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EMPIRICAL INVESTIGATION OF THE EFFECT OF MANDATORY AUDITOR ROTATION AND FIRM SIZE ON AUDIT QUALITY IN GHANA

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Abstract: Previous studies have verified that mandatory rotation of auditors enhances auditors' independence and results in elevated audit criteria. The aim of this study is to analyze the influence of required auditor rotation (MAR) and firm size on the quality of audits while considering the factors of auditor experience and auditor independence, which have been overlooked in prior research. This research will substantially impact the existing body of knowledge. The study collected secondary data from 20 publicly traded companies on the Ghana stock exchange market, spanning 2014 to 2023. The Hausman test was applied to determine the random-effects logistic regression model. The results indicated that MAR, firm size, and auditor independence have a positive and significant impact on the audit quality of a firm. This suggests that higher MAR, larger firm size, and greater auditor independence are more likely to improve audit quality. Therefore, it is crucial for Ghanaian firms and other firms in Western African communities, as well as emerging economies worldwide, to implement mandatory auditor rotation to enhance auditor independence and audit quality. This, in turn, will positively impact the firm's overall performance during the fiscal year.

Keywords: MAR, Firm size, Audit quality, Hausman test, Random-effects Logistic regression model.

Introduction

The debate on the desirability of mandatory auditor rotation (MAR) remains inconclusive. The implementation of a maximum tenure rule (MAR) is often proposed as a means to protect auditor independence and potentially strengthen investor confidence in financial statements (Bowlin, et al., 2015). According to Kusi-Appiah (2020), Ghana has recently joined the group of countries that use statutes to regulate audit risks that arise from the familiarity between auditors and clients. Auditor rotation, also referred to as the rotation of auditors, has been included in Ghana's recently enacted Companies Act, 2019 (Act 992). He emphasized that accounting and audit regulatory agencies, such as the Institute of Chartered Accountants in Ghana, as well as global accounting standards groups, have dedicated substantial resources to research on this subject. The ICAN chapter in Ghana and international accounting standards have suggested measures to mitigate the impact of risks related to the

involvement of an auditor and their work to improve the quality of audits. The recommended approach, endorsed by the governing authorities, is to implement a rotation system for audit engagement partners. This entails periodically replacing the engagement partners of audit companies to prevent them from becoming too familiar with a particular client.

The role of auditing in providing a reliable and unbiased assessment of accounting information is highly valued (DeFond & Zhang, 2014; Esplin et al., 2018). By allowing outside parties to confirm the accuracy of financial accounts, the goal is to lessen the information gap between the company's stakeholders and management. However, major accounting scandals such as Satyam in India and Enron, WorldCom, and others in the United States have raised questions about the independence of auditors. The propensity of audit firms and audit partners to develop long-term ties with customers, which may compromise their independence as auditors, has become a topic of increasing discussion in the US and around the world in the post-Enron era (Kuang et al., 2020; Lennox & Wu, 2018). In the reaction, authorities have put in place policies like a "cooling-off period" to stop former auditors from getting jobs with their clients immediately. Additionally, they require the rotation of audit partners and companies and place restrictions on the non-audit services provided by audit firms. The aforementioned measures are intended to enhance auditor independence and elevate audit quality.

Moreover, audit partners or audit business replacements can accomplish auditor rotation. A number of nations have enforced mandated audit firm rotation, including Austria, Brazil, Italy, Spain, South Korea, and other countries. Conversely, obligatory audit partner rotation has been implemented in the US, Australia, China, Singapore, Japan, the UK, France, Spain, the Netherlands, Germany, Italy, and other nations (Horton et al., 2021; Jenkins & Vermeer, 2013). The Sarbanes Oxley Act (SOX), 2002 stipulates in Section 203 that the audit partner must be changed every five years. Using the knowledge spillover hypothesis as support, opponents of required auditor rotation argue that auditors with longer tenure have more experience and, as a result, are better knowledgeable about their clients and the business environment. This increased understanding may help raise the audit quality (GAO, 2003).

Nevertheless, in Ghana, auditors facing legal action owing to negligence or lack of thoroughness are exceedingly uncommon. In instances where audit firms are proven to have failed to fulfill their responsibilities with due care, the customary course of action is to hold accountable only the individual auditors responsible for the specific audit. Conversely, the audit firm as a whole does not experience substantial negative consequences (Jacob et al., 2019). The aim of this study is to analyze the impact of mandatory auditor rotation (MAR) and firm size on audit quality in Ghana. This analysis will consider auditor independence and auditor experience through empirical analysis.

Literature review and hypothesis development

The allocation of ownership and managerial authority in contemporary companies gives rise to a moral hazard dilemma, since the agent or management may prioritize their personal interests over those of the principal or the firm's owners, the equity holders (Jensen and Meckling, 1976). The managers responsible for overseeing the company's operations possess a more comprehensive comprehension of the business and its future potential compared with the owners. An effective resolution to the agency problem involves engaging an autonomous auditor to perform a comprehensive evaluation of the company's financial statements and records, thereby mitigating the disparity in information. The independent external auditor holds significant importance in the field of auditing, and their audit opinion is held in high regard. Additionally, it enhances the quality of financial

reporting. Moreover, as stated by Fortin and Pittman (2007), it can offer insurance protection for losses resulting from audit misstatements. Nevertheless, quantifiable variables such as audit revenues and clientele expansion have a direct impact on the payment of partners in an audit firm. Lennox and Wu (2018) suggest that partners may be incentivize to make audit quality concessions that are difficult to detect, which could create agency problems for the audit company. Inadequate audit quality has adverse implications for all stakeholders in an audit firm, extending beyond the partner responsible for conducting the audit (Bazerman et al., 1997). The repercussions encompass damage to one's reputation and legal considerations. Hence, a compromise in audit quality may occur as a consequence. The underlying assumption that imposing a time limit on the duration of an audit partner's engagement with a client reduces the level of familiarity between the partner and the firm serves as the rational foundation for mandatory auditor rotation and its influence on audit quality. Introducing new partners helps alleviate the inertia that may arise when an audit partner has been in service for an extended period. In addition, it can foster the introduction of fresh ideas and enhancements (Lennox and Wu, 2018). Audit partner rotation, distinct from audit firm rotation, solely focuses on ensuring the satisfaction of the audit partner and the client's representatives. In other words, audit companies can still financially benefit from maintaining customer relationships even after rotating audit partners. Therefore, the rotation of audit partners may not be sufficient to enhance auditor independence (Bamber & Bamber, 2009). In addition, the audit team experiences a loss of client-specific knowledge because of partner turnover. Collecting client-specific data is crucial for performing high-quality audits, as indicated by research on audit quality and audit failures. Moreover, Geiger and Raghunandan (2002) found that auditors who are in the process of gaining client-specific knowledge and are in the first phases of their association with the audit firm are more prone to experiencing audit failures. According to Gipper et al. (2019), established partners possess a more comprehensive comprehension of their consumers and the industry in which they operate. As per Dodgson et al. (2020), when a new auditor assumes control of an audit, they need time to gather the requisite information. Imposing restrictions on the duration of work for an audit partner may decrease the overall quality of audits (Sanders et al., 2009). Audit quality, as defined by DeAngelo (1981), refers to the auditor's ability to identify and disclose issues in financial statements. A comprehensive investigation has identified several criteria that can be used to evaluate the quality of an audit. These factors encompass the selection between a Big4 or non-Big4 audit (referring to the four leading worldwide auditing firms known for enhancing audit quality), audit opinion, restatements, audit expenses, and earnings management (as evidenced by discretionary accruals). This study employs regularly used features in the academic community to evaluate the quality of audits, including audit cost, going concern audit opinion, and discretionary accruals. Prior research has identified the knowledge spillover idea and auditor independence notion as two opposing perspectives that have a substantial impact on the duration of audit partners' tenure and their replacement. The "knowledge spillover" idea suggests that the auditor greatly benefits from having a comprehensive grasp of the organization, particularly in terms of "economies of scope" and "knowledge externality." This fosters the exchange of information between auditors and management, leading to audits of superior quality (Simunic, 1984). As professionals in their field accumulate more experience, they gain a more profound comprehension of particular clientele and industries, as suggested by certain individuals. Changing audit partners poses a potential risk of information loss (Daugherty et al., 2012; Lennox and Wu, 2018). Chi and Huang (2005) discovered a positive association between the tenure of an audit partner with a Taiwanese organization and the company's financial performance. According to Chi et al. (2017), auditors with advanced abilities are unable to reduce the harm caused by the loss of client-specific data

during a particular activity. Fitzgerald et al. (2018) also provided evidence supporting the idea that partners have a limited amount of experience with clients in the first year of their collaboration. Chi et al. (2009) discovered no empirical proof to support the claim that rotating audit partners improves audit quality. Carey and Simnett (2006) discovered that there was no statistically significant relationship between the amount of discretionary accruals and the duration of a partner's tenure at a company. A study conducted by Fargher et al. (2008) in Australia found a clear association between the length of time an audit partner has been in their position and the quality of the audit. Salehi et al. (2018) conducted a meta-analysis and discovered that there is no significant link between the length of time an auditor has been in their position and the quality of their audit. The counterargument, based on the concept of auditor independence, contends that a partner's strong connection with a client company may jeopardize their objectivity and independence (Laurion et al., 2017). Strengthened relationships between partners and clients increase the likelihood of agreeing with management's perspectives, which could impact the quality of audits (Bamber & Iyer, 2007; Chen et al., 2008). This raises the matter of auditor independence. Proponents of mandatory partner rotation contend that placing limitations on auditors who have completed the required period of service will improve the caliber of audits. The occurrence of a new auditor occasionally brings forth a "novel perspective" on the audit procedure. Horton et al. (2021) argued that when audit partners are required to rotate in a dual audit system, this results in higher levels of abnormal accruals and discretionary revenue. These criteria are used to evaluate the effectiveness of an audit in relation to profits. This is different from the practice of rotating audit firms. Conducting an investigation at the partner level provides supporting evidence for this theory. Hamilton et al. (2005) discovered a direct relationship between the rotation of audit partners and the standard of earnings for clients of the Big 4 accounting firms. Carey and Simnett (2006) discovered that as the length of partnership grows, the likelihood of making going-concern declarations and failing to achieve profit targets diminishes. Fargher et al. (2008) discovered that the practice of rotating partners improves the caliber of earnings. Firth et al. (2012) discovered that firms implementing compulsory rotations of audit partners are more susceptible to receiving a modified audit opinion (MAO), which serves as an indicator of audit quality, in contrast to organizations without such limitations. Manry et al. (2008) discovered an inverse relationship between the quantity of discretionary accruals for American clients and the duration of a partner's tenure at a firm. Lennox et al. (2014) discovered that audit partners are motivated to improve their financial accounts before transferring them to a new partner. In a study conducted by Zhao et al. (2020) on a group of Chinese enterprises, it was discovered that audit partners who were preparing to leave their jobs deliberately kept back negative information. Conversely, incoming audit partners frequently revealed negative information after they took on their duties. The impact of mandatory audit rotation is contingent on institutional and regulatory frameworks, as discovered by researchers (Firth et al., 2012). Bandyopadhay et al. (2014) discovered that audit quality improves after three years when a client business must change its partners. This finding was observed in Chinese publicly listed firms between 2004 and 2011, during a period of lower lawsuit risk. According to Kusi-Appiah (2020), required auditor rotation improves the quality of audits by eliminating the danger of familiarity between auditors and the firm through periodic rotation. This study investigates whether mandatory auditor rotation (MAR) and firm size impact audit quality. Thus, we may develop hypotheses to determine the impact of required auditor rotation and firm size on audit quality as follows:

H1: Mandatory auditor rotation positively contributes to audit quality

H2: Firm size has a positive significant effect on audit quality.

Methodology

The study obtained secondary data from 20 listed firms on the Ghana stock exchange market, covering the period from 2014 to 2023. This resulted in a sample size of 200 for this study. Data were obtained from the Ghana stock exchange market. The selection of firms was based on their performance in the stock market. The chosen period was purposively selected on the basis of the availability of data.

This study employed quantitative research methodologies, namely a panel logistic regression model and Hausman test, in addition to presenting summary statistics.

The panel logistic regression model will be defined for this study because the dependent variable has two categories, making it dichotomous. In addition, this is a non-parametric test, meaning that no strict parametric assumptions are required in this particular situation.

$$In\left(\frac{p}{1-p}\right) = \hat{y}_{it} = \beta_0 + \beta_1 MAR_{it} + \beta_2 Firmsize_{it} + \beta_3 Auditorsexp_{it} + \beta_4 Auditorind_{it} + \varepsilon_{it} \ldots\ldots (1)$$

The dependent variable is audit quality, which is measured as Big4 = 1 if a firm chooses the top 4 global accounting firms for auditing and 0 otherwise (which is dichotomous). The main independent variables are firm size, which is the natural logarithm of total assets of the listed firm, and mandatory auditor rotation (MAR), while the control variables are auditor experience (measured in years) and auditor independence rate (measured in percentage). The β_0 is the intercept or constant term, while the β_1 to β_4 are the slopes or coefficient estimates, and ε_{it} is the stochastic error term. where ith is the panel unit, which is the firm selected, and t is the period in years. The odd ratio of the panel logistic regression model can be expressed as follows:

$In(\frac{p}{1-p})$ = odd ratio = exponent of coefficient estimates of independent variables = e^{β}

Robustness check

The Hausman test was used to detect endogenous regressors in a regression model for panel data. This is important because ordinary least square regression models may not be appropriate for panel data analysis. In addition, there is a question of which estimator to use for panel data analysis: a fixed effect or random-effects model. The Hausman test determines whether the fixed-effects model is suitable by rejecting the null hypothesis, or if the random-effects model is appropriate by accepting the null hypothesis (Dodge, 2008; Hausman, 1978). This also aids in addressing the issue of endogeneity in panel data analysis, thereby ensuring the reliability of the outcomes.

Results

Table 1: Summary statistics

	Mean		Std. Deviation
MAR	4.20		3.370
Firm size	0.47		0.331
Auditor exp	8.83		2.191
Auditor Ind	31.84		8.997
		Frequency	Percentage
Audit quality	0	125	62.50
	1	75	37.50
	Total	200	100.0

Source: Author's computation using STATA software

Table 1 indicates that the mean mandatory auditor rotation (MAR) is approximately 4, with a standard deviation of approximately 3. The mean firm size is approximately 0.5, with a standard deviation of approximately 0.3. The mean auditor's experience is approximately 9 years, with a standard deviation of approximately 2 years. Lastly, the mean auditor independence is approximately 32%, with a standard deviation of approximately 9%. If a firm chooses one of the top four global accounting firms for auditing, the binary variable Big4 equals 1, which represents audit quality. This implies that out of the total 200 firms, 75 firms (37.5%) hire auditors from the Big 4, whereas the remaining 125 firms (62.5%) do not. This can be attributed to the exorbitant expense of employing the leading four auditing firms, and it is crucial to involve the Big 4 auditors to achieve exceptional audit quality.

Table 2: Hausman Fixed Random

Audit Quality		Fixed (b)	Random (B)	Difference (b-B)	Std. error
	MAR	0.187	0.189	-.002	0.023
	Firm size	1.507	1.462	.045	0.202
	Auditor Exp	-0.145	-0.085	-.061	0.128
	Auditor Ind	-0.094	-4.185	.006	0.010
	Prob > chi2		= 0.8953		

Source: Author's computation using STATA software

Table 2 shows the Hausman test with a P-value of 0.8953 that exceeds the 0.05 significance level, meaning that we do not reject the null hypothesis. This implies that the random-effects logistic regression model will be specified for the analysis of the panel data in this study.

Table 3: Random effects logistic regression model

Audit Quality		Coefficient	S.E.	Z	P-value	Odd ratio
	MAR	0.189	0.053	3.55	0.000	1.208
	Firm size	1.462	0.555	2,64	0.008	4.314
	Auditor Exp	-0.085	0.082	-1.03	0.304	0.919
	Auditor Ind	0.088	0.024	3,69	0.000	1.092
	Constant	-4.185	1.120	-3,74	0.000	0.015
	Prob > chi2	0.0000				

Source: Author's computation using STATA software

Table 3 displays the random-effects logistic regression model determined by the Hausman test. The overall random effect model, with a significance level of P<.01, indicates that the fitted random-effects logistic regression model is statistically significant at the 1% level. This suggests that audit quality is significantly linked to mandatory auditor rotation (MAR) and firm size, while considering auditor experience and auditor independence.

The coefficient estimates for the variables MAR, firm size, and auditor independence demonstrate a statistically significant positive impact on audit quality. This suggests that MAR, firm size, and auditor independence are more likely to contribute to improved audit quality, thus validating research hypotheses 1 and 2.

Figure 1 displays the coefficient plot of the random-effects logistic regression model. It is evident that the coefficient estimate of firm size has the greatest impact on audit quality, as indicated by its highest odd ratio value of 4.314. The MAR coefficient estimate also has a significant effect, with an odd ratio value of 1.208. In comparison with the other coefficient estimates in the model, these two coefficients have higher odd ratio values.

Figure 2 displays the model predictive margin plot, which illustrates the forecasted audit quality when the firm is audited by the Big 4 auditors. The prediction fell within the two 95% confidence intervals, indicating a favorable predictive plot.

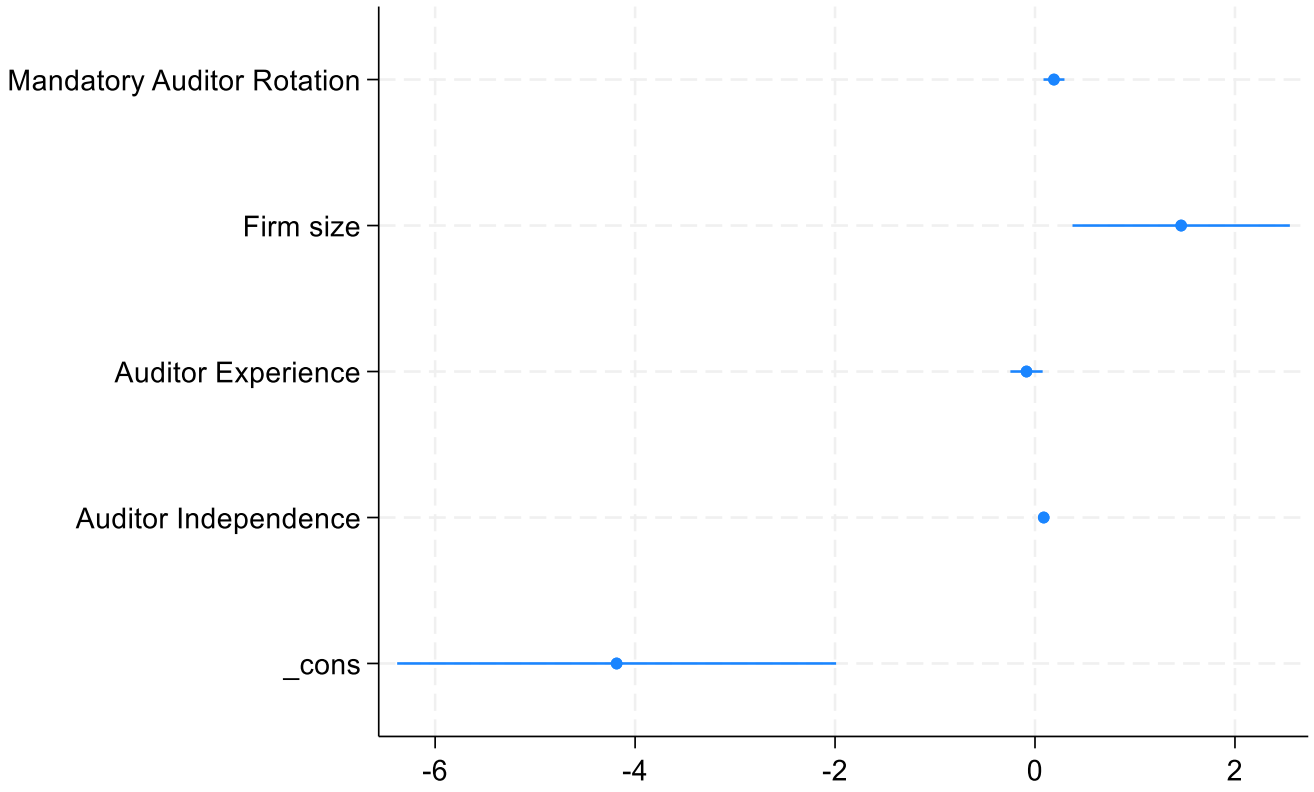

Figure 1: Model coefficient plot

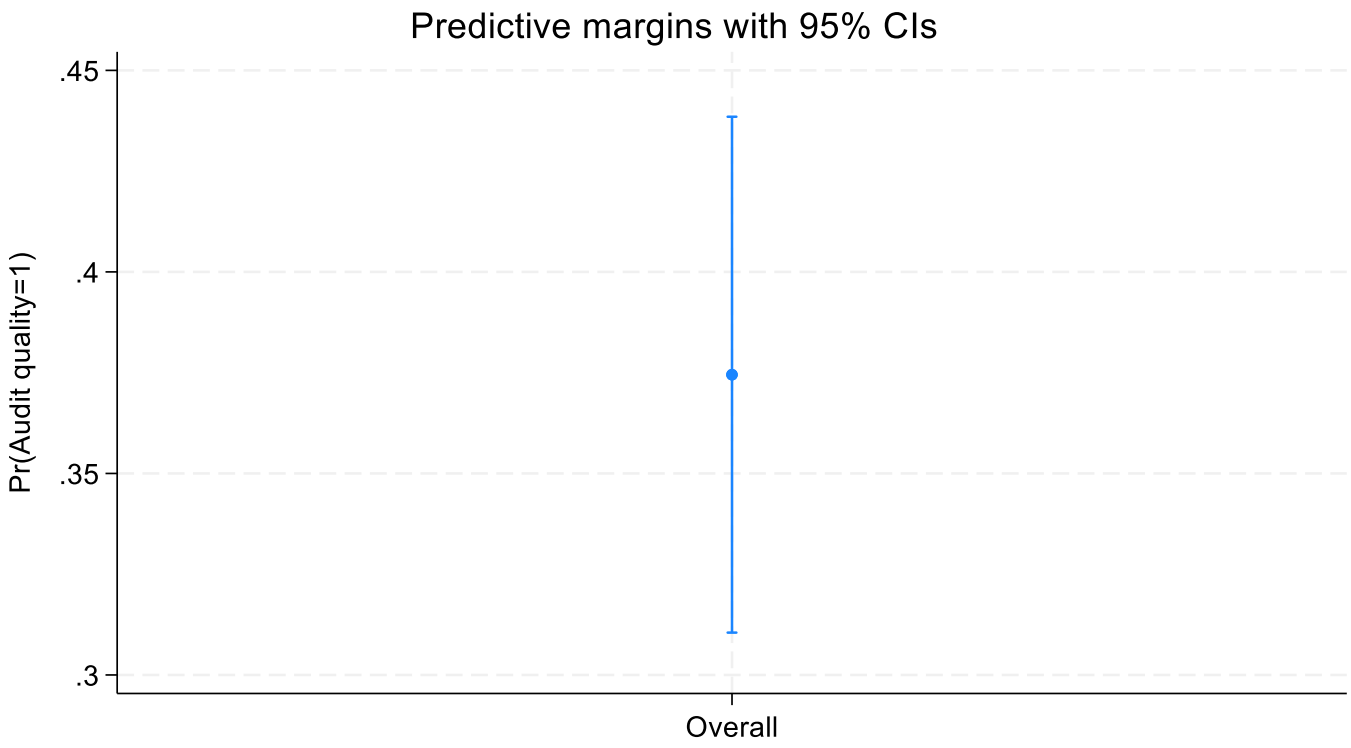

Figure 2: Model predictive margin plot

Discussion and Conclusion

Prior research has confirmed that compulsory rotation of auditors improves auditors' autonomy and leads to higher audit standards. This study examines the impact of mandatory auditor rotation (MAR) and firm size on audit quality, considering auditor experience and auditor independence, which have been neglected in previous studies. This research will significantly contribute to the current knowledge base.

The Hausman test was performed to evaluate the appropriateness of the random-effects logistic regression model. The findings demonstrated that the variables of MAR, firm size, and auditor independence exert a favorable and substantial influence on a firm's audit quality. These results indicate that a higher MAR, larger business size, and greater auditor independence are positively associated with improved audit quality, aligning with the findings of Kusi-Appiah (2020). Kusi-Appiah determined that compulsory auditor rotation improves the quality of audits by removing the potential for auditors to become too familiar with the firm through regular rotation. However, these findings contradict the research of Salehi et al. (2018), who found no substantial correlation between the length of time an auditor has been in their position and the quality of their audits.

Hence, it is crucial for Ghanaian firms and other firms in Western African communities, as well as emerging economies worldwide, to implement mandatory auditor rotation to enhance auditor independence and audit quality. This, in turn, will positively impact the firm's overall performance during the fiscal year.

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Appendix

STATA DO-FILE

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tsset Firms Year, yearly
xtlogit Auditquality MAR Firmsize AuditorExp AuditorInd, fe
estimates store fixed
xtlogit Auditquality MAR Firmsize AuditorExp AuditorInd, re
estimates store random
hausman fixed random
summarize MAR Firmsize AuditorExp AuditorInd
tabulate Auditquality
margins
marginsplot
coefplot
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