3.1.1) are control variables. I rely on DE as a proxy for closeness to accounting-based debt covenants and/or financial distress. Accordingly, I expect a positive coefficient on DE . Inspired by the fact that Holland and Ramsay (2003) document a positive relationship between firm size and threshold-induced earnings management, I introduce $SIZE$ as a control variable. Lang, Raedy and Yetman (2003) show that non-US firms that are cross-listed on a US stock exchange (i.e. the NYSE, AMEX or NASDAQ) are less aggressive with respect to earnings management. This finding might be explained by the fact that firms with cross-listings are subject to restrictions imposed by different countries and therefore exposed to a higher litigation risk. Consequently, I decided to include $XLIST$ as a control variable. Finally, I introduce $WCACC$ inspired by the assumption that firms with larger accruals have more opportunities to manage reported earnings. Accordingly, I predict a positive association between $WCACC$ and threshold-induced earnings management. In an attempt to mitigate the potential impact of outliers on the estimated coefficients, reported results are based on winsorized data. That is, a value

is winsorized when it is more than two standard deviations away from the mean value.

Examining the impact of audit quality on threshold-induced earnings management is very appealing for at least two different reasons. Firstly, various studies (see e.g. Hirst, 1994; Braun, 2001; Kim, Chung and Firth, 2003) find that auditors are more likely to object to earnings overstatements than to misstatements that have an income-decreasing effect. This makes perfect sense, given the fact that (1) earnings overstatements are associated with a higher litigation risk (i.e. stakeholders are more likely to suffer from earnings overstatements); and (2) most earnings misstatements have an income-increasing effect (see e.g. Kinney and McDaniel, 1989; DeFond and Jiambalvo, 1991; Kinney and Martin, 1994). Based on these considerations, one should clearly focus on income-increasing earnings management when establishing the relationship between audit quality and earnings management. It should be clear that threshold-induced earnings management perfectly satisfies this criterion. Secondly, given the fact that the traditional discretionary accrual models have to contend with measurement error (see e.g. Dechow, Sloan and Sweeney, 1995; Guay, Kothari and Watts, 1996; McNichols, 2000), an examination of the distribution of reported earnings provides an appealing alternative as discontinuities around the target are not plausibly due to non-discretionary forces (McNichols, 2000: 388).

An important issue with regard to testing the impact of differences in audit quality on earnings management relates to 'materiality'. That is, auditing standards (see e.g. Statements of Auditing Standards No. 220 (APB, 1995) and International Standards on Auditing No. 320 (IFAC)) refer to materiality in order to assess the relative importance of a detected misstatement. Auditors are required to '*(...) provide reasonable assurance that the financial statements are free of material misstatements (...)*' (SAS 220.04, APB 1995). Auditors (i.e. both high- and low-quality auditors) will therefore typically ignore immaterial (or small) earnings misstatements. From this, it should be clear that differences in audit quality are not expected to affect immaterial earnings management practices. Materiality is therefore clearly quite an important issue. Nevertheless, it is important to acknowledge that auditing standards do not provide detailed materiality

standards. SAS 220, for example, states that '(...) *the assessment of materiality is a matter of professional judgement (...)*' (SAS 220.04, APB 1995). Some frequently mentioned cut-off levels for assessing materiality in the auditing literature are: 0.50% of total assets, 5.00% of net income and 0.50% of operating income. From this, it should be clear that materiality is typically determined in terms of quantitative measures. Nevertheless, there is a growing consciousness that auditors should also consider qualitative factors for assessing materiality (i.e. qualitative materiality³). For example, the Securities and Exchange Commission issued Staff Accounting Bulletin No. 99: 'Materiality' (SEC, 1999), in order to promote consideration of qualitative factors when assessing materiality. These factors include, amongst other, whether the misstatement changes a loss into income or vice versa, masks a change in earnings or other trends, Stressing quantitative materiality can be considered as an attempt to remove the abuse of quantitative immateriality. More specifically, many earnings management schemes are not adjusted for due to the fact that they do not exceed a quantitative materiality threshold (cf. supra). For example, Nelson, Elliott and Tarpley (2003) recently show that merely 44% of all detected earnings management schemes are adjusted for by a particular Big5 audit firm. Now, how does materiality relate to the current study? Materiality is clearly not an issue for loss avoidance. That is, based on the aforementioned materiality cut-off levels, turning a loss into a profit should certainly be considered as being quantitatively material (i.e. a misstatement of more than 100% relative to the actually reported earnings figure). In addition, Blokdijsk *et al.* (2003) show that auditors consider small profits as a qualitative factor in assessing materiality (i.e. auditors employ lower materiality levels for firms reporting a small profit). Based on these considerations, quality differences among auditors should clearly show for loss avoidance. I expect materiality to be an issue for earnings management inspired by the desire to sustain recent performance. More specifically, discretionary amounts used to turn small earnings decreases into small earnings increases will typically not be quantitatively material. Both high-

³ A qualitative material misstatement can then be defined as a misstatement that affects financial statement users' decisions, even in the absence of quantitative materiality.

and low-quality auditors will therefore often pass over this particular type of earnings enhancement. Nevertheless, it is important to acknowledge that earnings management inspired by the desire to sustain recent performance is clearly qualitatively material. Barth, Elliot and Finn (1999), for example, show that there are market rewards associated with patterns of increasing earnings. Given the fact that it is not clear whether auditors consider a small earnings increase as a qualitative factor in assessing materiality (i.e. Blokdijsk *et al.* (2003) only consider small profits in their study), it is uncertain that audit quality differences will actually show for earnings management inspired by the desire to sustain recent performance.

Last but not least, it is important to acknowledge that the relationship between audit quality and earnings management is not clear-cut. Different empirical studies (see e.g. Hackenbrack and Nelson, 1996; Libby and Kinney, 2000; Braun, 2001) have shown that auditors are willing to waive (both immaterial and material) proposed adjusting journal entries (henceforth PAJEs) under certain conditions. One of the factors that has been found to affect the latter decision, and that might be of interest to the current study, is the nature of the proposed adjustment. More specifically, some PAJEs are related to subjective matters (e.g. accounting estimates), while other PAJEs concern factual data (e.g. the posting of an invoice) (Wright and Wright, 1997b). Prior studies (see e.g. Hackenbrack and Nelson, 1996; Wright and Wright, 1997b; Libby and Kinney, 2000; Braun, 2001) clearly show that auditors are more likely (i.e. willing) to waive PAJEs of the subjective kind. As recognised by several authors (see e.g. Magee and Tseng, 1990; Deis and Giroux, 1992), the power of an auditor decreases when there is more room for judgement and interpretation. Given the nature of the phenomenon, earnings management will typically involve the use of highly subjective accounting matters with the intent of 'steering' reported earnings. Consequently, it will be difficult for both high- and low-quality auditors to object to earnings management given the fact that disagreements on subjective matters can be considered justifiable. Based on these considerations, it might be that high-quality audits do not serve as an earnings management constraint.

3.2. Sample Selection

All accounting data used in the current study are collected from Bureau van Dijk's OSIRIS CD-ROM, which contains financial data for an international sample of quoted firms. From this database, I select all UK firms that are listed on the London Stock Exchange (i.e. LSE). I limit my sample to firms for which financial statements are classified under the so-called 'industrial template'⁴ in the OSIRIS database. Consistent with prior studies, I exclude banks, insurance companies and all other financial holdings (i.e. SIC codes between 6000 and 6799) and all public administrative institutions (i.e. SIC codes above 9000). The sample is further restricted by the supplementary data requirements imposed by equation (3.1.1). These selection criteria are then applied to the period 1997⁵-2001 and yield a final sample of 2,468 firm-years. All analyses are based on reported *ordinary income* figures. This decision is inspired by the fact that Gore, Pope and Singh (2001) document statistically significant discontinuities in the distribution of ordinary income figures (i.e. earnings before extraordinary items) for a sample of public UK firms. In addition, results reported by Van Caneghem (2002) suggest that UK firms' managers focus their earnings enhancement efforts on ordinary income⁶.

It might be interesting to note that all my analyses are based on firms' primary set of financial statements (i.e. from an informational perspective). More specifically, I rely on group accounts when these are available and individual accounts otherwise.

⁴ More specifically, financial statements are classified into three categories in the OSIRIS database (i.e. based on their format). The following categories (i.e. templates) are discerned: (1) industrial; (2) banks; and (3) insurance companies.

⁵ It might be interesting to note that in 1997, one still spoke about the Big6.

⁶ Van Caneghem (2002) considers various earnings measures (e.g. net income, operating income, ...) in search of earnings rounding-up behaviour (henceforth ERUB) for a sample of listed UK firms. Results clearly show that ERUB is only prevalent among reported pre-tax incomes. Findings therefore suggest that the latter earnings measure is targeted by UK managers with respect to earnings enhancement practices. It is important to acknowledge that pre-tax income in the WORLDScope database refers to ordinary income.

4. RESULTS

Before I go any further, it might be interesting to first examine the earnings distribution for the entire sample of firm-years (i.e. without differentiating between different audit quality sub-samples). Panel A (Panel B) of Table 1 presents both the actual number of small profits and small losses (small earnings increases and small earnings decreases) and the corresponding value on the *LA (SRP)* proxy for the full sample. The *LA (SRP)* proxy is then defined as the number of small profits (small earnings increases) divided by the number of small losses (small earnings decreases) (see e.g. Leuz, Nanda and Wysocki, 2003). It should be clear that results are consistent with earlier studies (see e.g. Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999; Gore, Pope and Singh, 2001; Holland and Ramsay, 2003) as they display statistically significant discontinuities around zero for (changes in) reported earnings figures. Worded differently, small profits and small earnings increases (small losses and small earnings decreases) are observed significantly more (less) often than would normally be expected under a smooth distribution.

TABLE 1: Distribution of Earnings Relative to Targets for the Entire Sample

PANEL A: Small Profits & Small Losses

# Obs.	Small Profits		Small Losses		<i>LA</i>
	# Obs.	Std. Dif.	# Obs.	Std. Dif.	
2,468	120	2.32 *	47	-4.49 **	2.55

PANEL B: Small Earnings Increases & Small Earnings Decreases

# Obs.	Small Increases		Small Decreases		SRP
	# Obs.	Std. Dif.	# Obs.	Std. Dif.	
2,468	289	4.95 **	121	-5.64 **	2.39

* = statistically significant at the 5% level

** = statistically significant at the 1% level

LA = # small profits / # small losses

SRP = # small earnings increases / # small earnings decreases

4.1. Univariate Analyses

Analogous to Table 1, Panel A (Panel B) of Table 2 shows both the actual number of small profits and small losses (small earnings increases and small earnings decreases) for the different audit quality sub-samples under study. Considering the brand name proxy, values on *LA* clearly support expectations. More specifically, non-Big5 clients have a larger value on *LA* than Big5 clients. Nevertheless, it is important to acknowledge that values come very close between both sub-samples. Moreover, both the Big5 and the non-Big5 sample exhibit statistically significant discontinuities around zero in their distribution of reported earnings figures. However, it might be interesting to note that the Big5 sample does not display significantly more small profits than would normally be expected, whereas this is clearly the case for the non-Big5 sample. Allowing for quality differences among Big5 audits, results are more interesting. As predicted, specialist Big5 clients have clearly the lowest value on the *LA* proxy. That is, the value on *LA* for the sample of specialist Big5 clients is less than half that of any of the two other sub-samples (i.e. the non-Big5 and non-specialist Big5 sample). In addition, the sample of specialist Big5 clients is the only one that does not display statistically significant discontinuities around zero in its earnings distribution. Results therefore clearly lend support for high-quality audits (i.e. specialist Big5 audits) constraining loss avoidance. Quite surprisingly, non-specialist Big5 clients have a larger value on *LA* than non-Big5 clients. Results therefore indicate that the lower value on *LA* for the sample of Big5

clients (i.e. relative to non-Big5 clients) is entirely attributable to specialist Big5 clients.

Results based on *SRP* are quite different. The largest (smallest) value on *SRP* is noted for the sub-sample of specialist Big5 (non-Big5) clients. In other words, values on *SRP* get larger as the proxy suggests higher audit quality. Moreover, all sub-samples display significantly more (fewer) small earnings increases (decreases) than would normally be expected. In sum, results based on earnings management induced by the desire to sustain recent performance are inconsistent with high-quality audits constraining earnings enhancement practices.

TABLE 2: Distribution of Earnings Relative to Targets for the Audit Quality Sub-Samples

PANEL A: Small Profits & Small Losses

	# Obs.	Small Profits		Small Losses		<i>LA</i>
		# Obs.	Std. Dif.	# Obs.	Std. Dif.	
Non-Big5	588	44	2.48 *	16	-3.33 **	2.75
Big5	1,880	76	1.08	31	-3.14 **	2.45
<i>Non-Specialist Big5</i>	1,352	60	1.69	18	-3.78 **	3.33
<i>Specialist Big5</i>	528	16	-0.80	13	-0.11	1.23

PANEL B: Small Earnings Increases & Small Earnings Decreases

	# Obs.	Small Increases		Small Decreases		<i>SRP</i>
		# Obs.	Std. Dif.	# Obs.	Std. Dif.	
Non-Big5	588	56	2.39 *	28	-2.02 *	2.00
Big5	1,880	233	4.34 **	93	-5.31 **	2.51
<i>Non-Specialist Big5</i>	1,352	177	2.73 **	74	-4.25 **	2.39
<i>Specialist Big5</i>	528	56	4.10 **	19	-3.31 **	2.95

* = statistically significant at the 5% level

** = statistically significant at the 1% level

LA = # small profits / # small losses

SRP = # small earnings increases / # small earnings decreases

4.2. *Multivariate Analyses*

Parameter estimates for the multivariate logistic regression (i.e. equation (3.1.1)) are presented in Table 3. Panel A (Panel B) of Table 3 shows results for loss avoidance (earnings management aimed at meeting last year's earnings). From Panel A, it can be seen that small profits (small losses) are significantly more (less) likely to be observed among both non-Big5 and non-specialist Big5 clients relative to specialist Big5 clients. In other words, results suggest that specialist Big5 auditors (i.e. high-quality auditors) constrain loss avoidance. However, no statistically significant differences are noted between non-Big5 clients and Big5 clients, nor between non-Big5 and non-specialist Big5 clients. From Panel B, on the other hand, it can be seen that audit quality differences do not significantly affect the likelihood of reporting a small earnings increase versus a small earnings decrease. In addition, parameter estimates on the audit quality proxies do not have the predicted signs. Accordingly, results are entirely inconsistent with high-quality auditors restricting earnings management induced by the desire to meet last year's earnings. These findings clearly support those reported earlier (cf. the univariate analyses).

With regard to the control variables, it might be interesting to note that these do never attain statistical significance (i.e. with an exception for *SIC4* in the *SRP* model). Moreover, some of the variables do even not have the predicted sign (see e.g. *WCACC*).

TABLE 3: Logistic Regression Summary Statistics

PANEL A: Small Profits & Small Losses

	PREDICTED SIGN		LA	
	Coefficient	(p-value) ^a	Coefficient	(p-value) ^a
Constant	1.061	(0.449)	0.069	(0.966)
AUD				
Big5 vs. Non-Big5	(-)	-0.123		
Non-Big5 vs. Specialist Big5	(+)		0.926	(0.050)
Non-Specialist Big5 vs. Specialist Big5	(+)		1.181	(0.013)
Non-Specialist Big5 vs. Non-Big5	(-)			
Specialist Big5 vs. Non-Big5	(-)			
DE	(+)	-0.014	-0.013	(0.333)
SIZE	(+)	0.027	0.011	(0.465)
XLST	(-)	-0.397	-0.199	(0.324)
WCACC	(+)	-0.918	-1.111	(0.078)
DND	(?)			
SIC1		-9.402	-9.171	(0.697)
SIC2		-1.229	-1.248	(0.063)
SIC3		0.161	0.424	(0.477)
SIC4		7.173	7.056	(0.674)
SIC7		0.012	0.328	(0.600)
Nagelkerke R ²		0.186	0.223	0.223

^a Where there are predictions on the sign of the coefficients and the estimates accord with that prediction, the p-values are reported on a one-tailed test basis, otherwise two-tailed tests are used.

PANEL B: Small Earnings Increases & Small Earnings Decreases

	SRP						
	PREDICTED SIGN	Coefficient	(p-value) ^a	Coefficient	(p-value) ^a	Coefficient	(p-value) ^a
Constant	(?)	0.133	(0.888)	0.560	(0.589)	0.108	(0.909)
<i>AUD</i>							
Big5 vs. Non-Big5	(-)	0.220	(0.449)				
No n-Big5 vs. Specialist Big5	(+)			-0.451	(0.246)		
No n-Specialist Big5 vs. Specialist Big5	(+)			-0.303	(0.367)		
Non-Specialist Big5 vs. Non-Big5	(-)					0.149	(0.621)
Specialist Big5 vs. Non-Big5	(-)					0.451	(0.246)
<i>DE</i>	(+)	0.012	(0.296)	0.011	(0.324)	0.011	(0.324)
<i>SIZE</i>	(+)	0.063	(0.223)	0.071	(0.199)	0.071	(0.198)
<i>XLIST</i>	(-)	-0.086	(0.375)	-0.124	(0.327)	-0.124	(0.327)
<i>WCACC</i>	(+)	-0.158	(0.746)	-0.165	(0.734)	-0.165	(0.734)
<i>DND</i>	(?)						
<i>SIC1</i>		-1.375	(0.149)	-1.366	(0.151)	-1.366	(0.151)
<i>SIC2</i>		0.751	(0.116)	0.719	(0.133)	0.719	(0.133)
<i>SIC3</i>		-0.118	(0.699)	-0.172	(0.580)	-0.172	(0.580)
<i>SIC4</i>		-0.848	(0.039)	-0.842	(0.040)	-0.842	(0.040)
<i>SIC7</i>		-0.324	(0.342)	-0.426	(0.235)	-0.426	(0.235)
Nagelkerke R ²		0.051		0.054		0.054	

^a Where there are predictions on the sign of the coefficients and the estimates accord with that prediction, the p-values are reported on a one-tailed test basis, otherwise two-tailed tests are used.

4.3. *Sensitivity Analyses*

Overall, the aforementioned results are insensitive to using an alternative cut-off level (i.e. 0.01) for identifying small profits and small losses (small earnings increases and small earnings decreases). In order to assess the robustness of reported results, I repeated the analyses relying on some alternative specifications of equation (3.1.1). Whereas *DE* was originally defined as '*long-term debt-to-equity*', I also considered '*total debt-to-equity*'. In addition, I assessed the impact of *total* accruals (i.e. working capital accruals minus depreciation) instead of *working* capital accruals on the dependent. I also considered the natural logarithm of net sales as an alternative *SIZE* proxy. Results are not affected by these sensitivity checks.

5. DISCUSSION AND CONCLUSION

Earlier studies on the impact of differences with regard to audit quality on earnings management have used the discretionary component of accruals as a proxy for earnings management. Inspired by the fact that discretionary accrual models are subject to measurement error and that results obtained in the aforementioned studies are rather inconclusive, I decided to rely on a very popular alternative research design in the current study. That is, I try to assess the relationship between audit quality and earnings management by examining the distribution of actually reported earnings figures (see e.g. Burgstahler and Dichev, 1997). Employing a sample of listed UK firms, I verify whether alleged audit quality differences affect discontinuities in the distribution of earnings around certain targets, being zero earnings and prior year's earnings. In order to proxy for audit quality, I rely on both the traditional brand name variable (i.e. non-Big5 vs. Big5) and a measure for Big5 auditors' industry expertise (i.e. non-specialist Big5 vs. specialist Big5). Consistent with earlier results for a UK sample (see Gore, Pope and Singh, 2001), I observe statistically significant discontinuities around both aforementioned targets for the full sample of firm-years. More specifically, I observe significantly more (fewer) small profits and small earnings increases

(small losses and small earnings decreases) than would be expected under a smooth distribution. Allowing for differences in audit quality, results are consistent with specialist Big5 auditors restricting loss avoidance relative to both non-specialist Big5 and non-Big5 auditors. Nevertheless, high-quality audits are not found to constrain earnings management aimed at turning small earnings decreases into small earnings increases.

Two important conclusions can be drawn from these results. Firstly, reported results suggest that high-quality audits only serve as an earnings management constraint for practices having a quantitatively material effect on reported earnings. More specifically, whereas turning a small loss into a small profit and turning a small earnings decrease into a small earnings increase are both qualitatively material, high-quality audits (i.e. specialist Big5 audits) only restrict the former type of earnings enhancement. As mentioned before, turning a small loss into a small profit is quantitatively material, whereas this will typically not be the case for turning a small earnings decrease into a small earnings increase. Results therefore suggest that auditors (i.e. both high- and low-quality auditors) neglect qualitative factors in assessing materiality. Accordingly, qualitatively material items that do not exceed a quantitative threshold will typically not be adjusted for by both high- and low-quality auditors. Findings therefore corroborate the need for materiality guidelines and/or auditing standards that recognise the importance of qualitative factors in assessing materiality. Secondly, the obtained results suggest that the traditional brand name proxy does not adequately capture audit quality differences. More specifically, whereas no discrepancies with regard to the occurrence of threshold-induced earnings management are noted between Big5 and non-Big5 clients, results uncover considerable differences among Big5 clients themselves (i.e. only for loss avoidance). The latter result supports earlier findings by Krishnan (2003) and Balsam, Krishnan and Yang (2003). Future empirical studies on audit quality should therefore clearly allow for quality differences among Big5 auditors.

REFERENCES

- Auditing Practices Board (APB) (1995). *Materiality and the Audit*, Statements of Auditing Standards No. 220.
- Balsam, S., Krishnan, J. and Yang, J. (2003). 'Auditor Industry Specialization and Earnings Quality'. *Auditing: A Journal of Practice and Theory*, 22(2): 71-97.
- Barth, M.E., Elliott, J.A. and Finn, M.W. (1999). 'Market Rewards Associated with Patterns of Increasing Earnings'. *Journal of Accounting Research*, 37(2): 387-413.
- Beaver, W.H. and Engel, E.E. (1996). 'Discretionary Behaviour with Respect to Allowances for Loan Losses and the Behaviour of Security Prices'. *Journal of Accounting and Economics*, 177-206.
- Becker, C.L., DeFond, M.L., Jiambalvo, J. and Subramanyam, K.R. (1998). 'The Effect of Audit Quality on Earnings Management'. *Contemporary Accounting Research*, 15: 1-24.
- Beneish, M.D. (1997). 'Detecting GAAP Violation: Implications for Assessing Earnings Management among Firms with Extreme Financial Performance'. *Journal of Accounting and Public Policy*, 16(3): 271-309.
- Blokdijk, H., Driehuisen, F., Simunic, D.A. and Stein, M.T. (2003). 'Factors Affecting Auditors' Assessments of Planning Materiality'. *Auditing: A Journal of Practice and Theory*, 22(2): 297-307.
- Bonner, S.E. and Lewis, B.L. (1990). 'Determinants of Auditor Expertise'. *Journal of Accounting Research*, 28: 1-20.
- Braun, K.W. (2001). 'The Disposition of Audit-Detected Misstatements: An Examination of Risk and Reward Factors and Aggregation Effects'. *Contemporary Accounting Research*, 18: 71-99.
- Burgstahler, D. and Dichev, I. (1997). 'Earnings Management to Avoid Earnings Decreases and Losses', *Journal of Accounting and Economics*, 24: 99-126.
- Craswell, A., Francis, J. and Taylor, S. (1995). 'Auditor Brand Name Reputations and Industry Specializations', *Journal of Accounting and Economics*, 20: 297-322.
- DeAngelo, L. (1981). 'Auditor Size and Audit Quality'. *Journal of Accounting and Economics*, 3: 183-199.
- DeAngelo, L.E. (1986). 'Accounting Numbers as Market Value Substitutes: A Study of Management Buyouts of Public Stockholders'. *Accounting Review*, 61: 400-420.

- Dechow, P.M., Sloan, R.G. and Sweeney, A.P. (1995). 'Detecting Earnings Management'. *Accounting Review*, 70: 193-225.
- DeFond, M.L. and Jiambalvo, J. (1991). 'Incidence and Circumstances of Accounting Errors'. *Accounting Review*, 66: 643-655.
- DeFond, M.L. (1992). 'The Association Between Changes in Client Firm Agency Costs and Auditor Switching'. *Auditing: A Journal of Practice and Theory*, 11: 16-31.
- DeGeorge, F., Patel, J. and Zeckhauser, R. (1999). 'Earnings Management to Exceed Thresholds'. *Journal of Business*, 72: 1-33.
- Deis, D.R. and Giroux, G.A. (1992). 'Determinants of Audit Quality in the Public Sector'. *Accounting Review*, 67(3): 462-479.
- Francis, J. and Wilson, E. (1988). 'Auditor Changes: A Test of Theories Relating to Agency Costs and Auditor Differentiation'. *Accounting Review*, 64: 663-682.
- Francis, J.R., Maydew, E.L. and Sparks, H.C. (1999). 'The Role of Big 6 Auditors in the Credible Reporting of Accruals'. *Auditing: A Journal of Practice and Theory*, 18: 17-34.
- Gaver, J.J. and Paterson, J.S. (2001). 'The Association between External Monitoring and Earnings Management in the Property-Casualty Insurance Industry'. *Journal of Accounting Research*, 39(2): 269-282.
- Gore, P., Pope, P.F. and Singh, A.K. (2001). 'Discretionary Accruals and the Distribution of Earnings Relative to Targets'. Working Paper, Lancaster University.
- Guay, W.R., Kothari, S.P. and Watts, R.L. (1996). 'A Market-Based Evaluation of Discretionary Accrual Models'. *Journal of Accounting Research*, 34: 83-105.
- Hackenbrack, K. and Nelson, M.W. (1996). 'Auditors' Incentives and Their Application of Financial Accounting Standards'. *Accounting Review*, 71: 43-59.
- Healy, P.M. (1985). 'The Effect of Bonus Schemes on Accounting Decisions'. *Journal of Accounting and Economics*, 7: 85-107.
- Hirst, D.E. (1994). 'Auditor Sensitivity to Earnings Management'. *Contemporary Accounting Research*, 11: 405-422.
- Holland, D. and Ramsay, A. (2003). 'Do Australian Companies Manage Earnings to Meet Simple Earnings Benchmarks?'. *Accounting and Finance*, 43(1): 41-62.

- International Federation of Accountants (IFAC). *Audit Materiality*, International Standards on Auditing No. 320.
- Jones, J.J. (1991). 'Earnings Management During Import Relief Investigations'. *Journal of Accounting Research*, 29: 193-228.
- Kim, J.-B., Chung, R. and Firth, M. (2003). 'Auditor Conservatism, Asymmetric Monitoring, and Earnings Management'. *Contemporary Accounting Research*, 20(2): 323-359.
- Kinney, W.R. and Martin, R.D. (1994). 'Does Auditing Reduce Bias in Financial Reporting? A Review of Audit-Related Adjustment Studies'. *Auditing: A Journal of Practice and Theory*, 13(1): 149-155.
- Kinney, W.R. and McDaniel, L.S. (1989). 'Characteristics of Firms Correcting Previously Reported Quarterly Earnings'. *Journal of Accounting and Economics*, 11: 71-93.
- Krishnan, G.V. (2003). 'Does Big6 Auditor Industry Expertise Constrain Earnings Management'. *Accounting Horizons*, Supplement: 1-16.
- Lang, M., Raedy, J. and Yetman, M. (2003). 'How Representative Are Firms That Are Cross-Listed in the United States? An Analysis of Accounting Quality'. *Journal of Accounting Research*, 41(2): 363-386.
- Leuz, C., Nanda, D. and Wysocki, P.D. (2003). 'Earnings Management and Investor Protection: An International Comparison'. *Journal of Financial Economics*, 69(3): 505-527.
- Libby, R. and Kinney Jr., W.R. (2000). 'Does Mandated Audit Communication Reduce Opportunistic Corrections to Manage Earnings to Forecasts?'. *Accounting Review*, 75: 383-404.
- Magee, R.P. and Tseng, M.-C. (1990). 'Audit Pricing and Independence'. *Accounting Review*, 65(2): 315-336.
- McNichols, M. and Wilson, G.P. (1988). 'Evidence of Earnings Management from the Provision of Bad Debts'. *Journal of Accounting Research*, 26: 1-31.
- McNichols, M.F. (2000). 'Research Design Issues in Earnings Management Studies'. *Journal of Accounting and Public Policy*, 19: 313-345.
- Nelson, M.W., Elliott, A. and Tarpley, R.L. (2003). 'How Are Earnings Managed? Examples of Auditors'. *Accounting Horizons*, Supplement: 17-35.
- Nichols, D.R. and Smith, D.B. (1983). 'Auditor Credibility and Auditor Changes'. *Journal of Accounting Research*, 21: 534-544.

- Owhoso, V.E., Messier, W.F. and Lynch, J.G. (2002). 'Error Detection by Industry-Specialized Teams during Sequential Audit Review'. *Journal of Accounting Research*, 40(3), 883-900.
- O'Keefe, T.B., King, R.D. and Gaver, K.M. (1994). 'Audit Fees, Industry Specialization, and Compliance with GAAS Reporting Standards'. *Auditing: A Journal of Practice and Theory*, 13(2): 41-55.
- Palmrose, Z.-V. (1988). 'An Analysis of Auditor Litigation and Audit Service Quality'. *Accounting Review*, 63: 55-73.
- Petroni, K. (1992). 'Optimistic Reporting in the Property-Casualty Insurance Industry'. *Journal of Accounting and Economics*, 15(4): 485-508.
- Petroni, K. and Beasley, M. (1996). 'Errors in Accounting Estimates and Their Relation to Audit Firm Type'. *Journal of Accounting Research*, 34(1): 151-171.
- Piot, C. (2001). 'Agency Costs and Audit Quality: Evidence from France'. *European Accounting Review*, 10(3): 461-499.
- Scott, D.W. (1992). *Multivariate Density Estimation*, New York: Wiley.
- Securities and Exchange Commission (SEC) (1999). *Materiality*, Staff Accounting Bulletin No. 99, Washington DC: Government Printing Office.
- Solomon, I., Shields, M. and Whittington, R. (1999). 'What do Industry-Specialist Auditors Know?'. *Journal of Accounting Research*, Spring: 191-208.
- Teoh, S.H. and Wong, T.J. (1993). 'Perceived Auditor Quality and the Earnings Response Coefficient'. *Accounting Review*, 68: 346-367.
- Van Caneghem, T. (2002). 'Earnings Management Induced by Cognitive Reference Points'. *British Accounting Review*, 34(2): 167-178.
- Watts, R.L. and Zimmerman, J.L. (1986) *Positive Accounting Theory*. Englewood Cliffs: Prentice-Hall.
- Wright, S. and Wright, A.M. (1997a). 'The Effect of Industry Experience on Hypothesis Generation and Audit Planning Decisions'. *Behavioral Research in Accounting*, 9: 273-294.
- Wright, A. and Wright, S. (1997b). 'An Examination of Factors Affecting the Decision to Waive Audit Adjustments'. *Journal of Accounting, Auditing and Finance*, 12: 15-36.