MAJOR INSTITUTIONAL OWNERSHIP AND AUDIT QUALITY: DO INSTITUTIONAL INVESTORS MONITOR FIRM MANAGEMENT? A STUDY OF CORPORATE GOVERNANCE

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Abstract

Institutional ownership grows significantly. Institutional investors are considered sophisticated market participants who monitor firm management. Institutional investors are anticipated to interfere in corporate governance by adopting a monitoring role, which can influence the quality of audit. While research on the monitoring role of institutional investors has fostered, empirical studies document either a positive (Ali et al., 2024) or a negative (Lemma et al., 2018) impact of institutional ownership on audit quality. This study aims to investigate the nature of this impact on audit quality in the United Kingdom (UK) setting. The UK capital market attracts significant funds from institutional investors. In the context of this study, two different audit quality metrics are applied, namely a) real earnings management and b) accrual earnings management. The sample comprised listed, non-financial firms on the FTSE All-Share Index. The sampling period spans the years 2012 to 2022. Results deriving from panel regressions document a statistically significant negative relationship between both earnings management strategies and major institutional ownership. Therefore, institutional ownership is associated with a positive impact on audit quality. Interestingly, no auditor size effect is found. Board-related corporate governance variables are not found to contribute to audit quality. These results could imply a substitutive role of institutional ownership (Guest, 2008) when audit quality is considered. These findings could serve as a valuable input for the UK regulatory authorities' initiatives in a constantly changing audit market.

Keywords: Audit Quality, Earnings Management, Real Earnings Management, Abnormal Current Accruals, Major Institutional Ownership

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1. INTRODUCTION

This study aims to evaluate the relationship between major institutional ownership and audit quality. Institutional investors invest funds on behalf of their clientele. The role of institutional investors in capital markets gains importance as their share in corporate equity ownership increases steadily. Literature suggests that institutional investors have the incentives and capabilities to monitor firm governance and performance. The latter is envisaged in financial reports.

Since institutional investors manage funds of their clients, they are held responsible for investing in firms that avoid earnings manipulation strategies and adhere to regulatory financial reporting guidelines (Coulmont & Berthelot, 2023; Vinjamury, 2021). Thus, firms with significant institutional ownership should be associated with greater financial reporting quality (Alruwaili et al., 2024; Bellavite Pellegrini et al., 2023; Utomo & Mawardi, 2024). DeFond and Zhang (2014) stipulate that financial reporting quality metrics, such as earnings management proxies, are commonly applied to estimate audit quality. Research classifies earnings management strategies into two streams: real activities and accruals-based. Many studies document a negative relationship between the two groups of metrics and institutional ownership (Ali et al., 2024; Alghemary et al., 2024). However, empirical findings seem to vary depending on the audit quality proxy, the capital market, or even the market conditions (Davis & Garcia-Cestona, 2023; Hsu & Koh, 2005). This study is motivated by these inconclusive findings and aims to document the nature of the anticipated relationship by adopting a robust approach. The United Kingdom (UK) market is a leading European capital market that hosts well-established institutional investors. Concurrently, the UK regulatory authorities have taken several initiatives that aim to safeguard audit quality. Both streams in earnings management strategies are empirically investigated using the UK market data, and a significant negative relationship is documented. Thus, empirical findings support the monitoring role of institutional ownership in the UK market.

The remainder of this paper is organized as follows. Section 2 summarizes the relevant literature and develops the hypothesis. Section 3 describes the data, the variables, and the applied methodology. Section 4 reports the empirical results, while Section 5 comprises a detailed discussion of the empirical findings. Finally, Section 6 ends the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Conflicting interests and information asymmetries between principals and agents within a firm structure comprise the premises of agency cost theory (Jensen & Meckling, 1976). Agency costs can be compensated for by mobilizing monitoring mechanisms. Auditing is considered an indispensable monitoring mechanism. Audit services involve independent assurance on the integrity of financial reporting. However, the amount of assurance is not directly measurable (DeFond & Zhang, 2014). Audit quality has various dimensions, and there is little consensus on its definition and estimation (Knechel et al., 2013). Someone could argue that audit quality is a puzzle with many different pieces.

Audit quality is an integral part of financial reporting quality. The quality of financial reports deteriorates when management adopts earnings management strategies, aiming to distort accounting figures to satisfy self-serving goals (Dechow & Skinner, 2000). In a seminal work, Roychowdhury (2006) suggested that managers manipulate normal operational practices so that they can record the fulfillment of financial reporting goals. This manipulation is known as real activities manipulation and can take the form of abnormal cash flows (deriving from sales manipulation), overproduction that understates the cost of goods sold, and reduction of discretionary expenses. The real earnings management approach, when studying earnings management, is gaining popularity (Nasir et al., 2018). Real earnings management is negatively related to many audit quality proxies (Sitanggang et al., 2019).

Alternatively, firms engage in accruals manipulation techniques to disguise earnings figures. Accrual-based earnings management is massively researched by the employment of the Jones (1991) and the modified Jones (Dechow et al., 1995) model. Accruals are split into two categories: normal, which unveil fundamental firm performance, and abnormal, which are indicative of earnings management efforts (Dechow et al., 2010). Firm performance was also found to be a significant driver in the estimation process of abnormal accruals (Kothari et al., 2005; Ashbaugh et al., 2003). Abnormal accruals adjusted for performance serve as an earnings quality and simultaneously audit quality proxy (Gunny & Zhang, 2013). Firms engage monotonically either in real or accruals earnings management. Alternatively, they adopt a mixture of both methods. The adopted strategy is driven by cost variables (Cohen et al., 2008). Francis (2024) supports the view that earnings quality is the most comprehensive measure to estimate audit quality.

Audit quality is often researched under the lens of ownership structure. Recent trends in ownership structure are mainly characterised by increased shareholding concentration among institutions. Institutional investors control most of the largest publicly listed firms on a worldwide scale (Li et al., 2021). Institutional investors are presumably sophisticated market participants who could detect opportunistic earnings management strategies (Velte, 2024). Institutional ownership can take various forms. Bushee (1998) recognizes three types of institutional investors: transient, dedicated, and quasi-indexers. Dedicated investors are characterised by their long-term investment horizon and active monitoring activities on firms' governance and performance (Bebchuk et al., 2017). Since institutional investors manage third-party funds, the probability of active monitoring increases (Klettner, 2021). In this vein, there is mounting research work that stipulates a monitoring role for institutional investors that mitigates earnings management efforts (Jiambalvo et al., 2002). Ali et al. (2024) focus on the Chinese capital market and find a negative relationship between institutional ownership and discretionary accruals. Additionally, they suggest that institutional ownership is associated with fewer instances of real activities' manipulation. The negative relationship between real earnings management activities and institutional ownership is also validated in different markets (Garel et al., 2021; Al-Duais et al., 2022; Alghemary et al., 2024). Institutional ownership is negatively

associated with the level of abnormal accruals (Zhong et al., 2017). This phenomenon is more pronounced in smaller-sized firms (Mitra & Cready, 2005). However, the beneficial effects of institutional ownership are not observed when institutional ownership is insignificant in shareholding value and has a short-term investment horizon (Burns et al., 2010; Mian et al., 2023). Wang (2014) studies the UK capital market and suggests that when institutional ownership is within the range of 10% to 20% coupled with a moderate investment horizon, the accruals quality increases. Concurrently, there is also contradicting evidence on the role of institutional ownership. Lemma et al. (2018) document a positive relationship between institutional ownership and accrual-based earnings management in an international setting. The UK capital market is well known as a host for numerous institutional investors (Investment Association [IA], 2023). The monitoring effect of institutional investors on audit quality, when the latter is approximated by either accrual-based or real earnings management proxies, attracts our research interest. This leads us to shape our research hypothesis:

H1: In the United Kingdom, major institutional ownership is positively associated with audit quality.

3. RESEARCH METHODOLOGY

3.1. Data

We processed an unbalanced panel of data containing firm-year observations dated from 2012 to 2022. We also used observations dated in the year 2011, where the first differences were required. Financial and corporate governance variables were obtained from Datastream. Institutional major ownership data were obtained from the Bureau van Dijk and Orbis database and excluded from the initial sample. The sample comprised the UK-listed firms on the FTSE All-Share Index. To the best of our knowledge, this is the first study that specifies major ownership according to the Financial Conduct Authority (FCA) provision. FCA considers major institutional ownership to be the 3% threshold for the UK-incorporated firms and 5% for non-UK-incorporated firms.

We opted for a vast, well-diversified sample of firms for many reasons. Firstly, we aimed to rule out systematic upward or downward earnings management (Klein, 2002). Secondly, we wanted to be confident that our conclusions would not be influenced by the market information advantages possessed by FTSE 100 and FTSE 350 firms (Mitra & Cready, 2005). Firms that fell in the financial institutions category were dropped out of the sample since they operate in a highly regulated environment and are required to follow certain guidelines on financial reporting (Fields et al., 2004). Further, we removed the top and bottom one percent of the dependent variables' distributions to ensure that our results were not affected by outlier observations. Table 1 depicts the sample selection procedure that yielded 886 firm/year observations for the first regression equation and 920 for the second, respectively.

Table 1. Sample selection

Selection procedure	*Regression Eq. (1)*	*Regression Eq. (2)*
Firms listed under the FTSE All-Share Index for the period 2012–2022 (Firms 2.707)	29.777	29.777
Less: Year observations without financial or corporate governance data	23.066	23.032
Less: Year observations without data on institutional presence	5.816	5.816
Sample for assessing audit quality	895	929
Less: Exclusion of extreme abnormal accruals values	9	9
Sample used in the estimation model	886	920

Note: We adopted the Bas et al. (2023) methodology to identify institutional investors. We extracted major shareholdings (3% and above) for the following types of investors provided by Bureau van Dijk and Orbis database: "A" — Insurance, "B" — Bank, "F" — Financial company, "J" — Foundation/Research institute, "P" — Private equity, "V" — Venture capital, and "Y" — Hedge fund. Type "E" — Mutual and pension fund/Nominee/Trust/Trustee.
Source: Authors' elaboration.

3.2. Audit quality proxies

3.2.1. Real earnings management — Abnormal cash flows

Based on the seminal work of Roychowdhury (2006), we estimated the level of abnormal cash flows for the sample of firms. The normal level of cash flows is expressed as a linear function of revenues and the change in revenues for the current period. In this vein, we ran a regression Eq. (1), at the industry level, on an annual basis to approximate normal cash flow.

$$CFO_t/A_{t-1} = \beta_0 + \beta_1 * (1/A_{t-1}) + \beta_2 * (REV_t/A_{t-1}) + \beta_3 * (\Delta\, REV_t/A_{t-1}) + \varepsilon_t \quad (1)$$

where, *CFO* stands for cash flow from operating activities, A_{t-1} denotes total assets for year $t-1$, *REV* denotes net revenues, and *ΔREV* denotes the change in revenues for the current year, whereas ε denotes the regression's error term.

The level of abnormal cash flow is the residual value from the actual *CFO* after deducting the normal *CFO* derived from the application of the estimated coefficients from the corresponding industry-year model and the firm's year revenue and lagged assets.

$$Abnormal\ cash\ flow = Actual\ CFO - Normal\ CFO \quad (2)$$

3.2.2. Abnormal accruals, adjusted for performance

Adopting prior literature (Ashbaugh et al., 2003; Gunny & Zhang, 2013), we ran cross-sectional regressions at the industry level, as in Eq. (3). We considered only industries with at least 15 firms.

$$CA_{j,t}/A_{j,t-1} = \beta_1 * 1/A_{j,t-1} + \beta_2 * (\Delta REV_{j,t})/A_{j,t-1} + \beta_3 * ROA_{j,t-1} + \varepsilon_t \quad (3)$$

Current accruals (*CA*) were estimated by employing the cash flow method (Hribar & Collins, 2002). *CA* accrued from net income before extraordinary items, depreciation, and amortization, after deducting operating *CFO*. A variable stands for total assets in year t – 1, *ΔREV* stands for net sales in year *t*, less net sales in year t – 1, *ROA* stands for return on assets in year t – 1; and ε is the error term.

The estimated industry-specific coefficients, $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$ were imparted in regression Eq. (4) to approximate the level of expected current accruals (*ECA*).

$$ECA_{j,t}/TA_{j,t-1} = \hat{\beta}_1 * 1/A_{j,t-1} + \hat{\beta}_2 * (\Delta REV_{j,t} - \Delta AR_{j,t})/A_{j,t-1} + \hat{\beta}_3 * ROA_{j,t-1} \quad (4)$$

where, *ΔAR* stands for accounts receivable for year *t* less the equivalent in year t – 1. The abnormal current accruals controlling for firm performance (*PCA*) were derived from Eq. (5).

$$PCA_{j,t} = CA_{j,t}/A_{j,t-1} - ECA_{j,t}/A_{j,t-1} \quad (5)$$

3.3. Regression models

We ran panel least squares regressions using the two alternative proxies for audit quality. Table 2 presents a summary of the variables included in the estimation procedure.

Table 2. Summary of variables

Symbol	Definition
	Dependent variables
REM	Abnormal cash flows, according to Roychowdhury (2006), are calculated.
PCA	Abnormal accruals, according to Gunny and Zhang (2013), are calculated. The absolute values of the metric were employed.
	Independent variable
INST	The sum of major institutional shareholdings (percentage) surpasses the 3% threshold.
	Auditor/Client control variables
AUDSIZE	Dummy variable numbered 1 if the auditor is a Big 4 audit firm and 0 otherwise.
AUDTENU	Auditor tenure — consecutive years.
AUDFEES	Natural logarithm of auditor fees.
	Corporate governance control variables
BRDSIZE	Number of board members.
CEODUAL	Dummy variable numbered 1 if the chief executive officer (CEO) is also a member of the board and 0 otherwise.
BRDIND	Proportion of independent board members (percentage).
	Firm-specific control variables
SIZE	Natural logarithm of total assets.
LOSS	Dummy variable numbered 1 if the firm records losses in the current financial year and 0 otherwise.
FRHOLD	Number of foreign holdings.
IAREPORT	Dummy variable numbered 1 if there is an internal audit report to the board and 0 otherwise.
QUICK	The ratio of cash and net receivables to current liabilities.
MVBV	The ratio of market to book value, at year's end.
ACC	Total accruals scaled by total assets of the previous financial year.
ROA	Return on assets for the current financial year.
ε_t	Error term.

Source: Authors' elaboration.

The real earnings management (*REM*) audit quality proxy in regression Eq. (6) is the level of abnormal cash flow, whereas the absolute values of abnormal current accruals adjusted for performance (*PCA*) are the audit quality proxy in regression Eq. (7).

$$REM_t = \beta_0 + \beta_1 * INST_{i,t} + \sum_{i=1}^{n} \beta_i * Controls_{i,t} + \varepsilon_{i,t} \quad (6)$$

$$PCA_t = \beta_0 + \beta_1 * INST_{i,t} + \sum_{i=1}^{n} \beta_i * Controls_{i,t} + \varepsilon_{i,t} \quad (7)$$

Several control variables were included in our baseline models to deter possible bias accruing from omitted variables that influence financial reporting quality, and ultimately audit quality. DeFond and Zhang (2014) discriminate between input and output-based measures of audit quality. In the first category, three features of the auditor/client relationship are identified, namely auditor size, auditor tenure, and finally audit fees. We wanted to control for different accrual or *REM* activity depending on: a) auditor size, b) the tenure length, and c) the level of audit fees related to the engagement (Cohen et al., 2008).

International Auditing and Assurance Standards Board (IAASB, 2014), classifies corporate governance mechanisms as contextual factors that exert influence on audit quality. We opted to include board-related, corporate governance variables in the regression equations. Board size, CEO duality, and board independence were included in regression equations to control for their implications for audit quality. We ruled out audit committee traits, adopting prior literature which contends that simultaneous estimation of board and audit committee characteristics challenges the estimation process (Xie et al., 2003).

Several firm-specific variables were also imparted as controls in the estimation process. Firm size attracts market interest (Ghosh & Moon, 2010) and stimulates institutional investor attention (Mitra & Cready, 2005). Concurrently, large-sized firms seem to have stable accruals (Dechow & Dichev, 2002).

Firm risk embodied in financial ratios and negative income is also imparted in the calculus (Klein, 2002). Business complexity is captured by the number of foreign holdings (Han et al., 2013). Market perspectives are presented by the market-to-book value ratio (Lim et al., 2013). Finally, we imparted the internal control report to the board as a control variable, since it seems to be associated with audit quality (Knechel et al., 2013).

In regression Eq. (6), we included *ROA* as a firm-level control variable, whereas in regression Eq. (7), we included total accruals scaled by the preceded financial year's total assets. Firm performance should be imparted as a control variable when estimating earnings management efforts (Kothari et al., 2005). Since *ROA* is already included in the calculus of *PCA* and the potential inclusion of the variable could cause multicollinearity issues, we imparted the performance measure only in the *REM* regression equation. Finally, we imparted total accruals scaled by total assets of the previous financial year as a control variable in the accruals' estimation process. It is generally accepted that total accruals exert bias in the estimation process of abnormal current accruals (Dechow et al., 2010).

4. RESULTS

4.1. Preliminary statistics

Tables 3 and 4 depict central tendency, variability, and distributional metrics for the variables included in the regression Eqs. (6) and (7), respectively. In Table 3, major institutional ownership *INST* has a mean (median) value of 18.8% (13.8%) while the observations are positively skewed (1.177). Most of the firms are audited by a Big 4 auditor, implied by a mean (median) value of 0.958 (1.00). Average tenure is 9.56 years. Corporate structures are characterised by boards with a median value of 9 members and a percentage of independent members at 59.38%, on average.

Table 3. Descriptive statistics — Regression Eq. (6)

Variables	*Mean*	*Median*	*Max*	*Min*	*Std. dev.*	*Skewness*	*Kurtosis*	*N*
REM	0.036	0.030	0.472	-0.527	0.114	0.129	5.625	886
INST	0.188	0.138	0.910	0.000	0.178	1.177	4.180	886
AUDSIZE	0.958	1.000	1.000	0.000	0.200	-4.581	21.990	886
AUDTENU	9.562	10.000	21.000	1.000	5.675	0.025	1.768	886
AUDFEES	7.135	6.890	10.895	2.773	1.367	0.562	2.795	886
BRDSIZE	8.881	9.000	17.000	4.000	2.294	0.682	3.304	886
CEODUAL	0.988	1.000	1.000	0.000	0.111	-8.807	78.558	886
BRDIND	59.384	60.000	87.500	10.000	13.525	-0.463	3.496	886
SIZE	14.568	14.355	19.205	10.373	1.649	0.507	2.964	886
LOSS	0.109	0.000	1.000	0.000	0.312	2.501	7.257	886
FRHOLD	9.933	5.000	86.000	0.000	14.812	2.254	8.279	886
IAREPORT	0.977	1.000	1.000	0.000	0.149	-6.428	42.323	886
QUICK	1.112	0.783	11.859	0.075	1.240	3.703	20.570	886
MVBV	4.014	2.125	696.820	-184.220	31.767	15.756	327.008	886
ROA	7.881	6.910	100.830	-62.750	10.888	0.589	14.997	886

Source: Authors' elaboration.

Regression Eq. (7) included 920 observations, as indicated in Table 4. There are no significant discrepancies for statistical measures between Table 3 and Table 4. On the latter table, the mean (median) value for major institutional ownership *INST* is 19.4% (14.5%). The finding concerning audit market concentration among the Big 4 auditors is also observed in Table 4 with a mean (median) value of 0.954 (1.00). The average share of independent members on the boards is 59.28% and the average number of total members is 8.9.

Table 4. Descriptive statistics — Regression Eq. (7)

Variables	*Mean*	*Median*	*Max*	*Min*	*Std. dev.*	*Skewness*	*Kurtosis*	*N*
PCA	1.341	1.038	6.100	0.000	1.158	1.267	4.305	920
INST	0.194	0.145	0.910	0.000	0.182	1.179	4.187	920
AUDSIZE	0.954	1.000	1.000	0.000	0.209	-4.353	19.953	920
AUDTENU	9.495	10.000	21.000	1.000	5.725	0.043	1.749	920
AUDFEES	7.192	6.916	15.710	2.773	1.388	0.713	4.076	920
BRDSIZE	8.910	9.000	17.000	4.000	2.311	0.645	3.200	920
CEODUAL	0.988	1.000	1.000	0.000	0.109	-8.980	81.648	920
BRDIND	59.282	60.000	87.500	10.000	13.919	-0.516	3.499	920
SIZE	14.603	14.370	19.205	10.373	1.636	0.516	2.978	920
LOSS	0.118	0.000	1.000	0.000	0.323	2.361	6.575	920
FRHOLD	9.868	5.000	86.000	0.000	14.546	2.292	8.598	920
IAREPORT	0.978	1.000	1.000	0.000	0.146	-6.559	44.022	920
QUICK	1.111	0.789	11.859	0.075	1.236	3.749	20.850	920
MVBV	3.219	2.065	498.370	-170.750	19.909	16.817	437.260	920
ACC	-0.029	-0.023	0.663	-0.658	0.091	-1.137	15.266	920

Source: Authors' elaboration.

Appendix (Table A.1 and Table A.2) presents Spearman correlation matrices for the variables included in the regression Eqs. (6) and (7) respectively. There is no correlation coefficient that surpasses the 0.9 threshold, which could imply serious multicollinearity issues (Gujarati, 2003). In Appendix (Table A.1), we document a significant negative correlation of *INST* (r = -0.068) with the level of abnormal cash flows, the adopted audit quality metric. Audit fees are also negatively correlated (r = -0.118), indicating a widely accepted argument that increased effort, which corresponds to more fees, leads to better audit quality. *AUDSIZE* is positively related to audit fees (r = 0.11), consistent

with the argument that Big 4 auditors charge a premium. An interesting observation is the strong positive correlation coefficient between *BRDSIZE* and *AUDFEES* (r = 0.575). A sizeable board seeks to safeguard the members' reputation by demanding extensive auditing. The latter is reflected in higher audit fees. In Appendix (Table A.2), we notice similar behaviour for most variables. The positive relationship between *AUDSIZE* and *AUDFEES* remains (r = 0.133), as well as between *BRDSIZE* and *AUDSIZE* (r = 0.221). In both correlation tables, there is a noticeable, significant negative relationship between *BRDSIZE* and *INST* (r = -0.251 and r = -0.263 for Appendix (Table A.1 and Table A.2), respectively). Sizeable firms seem reluctant to employ earnings management strategies either based on real activities, or accruals, as indicated by significant negative coefficients (r = -0.137 and r = -0.208).

4.2. Regression results

Firms' earning management strategies could comprise an amalgamation of real earnings and accrual-based management tools. Firms choose the most cost-effective solution (Cohen et al., 2008). We approached audit quality by estimating both real earnings and accruals-based management efforts, trying to capture the different strategies employed to disguise earnings figures.

In the second column of Table 5, we report the results of the regression equation that has the *REM* proxy as the dependent variable. The *INST* coefficient is negative (-0.035) and significant at a 10% significance level when we approximate audit quality with the level of abnormal cash flows. The adjusted R^2 is 18.4% and the regression equation is significant with an F-stat. of 15.29 (p-value = 0.00).

Table 5. Regression results

Variables	*REM — Eq. (6)*	*PCA — Eq. (7)*
Constant	0.039 (0.673)	5.418 (9.021)***
INST	-0.035 (-1.704)*	-0.577 (-2.829)***
AUDSIZE	0.007 (0.439)	0.189 (1.092)
AUDTENU	0.000 (1.411)	0.003 (0.574)
AUDFEES	-0.009 (-2.015)**	0.191 (4.165)***
BRDSIZE	0.004 (1.965)**	0.070 (3.338)***
CEODUAL	-0.017 (-0.523)	-1.330 (-3.879)***
BRDIND	0.000 (1.514)	0.007 (2.763)***
SIZE	-0.006 (-1.537)	-0.376 (-8.803)***
LOSS	0.019 (1.504)	-0.221 (-1.765)*
FRHOLD	0.000 (1.004)	0.003 (1.429)
IAREPORT	0.055 (2.318)**	-0.121 (-0.494)
QUICK	0.015 (5.367)***	0.235 (8.040)***
MVBV	0.000 (2.391)***	0.002 (1.223)
ROA	0.003 (9.509)	
ACC		0.124 (0.278)
R^2	0.197	0.182
Adj. R^2	0.184	0.169
F stat.	15.29	14.42

*Note: t-stats. in parentheses; *** 0.01, ** 0.05, and * 0.10 significance levels.*
Source: Authors' elaboration.

We also studied audit quality by approximating the level of abnormal accruals. The level of the absolute value of abnormal current accruals adjusted for performance is indicative of suboptimal levels of audit quality. We considered the absolute value of accruals because they tend to reverse over time. The *INST* coefficient is negative (-0.577) and significant, at all conventional significance levels (p-value = 0.0048). The regression equation is significant with an F-stat. of 14.42 (p-value = 0.00).

Our hypothesis is validated in both contexts. Major institutional ownership is associated with higher audit quality. This argument is supported by dual audit quality proxies. As the percentage of institutional investors in the share capital increases, the firms are involved in less *REM* and/or accruals earnings management. This finding is consistent with the monitoring effect argument. Institutional investors possess incremental levels of sophistication and require firm management to be more vigilant with financial reporting. Improved quality in financial reporting results in higher audit quality.

5. DISCUSSION

Empirical results corroborate previous findings on the monitoring role of institutional investors and their implications on audit quality (Chen et al., 2016; Davis & Garcia-Cestona, 2023). The dual proxies for audit quality, accruals management, and earnings management from real activities were also employed by Ali et al. (2024) in the Chinese market, reaching the same conclusions as the current study. Davis and Garcia-Cestona (2023) studied the USA market, also adopted the same audit quality proxies, and documented a positive relationship between institutional ownership and accruals earnings management. However, the relationship changes to negative when the earnings management from real activities proxy is adopted. The researchers posit that the relationship between the audit quality metrics and institutional ownership is context-dependent and has non-linear virtues. In contrast, this study suggests a negative relationship between institutional ownership and both earnings management metrics in the UK market. The positive impact of institutional ownership on accruals quality is also validated in the Australian market (Koh, 2003; Hsu & Koh, 2005).

Research design controlled for concurrent effects of auditor and firm-specific variables. Auditor size, despite its widespread use as an audit quality proxy (Jiang et al., 2019), does not seem to contribute to higher audit quality levels in the current testing. The same applies to board-related variables such as board size and independence. These findings align with Guest's (2008) suggestions. Specifically, Guest (2008) contends that in the UK, there is a culture of active stewardship on behalf of institutional investors. This active role acts as a substitute for board monitoring activities. The UK authorities acknowledged this role and were the first to shape a stewardship code that outlines responsible ways of investing for institutional investors (Klettner, 2021). The absence of a statistically significant relationship between the audit quality proxies and all board variables in this study indicates that the institutional investor effect on audit quality is strong and has substitutive features.

6. CONCLUSION

The purpose of this study is to assess the role of major institutional ownership on audit quality levels. Audit quality is approximated by various measures, the most prominent being financial reporting quality proxies. Earnings management suppresses financial reporting quality and, subsequently, audit quality. There is a vast body of literature that groups earnings management into two broad approaches, namely real activities manipulation and accruals management.

We adopted both earnings management approaches to ascertain the implied audit quality levels. Abnormal cash flows and abnormal current accruals, adjusted for firm performance, served as the dependent variables of our regression models. These proxies imply suboptimal levels of audit quality. Dual proxies support the validity of our arguments. The vast sample of firm-year observations was UK-originated and comprised listed firms on the FTSE All-Share Index.

The study documents a significant negative relationship between both earnings management proxies and major institutional ownership, validating the research hypothesis. Thus, institutional shareholding is associated with enhanced levels of audit quality. These empirical results add to the growing body of literature devoted to the role of institutional ownership. The absence of a significant relationship between audit quality and auditor size, or even board-related corporate governance variables, may indicate a substitutive role for institutional investors. The findings can be used by competent authorities when shaping regulatory interventions in the audit market. Further research could focus on alternative audit quality proxies to investigate the validity of the empirical findings.

The limitations of the study pertain to the special features of the financial reporting quality measures. Financial reporting quality measures suffer from high estimation errors, and this can influence the reliability of the findings. Alternative measures could be applied to verify the robustness of the empirical findings.

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APPENDIX

Table A.1. Correlation matrix regression — Eq. (6)

Variable	*REM*	*INST*	*AUDSIZE*	*AUDTENU*	*AUDFEES*	*BRDSIZE*	*CEODUAL*	*BRDIND*	*SIZE*	*LOSS*	*FRHOLD*	*IAREPORT*	*QUICK*	*MVBV*	*ROA*
REM	1.000														
INST	-0.068	1.000													
	(-2.033)**														
AUDSIZE	0.037	-0.005	1.000												
	(1.106)	(-0.160)													
AUDTENU	0.043	0.012	0.095	1.000											
	(1.287)	(0.347)	(2.837)***												
AUDFEES	-0.118	-0.230	0.110	0.104	1.000										
	(-3.535)***	(-7.013)***	(3.304)***	(3.119)***											
BRDSIZE	-0.017	-0.251	0.226	0.125	0.575	1.000									
	(-0.492)	(-7.707)***	(6.899)***	(3.758)***	(20.901)***										
CEODUAL	0.006	0.136	0.028	-0.054	-0.136	-0.054	1.000								
	(0.170)	(4.094)***	(0.819)	(-1.596)	(-4.080)***	(-1.615)									
BRDIND	0.008	-0.060	0.113	0.026	0.364	0.227	0.097	1.000							
	(0.226)	(-1.781)*	(3.392)	(0.773)	(11.633)***	(6.930)***	(2.884)***								
SIZE	-0.137	-0.304	0.124	0.083	0.768	0.653	-0.140	0.372	1.000						
	(-4.097)***	(-9.471)***	(3.720)***	(2.463)**	(35.658)***	(25.659)***	(-4.207)***	(11.908)***							
LOSS	-0.131	0.030	0.019	-0.035	0.075	0.008	0.039	-0.016	0.034	1.000					
	(-3.924)***	(0.897)	(0.565)	(-1.027)	(2.221)**	(0.228)	(1.170)	(-0.475)	(1.011)						
FRHOLD	0.018	-0.007	0.123	-0.076	0.037	0.084	0.087	-0.086	0.077	0.108	1.000				
	(0.548)	(-0.204)	(3.685)***	(-2.276)**	(1.109)	(2.518)**	(2.610)***	(-2.557)**	(2.283)**	(3.218)***					
IAREPORT	0.026	0.053	0.158	0.005	0.186	0.123	-0.017	0.108	0.141	0.053	0.036	1.000			
	(0.787)	(1.573)	(4.764)***	(0.159)	(5.637)***	(3.691)***	(-0.507)	(3.236)***	(4.239)***	(1.587)	(1.083)				
QUICK	0.170	0.118	0.002	0.046	-0.034	-0.048	-0.129	-0.120	-0.227	0.063	0.048	-0.041	1.000		
	(5.140)***	(3.546)***	(0.051)	(1.375)	(-1.014)	(-1.425)	(-3.871)***	(-3.584)***	(-6.922)***	(1.876)*	(1.426)	(-1.219)			
MVBV	0.250	-0.057	0.028	0.013	0.005	-0.008	-0.042	-0.041	-0.162	-0.206	-0.029	0.007	0.117	1.000	
	(7.684)***	(-1.708)*	(0.833)	(0.394)	(0.136)	(-0.228)	(-1.256)	(-1.206)	(-4.881)***	(-6.245)***	(-0.874)	(0.205)	(3.490)***		
ROA	0.412	-0.071	0.005	0.014	-0.165	-0.048	0.022	-0.018	-0.210	-0.515	-0.025	-0.027	0.058	0.460	1.000
	(13.445)***	(-2.121)	(0.147)	(0.408)	(-4.980)***	(-1.432)	(0.659)	(-0.540)	(-6.370)***	(-17.870)***	(-0.729)	(-0.813)	(1.734)*	(15.406)***	

*Note: t-stats. in parentheses; *** 0.01, ** 0.05, and * 0.10 significance levels.*
Source: Authors' elaboration.

Table A.2. Correlation matrix regression — Eq. (7)

Variable	*PCA*	*INST*	*AUDSIZE*	*AUDTENU*	*AUDFEES*	*BRDSIZE*	*CEODUAL*	*BRDIND*	*SIZE*	*LOSS*	*FRHOLD*	*IAREPORT*	*QUICK*	*MVBV*
PCA	1.000													
INST	0.008	1.000												
	(0.238)													
AUDSIZE	0.034	-0.003	1.000											
	(1.026)	(-0.102)												
AUDTENU	0.012	0.006	0.097	1.000										
	(0.359)	(0.171)	(2.957)***											
AUDFEES	-0.025	-0.234	0.133	0.084	1.000									
	(-0.761)	(-7.290)***	(4.062)***	(2.541)**										
BRDSIZE	-0.030	-0.263	0.221	0.091	0.580	1.000								
	(-0.907)	(-8.252)***	(6.855)***	(2.770)***	(21.568)***									
CEODUAL	-0.077	0.137	0.024	-0.053	-0.131	-0.052	1.000							
	(-2.335)**	(4.180)***	(0.723)	(-1.608)	(-3.999)***	(-1.572)								
BRDIND	0.019	-0.066	0.110	0.011	0.356	0.228	0.094	1.000						
	(0.584)	(-2.007)**	(3.344)***	(0.338)	(11.551)***	(7.108)***	(2.854)***							
SIZE	-0.208	-0.325	0.155	0.063	0.771	0.666	-0.137	0.364	1.000					
	(-6.450)***	(-10.419)***	(4.763)***	(1.904)*	(36.642)***	(27.032)***	(-4.186)***	(11.840)***						
LOSS	-0.104	0.036	0.000	-0.023	0.071	-0.005	0.040	0.006	0.018	1.000				
	(-3.155)***	(1.079)	(-0.012)	(-0.687)	(2.156)**	(-0.166)	(1.223)	(0.168)	(0.536)					
FRHOLD	0.052	-0.035	0.109	-0.082	0.026	0.102	0.087	-0.087	0.068	0.092	1.000			
	(1.578)	(-1.073)	(3.308)***	(-2.479)**	(0.782)	(3.120)***	(2.656)***	(-2.648)***	(2.072)**	(2.790)***				
IAREPORT	0.003	0.041	0.110	-0.001	0.201	0.115	-0.016	0.107	0.143	0.055	0.056	1.000		
	(0.101)	(1.232)	(3.360)***	(-0.037)	(6.215)***	(3.506)***	(-0.497)	(3.251)***	(4.375)***	(1.658)*	(1.694)*			
QUICK	0.321	0.135	-0.023	0.049	-0.028	-0.056	-0.127	-0.126	-0.221	0.067	0.058	-0.036	1.000	
	(10.269)***	(4.121)***	(-0.701)	(1.488)	(-0.851)	(-1.690)*	(-3.874)***	(-3.851)***	(-6.857)***	(2.025)**	(1.774)*	(-1.101)		
MVBV	0.419	-0.065	0.019	0.009	0.019	0.014	-0.047	-0.030	-0.139	-0.231	0.018	-0.020	0.100	1.000
	(13.999)***	(-1.963)**	(0.577)	(0.271)	(0.580)	(0.427)	(-1.433)	(-0.920)	(-4.257)***	(-7.194)***	(0.533)	(-0.595)	(3.032)***	
ACC	0.007	-0.086	0.006	-0.002	-0.116	0.022	0.025	-0.097	-0.033	-0.431	0.011	-0.060	-0.052	0.134
	(0.218)	(-2.616)***	(0.194)	(-0.064)	(-3.524)***	(0.657)	(0.764)	(-2.949)***	(-0.991)	(-14.48)***	(0.336)	(-1.827)*	(-1.592)	(4.112)***

*Note: t-stats. in parentheses; *** 0.01, ** 0.05, and * 0.10 significance levels.*
Source: Authors' elaboration.