# CAN AUDIT REGULATIONS REDUCE EARNINGS MANAGEMENT? EVIDENCE FROM AN ANALYSIS OF THE RELATIONSHIP BETWEEN EARNINGS MANAGEMENT AND AUDITOR SWITCHES

Gerrit Penning
University of Pretoria

Charl de Villiers
The University of Auckland, and
University of Pretoria

## Abstract

This paper compares the frequency of auditor switches for Johannesburg Stock Exchange listed firms with earnings quality. We find that, during the earlier years of the sample period (1998-2006), higher frequency switch firms are associated with lower earnings quality (measured by abnormal accruals) and a higher incidence of modified audit opinions. This association is not present in more recent years (2007-2013). Abnormal accruals reduced in recent years, especially among firms that frequently switch auditors. We ascribe this reduction in earnings management to specific regulatory changes around 2005/6 that alerted auditors to earnings management and firmed their resolve to be more vigilant in suppressing earnings management.

**Keywords:** Audit quality, Regulation, Earnings management.

**Acknowledgements:** The authors thank Steven Cahan and Andy Stark, as well as the reviewers and participants of the South African Accounting Association Conference 2015, for their valuable comments, feedback, and suggestions on earlier drafts of the paper.

**Declaration**: We hereby confirm that this paper has not been published previously and are not currently under consideration for publication elsewhere.

**Author biographies**
Gerrit Penning is a senior lecturer in auditing at the University of Pretoria, South Africa.

Charl de Villiers is a professor of accounting in the Graduate School of Management, The University of Auckland, New Zealand; and in the Department of Accounting, University of Pretoria, South Africa.

## 1. Introduction

The effectiveness of audit regulation remains an ongoing concern, and although several significant regulatory changes have occurred during the last decade or two, uncertainty remains regarding its effect on audit quality (Kleinman *et al.,* 2014). Earnings quality can be affected by audit quality. However, earnings quality is not particularly easy for investors or auditors to observe, mostly requiring cross-sectional analyses. By contrast, it is relatively easy to observe and track how frequently a firm switches auditor[1], using publicly available information. If it can be shown that earnings quality and auditor switching behaviour is correlated, this would be of interest, both to investors and to auditors.

Firm characteristics develop over time and therefore it is not always possible to determine which characteristic(s) influence/cause which other characteristic(s). Accordingly, we consider earnings quality on average (not only around the year of a switch), and expect firms with a history of more frequent auditor switches to be associated with lower earnings quality. We analyse Johannesburg Stock Exchange (JSE) listed firms for the period 1997-2013. Auditor switching is not mandated in this South African setting. We compare the financial characteristics of firms that switch auditor frequently with firms that switch infrequently, as well as examine the association between earnings quality (using abnormal accruals and modified audit opinions as proxies) and a firm's frequency of auditor switching. After assessing earnings quality in aggregate over the entire sample period, we break it down into shorter periods of time, in order to document the trend around the time when significant audit regulatory changes occurred in South Africa, around 2005/6. If it can be shown that there was a change in the level of earnings management around the audit regulatory changes in 2005/6, this would be evidence in support of the effectiveness of the audit regulations in influencing earnings quality.

The prior literature provides conflicting evidence regarding the association between auditor switches and earnings quality. On the one hand, DeFond & Subramanyam (1998) associate switch firms with income increasing abnormal accruals – and where auditors attempt to supress such accruals through conservatism, they are dismissed. Such dismissals may be as a result of audit shopping, which has been cited by regulators (Schwartz & Menon, 1985; Krishnan, 1994) and by the media and analysts (Ettredge *et al.,* 2011) as an area of possible concern. Audit shopping may allow audit clients to evade scrutiny of low earnings quality and qualified audit opinions (Lennox, 2000). However, earnings management may increase when a new auditor

starts, due to the incoming auditor being unaccustomed to the new client and therefore unable to effectively detect and deter earnings management (Gul *et al.*, 2009). Therefore, auditor switching is not necessarily associated with *ex ante* lower earnings quality. Further evidence can be seen in Lee *et al.* (2003), who find little support for an association between auditor switching and abnormal accruals. Furthermore, Krishnan (1994) suggests that auditor switching is not so much as a result of modified audit opinions, but often triggered by the auditor's overly conservative auditor practices, i.e. the switching is not necessarily associated with low earnings quality. In fact, auditor switching could be driven by changes in the firm's financing, changes in operations, the search for more competitive audit fees, or even higher quality audits for various reasons (Beattie & Fearnley, 1995; Johnson & Lys, 1990). Regardless of the reasons for auditor switching, auditor switches attract regulatory scrutiny. For example, both the Securities and Exchange Commission (SEC)[2] and the Johannesburg Stock Exchange (JSE) (JSE, 2013) require firms to register any changes in a firm's auditor. The SEC also requires specific information to be reported about audit issues during the two years prior to a switch, whereas the JSE requires an auditor (or audit partner) switch to be submitted as part of price sensitive information. Given the arguments for both positive and negative associations, the mixed prior findings, the evidence of regulatory interest, as well as the potential practical usefulness of the information for investors, there is a need to further investigate this issue.

We find that firms that switch auditor more than once in 10 years have, on average, a weaker financial performance, higher incidences of loss-making, lower operating cash flows, and higher cash flow volatility, as well as lower earnings quality, than firms that switch auditors less often. In regression analyses, we find that auditor switch frequency is negatively and significantly associated with earnings quality for three of the four measures of earnings quality, including modified audit opinions.

When we consider eight-year periods instead of the full sample period, the statistically significant overall associations are stronger in the earlier years of the sample period (1998-2006). Further analyses show that the earnings quality of both frequent and infrequent switchers improved, with frequent switchers improving more, to the extent that there is no statistically significant difference between frequent and infrequent switchers during the more recent years (2011-2013). We attribute these changes to changes in the South African audit regulations around 2005/6 that appear to have motivated auditors to become more assertive in suppressing earnings management in more recent years. The fact that South Africa was ranked first in the world (among 144 countries) for the strength of auditing and reporting regulation/quality by the World Economic Forum in each of the last six years (2011-2016),

provides further evidence in support of this notion (Independent Regulatory Board for Auditors (IRBA), 2015).

Apart from providing additional evidence where mixed results have been reported in the past, the current study contributes to, and goes beyond, the prior literature by examining the association between earnings quality and a firms' historical switch behaviour, rather than with a particular switch, allowing for the comparison of low-frequency versus high-frequency switch firms. Furthermore, the JSE setting provides for a different regulatory backdrop (where the effectiveness of recent regulatory changes can be assessed), compared to the US regulatory setting of most prior studies. In addition, as far as we can ascertain, we are the first to document a decrease in earnings management since the introduction of new audit regulations around 2005/6. These findings can be interpreted as evidence of the effectiveness of the new audit regulations.

Investors, auditors, and regulators would be interested in these results: investors, because such knowledge could assist them in their investment decision-making and reaffirm the reliability of audit procedures in suppressing earnings management; auditors, because this may be helpful for them in assessing the risk profile of existing and prospective clients and influence their audit activities around earnings management; and regulators, because of the evidence of successful audit regulation and may point towards areas of regulatory change to consider, both in South Africa and in other parts of the world.

The remainder of the paper consists of a literature review and hypotheses development, sample selection, research design, findings, and conclusion.

## 2. Prior literature and development of hypotheses

### *2.1 Auditor switches and firm characteristics*

Generally, investors have limited signals from auditors regarding earnings quality (Francis, 2011) and therefore also on financial health. If it can be shown that high frequency switch firms reflect weaker financial condition, then auditor switch rates have the potential to be another signal from the auditor of a firm's financial condition.

Findings from prior literature show a link between auditor switching and financial health. DeFond & Subramanyam (1998) note that their models used in calculating accruals might in fact be driving the level of discretionary accruals due to weaker firm performance around the time of the switch. In the same light, Schwartz & Menon (1985) find that failing firms are more likely to switch auditors than those in a healthier financial position. As a consequence,

Schwartz & Menon (1985) emphasise the need to control for financial distress when researching auditor switches. This finding aligns with the suggestion by Chen *et al.* (2009) that auditor changes can assist in increasing the effectiveness of financial distress prediction models. We therefore expect firms with a higher auditor switch frequency to reflect weaker performance and a less healthy financial condition overall. Therefore, we state the following hypothesis:

*H1: Firms with a high frequency of auditor switching are likely to reflect a weaker financial condition than firms with a low auditor switch frequency*.

### *2.2 Measuring earnings quality*

#### *2.2.1 Abnormal accruals*

Higher quality earnings are considered to be decision-relevant to users relying on reported earnings as it is more informative about a firm's financial performance (Dechow *et al.*, 2010; Francis 2011). However, a firm's performance is a product of both underlying real earnings and the accounting process by which management reports on the cash flow and accrual components of earnings. Therefore, a firm may influence the level of earnings through real earnings management by manipulating the timing of certain transactions, or by manipulating accrual estimates. The fact that accruals rely on judgment provides management with the opportunity to manipulate the level of earnings (Francis & Krishnan, 1999). The resultant "abnormal" or unexpected component of accruals are considered discretionary in nature as it is a distortion of the normal process of capturing fundamental firm performance - either as a result of an imperfect accounting process or due to earnings management - and thus represents lower earnings quality (Dechow *et al.*, 2010).

We use abnormal accruals as our first measure of earnings quality and apply three models from prior literature to determine the discretionary component of accruals. Furthermore, we use the absolute value of abnormal accruals instead of signed values.

#### *2.2.2 Modified audit opinions*

Where the effort of auditors does not induce high earnings quality, auditors can report on low earnings quality through modified audit opinions (Dechow *et al.*, 2010, referring to Whittred 1980). Accordingly, we expect firms with a greater incidence of modified audit opinions to be associated with lower earnings quality. Prior studies have linked modified audit opinions to lower earnings quality, e.g. Francis & Krishnan (1999) find an increased incidence

of modified audit reports in light of higher accruals, induced by higher auditor conservatism. Audit opinions have also been found to be effective in detecting abnormal accruals, with Bartov *et al.* (2000) showing the models' ability to detect abnormal accruals as evidenced by auditors' issuance of modified audit opinions. On the other hand, Butler *et al.* (2004) find no evidence linking heightened earnings management through accruals with modified audit opinions, although they suggest that modified audit opinions as a result of abnormal accruals are driven by auditors reporting on clients' inappropriate going concern assumptions. Regardless, we use the presence of modified audit opinions as a proxy for lower earnings quality.

### *2.3 Auditor switches and earnings quality*

Earnings quality is not easily visible to investors and other users of financial statements and is rather derived empirically through cross-sectional analysis using various metrics representing earnings quality. Similarly, earnings quality may not be visible to an incoming auditor or regulators. The history of a firm's auditor switching practice however, is observable and is publically available information. It therefore stands to reason that, should an association exist between the frequency at which a firm switches its auditor and the firm's overall earnings quality during the period covering the switch history, investors and auditors could possibly deduct earnings quality from a firm's auditor switch behaviour.

Regulators regard auditor switch information as important. For example, US-listed firms are required to inform the Security and Exchange Commission (SEC) of a resignation or dismissal of their independent auditors, or their auditor's refusal to stand for re-appointment. Furthermore, the SEC requires firms to indicate whether, during the preceding two financial years and leading up to the switch, it received a qualified or adverse opinion, in addition to the nature of any disagreements between the firm and its auditor[3]. In South Africa, the JSE considers auditor changes to be price-sensitive information and requires firms to follow the price sensitive information disclosure procedures for any auditor (including audit partner) changes (JSE, 2013).

Such regulatory concern is based on the premise that, amongst other reasons, audit clients could be motivated to switch to a more accommodating auditor to enjoy more latitude and/or to avoid receiving a modified audit opinion (Lennox, 2000). Prior literature provides some evidence on the link between audit opinions and auditor switching. Krishnan (1994) finds higher incidences of switching where going concern opinions are issued, with an analogous increase in propensity for loss-making and earnings volatility by the client firm. Krishnan

(1994) does however, suggest that switching is not incentivised by a modified audit opinion *per se*, but rather by increased auditor conservatism prior to the switch. Entities with high auditor switch probabilities have also been found to be at higher likelihood of receiving a modified audit opinion (Krishnan *et al.*, 1996). Other studies show mixed results regarding the propensity of firms to switch auditor in light of modified audit opinions, including going concern reports (Chow & Rice, 1982; Swartz & Menon, 1985; Citron & Taffler, 1992). These mixed results could be the result of there being other reasons for firms to switch auditors, such as a desire to lower audit fees.

Prior literature finds evidence of lower earnings quality during the early stages of tenure (Johnson et al, 2002), with unfamiliarity of the new auditor suggested as a possible reason for a constraint in the ability to detect material misstatements (Gul *et al.*, 2009). Nevertheless, Carcello & Nagy (2004) find a higher incidence of SEC-reported irregularities in client financial statements in the first three years of tenure than in subsequent years. Davis *et al.* (2009) find an increased level of earnings management earlier on in the auditor's tenure, while Myers *et al.* (2003) find that a longer tenure results in less extreme accruals. We therefore state the following hypothesis:

*H2: Firms with more frequent auditor switches are likely to have lower earnings quality than firms with less frequent auditor switches.*

### *2.4 Trend in earnings quality*

Several regulatory changes impacting the South African audit profession occurred around 2005/6. However, there is little empirical evidence available on how these regulatory changes affected audit quality, or earnings quality. It is therefore uncertain whether auditors were incentivised by the new regulations to better detect and supress the earnings management practices of audit clients through increased audit effort and quality, and if so, whether they were successful in these efforts.

Prior studies have found direct links between the level of audit quality and earnings quality (Francis, 2011). For example, Gunny & Zhang (2013) showed that higher abnormal accruals are associated with incidences of audit deficiencies discovered during regulatory inspections, while Becker *et al.* (1998) documents higher discretionary accruals amongst non-Big Six clients, implying that Big Six audit firms offer better audit quality. One reason for auditors' incentive to suppress earnings management lies in the possible legal consequences where they

fail to do so and where lower earnings quality leads to negative consequences for investors, such as a fall in stock prices (Francis, 2011).

Audit quality is affected by new regulation. For instance, the Sarbanes-Oxley Act (SOX) required public inspections of audit firms by the Public Company Accounting Oversight Board (PCAOB) in contrast to a peer-review process in place prior to SOX. Knechel *et al.* (2013) summarises the findings from prior studies which considered the effect of PCAOB inspections and point out that audit quality may improve, and more so for small audit firms, as a result of the PCAOB's inspections.

Shifts in the South African auditing regime around 2005/6 include changes resulting from the Auditing Profession Act (APA) No. 26 of 2005, which established the Independent Regulatory Board for Auditors (IRBA, 2006). The Act requires IRBA to perform inspections of audit firms of public companies every three years, whereas the previous Act did not specify a timeframe for inspections (PAAA, 1991). The APA also required the identification of the engagement partner on audit reports and several other requirements aimed at enhancing auditor accountability. In addition, the South African Institute of Chartered Accountants (SAICA) adopted the IFAC Code of Ethics in 2006 for Chartered Accountants who are also registered as auditors with IRBA. This code emphasises a conceptual approach to ethics as opposed to the former rules-based framework (SAICA, 2006). These changes may have result in stricter enforcement by auditors, thereby affecting the level of earnings quality.

According to the World Economic Forum (WEF), who ranks countries' for the strength of auditing and reporting regulation, South Africa has increased its ranking during the years up to 2011 and has since been ranked number one in the world in each of the last six years (2011-2016) (IRBA, 2015). An index presented by Brown *et al.* (2014) to measure audit strength and enforcement activities shows a similar trend for earlier years with South Africa showing an increase in audit strength and enforcement from 2002 to 2005.

Regulation also affect the accounting practices of firms. For example, after the Sarbanes-Oxley Act was passed in 2002, a significant decline in accruals-based earnings management was observed (Cohen *et al.*, 2008). In South African, JSE-listed firms were compelled to adopt International Financial Reporting Standards (IFRS) on 1 January 2005 (IFRS Foundation, 2015). However, the South African accounting standards that were replaced, were the exact wording of the IFRS standards by another name. Furthermore, note that there is mixed evidence regarding changes in earnings quality after IFRS adoption, with some studies reporting no

change in earnings quality (Jeanjean & Stolowy, 2008), and others a decrease in earnings quality (e.g. Ahmed *et al.*, 2013).

In summary, audit regulations strengthened and accounting regulations remained constant, although external perceptions of accounting standards may have changed around 2005/6. We consider the WEF's ranking referred to above as an indication of the institutional strength within which the South African audit profession functions and therefore state the following hypothesis:

*H3: The earnings quality of JSE-listed firms is likely to be better after 2006.*

## 3. Sample selection

We obtained financial statement data from the *INET BFA* database for all JSE-listed and delisted firms for financial years from 1997 to 2013. Audit firm switches for this period were hand collected from annual reports. A general internet search identified audit firm mergers during the sample period and these were not considered auditor switches.

Table 1, Panel A provides sample information. Consistent with the prior literature, firms in the "financials" industry were excluded due to differences in their financial ratios and regulatory environment (192 firms). Firms classified by *INET BFA* as "Gold" companies were excluded for the same reason (31 firms). All firms that were audited by Arthur Andersen during the period 2001 to 2003 were excluded, as the demise of Arthur Andersen internationally led to auditor changes for a known external reason (13 firms). All firm-year observations for which revenue was disclosed as zero as well as the year following a zero-revenue year were excluded as a sensible change in revenues could not be calculated. Firm-year observations were also excluded from cross-sectional regression analyses if there were not at least five firms per industry-year. Finally, firms with fewer than four years' observations were excluded from the analyses. The final sample consisted of 3,443 firm-year observations. The test sample covers 388 unique firms, consisting of 204 firms still listed in 2013 and 184 delisted firms, from an initial sample of 830 firms across the whole of the sample period.

Firms were classified into 10 industries based on the Industry Classification Benchmark (ICB) classification taxonomy used by the JSE. Table 1, Panel B shows a total of 233 firm-years that were subject to a switch, while Panel C shows the number of auditor switches per year. Panel D shows whether auditor switch occurred between Big 4 firms, between non-Big 4 firms, from Big 4 to non-Big 4, or *visa versa*. According to this analysis, the majority of switches (40.8%), occurred between non-Big 4 audit firms.

<< INSERT TABLE 1 HERE >>

## 4. Research design

### *4.1 Calculation of auditor switch rate and rankings*

The focus of the study is how the rate at which a JSE-listed firm switches its auditor can be used to profile firms' financial health, as well as the association of switch rate with earnings quality. We calculate the switch rate as follows:

$$SWITCH\ RATE = No.of\ auditor\ switches_{i,p}\ /\ No.of\ firm\ year\ observations_{i,p}\ x\ 10$$

where the subscripts denote the firm (*i*) and the period of observation (*p*) for which annual report data is available for firm *i* during the sample period. The ratio is multiplied by ten to enable convenience in interpretation and to assign a ranked switch rate in the form of a natural number to each firm. For example, firms switching its auditor once in a ten-year period would be allocated a switch rate of one, while a firm switching its auditor three times in a fourteen year period would have a rate of 2.14 (3/14x10). The prevalence of auditor switching ranks in our sample of 3,443 firm-year observations are: 1,957 firm-year observations had no switches and was ranked 0; 688 observations rankled 1; 431 observations ranked 2; 259 ranked 3; and 108 observations ranked 4.

A firm's switch rate (and therefore, rank) is assigned to each financial year observation of the firm regardless of when during the period of observation the switch(es) occurred. This is in-line with the argument previously stated that firms with higher switch rates are expected to have an inherently lower earnings quality and not only around the period of a switch year.

### *4.2 Measurement of earnings quality proxies*

We use three measures of abnormal accruals to proxy for earnings quality as explained in section 4.2.1 below. We use the presence of a modified audit opinion as our fourth proxy for earnings quality.

#### *4.2.1 Discretionary estimation errors (DEE)*

Our first model is based on Dechow & Dichev (2002) (DD) as modified by McNichols (2002), in line with Francis *et al.* (2005). We measure discretionary estimation errors *(DEE)*, represented by $\varepsilon_{it}$, as the absolute value of the unstandardised residual from the following cross-sectional model by industry-year:

$$TCA_{\mathrm{i,t}} = \alpha + b_1 CFO_{i,t-1} + b_2 CFO_{i,t} + b_3 CFO_{i,t+1} + b_4 \Delta REV_{i,t} + b_5 PPE_{i,t} + \varepsilon_{it} \quad (1)$$

where *i* and *t* denote firm and year subscripts respectively. *TCA* is total current accruals calculated as per Francis *et al.* (2005) using balance sheet figures. $CFO_{it}$ represents the cash

flows from operating activities before dividends as per the cash flow statement, $\Delta REV_{it}$ is the change in revenue between year *t* and *t-1* and $PPE_{it}$ is the gross value of property, plant and equipment. All variables are scaled by average total assets and are winsorised at the 0.5th and 99.5th percentiles. Note that only 3,043 firm-year observations of the total 3,443 are used in the DEE model, as cash flow data for the following year was not available for the 2013 observations.

*4.2.2 Abnormal working capital accruals (AWCA)*

We use the abnormal working capital accruals *(AWCA)* model as proposed by DeFond & Park (2001) as our second measure of earnings quality. This metric measures the difference between realized working capital and the market's expectation of the level of working capital needed to support current sales (DeFond & Park, 2001). Carey & Simnett (2006) note from prior research that management has the most discretion over working capital accruals. We examine the absolute value of *AWCA* and expect higher overall unsigned *AWCA* for firms that more regularly switch their auditor, calculated as follows:

$$AWCA_{\mathrm{i,t}} = WC_{i,t} - [(WC_{i,t-1} \,/\, REV_{i,t-1}) \times REV_{i,t}] \qquad (2)$$

where *i* and *t* denote firm and year subscripts respectively. *REV* is revenue and *WC* is non-cash working capital calculated using balance sheet figures. We express the calculated $AWCA_{\mathrm{i,t}}$ as a ratio of current year sales ($REV_{i,t}$), winsorised at the top 99.5th percentile.

*4.2.3 Total abnormal accruals (TAC)*

We use the modified version of the Jones model (Dechow *et al.,* 1995) to calculate total abnormal accruals *(TAC)*. Following Kothari *et al*. (2005), we include a performance measure in the form of lagged return on assets as follows:

$$\mathrm{DA_{it}} = TA_{it} - \alpha + b_1(\Delta REV_{it} - \Delta REC_{it}) + b_2\, PPE_{it} + b_3\, ROA_{it-1} \qquad (3)$$

The subscripts *i* and *t* denote individual firm and year observations respectively. *DA* is discretionary accruals and proxies for earnings quality, while *TA* represents total accruals. Δ*REV* represents change in current over prior year revenue and Δ*REC* is change in accounts receivable calculated from the balance sheet. *PPE* represents gross fixed assets and *ROA* is lagged return on assets calculated as prior year income before dividends over prior year total assets. All variables except *ROA* are scaled by average total assets. The coefficients in model (3) are determined from calculating a least squares regression (not shown) using the regression's prediction error as an estimate of industry and firm-specific total abnormal

accruals *(TAC)*, adjusted for prior-year firm performance. The prediction error is unstandardized and calculated cross-sectionally per firm per industry year. All variables are winsorised at the 0.5th and 99.5th percentiles.

*4.2.4 Modified audit opinions*

Information about modified audit opinions are obtained directly from the *INET BFA* database. Where data on the type of opinion ("qualified" or "unqualified") was missing from the *INET BFA* database, we manually inspected the firm's annual report for the relevant year's audit opinion as per the audit report. There were 50 instances of modified audit opinions amongst the 3,443 firm-year observations. The majority of these opinions related to going concern issues. A breakdown of the nature of the modified opinions are provided in Table 1, Panel E.

*4.2.5 Regression model development*

To test Hypothesis 2, we determine the relation between earnings quality and the rate at which firms switch their auditor by estimating the following multiple linear regression, while controlling for factors that may also be associated with earnings quality:

$$\begin{aligned} "EQ"_{i,t} = {} & \beta_0 + \beta_1 SWITCHCAT_{i,t(p)} + \beta_2 SIZE_{i,t} + \beta_3 AGE_{i,t} + +\beta_4 LEV + \beta_5 \Delta FIN_{i,t} + \\ & \beta_6 DELIST_{i,t} + \beta_7 ROA_{i,t} + \beta_8 OCF_{i,t} + \beta_9 SGRO_{i,t} + \beta_{10} \sigma(OCF)_{i,t(p)} + \\ & \beta_{11} ALTZ_{i,t} + \beta_{12} P\_LOSS_{i,t} + \beta_{13} DIRECT_{i,t} + +\beta_{14} \mathrm{ANLST}_{i,t} + \beta_{15} BIGN_{i,t} + \\ & \beta_{16} TENURE_{i,t} + \beta_m INDSTRDUM + \beta_n YEARDUM_{i,t} + \varepsilon_i \end{aligned} \quad (4)$$

where *i* and *t* denote firm and year subscripts respectively. *SWITCHCAT*, representing a firm's switch category, splits the control variables between infrequent switchers (0) and frequent switchers (1). *(p)* denotes a firm's period of observation and implies that the same *SWITCHCAT* value was allocated to all of the firm-year observations for the particular firm. *EQ* (earnings quality) is represented by either the results of calculating abnormal accruals in equations (1), (2) or (3) or a modified audit opinion. We are primarily concerned with the coefficient and sign of *SWITCHCAT*. The cut-off point between the two switch categories are determined from tests on differences in means between the high-frequency and low-frequency switch rate groups' level of earnings quality (see section 5.1). In accordance with Hypothesis 2, we expect *SWITCHCAT* to have a positive association with abnormal accruals, i.e. firms in the frequent switch group will be associated with lower earnings quality as proxied by higher abnormal accruals or more instances of modified audit opinions.

We include several control variables in model (4) that have been shown to be associated with earnings quality, explained in Appendix I. For example, we include those control variables typically associated with poorer firm performance to evaluate the likelihood of the modified audit opinions being the result of the underlying financial condition. Additionally, because absolute values of abnormal accruals may be correlated with certain firm characteristics (Hribar & Nichols (2007), we also include controls for firm size and operating volatility. The variables are winsorised to prevent distortion by outliers.

## 5. Findings

### *5.1 Determining an appropriate cut-off point between frequent/infrequent auditor switches*

Pearson correlations and Spearman's rhos were calculated to test for differences in means between firms' switch rates (as calculated in 4.1) and each of the earnings quality metrics (untabulated). All were significant at the 0.01 level (two-tailed). The results suggest that the higher the rate at which a firm switches its auditor, the lower the earnings quality. However, to isolate the cut-off point as to where "frequent" and "infrequent" switchers can be separated, the switch rate is ranked as explained in section 4.1. Using a one-way *ANOVA* test, tests for differences in means between the various switch ranks were performed and for this purpose, a *Games-Howell post-hoc* test was performed to compare all possible combinations of group differences across the four earnings quality proxies. For the abnormal accruals metrics *DEE* and *TAC*, the results show that no significant differences exist between the means of ranks 0 and 1 on the one hand and ranks 2, 3 and 4 on the other ($p < 0.05$). For *AWCA*, significant differences were found between all ranks, except ranks 2 and 3. Although *MODIFIED* provides similar results to *DEE* and *TAC*, no significant differences were found between rank 0 and 1 on the one hand and rank 4 and the rest.

Based on the findings of the tests for differences in means, we group firms into "infrequent switch firms" (ranks 0 and 1) and "frequent switch firms" (ranks 2, 3 and 4), represented by *SWITCHCAT* in model 4 (coded 1 for frequent switchers, otherwise 0).

### *5.2 Descriptive statistics for control variables*

Table 2 shows descriptive statistics for the control variables used in the regression analysis for firms that switch auditors frequently and infrequently. The means of all of the control variables are statistically significantly different between frequent and infrequent switchers, mostly at the 0.1% level, except in the case of growth in revenue *(SGRO)* where the p-value is 0.018. In terms of firm characteristics, frequent switchers are on average smaller firms *(SIZE)*, younger *(AGE)*, have higher leverage *(LEV)*, are more likely to issue new equity and debt *(ΔFIN)*, are experiencing an increase in long-term loans *(ΔFIN)*, and are more likely to delist from the JSE. In terms of firm performance characteristics, frequently switching firms offer negative returns on assets on average *(ROA)*, have smaller cash flows *(OCF)*, greater sales growth *(SGRO)*, more volatile cash flows *(σOCF)*, and are in a less healthy financial condition as reflected by a lower Altman-Z score *(ALTZ)*. However, on average, these frequently switching firms are not in a state of financial distress, given that their mean Altman-Z score (2.831) is above the financial distress threshold (1.81) of the Altman-Z model. Frequent switchers are also subject to more incidences of loss making *(P_LOSS)*. In terms of corporate governance factors, frequently switching firms display greater levels of beneficial director shareholding, and are followed by a greater number of analysts. In terms of auditor influence factors, frequent switchers are more likely to be audited by non-Big 4 audit firms (consistent with results in Krishnan *et al.*, 1996) and, as expected, exhibit shorter auditor tenures.

It thus appears that firms listed on the JSE have different profiles based on the study's classification for "frequent" and "infrequent" switch firms. More specifically and in support of Hypothesis 1, descriptive statistics suggest that frequent switch firms portray a less healthy financial condition than infrequent switch firms as a result of greater leverage, lower returns, lower cash flow resources, higher volatility of cash flows, greater likelihood of approaching financial distress and a higher incidence of loss-making.

<< INSERT TABLE 2 HERE >>

### *5.3 Correlation coefficients*

The Spearman correlations in Table 3 show that *SWITCHCAT* is positively and significantly correlated with all four earnings quality metrics, implying that high-frequency switch firms generally have lower earnings quality. Furthermore, *SWITCHCAT* is also significantly correlated ($p < 0.05$) with all of the control variables. As expected, all three abnormal accruals metrics are positively and significantly correlated with each other, as they capture elements of

the same accounting process. *MODIFIED* is also positively and significantly correlated with *AWCA* and *TAC*, suggesting that audit opinion modifications may capture at least some of the higher abnormal accruals in sample firms' financial statements. These correlations further substantiate the inferences from Table 2 by showing that lower earnings quality firms (associated with high-frequency switch firms) are smaller, younger, more leveraged and generally exhibit weaker financial condition overall - in conformance with Hypothesis 1. However, given the lack of controls, there is a need for regression analyses.

<< INSERT TABLE 3 HERE >>

### *5.4 Main regression analysis*

Table 4, Panel A shows the results of a multiple linear regression in estimating the level of abnormal accruals (*DEE*, *AWCA*, *TAC* models) for firm classification based on firm switch category *(SWITCHCAT)*, coded 1 for high-frequency switch firms, otherwise 0. Collinearity diagnostics reveal no tolerance levels lower than 0.397 or variance inflation factors (VIFs) of higher than 5 for any of the regressions, suggesting that multicollinearity is not likely to be a concern. In the *DEE* ($t$ = 2.707, $p$ = 0.007) and *AWCA* ($t$ = 1.733, $p$ = 0.083) models, *SWITCHCAT* is positive and significant at the 1% and 10% levels respectively. *SWITCHCAT* is not statistically significant in the *TAC* model. Insofar as firm characteristics are concerned, firms that are smaller *(SIZE)* and younger *(AGE)* are associated with higher levels of absolute abnormal accruals, while higher leverage *(LEV)* and new equity/debt issues *(ΔFIN)* are associated in a positive direction with higher abnormal accruals in most models. For the *DEE* and *TAC* models, firms that later delisted are associated with higher abnormal accruals. On firm performance effects, abnormal accruals are positively and significantly associated with higher firm growth *(SGRO)*, volatility of cash flows *(σOCF)* and prior year losses *(P_LOSS)*. The return on assets *(ROA)* variable displays mixed results. Directors' beneficial shareholding shows a significant negative association with abnormal accruals for all models.

The results for the *DEE* model suggest that firms which are smaller, younger, with higher leverage and more issues of new financing, more volatile cash flows and with a higher incidence of loss making, are explaining a significant component of the dependent variable, abnormal accruals. The possibility therefore exists that earnings quality is being driven by the financial performance of a particular set of firms, similar to the findings of DeFond & Subramanyam (1998) in their study on auditor switches. Discretionary accruals are expected to be higher with higher total accruals, as well as where total accruals are the result of extreme

real performance being reported by a firm's accounting system (Dechow *et al.*, 2010). Indeed, and as expected, untabulated Pearson correlations (two-tailed) show significant positive correlation between *DEE* and the absolute value of total current accruals ($r = 0.888$, $p < 0.01$) and the same is found for *TAC* ($r = 0.862$, $p < 0.01$) on absolute total accruals. The regressions may thus not be detecting abnormal accounting discretion per se, as a result of the models' inability to distinguish between real firm performance and earnings management.

Table 4, Panel B shows the results of a binary logistic regression performed to determine the association between a firm's auditor switch category *(SWITCHCAT)* and modifications to the audit opinion *(MODIFIED)*. *SWITCHCAT* has a positive association with *MODIFIED* ($p = 0.006$) and the odds ratio *(Exp(B))* indicates that high-switch firms have a 3.467 times higher chance of receiving a modified audit opinion than low-switch firms. This result is consistent with Krishnan *et al.*, (1996) who find that auditors are more likely to issue modified opinions to "switch firms". In addition, smaller firm size *(SIZE)* and cash flow resources *(OCF)*, the presence of a Big 4 audit firm *(BIGN)* and the incidence of a prior period loss *(P_LOSS)* are associated with a greater likelihood of a modified audit opinion. Firms with modifications to the audit opinion are also more likely to eventually delist from the JSE *(DELIST)* and to suffer from greater financial distress *(ALTZ)*. However, due to the positive and significant correlation of prior year losses with *MODIFIED*, the possibility of going concern reports (56% of all modifications) driving the modified audit opinions cannot be ruled out.

The significance of association found in the *DEE*, *AWCA* and *MODIFIED* models suggests that JSE-listed firms which engage in a higher frequency of auditor switches can be expected to have lower earnings quality, which provides evidence in support of Hypothesis 2.

<< INSERT TABLE 4 HERE >>

### *5.5 Analyses over shorter time periods*

Table 4 encompassed the entire period of the study. However, users wishing to analyse the quality of financial statements may opt to do so at any point in time. In order to determine whether our results hold for a shorter time period, the main regression was repeated for *DEE*, *AWCA* and *TAC* for each eight year time period in the sample. For *MODIFIED*, sample sizes are too small for this kind of analysis. The results in Table 5, Panel A show statistically significant correlations between the switch category and earnings quality metrics in the earlier periods, but not in more recent periods. Analysis of an independent samples *t*-test on a year-by-year basis (Panels B to D) reveals that there is no statistically significant difference between

firms that frequently switch and other firms: for *DEE* from 2006 onwards; for *TAC* in 2006 and from 2008 onwards; and for *AWCA* in 2003, 2008, 2009, and from 2011 onwards. Panels B to D of Table 5 show the means of *DEE*, *AWCA*, and *TAC* are generally lowering for both firms that switch frequently and infrequently. The table further show that the earnings quality of frequent switchers reduces more, to the extent that the means of frequent switchers are getting close to the means of infrequently switching firms in the more recent years.

Untabulated independent samples *t*-tests that compare observations from the period 1998-2006 with those from 2011-2013 show the mean of *DEE* to be significantly lower for both firms that switch frequently and infrequently (both significant at the 1% level), *AWCA* to be significantly lower only for firms that switch frequently (at the 5% level), and *TAC* to be significantly lower for both firms that switch frequently (at the 1% level) and infrequently (at the 5% level).

<< INSERT TABLE 5 HERE >>

Both low and high-frequency switch firms appear to have engaged in less earnings management after 2006, with a greater change among high-frequency switch firms. This represents evidence in support of Hypothesis 3, that auditors have become more assertive in suppressing earnings management in response to regulatory changes. These regulatory changes appear to have contributed to a more vigilant attitude by South African auditors regarding audit quality in general and more specifically earnings management.

*5.6 Sensitivity analyses*

As a test of sensitivity, we repeat the main regression in 5.4, but remove firms which delisted at any point during the sample period. When only listed firms are included, there is no statistical significance between any of the earnings quality proxies and the variable of interest, SWITCHCAT. However, when only delisted firms are included in the regression, statistical significance for the DEE model remains (DEE: $t = 3.181$, $p < 0.01$), implying that firms which delisted are driving much of the results for at least the discretionary estimation error model in the main regression. However, the fact that the other proxies for earnings managements is not statistically significant in either sub-sample may point to a lack of statistical power due to the small sample size after dividing the sample.

We were also interested in separately assessing the pre-2006 and post-2006 periods. The untabulated results show SWITCHCAT to be statistically significant for each of the four earnings quality proxies for the period 1998-2006 (DEE, AWCA, and MODIFIED at the 1% level and TAC at the 5% level). For the 2007-2013 period, SWITCHCAT is statistically

significance only in the regression with TAC as the dependant variable (at the 5% level). These results provide further evidence in support of the conclusion that high frequency switchers were likely to have lower earnings quality during the 1998-2006 period, but that there was no difference between high and low frequency switchers during the 2007-2013 period.

## 6. Conclusion

This study examines the association between earnings quality and the frequency of auditor switching by JSE-listed firms. In spite of the mixed findings in the prior literature, we expect frequently switching firms to be in a less healthy financial condition and to be associated with lower earnings quality.

We find evidence that high-frequency switch firms are characterised by poor financial performance and a weaker financial condition. We also find that high-frequency switch firms are associated with lower earnings quality, measured by three measures of earnings quality, including modified audit opinions. However, further analyses show that these associations only apply to the earlier years examined (1998-2006), that the earnings quality (measured by abnormal accruals metrics) of all firms increases over time, that the earnings quality of firms that frequently switch auditor increases more than infrequent switchers, and that there is no difference between the earnings quality of frequent and infrequent switchers in the more recent years (2011-2013). We attribute these changes to changes in South African audit regulations around 2005/6 that appear to have alerted auditors to earnings management, motivating them to increase audit effort to detect it and/or caused them to have become more assertive in suppressing earnings management to avoid negative consequences for themselves. The observation that South Africa was ranked first in the world (among 144 countries) for the strength of auditing and reporting regulation/quality by the World Economic Forum in each of the last five years (2011-2016) (IRBA, 2015) provides evidence in support of an increase in audit quality, which led to an increase in earnings quality.

This study contributes to the literature by demonstrating that firms' historical record of auditor switch frequencies, and not just an individual instance of a switch, can be used as a determinant to earnings quality predictions under certain circumstances. Our results further show the importance of controlling for firms' financial condition when performing tests on auditor switches. To the best of our knowledge, our study is the first to document a reduction in earnings management metrics that coincide with the introduction of new audit regulations around 2005/6. Future research could focus on the causes of the reduction in South African earnings management metrics around 2006 as documented in this paper.

**Notes**

1. In this paper "auditor" refers to "audit firm" and not to the engagement partner.
2. Securities and Exchange Commission, "Practice Rules", Rule 10A-1. Available at http://www.sec.gov/rules/final/34-38387.txt (accessed 13 February 2015).
3. Securities and Exchange Commission, "Investor Bulletin: How to Read an 8-K". Available at https://www.sec.gov/investor/pubs/readan8k.pdf (accessed 3 June 2015).

**References**


Ahmed, A. S., Neel, M. & Wang, D. (2013), 'Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence', *Contemporary Accounting Research*, Vol. 30, No. 4, pp. 1344-1372.

Bartov, E., Gul, F. A. & Tsui, J. S. (2000), 'Discretionary-accruals models and audit qualifications', *Journal of Accounting and Economics*, Vol. 30, No. 3, pp. 421-452.

Beattie, V. & Fearnley, S. (1995), 'The importance of audit firm characteristics and the drivers of auditor change in UK listed companies', *Accounting and Business Research*, Vol. 25, No. 100, pp. 227-239.

Becker, C. L., DeFond, M. L., Jiambalvo, J. & Subramanyam, K. R. (1998), 'The effect of audit quality on earnings management', *Contemporary accounting research*, Vol. 15, No. 1, pp. 1-24.

Brown, P., Preiato, J. & Tarca, A. (2014), 'Measuring country differences in enforcement of accounting standards: An audit and enforcement proxy', *Journal of Business Finance & Accounting*, Vol. 41, Nos. 1-2, pp. 1-52.

Butler, M., Leone, A. J. & Willenborg, M. (2004), 'An empirical analysis of auditor reporting and its association with abnormal accruals', *Journal of Accounting and Economics*, Vol. 37, No. 2, pp. 139-165.

Cahan, S., Zhang, W. & Veenman, D. (2011), 'Did the Waste Management Audit Failures Signal Lower Firm-Wide Audit Quality at Arthur Andersen?', *Contemporary Accounting Research*, Vol. 28, No. 3, pp. 859-891.

Carcello, J. V. & Nagy, A. L. (2004), 'Audit firm tenure and fraudulent financial reporting', *Auditing: A Journal of Practice & Theory*, Vol. 23, No. 2, pp. 55-69.

Carey, P. & Simnett, R. (2006), 'Audit partner tenure and audit quality', *The Accounting Review*, Vol. 81, No. 3, pp. 653-676.

Chen, C. L., Yen, G. & Chang, F. H. (2009), 'Strategic auditor switch and financial distress prediction – empirical findings from the TSE-listed firms', *Applied Financial Economics*, Vol. 19, No. 1, pp. 59-72.

Chow, C. W. & Rice, S. J. (1982), 'Modified audit opinions and auditor switching', *The Accounting Review*, Vol. 57, No. 2, pp. 326-335.

Citron, D. B. & Taffler, R. J. (1992), 'The audit report under going concern uncertainties: an empirical analysis', *Accounting and Business Research*, Vol. 22, No. 88, pp. 337-345.

Cohen, D. A., Dey, A. & Lys, T. Z. (2008), 'Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods', *The Accounting Review*, Vol. 83, No. 3, pp. 757-787.

Davis, L. R., Soo, B. S. & Trompeter, G. M. (2009), 'Auditor Tenure and the Ability to Meet or Beat Earnings Forecasts', *Contemporary Accounting Research*, Vol. 26, No. 2, pp. 517-548.

Dechow, P., Ge, W. & Schrand, C. (2010), 'Understanding earnings quality: A review of the proxies, their determinants and their consequences', *Journal of Accounting and Economics*, Vol. 50, No. 2, pp. 344-401.

Dechow, P. M. (1994), 'Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals', *Journal of Accounting and Economics*, Vol. 18, No. 1, pp. 3-42.

Dechow, P. M. & Dichev, I. D. (2002), 'The quality of accruals and earnings: The role of accrual estimation errors', *The Accounting Review*, Vol. 77, No. 1, pp. 35-59.

Dechow, P. M., Sloan, R. G. & Sweeney, A. P. (1995), 'Detecting earnings management', *The Accounting Review*, Vol. 70, No. 2, pp. 193-225.

DeFond, M. L. & Jiambalvo, J. (1994), 'Debt covenant violation and manipulation of accruals', *Journal of Accounting and Economics*, Vol. 17, No. 1, pp. 145-176.

DeFond, M. L. & Park, C. W. (2001), 'The reversal of abnormal accruals and the market valuation of earnings surprises', *The Accounting Review*, Vol. 76, No. 3, pp. 375-404.

DeFond, M. L., & Subramanyam, K. R. (1998), 'Auditor changes and discretionary accruals', *Journal of Accounting and Economics*, Vol. 25, No. 1, pp. 35-67.

Doyle, J., Ge, W. & McVay, S. (2007), 'Determinants of weaknesses in internal control over financial reporting', *Journal of Accounting and Economics*, Vol. 44, No. 1, pp. 193-223.

Ettredge, M., Heintz, J., Li, C. & Scholz, S. (2011), 'Auditor realignments accompanying implementation of SOX 404 ICFR reporting requirements', *Accounting Horizons*, Vol. 25, No. 1, pp. 17-39.

Francis, J., LaFond, R., Olsson, P. & Schipper, K. (2005), 'The market pricing of accruals quality', *Journal of Accounting and Economics*, Vol. 39, No. 2, pp. 295-327.

Francis, J. R. & Krishnan, J. (1999), 'Accounting Accruals and Auditor Reporting Conservatism', *Contemporary Accounting Research*, Vol. 16, No. 1, pp. 135-165.

Francis, J. R. (2011), 'A framework for understanding and researching audit quality', *Auditing: A Journal of Practice & Theory*, Vol. 30, No. 2, pp. 125-152.

Gul, F. A., Fung, S. Y. K. & Jaggi, B. (2009), 'Earnings quality: Some evidence on the role of auditor tenure and auditors' industry expertise', *Journal of Accounting and Economics*, Vol. 47, No. 3, pp. 265-287.

Hribar, P. & Nichols, D. (2007), 'The use of unsigned earnings quality measures in tests of earnings management', *Journal of Accounting Research*, Vol. 45, No. 5, pp. 1017-1053.

IFRS Foundation (2015), IFRS Application Around the World. Available at http://www.ifrs.org/Use-around-the-world/Documents/Jurisdiction-profiles/South-Africa-IFRS-Profile.pdf (accessed 29 January 2016).

Independent Regulatory Board for Auditors (IRBA) (2006), Auditing Profession Act (Act 26 of 2005). Available at: http://www.paab.co.za/index.php/legal-functions-49/56?task=view (accessed 29 January 2016).

Independent Regulatory Board for Auditors (IRBA) (2015), South Africa maintains first position for the strength of Auditing and Reporting Standards for six years in a row. Available at http://www.paab.co.za/index.php/media-releases-news-44/901-monde (accessed 29 January 2016).

Jeanjean, T. & Stolowy, H. (2008), 'Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption', *Journal of accounting and public policy*, Vol. 27, No. 6, pp. 480-494.

Johnson, W. B. & Lys, T. (1990), 'The market for audit services: Evidence from voluntary auditor changes', *Journal of Accounting and Economics*, Vol. 12, No. 1, pp. 281-308.

Johnson, V. E., Khurana, I. K. & Reynolds, J. K. (2002), 'Audit-Firm Tenure and the Quality of Financial Reports', *Contemporary Accounting Research*, Vol. 19, No. 4, pp. 637-660.

JSE (2013), Insider trading and other market abuses, revised. Available at https://www.jse.co.za/content/JSERulesPoliciesandRegulationItems/Insider%20Trading%20Booklet.pdf (accessed 29 January 2016).

Kleinman, G., Lin, B. B. & Palmon, D. (2014), 'Audit Quality A Cross-National Comparison of Audit Regulatory Regimes', *Journal of Accounting, Auditing & Finance*, Vol. 29, No. 1, pp. 61-87.

Kim, J. B., Chung, R. & Firth, M. (2003), 'Auditor Conservatism, Asymmetric Monitoring, and Earnings Management', *Contemporary Accounting Research*, Vol. 20, No. 2, pp. 323-359.

Kothari, S. P., Leone, A. J. & Wasley, C. E. (2005), 'Performance matched discretionary accrual measures', *Journal of Accounting and Economics*, Vol. 39, No. 1, pp. 163-197.

Krishnan, J., (1994), 'Auditor switching and conservatism', *The Accounting Review*, Vol. 69, No. 1, pp. 200-215.

Krishnan, J., Krishnan, J. & Stephens, R. G. (1996), 'The simultaneous relation between auditor switching and audit opinion: An empirical analysis', *Accounting and Business Research*, Vol. 26, No. 3, pp. 224-236.

Lennox, C. (2000), 'Do companies successfully engage in opinion-shopping? Evidence from the UK', *Journal of Accounting and Economics*, Vol. 29, No. 3, pp. 321-337.

Lee, H. Y., O'Keefe, T. & Stein, M. (2003), 'Client characteristics, abnormal accruals and auditor switches: An empirical study', *Asia-Pacific Journal of Accounting & Economics*, Vol. 10, No. 1, pp. 31-56.

McNichols, M. F. (2002), 'Discussion of the quality of accruals and earnings: The role of accrual estimation errors', *The Accounting Review*, Vol. 77, No. 1, pp. 61-69.

Myers, J. N., Myers L. A. & Omer, T. C. (2003), 'Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation?', *The Accounting Review*, Vol. 78, No. 3, pp. 779-799.

Public Accountants' and Auditors' Board (PAAB) (1991), Public Accountants' and Auditors' Act, 1991 (Act 80 of 1991). Available at http://www.paab.co.za/index.php/component/docman/doc_download/584-public-accountants-and-auditors-act-1991-act-80-of-1991-english (accessed 29 January 2016).

South African Institute of Accountants (2006), SAICA adopts revised International Code of Ethics for professional accountants. Available at https://www.saica.co.za/News/NewsArticlesandPressmediareleases/2006/tabid/704/itemid/190/language/en-ZA/Default.aspx (accessed 29 January 2016).

Schwartz, K. B. & Menon, K. (1985), 'Auditor switches by failing firms', *The Accounting Review*, Vol. 60, No. 2, pp. 248-261.

**Appendix I**
**Control variables used in study**

| VARIABLE NAME | | DESCRIPTION |
|---|---|---|
| **Firm characteristics** | | |
| *SIZE* | Firm size | Natural logarithm of current year total assets. (Doyle *et al.*, 2007) |
| *AGE* | Firm age | Natural logarithm of the number of years the company has been in existence, determined by subtracting its year of incorporation from the financial statement year *(t)* under observation. |
| *LEV* | Firm leverage | Ratio of lagged total liabilities to prior year total assets. Firms with greater leverage and approaching default are expected to engage in greater earnings management. (DeFond & Jiambalvo, 1994). |
| *ΔFIN* | Change in new financing | Change in long term loans plus changes in ordinary and preference share capital, scaled by average total assets. (Cahan *et al.*, 2011) |
| *DELIST* | Listing status | Indicator variable coded 1 if the firm has delisted during the sample period or has been suspended from listing by the end of its 2013 financial year and 0 if the firm is still listed in 2013. |
| **Firm performance** | | |
| *ROA* | Lagged return on assets | Net income before dividends (prior year) scaled by total assets (prior year). |
| *OCF* | Operating cash flows pre-div | Scaled by average total assets. (Dechow, 1994). |
| *SGRO* | Growth in sales | Ratio of current year revenue to prior year revenue. (Gul *et al.*, 2009). |
| $\sigma OCF$ | Volatility of cash flows | Standard deviation of cash flows from operating activities before dividends over a firm's period of observation (*p*) divided by average total assets over period *p*. (Hribar & Nichols, 2007). |
| *P_LOSS* | Prior year loss | Indicator variable coded 1 if the company reported a net loss (income before dividends) in its prior financial year and 0 otherwise. |
| *ALTZ* | Altman Z-score | Measurement of the degree of the firm's financial distress, with low scores indicative of greater distress. |
| **Corporate governance** | | |
| *DIRECT* | Directors' shareholding | Number of beneficial shares held divided by total number of shares in issue at the end of year *(t)*. (Dechow *et al.*, 2010). |
| *ANLST* | Analysts | The number of analysts following the firm in year (*t*). |
| *BIGN* | Auditor type | Indicator variable coded 1 if the firm was audited by a Big 4 firm during year (*t*) and 0 otherwise. (Becker *et al.*, 1998 and Kim *et al.*, 2003). |
| *TENURE* | Audit firm tenure | The phase of auditor tenure applicable to the observation, coded 0 for the initial year of the switch, 1 for the year subsequent to the switch and the third year (Johnson *et al.*, 2002), 2 for years four to seven, 3 for years eight and nine, 4 for years ten or more and 5 if it is not possible to determine the tenure due to the unobservability of a preceding switch which could otherwise have served as a reference point for the commencement of tenure. |

**Table 1**
**Sample information and descriptive statistics**

**Panel A: Sample information**

| | Number of firm-year observations |
|---|---|
| **Initial sample** | **6,720** |
| less: | |
| Firms classified by INET BFA as "Gold mining" | 247 |
| Firms in the financials industry | 1,686 |
| Firms subject to Arthur Andersen audits* | 213 |
| First year of observation | 576 |
| Years with inconsistent revenue** | 219 |
| Not at least 5 firms in industry year† | 116 |
| Not at least 4 firm-year observations | 221 |
| **Test sample** | **3,443** |

**Notes:**
The initial sample is based on the INET BFA database and excludes firm-year observations with missing data.
* The firm-years for any firm subject to audit by Arthur Andersen at any point during the sample period were removed from the sample as these "switches" are for a known reason, unrelated to the research question.
** Defined as firm-year observations with zero revenue reported in the firm's income statement and also includes the year subsequent to a zero-revenue year.
†This limitation resulted in all firms in the Oil and Gas and Utilities industries being removed from the test sample, in addition to some firms-years in other industries, due to an insufficient number of firms across industry-years for the purpose of effective regression analysis.

**Panel B: Auditor switch data by industry**

| Four-digit ICB industry code | Industry description | N = firm-year observations | N= firms | N = auditor switch years |
|---|---|---|---|---|
| 0001 | Oil & Gas* | - | - | - |
| 1000 | Basic Materials | 639 | 66 | 53 |
| 2000 | Industrials | 1,090 | 127 | 69 |
| 3000 | Consumer Goods | 543 | 59 | 35 |
| 4000 | Health Care | 87 | 13 | 4 |
| 5000 | Consumer Services | 690 | 76 | 33 |
| 6000 | Telecommunications | 36 | 7 | 3 |
| 7000 | Utilities* | - | - | - |
| 8000 | Financials | - | - | - |
| 9000 | Technology | 358 | 40 | 36 |
| | **Total** | **3,443** | **388** | **233** |

**Table 1 (continued)**
**Sample information and descriptive statistics**

**Panel C: Number of auditor switches per year**

| Year | N = firm-years | N = auditor switches | Year | N = firm-years | N = auditor switches |
|---|---|---|---|---|---|
| 1998 | 208 | 8 | 2006 | 175 | 18 |
| 1999 | 236 | 21 | 2007 | 171 | 13 |
| 2000 | 264 | 23 | 2008 | 208 | 19 |
| 2001* | 244 | 16 | 2009 | 229 | 18 |
| 2002* | 238 | 17 | 2010 | 223 | 8 |
| 2003* | 225 | 12 | 2011 | 222 | 13 |
| 2004 | 207 | 16 | 2012 | 211 | 11 |
| 2005 | 184 | 12 | 2013 | 198 | 8 |
| **Total** | | | | **3,443** | **233** |

**Notes:**
1997 not included, as this is the initial year in the sample, therefore switches could not be observed.
* The period 2001 to 2003 excludes the 12 switches where Big 4 audit firms took on Arthur Andersen's former clients (N: 2001 = 2, N: 2002 = 3, N: 2003 = 7).

**Panel D: Type of auditor switch**

| | N | % |
|---|---|---|
| Big 4 to Big 4 | 48 | 20.6 |
| Big 4 to Non-Big 4 | 34 | 14.6 |
| Non-Big 4 to Big 4 | 56 | 24.0 |
| Non-Big 4 to Non-Big 4 | 95 | 40.8 |
| **Total** | **233** | **100** |

**Panel E: Nature of modified audit opinions**

| | N | % |
|---|---|---|
| Going concern-related | 28 | 56 |
| Deviation from generally accepted accounting practice | 14 | 28 |
| Insufficient audit evidence | 8 | 16 |
| **Total** | **50** | **100** |

**Table 2**
**Descriptive statistics for control variables by switch category**

| Control variable | Infrequent switchers (0) | | | Frequent switchers (1) | | | Mean Diff | *t* | df | Sig. (*p*-value) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Std. Deviation | Mean | Median | Std. Deviation | | | | |
| *SIZE* | 13.911 | 13.827 | 2.101 | 11.685 | 11.762 | 1.932 | 2.225 | 27.939 | 1413.284 | 0.000*** |
| *AGE* | 3.264 | 3.433 | 0.983 | 2.581 | 2.564 | 0.867 | 0.683 | 18.888 | 1468.175 | 0.000*** |
| *LEV* | 0.598 | 0.550 | 0.431 | 0.720 | 0.611 | 0.481 | -0.122 | -6.432 | 1207.255 | 0.000*** |
| *FIN* | 0.031 | 0.001 | 0.215 | 0.078 | 0.003 | 0.326 | -0.046 | -3.757 | 1014.373 | 0.000*** |
| *DELIST* | 0.310 | 0.000 | 0.462 | 0.410 | 0.000 | 0.492 | -0.101 | -5.144 | 1250.310 | 0.000*** |
| *ROA* | 0.091 | 0.091 | 0.215 | -0.050 | 0.046 | 0.379 | 0.142 | 10.073 | 956.288 | 0.000*** |
| *OCF* | 0.129 | 0.119 | 0.176 | 0.016 | 0.045 | 0.221 | 0.113 | 13.210 | 1119.767 | 0.000*** |
| *SGROWTH* | 1.200 | 1.120 | 0.598 | 1.294 | 1.086 | 1.092 | -0.096 | -2.371 | 945.723 | 0.018** |
| *σOCF* | 0.129 | 0.101 | 0.101 | 0.156 | 0.122 | 0.117 | -0.028 | -6.082 | 1174.481 | 0.000*** |
| *ALTZ* | 4.348 | 3.915 | 2.960 | 2.617 | 2.601 | 3.946 | 1.731 | 11.460 | 1081.045 | 0.000*** |
| *P_LOSS* | 0.120 | 0.000 | 0.331 | 0.370 | 0.000 | 0.482 | -0.242 | -13.287 | 1032.559 | 0.000*** |
| *DIRECTOR* | 0.116 | 0.015 | 0.189 | 0.186 | 0.086 | 0.227 | -0.070 | -7.916 | 1149.414 | 0.000*** |
| *ANALYST* | 5.550 | 7.000 | 3.137 | 6.050 | 7.000 | 2.975 | -0.505 | -4.148 | 1375.001 | 0.000*** |
| *BIGN* | 0.760 | 1.000 | 0.426 | 0.400 | 0.000 | 0.490 | 0.361 | 18.758 | 1182.815 | 0.000*** |
| *TENURE* | 4.100 | 5.000 | 1.470 | 1.620 | 1.000 | 1.526 | 2.483 | 41.456 | 3441.000 | 0.000*** |

**Notes:** *, **, *** denote significance at the 10%, 5%, 1% levels (two-tailed); Infrequent switchers (0), *N* = 2 645; Frequent switchers (1), *N* = 798.
Firms are split based on the frequency at which they switch auditor, with infrequent switchers (0) switching auditor once or never in a 10 years or longer time period, and frequent switchers (1) switching more than once in a 10 year period.
Independent samples *t*-tests tabulated, with similar results obtained with *Mann-Whitney U* tests/*chi-square* tests for continuous/indicator variables.
*SIZE* = Natural log of total assets; *AGE* = Natural logarithm of the number of years the company has been in existence; *LEV* = Ratio of lagged total liabilities to prior year total assets; *ΔFIN* = Change in long term loans plus change in ordinary and preference share capital, scaled by average total assets; *DELIST* = Indicator variable coded 1 if the firm has delisted during the sample period and 0 otherwise; *ROA* = Net income before dividends (prior year) divided by total assets (prior year); *OCF* = Cash flows from operating activities before dividends scaled by average total assets; *SGRO* = Ratio of current year revenue to prior year revenue; $\sigma OCF$ = Standard deviation of cash flows from operating activities before dividends over a firm's period of observation (*p*); *ALTZ* = Altman Z-score financial distress calculated for the year of observation; *P_LOSS* = Indicator variable coded 1 if the company reported a net loss in its prior financial year (income before dividends) and 0 otherwise; *DIRECT* = Beneficial shares held by directors divided by total number of shares in issue at the end of the year *ANLST* = The number of analysts following the firm in the year under observation; *BIGN* = Indicator variable coded 1 if the firm was audited by a Big 4 firm during the year and 0 otherwise; *TENURE* = Phase of auditor tenure, where 0 = initial year, 1 = 2nd and 3rd year, 3 = 4th to 7th year, 4 = 8th and 9th year, 5 = unidentifiable tenure.

**TABLE 3**

***Pearson* (above the diagonal) and *Spearman* (below the diagonal) correlation coefficients for switch category, earnings quality proxies and control variables**

| | *SWITCHCAT* | *DEE* | *AWCA* | *TAC* | *MODIFIED* | *SIZE* | *AGE* | *LEV* | *ΔFIN* | *DELIST* |
|---|---|---|---|---|---|---|---|---|---|---|
| *SWITCHCAT* | 1 | 0.152*** | 0.178*** | 0.142*** | 0.106*** | -0.414*** | -0.288*** | 0.116*** | 0.079*** | 0.090*** |
| *DEE* | 0.131*** | 1 | 0.205*** | 0.746*** | 0.038** | -0.205*** | -0.107*** | 0.150*** | 0.077*** | 0.110*** |
| *AWCA* | 0.169*** | 0.337*** | 1 | 0.254*** | 0.053*** | -0.218*** | -0.066*** | 0.112*** | 0.171*** | 0.076*** |
| *TAC* | 0.123*** | 0.574*** | 0.404*** | 1 | 0.045*** | -0.260*** | -0.141*** | 0.156*** | 0.075*** | 0.128*** |
| *MODIFIED* | 0.106*** | 0.021 | 0.094*** | 0.054*** | 1 | -0.135*** | -0.053*** | 0.038** | 0.005 | 0.100*** |
| *SIZE* | -0.423*** | -0.178*** | -0.223*** | -0.224*** | -0.124*** | 1 | 0.435*** | -0.155*** | -0.019 | -0.328*** |
| *AGE* | -0.301*** | -0.075*** | -0.127*** | -0.131*** | -0.052*** | 0.447*** | 1 | -0.065*** | -0.023 | -0.163*** |
| *LEV* | 0.119*** | 0.077*** | -0.009 | 0.103*** | 0.032* | -0.062*** | -0.075*** | 1 | 0.055*** | 0.084*** |
| *ΔFIN* | 0.038** | 0.050*** | 0.047*** | 0.033* | 0.005 | 0.072*** | 0.013 | -0.055*** | 1 | -0.024 |
| *DELIST* | 0.090*** | 0.099*** | 0.107*** | 0.122*** | 0.100*** | -0.329*** | -0.168*** | 0.037** | -0.036** | 1 |
| *ROA* | -0.201*** | -0.021 | -0.110*** | -0.045*** | -0.129*** | 0.202*** | 0.042** | -0.139*** | 0.008 | -0.156*** |
| *OCF* | -0.240*** | -0.073*** | -0.187*** | -0.117*** | -0.119*** | 0.248*** | 0.102*** | -0.021 | -0.077*** | -0.159*** |
| *SGROWTH* | -0.052*** | 0.026 | 0.012 | 0.042** | -0.067*** | 0.108*** | -0.039** | -0.016 | 0.176*** | -0.050*** |
| *σOCF* | 0.129*** | 0.220*** | 0.187*** | 0.227*** | 0.065*** | -0.288*** | -0.103*** | 0.206*** | -0.001 | 0.035** |
| *ALTZ* | -0.245*** | -0.038** | -0.180*** | -0.068*** | -0.121*** | 0.173*** | 0.088*** | -0.200*** | -0.066*** | -0.142*** |
| *P_LOSS* | 0.266*** | 0.139*** | 0.217*** | 0.157*** | 0.170*** | -0.327*** | -0.125*** | 0.160*** | 0.029* | 0.141*** |
| *DIRECTOR* | 0.134*** | 0.006 | 0.015 | 0.030* | 0.003 | -0.364*** | -0.310*** | 0.041** | -0.006 | -0.054*** |
| *ANALYST* | 0.053*** | 0.021 | 0.047*** | 0.048*** | 0.024 | -0.194*** | -0.065*** | -0.001 | -0.079*** | 0.159*** |
| *BIGN* | -0.326*** | -0.019 | -0.073*** | -0.062*** | -0.015 | 0.438*** | 0.313*** | -0.007 | 0.006 | -0.093*** |
| *TENURE* | -0.561*** | -0.115*** | -0.128*** | -0.115*** | -0.056*** | 0.363*** | 0.464*** | -0.110*** | -0.017 | -0.081*** |

**TABLE 3 (continued)**

| | *ROA* | *OCF* | *SGROWTH* | *σOCF* | *ALTZ* | *P_LOSS* | *DIRECTOR* | *ANALYST* | *BIGN* | *TENURE* |
|---|---|---|---|---|---|---|---|---|---|---|
| *SWITCHCAT* | -0.222*** | -0.246*** | 0.054*** | 0.112*** | -0.222*** | 0.266*** | 0.147*** | 0.069*** | -0.326*** | -0.577*** |
| *DEE* | -0.098*** | -0.065*** | 0.107*** | 0.217*** | -0.033* | 0.176*** | -0.001 | 0.033* | -0.040** | -0.130*** |
| *AWCA* | -0.271*** | -0.257*** | 0.271*** | 0.148*** | -0.138*** | 0.237*** | -0.004 | 0.040** | -0.091*** | -0.095*** |
| *TAC* | -0.110*** | -0.135*** | 0.130*** | 0.262*** | -0.065*** | 0.199*** | 0.028 | 0.051** | -0.069*** | -0.134*** |
| *MODIFIED* | -0.135*** | -0.118*** | 0.010 | 0.083*** | -0.127*** | 0.170*** | 0.015 | 0.023 | -0.015 | -0.061*** |
| *SIZE* | 0.309*** | 0.290*** | 0.004 | -0.310*** | 0.199*** | -0.342*** | -0.346*** | -0.237*** | 0.427*** | 0.367*** |
| *AGE* | 0.133*** | 0.115*** | -0.084*** | -0.047*** | 0.107*** | -0.116*** | -0.252*** | -0.080*** | 0.312*** | 0.476*** |
| *LEV* | -0.300*** | -0.155*** | 0.049*** | 0.300*** | -0.222*** | 0.229*** | -0.014 | 0.012 | -0.013 | -0.128*** |
| *ΔFIN* | -0.146*** | -0.130*** | 0.135*** | 0.077*** | -0.055*** | 0.118*** | -0.005 | -0.047*** | -0.023 | -0.054*** |
| *DELIST* | -0.142*** | -0.147*** | 0.002 | 0.070*** | -0.146*** | 0.141*** | -0.050*** | 0.161*** | -0.093*** | -0.087*** |
| *ROA* | 1 | 0.456*** | 0.018 | -0.092*** | 0.393*** | -0.622*** | -0.043** | -0.043** | 0.138*** | 0.169*** |
| *OCF* | 0.484*** | 1 | 0.091*** | -0.001 | 0.429*** | -0.334*** | -0.046*** | -0.025 | 0.157*** | 0.135*** |
| *SGROWTH* | 0.190*** | 0.213*** | 1 | 0.094*** | 0.081*** | -0.021 | 0.021 | 0.020 | -0.032* | -0.067*** |
| *σOCF* | 0.089*** | 0.128*** | -0.008 | 1 | 0.009 | 0.197*** | 0.060*** | 0.061*** | -0.010 | -0.133*** |
| *ALTZ* | 0.552*** | 0.464*** | 0.182*** | 0.066*** | 1 | -0.326*** | -0.042** | -0.025 | 0.106*** | 0.124*** |
| *P_LOSS* | -0.667*** | -0.323*** | -0.186*** | 0.171*** | -0.363*** | 1 | 0.043** | 0.034** | -0.127*** | -0.188*** |
| *DIRECTOR* | -0.014 | -0.043** | 0.054*** | 0.058*** | 0.002 | 0.016 | 1 | 0.043** | -0.299*** | -0.153*** |
| *ANALYST* | -0.026 | -0.026 | -0.039** | 0.038** | -0.038** | 0.024 | 0.016 | 1 | -0.044*** | -0.042** |
| *BIGN* | 0.108*** | 0.158*** | 0.005 | -0.025 | 0.108*** | -0.127*** | -0.319*** | -0.021 | 1 | 0.259*** |
| *TENURE* | 0.060*** | 0.086*** | -0.006 | -0.166*** | 0.099*** | -0.176*** | -0.187*** | -0.012 | 0.248*** | 1 |

**Notes:**
*, **, *** denote significance at the 10%, 5%, 1% levels (two-tailed).
Bivariate *Pearson* correlations (above the diagonal) and *Spearman's* rho (below the diagonal) are displayed.
*SWITCHCAT* = Binomial grouping variable used to split the control variables between infrequent switchers (0) and frequent switchers (1).
All other variables are defined in the Appendix and Table 2.

**TABLE 4**
**Regression of earnings quality proxies against switch category ("infrequent" vs "frequent" switchers)**

**Panel A: Abnormal accruals and control variables**

| Variable | Pred. sign | *DEE* Coeff. | *DEE* *t* | *DEE* *p*-val. | *AWCA* Coeff. | *AWCA* *t* | *AWCA* *p*-val. | *TAC* Coeff. | *TAC* *t* | *TAC* *p*-val. |
|---|---|---|---|---|---|---|---|---|---|---|
| (Constant) | | 0.105 | 5.938 | 0.000*** | 0.482 | 5.383 | 0.000*** | 0.146 | 7.648 | 0.000*** |
| *SWITCHCAT* | + | 0.013 | 2.707 | 0.007*** | 0.044 | 1.733 | 0.083* | 0.003 | 0.570 | 0.569 |
| *SIZE* | - | -0.004 | -3.425 | 0.001*** | -0.050 | -9.039 | 0.000*** | -0.006 | -5.333 | 0.000*** |
| *AGE* | - | -0.006 | -3.021 | 0.003*** | -0.001 | -0.129 | 0.898 | -0.007 | -3.370 | 0.001*** |
| *LEV* | + | 0.015 | 3.881 | 0.000*** | -0.063 | -3.139 | 0.002*** | 0.014 | 3.156 | 0.002*** |
| *ΔFIN* | + | 0.012 | 1.641 | 0.101 | 0.130 | 3.863 | 0.000*** | 0.010 | 1.412 | 0.158 |
| *DELIST* | + | 0.007 | 1.745 | 0.081* | 0.028 | 1.412 | 0.158 | 0.009 | 2.166 | 0.030** |
| *ROA* | - | 0.015 | 1.788 | 0.074* | -0.279 | -6.686 | 0.000*** | 0.034 | 3.779 | 0.000*** |
| *OCF* | - | -0.006 | -0.576 | 0.564 | -0.451 | -8.944 | 0.000*** | -0.049 | -4.588 | 0.000*** |
| *SGRO* | + | 0.008 | 3.944 | 0.000*** | 0.204 | 18.280 | 0.000*** | 0.016 | 6.527 | 0.000*** |
| *σOCF* | + | 0.103 | 5.776 | 0.000*** | 0.005 | 0.055 | 0.956 | 0.161 | 8.392 | 0.000*** |
| *ALTZ* | - | 0.001 | 1.142 | 0.253 | -0.005 | -1.771 | 0.077* | 0.001 | 0.950 | 0.342 |
| *P_LOSS* | + | 0.025 | 4.516 | 0.000*** | 0.017 | 0.614 | 0.539 | 0.034 | 5.755 | 0.000*** |
| *DIRECT* | ? | -0.026 | -2.859 | 0.004*** | -0.242 | -5.274 | 0.000*** | -0.023 | -2.373 | 0.018** |
| *ANLST* | + | -0.001 | -1.127 | 0.260 | -0.003 | -1.166 | 0.244 | 0.000 | -0.511 | 0.610 |
| *BIGN* | - | 0.005 | 1.261 | 0.207 | 0.006 | 0.302 | 0.763 | 0.004 | 0.956 | 0.339 |
| *TENURE* | - | 0.000 | 0.103 | 0.918 | 0.018 | 3.053 | 0.002*** | 0.001 | 0.467 | 0.640 |
| Industry Dummies | | | Included | | | Included | | | Included | |
| Year Dummies | | | Included | | | Included | | | Included | |
| *F* (*ANOVA* regression) | | | 13.103 | | | 33.320 | | | 17.539 | |
| Sig. regression model | | | 0.000 | | | 0.000 | | | 0.000 | |
| *Adjusted* $R^2$ | | | 0.125 | | | 0.258 | | | 0.151 | |
| *N* | | | 3 043 | | | 3 443 | | | 3 443 | |

**TABLE 4 (continued)**
**Panel B: Audit opinion modifications and control variables**

| Variable | Pred. sign | *MODIFIED* Coeff. | *Wald.* | *p*-val. | *Exp(B)* |
|---|---|---|---|---|---|
| (Constant) | | -4.208 | 5.719 | 0.017** | 0.015 |
| *SWITCHCAT* | + | 1.243 | 7.412 | 0.006*** | 3.467 |
| *SIZE* | - | -0.249 | 4.622 | 0.032** | 0.780 |
| *AGE* | - | 0.247 | 1.408 | 0.235 | 1.280 |
| *LEV* | + | -0.311 | 0.865 | 0.352 | 0.732 |
| *ΔFIN* | + | -0.325 | 0.396 | 0.529 | 0.723 |
| *DELIST* | + | 0.624 | 2.621 | 0.105 | 1.867 |
| *ROA* | - | 0.100 | 0.044 | 0.834 | 1.105 |
| *OCF* | - | -1.282 | 2.958 | 0.085* | 0.277 |
| *SGRO* | + | 0.276 | 4.046 | 0.044** | 1.318 |
| *σOCF* | + | 0.599 | 0.206 | 0.650 | 1.821 |
| *ALTZ* | - | -0.066 | 1.570 | 0.210 | 0.936 |
| *P_LOSS* | + | 1.883 | 19.260 | 0.000*** | 6.576 |
| *DIRECT* | ? | 0.585 | 0.513 | 0.474 | 1.795 |
| *ANLST* | + | -0.046 | 0.712 | 0.399 | 0.955 |
| *BIGN* | - | 0.999 | 7.162 | 0.007*** | 2.716 |
| *TENURE* | - | 0.121 | 1.131 | 0.288 | 1.128 |
| Industry Dummies | | Included | | | |
| Year Dummies | | Included | | | |
| *Sig. Hosmer and Lemeshow* test | | 0.104 | | | |
| *Nagelkerke R²* | | 0.316 | | | |
| *N* | | 3 443 | | | |

**Notes:**

*, **, *** denote significance at the 10%, 5%, 1% levels (two-tailed).
*Exp(B)* is change in odds ratio (Panel B) and *Wald* is Wald test (Panel B).
Predicted signs are based on correlation coefficients in section 5.2.2 (untabulated), informed by the analysis of prior literature and as explained in section 4.2.5.
Results for the *DEE*, *AWCA* and *TAC* metrics (Panel A) are based on a multiple linear regression in predicting the value of the dependent variables. The associations for the *MODIFIED* metric (Panel B) is estimated using a binary logistic regression.

**Variable definitions:**

*DEE* = discretionary estimation error represented by the residual in equation (1).
*AWCA* = abnormal working capital accruals calculated in equation (2).
*TAC* = total abnormal accruals derived from the residual calculated in equation (3).
*MODIFIED* = Indicator variable coded 0 if the firm received an unmodified audit opinion for the year and 1 in the case of a modified audit opinion.
*SWITCHCAT* = Binomial grouping variable used to split the model variables between infrequent switchers (0) and frequent switchers (1) – groupings as formulated in the study. Regression allows for industry and year fixed effects by including dummy variables for all industries and financial years in the sample, except the industry and year with the highest number of observations. All other variables are defined in the Appendix and Table 2.

**TABLE 5**
**Periodic analysis by switch category *(SWITCHCAT)* and earnings quality**

**Panel A: *SWITCHCAT* coefficients in eight-year period regressions**

| Period | *DEE* | | | *AWCA* | | | *TAC* | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | *t* | *p*-val. | Coeff. | *t* | *p*-val. | Coeff. | *t* | *p*-val. |
| 1998-2005 | 0.029 | 4.112 | 0.000*** | 0.094 | 2.710 | 0.007*** | 0.020 | 2.455 | 0.014** |
| 1999-2006 | 0.030 | 3.962 | 0.000*** | 0.087 | 2.333 | 0.020** | 0.013 | 1.543 | 0.123 |
| 2000-2007 | 0.024 | 3.232 | 0.001*** | 0.062 | 1.522 | 0.128 | 0.009 | 1.013 | 0.311 |
| 2001-2008 | 0.017 | 2.279 | 0.023** | 0.040 | 0.953 | 0.341 | 0.006 | 0.641 | 0.522 |
| 2002-2009 | 0.012 | 1.635 | 0.102 | 0.008 | 0.190 | 0.849 | -0.003 | -0.371 | 0.711 |
| 2003-2010 | 0.006 | 0.898 | 0.369 | 0.030 | 0.764 | 0.445 | -0.009 | -1.099 | 0.272 |
| 2004-2011 | 0.006 | 0.811 | 0.417 | 0.034 | 0.847 | 0.397 | -0.010 | -1.355 | 0.176 |
| 2005-2012 | 0.000 | -0.026 | 0.980 | 0.018 | 0.484 | 0.629 | -0.011 | -1.563 | 0.118 |
| 2006-2013 | -0.005 | -0.776 | 0.438 | 0.001 | 0.028 | 0.978 | -0.015 | -2.095 | 0.036** |
| Industry Dummies | | Included | | | Included | | | Included | |
| Year Dummies | | Included | | | Included | | | Included | |

**TABLE 5 (continued)**
**Periodic analysis by switch category *(SWITCHCAT)* and earnings quality**

**Panel B: Independent samples *t*-tests - year-by-year; *DEE***

| Year | Infrequent-switch firms | | | Frequent-switch firms | | | *T*-test | |
|---|---|---|---|---|---|---|---|---|
| | *N* | Mean | Std. dev. | *N* | Mean | Std. dev. | *t*-stat. | *p*-val. |
| 1998 | 166 | 0.068 | 0.069 | 39 | 0.114 | 0.106 | -2.559 | 0.014** |
| 1999 | 181 | 0.088 | 0.084 | 53 | 0.137 | 0.131 | -2.560 | 0.013** |
| 2000 | 178 | 0.070 | 0.071 | 53 | 0.127 | 0.119 | -3.260 | 0.002*** |
| 2001 | 174 | 0.089 | 0.097 | 52 | 0.143 | 0.148 | -2.472 | 0.016** |
| 2002 | 167 | 0.076 | 0.084 | 53 | 0.117 | 0.100 | -2.665 | 0.009*** |
| 2003 | 159 | 0.086 | 0.094 | 49 | 0.128 | 0.122 | -2.193 | 0.032** |
| 2004 | 140 | 0.073 | 0.082 | 43 | 0.132 | 0.146 | -2.505 | 0.016** |
| 2005 | 130 | 0.082 | 0.083 | 37 | 0.117 | 0.096 | -2.053 | 0.045** |
| 2006 | 126 | 0.087 | 0.095 | 38 | 0.109 | 0.076 | -0.948 | 0.345 |
| 2007 | 122 | 0.088 | 0.080 | 43 | 0.098 | 0.087 | -0.717 | 0.474 |
| 2008 | 152 | 0.087 | 0.100 | 49 | 0.109 | 0.109 | -1.304 | 0.194 |
| 2009 | 166 | 0.068 | 0.079 | 50 | 0.067 | 0.060 | 0.030 | 0.976 |
| 2010 | 167 | 0.065 | 0.075 | 49 | 0.078 | 0.094 | -0.991 | 0.323 |
| 2011 | 165 | 0.064 | 0.080 | 45 | 0.094 | 0.112 | -1.658 | 0.103 |
| 2012 | 156 | 0.063 | 0.081 | 41 | 0.076 | 0.084 | -0.945 | 0.346 |
| 2013 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |

**Panel C: Independent samples *t*-tests - year-by-year; *AWCA***

| Year | Infrequent-switch firms | | | Frequent-switch firms | | | *T*-test | |
|---|---|---|---|---|---|---|---|---|
| | *N* | Mean | Std. dev. | *N* | Mean | Std. dev. | *t*-stat. | *p*-val. |
| 1998 | 168 | 0.061 | 0.112 | 40 | 0.359 | 1.000 | -1.873 | 0.069* |
| 1999 | 183 | 0.068 | 0.098 | 53 | 0.366 | 0.977 | -2.217 | 0.031** |
| 2000 | 201 | 0.060 | 0.099 | 63 | 0.207 | 0.602 | -1.936 | 0.057* |
| 2001 | 189 | 0.069 | 0.141 | 55 | 0.289 | 0.761 | -2.139 | 0.037** |
| 2002 | 179 | 0.128 | 0.514 | 59 | 0.438 | 1.062 | -2.162 | 0.034** |
| 2003 | 171 | 0.111 | 0.405 | 54 | 0.269 | 0.739 | -1.503 | 0.138 |
| 2004 | 159 | 0.095 | 0.321 | 48 | 0.438 | 1.040 | -2.254 | 0.029** |
| 2005 | 139 | 0.081 | 0.386 | 45 | 0.369 | 0.950 | -1.978 | 0.054* |
| 2006 | 135 | 0.101 | 0.450 | 40 | 0.445 | 1.111 | -1.911 | 0.063* |
| 2007 | 127 | 0.104 | 0.413 | 44 | 0.716 | 1.487 | -2.695 | 0.010*** |
| 2008 | 154 | 0.152 | 0.573 | 54 | 0.258 | 0.770 | -1.067 | 0.287 |
| 2009 | 173 | 0.122 | 0.477 | 56 | 0.194 | 0.630 | -0.902 | 0.368 |
| 2010 | 173 | 0.071 | 0.266 | 50 | 0.321 | 0.919 | -1.898 | 0.063* |
| 2011 | 172 | 0.110 | 0.410 | 50 | 0.286 | 0.911 | -1.331 | 0.189 |
| 2012 | 165 | 0.072 | 0.222 | 46 | 0.190 | 0.684 | -1.149 | 0.256 |
| 2013 | 157 | 0.086 | 0.375 | 41 | 0.051 | 0.079 | 0.592 | 0.554 |

**TABLE 5 (continued)**
**Period analysis by switch category *(SWITCHCAT)* and earnings quality**

**Panel D: Independent samples *t*-tests - year-by-year; *TAC***

| Year | Infrequent-switch firms | | | Frequent-switch firms | | | *T*-test | |
|---|---|---|---|---|---|---|---|---|
| | *N* | Mean | Std. dev. | *N* | Mean | Std. dev. | *t*-stat. | *p-val.* |
| 1998 | 168 | 0.079 | 0.073 | 40 | 0.152 | 0.123 | -3.596 | 0.001*** |
| 1999 | 183 | 0.105 | 0.106 | 53 | 0.163 | 0.157 | -2.503 | 0.015** |
| 2000 | 201 | 0.089 | 0.083 | 63 | 0.150 | 0.133 | -3.422 | 0.001*** |
| 2001 | 189 | 0.104 | 0.109 | 55 | 0.161 | 0.146 | -2.685 | 0.009** |
| 2002 | 179 | 0.081 | 0.087 | 59 | 0.152 | 0.158 | -3.279 | 0.002*** |
| 2003 | 171 | 0.105 | 0.128 | 54 | 0.141 | 0.132 | -1.807 | 0.072* |
| 2004 | 159 | 0.100 | 0.109 | 48 | 0.142 | 0.140 | -1.899 | 0.062* |
| 2005 | 139 | 0.086 | 0.102 | 45 | 0.129 | 0.125 | -2.353 | 0.020** |
| 2006 | 135 | 0.105 | 0.126 | 40 | 0.121 | 0.114 | -0.718 | 0.474 |
| 2007 | 127 | 0.094 | 0.102 | 44 | 0.142 | 0.133 | -2.196 | 0.032** |
| 2008 | 154 | 0.110 | 0.120 | 54 | 0.126 | 0.128 | -0.816 | 0.415 |
| 2009 | 173 | 0.089 | 0.094 | 56 | 0.088 | 0.097 | 0.016 | 0.987 |
| 2010 | 173 | 0.076 | 0.080 | 50 | 0.085 | 0.088 | -0.719 | 0.473 |
| 2011 | 172 | 0.086 | 0.093 | 50 | 0.111 | 0.121 | -1.595 | 0.112 |
| 2012 | 165 | 0.085 | 0.084 | 46 | 0.087 | 0.089 | -0.165 | 0.869 |
| 2013 | 157 | 0.083 | 0.079 | 41 | 0.091 | 0.110 | -0.547 | 0.585 |

**Notes:**

*, **, *** denote significance at the 10%, 5%, 1% levels (two-tailed).
*N* = Firm-year observations.
Firms are split based on the frequency at which they switch auditor, reflected by *SWITCHCAT*, with infrequent switchers (0) switching auditor once or less every 10 year or higher period, and frequent switchers (1) switching more than once in a 10 year or converted equivalent period.
Results in Panel A are based on a multiple linear regression in predicting the value of the dependent variables, *DEE*, *AWCA* and *TAC*, regressed on the above two switch categories.

**Variable definitions:**

*DEE* = discretionary estimation error represented by the residual in equation (1).
*AWCA* = abnormal working capital accruals calculated in equation (2).
*TAC* = total abnormal accruals derived from the residual calculated in equation (3).
*SWITCHCAT* = Binomial grouping variable used to split the model variables between infrequent switchers (0) and frequent switchers (1). Regression allows for industry and year fixed effects by including dummy variables for all industries and financial years in the sample, except the industry and year with the highest number of observations.