

Malaysian Government-Linked Companies and Earnings Management: The Interaction Effects of Internal and External Audit Governance Mechanisms on Earnings Management

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Abstract: This study aims to investigate the interactions between the audit governance mechanisms, such as the audit committee (AC), internal audit function (IAF), and external auditors (EA), and earnings management (EM) in Malaysia's government-linked companies (GLCs). It is one of the first papers to explore the complementary impact of external and internal corporate governance mechanisms on EM. This study used regression analysis on 340 firm-year-based observations with Malaysian GLCs available on the Bursa Malaysia main board during the period from 2009 to 2018. This study found that the interaction between the AC and the IAF is significantly and negatively correlated with EM. Similarly, the interaction between EA and the IAF negatively affects EM. However, the relationship between the AC and the EA interaction in lowering EM is negligible. One of the main conclusions of this study is that, in addition to ensuring the IAF's competency, the management of GLCs should establish and support the IAF, because of its critical position in assisting the roles of the AC and EA in minimizing opportunities for EM. The study provides empirical data on the effectiveness of the audit governance systems in Malaysian GLCs, which can aid the government, regulator, and other interested parties in their efforts to increase the GLCs' contributions to achieving orderly social and economic development in Malaysia.

Keywords: earnings management, government-linked companies, corporate governance, interaction effects

JEL Classification: M41, M42, M48

Introduction

Corporate governance in Malaysia's GLCs has come under increased scrutiny due to recent reports of financial irregularities within these organizations. These businesses include Lembaga Tabung Angkatan Tentera (LTAT), Felda Group, Tabung Haji, and 1Malaysia Development Berhad (1MDB), all of whose financial irregularities have resulted in significant financial losses for the Malaysian people (Khor, 2018). Menon (2018) has noted that there have been numerous significant bailouts of GLCs in recent years, with a potential cumulative value of up to RM85 billion. These financial irregularities are attributable to poor corporate governance (Eusoff, 2018), ineffective regulatory bodies (Haat, Rahman, and Mahenthiran 2008), agency conflict between owners and managers (Zgarni, Hlioui, and Zehri 2016), and the phenomenon of EM (Goncharov, 2005).

Most studies into EM practices in Malaysia focus on the top publicly listed companies (Rahman and Ali, 2006; Al-Absy, Ismail, and Chandren, 2019; Mohammad and Wasiuzzaman, 2020); few focus on GLCs. Using data from 2000 to 2013, Selahudin and Nawang (2015) found that Malaysian GLCs engaged in more EM practices, compared to non-GLCs. Nonetheless, GLCs have been transformed into prominent national institutions, and the majority have become well-known corporate entities at the regional level. The GLCs contribute to a substantial portion of the economic structure within Malaysia, with about 36% of Bursa Malaysia's market capitalization and 5% of the country's workforce (Menon and Ng, 2013). Therefore, it is very important to look into the topic of EM of Malaysia's GLCs in order to see whether the companies' financial performance is affected by their corporate governance practices.

Prior research recognizes the critical role played by internal bodies – the AC and IAF – and by external bodies – the EA – in forming governance mechanisms that help to achieve high quality financial reporting. The main board has delegated power to the AC to offer more reliability and accuracy in financial statements. The IAF and EA are both responsible for supporting the AC's primary role, which is to achieve better quality financial reporting (Al-Rassas and Kamardin 2015). The Institute of Internal Auditors (2017) has mentioned that the IAF has a crucial role in enhancing impactful governance within a company. This, therefore, has an important impact on the overall integrity and credibility of financial reporting. Based on the International Standards Auditing (ISA) -200, the primary goal of an audit is to establish its explicit perspective on financial statements (IFAC 2019). Zgarni et al. (2016) mentioned that the most prominent goal of external and internal corporate governance actors is to establish a higher overall financial reporting quality. Therefore, the primary interaction among these actors is essential for satisfying this goal.

There is a lack of research investigating the complementary impact of external and internal governance's functionality or mechanisms on EM (Davidson, Goodwin-Stewart,

and Kent, 2005; Al-Rassas and Kamardin, 2015). Davidson, Goodwin-Stewart, and Kent (2005) investigated the impacts of the board, the AC, EA and IAF on EM for 434 Australian companies. Al-Rassas and Kamardin (2015) explored the impacts of the AC, EA and IAF on EM using Malaysian-listed companies from 2009 to 2012. However, these studies have treated the AC, IAF and EA as independent monitoring mechanisms with regard to EM. Alves (2013) stated that it is not likely that they work individually in the corporate framework. Zgarni, Hlioui, and Zehri (2016) suggested that analyzing the overall governance system seems more practical, by simultaneously examining the complementary effects of these corporate governance functionalities. Therefore, it is crucial to investigate the interaction effects of these three parties, to assess whether they are complementary to each other in reducing opportunistic management behavior.

Limited research has been conducted to investigate the impact of corporate governance mechanisms on Malaysian GLCs. Notable studies by Mohamad et al. (2012) analyzed board and AC characteristics using data from 2003 and 2006, while Jamil and Nelson (2011) evaluated the relationship between AC and EM using data from 2003 to 2009. Bin and Yi (2015) delved into the relationship between board mechanisms and performance among 16 GLCs. In a more recent study, Alias et al. (2019) investigated the competency levels of internal auditors in detecting unethical practices among GLCs. Despite these existing studies, the interaction effect of audit governance mechanisms in Malaysia has been inadequately investigated so far, especially with a specific focus on GLCs. This paper ventures beyond the previous research, by investigating the effects of interactions between the AC, IAF and EA on EM among a sample of 340 Malaysian GLCs during the period from 2009 to 2018.

This study makes contributions in several ways. It adds to the existing literature by offering evidence on the interaction impact of external and internal governance functionality or mechanisms on EM. Furthermore, it examines corporate governance mechanisms and EM in the unique setting of Malaysian GLCs, which is less emphasized in prior studies. In addition, this study adds to the existing literature by using the resource dependence theory to discuss the interaction impacts among corporate governance mechanisms. Also, it offers empirical evidence to aid policymakers and regulatory bodies in making judgments regarding the interaction between governance mechanisms, by establishing and continuously enhancing the current regulations, guidelines and corporate governance codes.

The remainder of this study is organized as follows. The background of the GLCs in Malaysia is discussed in Section 2. Section 3 presents the literature review and the defined hypotheses. Section 4 outlines the research design, variable measurements and the research model. Section 5 discusses the empirical results. Finally, Section 6 concludes the study.

Background of the Study

Malaysian Code of Corporate Governance

In March 2000, the Malaysian Code of Corporate Governance (or MCCG) was first issued, representing a prominent milestone in terms of Malaysian corporate governance reform. The first MCCG covered various areas: the board of directors, directors' remunerations, shareholders, accountability, and audits (Ponnu and Karthigeyan, 2010). The code was then revised in 2007 to focus on independent directors and the AC, in order to ensure the reliable practice of corporate governance. Further revisions in 2012 aimed to strengthen the structure of the boards, and made recommendations regarding processes that firms should adopt, to help them embed correct corporate governance practices in their work culture. A new version of the code was released in April 2017 to supersede the earlier editions. A key focus of the code is the importance of building a solid working relationship and interaction between the AC, IAF and EA in the corporate governance process.

- (1) Under Practice 8.0: The AC should ask key questions to ensure whether the financial statements are generally consistent with the operational and other information when significant matters require judgment. In addition, the AC needs to offer advice on whether the financial statements show a fair and true perspective of the company's financial position and performance.
- (2) Under Practice 8.1: The responsibilities of the AC include communicating its views and concerns on related transactions to internal bodies as well as the EA. The AC should ensure there is coordination between internal auditors and the EA.

Malaysian GLCs

In its industrialization agenda after independence, the government has taken on a proactive role by launching state enterprises, later known as government-linked companies (or GLCs) (Ting and Lean 2011). The aim of establishing these GLCs is to resolve issues related to social development, while also achieving the economic goals laid out by the New Economic Policy (Hamid, 2011). PCG (2015) defines GLCs as companies that have a main commercial goal, whereby the government has a direct controlling stake. The government has the authority to assign management positions, contract rewards, strategies, financing, acquisitions, as well as divestment (Menon, 2017). The Malaysian government launched the 10-year GLC Transformation Program (GLCT) in response to efforts to improve GLC performance, with the goal of hastening Malaysia's social and economic development into that of a developed nation (PCG, 2015).

Although the 10-year GLCs Transformation Program (2004-2014) showed some positive changes in the GLCs' performance, it is still below the expected outcomes (The Star, 2022). According to the research division of Maybank Investment Bank, GLCs gen-

erally underperformed when compared to non-GLCs, which lowered the performance of the overall equity market (Aman, 2023). According to Isa and Lee (2016), some Malaysian GLCs have received criticism for their relatively subpar performance, as a result of operational and financial mismanagement problems that are reflected in a lower return on assets (ROA) and return on equity (ROE) figures. According to a recent Asia Sentinel report, some GLCs are suffering enormous losses, like the Kidzania investment, which has lost a total of RM 286.3 million (Hunter, 2023). The underperformance of the GLCs means that they must transform themselves to sustain their market competitiveness (PCG, 2015). Therefore, whether GLCs are performing better, or whether their improved performance is affected by earnings management, is still an open question that requires further research (Mohamad et al., 2012).

There have been few empirical investigations into the association between EM and corporate governance's functionality or mechanisms in GLCs in Malaysia. In an empirical work by Mohamad et al. (2012), the impacts of the board and the AC's characteristics toward EM were investigated by checking both GLCs pre- and post-transformation. The results indicated that no corporate governance mechanisms significantly affected the reduction of EM, except for the leadership structure and board meetings in post-transformation. Jamil and Nelson (2011) explored the link between the AC's characteristics as well as the financial reporting quality between the GLCs. With the exception of the AC's independence, the authors found that the AC's characteristics are not significantly linked to EM.

To date, there has been little discussion regarding the interaction effects of external and internal corporate governance mechanisms on EM in Malaysian GLCs. Hence, the complementary effects of the AC, IAF and EA are examined in this study, to determine whether corporate governance practices improve the GLCs' reporting quality.

Literature Review

EM and corporate governance

True and fair assessments of financial information are important for potential investors, who use the information to make rational and intelligent decisions about which firms they allocate resources to. However, EM occurs when managers utilize their judgment in financial reporting and in structuring transactions to change the financial reports to mislead certain stakeholders about the company's economic performance, or to impact contractual results that relate to documented accounting figures (Healy and Wahlen, 1999). Unlike fraud, EM involves selecting accounting strategies and figures that are in line with generally accepted accounting principles (or GAAP). Because accounting is subjective, using

judgment in a neutral approach without any intention of individual gain is not considered EM (Healy and Wahlen, 1999). Any companies that utilize EM operate within the legal limits of accounting manipulation (Rahman and Ali, 2006).

Within the theoretical model of the resource dependence theory, enterprises benefit from internal and external monitoring techniques with different degrees of knowledge and expertise. A solid corporate governance structure will enable effective monitoring of managerial decision-making and contribute to limiting EM actions (Al-Thuneibat, Al-Angari, and Al-Saad 2016). Agency theory emphasizes the critical role of corporate governance structures in supervising managerial behavior (Jensen and Meckling 1976). EM may indicate an agency problem, as management may manipulate the firm's profitability to obtain larger bonuses if the control processes are weak (Fama and Jensen 1983). The AC, IAF, and EA auditing functions act as monitoring mechanisms, limiting the risk in the financial reporting process and trying to improve the information flow among both managers and other stakeholders (Jensen and Meckling 1976). The auditing processes provide resources to improve the firm's internal controls and the integrity of its financial reporting (Pfeffer and Salancik 1978; Hillman and Dalziel 2003).

Interaction between AC and IAF

The AC has an essential role in evaluating the performance of the IAF, by ensuring the structure of the function has the ability to fulfill its responsibilities. Bursa Malaysia (2018) highlighted that the IAF is the “eyes and ears” of the AC, as it serves as a sounding board on deficiencies in the internal controls, and provides remedial advice to the AC. The IAF is the key line of defense of day-to-day management, and therefore is responsible for advising the AC on where it can minimize avoidable losses (Bursa Malaysia 2018).

It is crucial that the person responsible for the internal audit directly reports to the AC (Securities Commission Malaysia 2017). Based on MCCG 2017 Practice 10.1, the AC must ensure the assignment and removal, work scope, performance evaluation, as well as the defined budget for the IAF. Also, the IAF acts as a crucial source of advice for the AC in terms of weaknesses within internal procedures, to ensure the firm has suitable remedial strategies.

Prior works have suggested that the internal auditor must be linked with the AC in order to be successful. A study by Alzoubi (2019) showed that increased meetings between the AC and the IAF reduce the level of EM. In Palestine, the communication between the AC and the internal audit has significant effects on corporate governance (Sartawe and Shrouf 2017). The AC must check the internal audit activities and ensure its scope is adequate for good internal control (Scarborough, Rama, and Raghunandan 1998). Furthermore, García, Barbadillo, and Pérez (2010) found a significant negative interaction

between the AC and the internal audit on EM in Spanish companies. García, Barbadillo, and Pérez (2010) explained that the relationship between the AC and the internal auditor is necessary for effective internal control, thus increasing financial reporting quality. The AC must supervise the financial reporting process by overseeing the IAF, to ensure a sound internal control environment.

Agency theory suggests that coordination between the AC and IAF helps to monitor people's roles in the firm, thereby decreasing the likelihood of EM. Moreover, resource dependence theory explains that the IAF can offer valuable resource-dependence contributions to the AC, to enhance the financial reporting process (Udayasankar 2008; Hillman, Withers, and Collins 2009).

It is expected that the IAF can moderate the relationship between the AC and EM. Therefore, the first hypothesis was proposed as follows:

H1: The interaction of the AC and IAF is negatively associated with EM.

Interaction between AC and EA

The AC and EA both play a role in ensuring the production of high-quality financial reports that aid decision-making, maintain the company's reputation, and avoid legal liabilities (Alves 2013). Regulators expect the AC to act as the "bosses" of the EA (Compernelle 2018). Under MCCG 2017 Practice 8.3, the AC must review the audit plan, the evaluation of internal-based controls, and the audit report with the EA. The AC is required to perform a yearly evaluation on the EA' overall performance and undertake follow-up procedures. Furthermore, the AC must develop a list of audit quality indicators to monitor the effectiveness of the external audit process (Securities Commission Malaysia 2017).

According to Bursa Malaysia (2018), audit quality is not within the sole purview of external oversight bodies, but also the responsibility of the AC, as they must select and evaluate the EA. For instance, the Bursa Malaysia Listing Requirements stated that the AC must proactively oversee the external audit process (Bursa Malaysia 2018). Furthermore, the AC is encouraged to consult the EA on significant adjustments from the external audit if the need arises. A private meeting between the AC and EA must be established to discuss key audit challenges. The task of the AC includes meeting with the EA to discuss audit-related matters as well as proposing and handling the coordination of the audit work with the audit staff (Bursa Malaysia 2018).

The interaction between the AC and EA improves financial reports that are published and seen by the stakeholders (Mitchell, Singh, and Singh 2008). In Tunisia, the combined effect of the AC and the external audit shows a significant result on discretionary accruals, as this combination limits opportunistic management behaviors, such as EM (Zgarni,

Hlioui, and Zehri 2016). The AC has the task of overseeing the external audit procedure in order to enhance audit quality. A higher audit quality helps to restrict management's discretion over accounting issues, and thus results in higher financial reporting quality. In a study of Portuguese companies, Alves (2013) provides evidence regarding the interaction between the EA and AC, which suggests the two parties complement each other's roles in curbing EM. The AC has incentives to ensure high audit quality to reduce the litigation risk and loss of reputation (Goodwin-Stewart and Kent 2006a). Sulaiman (2017) explained that an effective AC can monitor the EA by securing appropriate resources for the audit.

Based on agency theory, the AC and EA are the most essential monitoring mechanisms. Thus, the interaction between these parties can reduce the conflict of interests and mitigate EM (Jensen and Meckling 1976). Resource dependence theory suggests that the AC possesses a distinct incentive and ability to demand a higher external audit quality, to achieve higher quality financial reporting (Mustafa, Che-Ahmad, and Chandren 2018). Hillman and Dalziel (2003) stated that the external audit's quality will be improved when the AC becomes more resourceful and plays a solid resource-dependence role. These two theories confirm that the interaction between the AC and EA can increase the quality of financial reporting. The EA is expected to moderate the relationship between the AC and EM. Thus, the second hypothesis was proposed:

H2: The interaction of the AC and EA is negatively associated with EM.

Interaction between EA and IAF

The EA are responsible for understanding the IAF and the related internal audit activities to conduct effective audits of the financial statements. According to ISA 610, the EA may use the work of the IAF to acquire audit evidence, and also offer assistance under its supervision (Malaysian Institute of Accountants 2018a). ISA 315 explains that effective communication between internal and external auditors may create an environment wherein the EA can be informed of critical events that can potentially impact the audit procedure. Moreover, the experience of the IAF can help the EA better understand the entity and its surrounding environment, and assess the associated risks of material misstatements (IAASB 2019).

Bursa Malaysia (2018) noted that the lack of coordination between the internal auditors and the EA can lead to gaps in the audit's coverage. Thus, the EA should coordinate with the internal auditors to avoid the duplication of efforts to optimize audit efficiency. The synergy between the IAF and EA has been discussed in previous research, which concluded that the two parties complement each other (Goodwin-Stewart and Kent 2006b). Singh and Newby (2010) mentioned that firms that utilize internal and external audits

are more likely to improve their operating environment. The researchers also mentioned that firms should focus on external and internal auditing, to improve the integrity of their financial reporting.

Munro and Stewart (2011) claimed that the EA are more likely to utilize internal audits for control evaluation processes than an extensive test of balance. Nevertheless, ISA 610 requires the EA to evaluate the objectivity and competence of the IAF before using their work. Therefore, the degree to which EA depend on internal audits is contingent upon the IAF's quality (Zain, Zaman, and Mohamed 2015). A high-quality IAF remains vital in a strong corporate governance culture, in order to assist the EA in improving the quality of financial reporting.

Based on agency theory, the interaction between the EA and the IAF ties the contractual relationships among principals and agents and results in lower EM (Jensen and Meckling 1976; Adams 1994). Furthermore, resource dependence theory suggests that internal auditors contribute their knowledge and understanding of a firm's internal control environment to assist the EA in conducting an effective audit, and thus increase the financial reporting's quality (Udayasankar 2008; Pfeffer and Salancik 1978). The resources provided by the IAF – including overall risk, control, and the governance environment of firms – are sensitive to the EA when making audit-planning decisions (Munro and Stewart 2011). It is expected that the IAF can moderate the relationship between the EA and EM. Thus, the third hypothesis was proposed:

H3: The interaction of the EA and IAF is negatively correlated with EM.

Research Design

Sample selection

To date, there are 47 GLCs listed on the Bursa Malaysia. However, the final sample utilized in this work consisted of 38 GLCs after excluding finance-related companies, which have different characteristics and operate in specific legal environments (Mohamad, Rashid, and Shawtari 2012). This study covered 10 years from 2009 to 2018 for several reasons. First, the MCCG was revised in 2012 and 2017 during those 10 years. Second, 2009 was an appropriate year to start data collection as it was the year that listed companies were first required to disclose the cost of their IAF, following the mandate by Bursa Malaysia (Al-Rassas and Kamardin 2016).

EM measurement

The Jones model has been extensively adopted in the literature on EM and is arguably the optimal framework for testing EM (Bernard and Skinner 1996). This study used a cross-sectional variation of a modified variant of the Jones model by Dechow, Sloan, and Sweeney (1995) to measure the discretionary accruals. After comparing it to five widely adopted models for discretionary accruals, the modified Jones model was deemed the optimal model for this type of investigation (Dechow, Sloan, and Sweeney 1995).

Based on prior work, this study used a variant of the cross-sectional method. According to Jaggi, Leung, and Gul (2009), and Klein (2002), a minimum of 10 different observations in every industry on a yearly basis are required to measure the coefficients for the discretionary accruals. This study comprised a sample of 38 GLCs, resulting in a relatively small number of companies in each industry. Due to the limited number of samples in each industry, conducting an analysis on an industry-specific basis might not produce statistically significant findings or meaningful insights (Ecker et al., 2013). To address this limitation, industry dummies were included in the regression to control for industry effects, following the prior studies by Kusnadi et al. (2015) and Bradbury et al. (2006). This approach ensured that no sample was eliminated from the analysis due to insufficient data within specific industries.

The framework segregated total accruals (or TACC) into non-discretionary accruals (or NDACC) and discretionary accruals (or DACC). Firstly, the total accruals were computed using the difference from the net income (before any extraordinary items) as well as the operating cash flow. The coefficient's parameters ($\alpha_1, \alpha_2, \alpha_3$) were measured using ordinary least squares regression for the years considered, as shown in Equation (1):

$$\frac{TACC_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + IND_{jt} + \varepsilon_{it} \quad (1)$$

Where TACC_{it} represented the accruals for firm *i* during year *t*; A_{it-1} represented the assets for *i* for the end of the previous year; ΔREV_{it} represented the change in revenue for *i* for year *t* – 1 as well as *t*; ΔREC_{it} represented the change in the receivables for *i* for year *t* – 1 as well as *t*; PPE_{it} represented the gross property, plant as well as equipment for *i* during year *t*; IND_{jt} represented the industry dummy for industry *j* during year *t*.

Second, using the coefficient parameters estimated in Equation (1), NDACC was computed for every sample firm-year with the modified Jones variant model, as shown in Equation (2):

$$NDACC_{it} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + IND_{jt} \quad (2)$$

Finally, DACC was computed using the difference between TACC as well as NDACC. The high level of DACC reflected a high EM within the company. DACC was computed as shown in Equation (3):

$$DACC_{it} = TACC_{it} - NDACC_{it} \quad (3)$$

EM can be income-decreasing or increasing, and thus the absolute value of DACC was employed in this study. This was in line with previous research, which showed that absolute discretionary accruals are a suitable proxy (Oktavia et al., 2019). In essence, a high value represents a high EM.

Independent and control variables measurement

AC effectiveness measurement

Audit committee effectiveness (or ACE) was a composite variable consisting of four variables, with audit committee size (or ACSIZE), audit committee financial expertise (or ACFIN), audit committee independence (or ACIND), as well as audit committee meeting (or ACMEET). ACSIZE was estimated based on the number of AC members (García, Barbadillo, and Pérez 2010). ACFIN was estimated based on the financial experts available in the AC, compared to the number of members in the AC (Nehme and Jizi 2018). ACIND was estimated as the independent committee members, compared to the AC members (Rahman and Ali 2006). ACMEET estimated the total number of AC meetings that occurred throughout the year (Kusnadi et al. 2015).

According to Song et al. (2013), simple averaging is typically applied for defining a composite variable. First, the four variables (ACSIZE, ACFIN, ACIND, and ACMEET) were transferred to standardized z-scores. Such standardization was crucial, as the four variables had different variances, so any original variable did not unduly impact the composite variable with a relatively large variance (Song et al. 2013). Second, ACE was created by adding the standardized z-scores of all the variables.

IAF quality measurement

Internal audit function quality (or IAFQ) was a composite variable of two variables, including the size of the IAF (or IAFSIZE) and the sourcing arrangement of the IAF (or IAFSOUR). IAFSIZE was computed as a natural logarithm of the internal audit cost for each year (Yasin and Nelson 2012). IAFSOUR was measured using a dummy variable, which took 1 if the firm performs a full in-house IAF, and 0 if not (Al-Rassas and Kamarudin 2015). First, these variables were transformed into standardized z-scores. Second, the IAF quality (IAFQ) was defined by adding the standardized z-scores of the two variables considered (i.e. IAFSIZE and IAFSOUR).

External audit quality measurement

The external audit quality (or EAQ) was a composite variable of the four variables, comprising the size of the audit firm (or BIG4), audit fees (or AFEES), non-audit services fees (NAS), as well as audit partner tenure (or APTEN). BIG4 was determined using a dummy variable that took 1 value if Big 4 auditors audit the firm, or 0 otherwise (Park and Choi, 2023). AFEES was calculated as a natural logarithm of the annual external audit fees (Martinez and Moraes 2017). NAS was calculated as a ratio between non-audit services fees to fees paid to the auditors (Frankel, Johnson, and Nelson 2002). APTEN was calculated as the consecutive years in which the audit report had been signed by the original audit partner (Azizkhani, Monroe, and Shailer, 2013).

Firstly, the four variables, BIG4, AFEES, NAS, and APTEN, were transferred to standardized z-scores. Secondly, the standardized z-scores of NAS and APTEN were multiplied by (-1). A higher value of NAS and APTEN indicated lower auditor independence and lower external audit quality. Thirdly, the EAQ was defined by adding the standardized z-scores of the variables considered.

In addition, this study included five control variables to monitor the impact of firm characteristics, comprising leverage (LEV – total liabilities over total assets), return on assets (ROA – the yearly net profit of individual firm prior to tax over total assets), negative operating cash flow (NEGCF – a dummy variable that was 1 if the company had a negative operating cash flow, or 0 otherwise.), sales growth (SGR – annual sales growth (current year sales – prior year sales divided by prior year sales) and firm loss (LOSS – a dummy variable that was 1 if the company had a negative net income, or 0 otherwise) (Na et al., 2023; Park and Choi, 2023).

Research model

The following model was developed to investigate the interaction effects of the AC, IAF and EA and their effects on EM.

$$DACC_{it} = \beta_0 + \beta_1 ACE_{it} + \beta_2 IAFQ_{it} + \beta_3 EAQ_{it} + \beta_4 ACE * IAFQ_{it} + \beta_5 ACE * EAQ_{it} + \beta_6 EAQ * IAFQ_{it} + \beta_7 LEV_{it} + \beta_8 ROA_{it} + \beta_9 NEGCF_{it} + \beta_{10} SGR_{it} + \beta_{11} LOSS_{it} + \varepsilon_{it}$$

Where β_0 was the constant; β_1 to β_{13} was the coefficient; i was firm; t was year; and ε was the error term.

Results and Discussion

Descriptive statistics

Table 1 provides the statistics for all the variables considered. This study's average audit committee size (ACSIZE) was 3.597, whereas the maximum and minimum values were recorded at three and five, respectively. On average, 43.2% of directors on the ACs possessed accounting and financial expertise, and 80% of ACs' members were independent directors. This study's frequency of audit committee meetings (ACMEET) showed a mean value of 6.17 and a median value of six, which was higher than Bursa Malaysia's recommendation to hold at least four meetings yearly.

On average, the natural logarithm of the IAF's costs was recorded at 13.407 (RM3,663,813). In this study, 234 firm-year observations (68.8%) established a full in-house IAF, while 106 observations (31.2%) did not have a full in-house IAF. Three hundred and twenty-one firm-year observations (94.4%) were audited by Big 4 firms, while only 19 (5.6%) were audited by non-Big 4 firms. On average, the natural logarithm of the audit fees was 13.64 (RM2,156,792) among the sample firms, ranging from RM35,000 to RM28,000,000. The descriptive statistics showed that most of the sample firms followed the recommendation of Bursa Malaysia, which maintains that the non-audit fee ratio should be below 50%. The average audit partner tenure (APTEN) was 2.376 years, with a maximum and minimum of one year and five years. Before December 15, 2018, the Malaysian Institute of Accountants (2018b) stated that external audit partners were allowed to serve in the same role for a maximum of five years.

The firm-year average leverage (LEV) indicated that 46.6% of the sample's total assets were debt financing. The return on assets (ROA) for the sample firms ranged from -29.6% to 18.1%, with an average of 4.7%. Furthermore, 45 observations (13.2%) had a negative operating cash flow (NEGCF) in their financial year, while 295 observations (86.8%) had a positive operating cash flow in their financial year. The average sales growth (SGR) was 7.4%, ranging from -70.8% to 215.7%. The data also demonstrated that some samples had a negative figure for sales growth; this meant the current year's sales revenue was lower than the prior year. Forty-one observations (12.1%) recorded net losses in their financial year, while 299 observations (87.9%) recorded a net income in their financial year.

Table 1. Descriptive statistics (N=340)

Variables	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
DACC	0.037	0.023	0.040	0.000	0.197	2.052	8.247

Variables	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
AC							
ACSIZE	3.597	4.000	0.642	3.000	5.000	0.605	2.388
ACFIN	0.432	0.333	0.172	0.2	1.000	0.902	3.186
ACIND	0.803	0.750	0.154	0.333	1.000	-0.118	2.878
AC-MEET	6.170	6.000	2.397	2.000	15.000	1.531	6.134
ACE	0.000	-0.214	2.078	-5.462	5.776	0.484	4.853
LAF							
IAFSIZE	13.407	13.864	3.158	0.000	17.497	-2.822	12.734
IAF-SOUR	0.688	1.000	0.464	0.000	1.000	-0.813	1.661
IAFQ	0.000	0.786	1.778	-5.728	1.966	-1.426	4.741
EA							
BIG4	0.944	1.000	0.230	0.000	1.000	-3.867	15.954
AFEES	13.643	13.447	1.321	11.471	16.981	0.393	2.503
NAS	0.262	0.234	0.207	0.000	0.921	0.829	3.320
APTEN	2.376	2.000	1.267	1.000	5.000	0.549	2.205
EAQ	0.000	0.143	1.872	-5.607	3.359	-0.886	5.032
Control Variables							
LEV	0.466	0.484	0.158	0.132	0.869	-0.151	2.663
ROA	0.047	0.050	0.072	-0.296	0.181	-2.001	10.255
SGR	0.074	0.047	0.346	-0.708	2.157	2.781	18.434
NEGCF	0.132	0.000	0.339	0.000	1.000	2.170	5.708
LOSS	0.121	0.000	0.326	0.000	1.000	2.330	6.430

Based on the correlation matrix (see Table 2), there was no correlation coefficient higher than ± 0.8 among variables. Therefore, multicollinearity did not exist and would not lead to bias in the regression analysis (Gujarati and Porter 2009). A significant negative correlation was found between EM (DACC) and IAF (IAFQ) at a significance level of 1%. Moreover, DACC was significantly correlated with some control variables, including leverage (LEV), return on assets (ROA), negative operating cash flow (NEGCF), and firm loss (LOSS).

Table 2. Pearson Correlation Matrix

	DACC	ACE	IAFQ	EAQ	LEV	ROA	NEG-CF	SGR	LOSS
DACC	1.000								
ACE	-0.051	1.000							
IAFQ	-0.132***	0.467***	1.000						
EAQ	-0.054	0.078	0.373***	1.000					
LEV	0.138***	0.116**	0.150***	0.069	1.000				
ROA	-0.311***	-0.063	0.123**	0.099*	-0.484***	1.000			
NEGCF	0.291***	0.023	-0.132***	-0.210***	0.079	-0.222***	1.000		
SGR	-0.059	0.049	-0.063	-0.107**	-0.114**	0.152***	0.033	1.000	
LOSS	0.279***	0.053	-0.116**	-0.179***	0.262***	-0.697***	0.229***	-0.251***	1.000

Notes: Significant at the ***0.01 level, the **0.05 level, and the *0.10 level.

Regression analysis

Consistent with the prior studies, this study applied pre-estimations to test the appropriateness of the econometric model used. Based on Table 1, the skewness and kurtosis of the variables were applied to examine the normality of the data. As a rule of thumb, Rahman and Ali (2006) have stated that data are considered normal if the skewness is in the range of ± 1.96 , and kurtosis is in the range of ± 2.00 . In this study, the variables of ROA and SGR recorded a high kurtosis value of 10.255 and 18.434, respectively. The dependent variable, DACC, recorded a relatively high kurtosis value of 8.247. Thus, these variables violated the assumptions of normality in this study. Moreover, the Shapiro-Wilk assessment was carried out to investigate the normality of the model's residuals. The result ($p = 0.00$) indicated that the normality assumption was not fulfilled. Notwithstanding, due to the larger size of the cross-section and time-series dimensions of the panel dataset, the normal distribution of data for the panel dataset was not required (Levin et al., 2002). In addition, the statistical approaches used to test homoscedasticity were Breusch and Pagan's (1979) and White's (1980) tests. The results of these two tests ($p = 0.00$) indicated that heteroscedasticity problems were present. Additionally, serial correlation was examined using Wooldridge's (2002) test, as this test could be applied in the context of panel data. The results showed non-significant p-values ($p = 0.80$, $p > 0.05$) in all the models, and thus the data did not suffer from a serial correlation issue. Due to the presence of heteroscedasticity, this study utilized a generalized least squares (GLS) regression to correct the problems of non-normality, heteroscedasticity, and autocorrelation in the time series data (Alzoubi 2018).

Hausman's (1978) test was used to distinguish the most appropriate model between fixed effects or random effects for the panel data. The Hausman test showed a p-value of 0.124, 0.157, 0.344 and 0.716 for models 1 to 4, respectively. The results indicated

that the null hypothesis of the Hausman test should be accepted, and therefore, the random effects GLS regression would be more appropriate.

Four models were presented to investigate the interaction effects of corporate governance on EM. Model 1 investigated the interaction of the AC and IAF, while model 2 investigated the interaction of the AC and EA. Model 3 investigated the interaction effects of the EA and IAF on EM. Model 4 included all the governance mechanisms and their interaction effect on EM. Table 3 displays the random effects GLS regression models for EM (DACC). All the models were significant with R2 values of 18.09%, 16.02%, 17.26%, and 19.55%, respectively.

Table 3. Random effect GLS regression results

Dependent Variable: DACC									
Model		(1)		(2)		(3)		(4)	
Variables	Expected Sign	Coefficient value	z value	Coefficient value	z value	Coefficient value	z value	Coefficient value	z value
ACE	-	-0.0005	-0.38	-0.0014	-1.22			-0.0003	-0.28
IAFQ	-	-0.0033	-1.93**			-0.0034	-2.14**	-0.0046	-2.53***
EAQ	-			0.0009	0.72	0.0013	1.04	0.0013	1.00
ACE*IAFQ	-	-0.0012	-2.47***					-0.0012	-2.26**
ACE*EAQ	-			-0.0005	-0.86			0.0001	0.05
EAQ*IAFQ	-					-0.0012	-1.96**	-0.0012	-1.82*
LEV	+	0.0082	0.50	-0.0009	-0.05	-0.0025	-0.14	0.0019	0.11
ROA	-	-0.1132	-2.54***	-0.1263	-2.82***	-0.1248	-2.76***	-0.1185	-2.64***
NEG-CF	+	0.0222	3.58***	0.0246	3.88***	0.0235	3.73***	0.0226	3.58***
SGR	+	-0.0008	-0.14	0.0007	0.12	0.0007	0.12	0.0010	0.16
LOSS	+	0.0063	0.71	0.0077	0.85	0.0069	0.77	0.0071	0.80
Constant		0.0367	3.88***	0.0391	4.02***	0.0414	4.15***	0.0410	4.20***
R ²		18.09%		16.02%		17.26%		19.55%	
Wald Chi ²		60.45***		51.43***		55.66***		64.09***	
N		340		340		340		340	

Notes: Significant at the ***0.01 level, the **0.05 level, and the *0.10 level.

In relation to H1, the interaction of the AC and IAF was negatively correlated with EM. The interaction variable (ACE*IAFQ) was significantly and negatively related to EM at the 1% and 5% levels. The audit committee's effectiveness (ACE) recorded a negative and non-significant relationship with EM. After being moderated by the internal audit function's quality (IAFQ), ACE significantly and negatively impacted EM. Thus, the results support H1 in this study, which found that the synergy between an effective AC and

high IAF quality would significantly reduce the level of EM. This result is in line with the results by García, Barbadillo, and Pérez (2010) in the context of Spanish companies. This implies that an effective AC will reduce the EM when firms have a high-quality IAF. It also indicates that a high-quality IAF provides better assistance to the AC in monitoring the financial reporting procedure.

A high-quality IAF can be considered as a value-added service to the AC. The negative relationship matched with their usual duties. The AC is responsible for monitoring the internal audit and supporting the independence, competence, and budget for the internal audit. The IAF needs to build a competent function to align with the corporate governance needs, and communicate the findings of the analysis and audit to the AC (Rittenberg 2016). This suggests that the collaboration between these two parties could limit opportunistic management behavior and thus lead to higher financial reporting quality.

Hypothesis 2 stated that the interaction between the AC and EA is negatively associated with EM. Based on Table 3, the ACE and the external audit quality were not significantly correlated to EM. This study found no significant correlation between external audit quality (EAQ) and EM. Further, the results found a non-significant relationship between the interaction variable (ACE*EAQ) and EM; thus, this study failed to support H2. This unanticipated finding indicates that the combination of an effective AC and high external audit quality does not have any effect on EM. This contradicts normal expectations, which dictate that they should monitor the financial reporting procedure.

In contrast to the prior studies by Alves (2013) and Zgarni, Hlioui, and Zehri (2016), this study found no evidence between the interaction of ACE, EAQ and EM in the context of Malaysian GLCs. A possible explanation for this result is that the purported benefits of coordination between the AC and EA may be less than anticipated by policy-makers and regulators. During his study of French companies, Compennolle (2018) found that the EA believed they did not require the AC's supervision in order to be trusted professionals. The EA expressed that the AC's members cannot challenge them in terms of their professionalism. In addition, the EA expressed that the AC cannot request information from them, as they felt the AC was less independent compared to them (Compennolle 2018). Thus, in practice, the relationship between the AC and the EA may not meet the regulators' expectations.

With regard to H3, the interaction between the EA and IAF was negatively associated with EM. The interaction effect of the EA and IAF (EAQ*IAFQ) was found to be significantly associated with discretionary accruals at the 5% and 10% levels, respectively. The negative coefficients were observed and implied that the EAQ and IAFQ appearing jointly had a negative impact on EM. This shows that the simultaneous presence of high quality external and internal audits will significantly decrease the likelihood of EM.

It is expected that the IAF moderates the relationship between the EA and EM. The relationship between the EAQ and EM showed a positive coefficient and was not significant at any conventional level. After being moderated by IAFQ, the external audit quality significantly and negatively impacted EM. This implies that a high quality external audit leads to lower EM when firms have a high-quality IAF.

These results are in line with the prior work, which found that the EA and IAF are complementary to each other (Goodwin-Stewart and Kent 2006b; Singh and Newby 2010). This study confirms that the interaction between these two parties could decrease the likelihood of EM, and increase the quality of the financial reporting by Malaysian GLCs. The negative interaction effect could be attributed to the fact that a high-quality IAF induces a greater EA' dependence on the internal auditors' work. A high-quality IAF provides a better understanding of the company's internal control environment and financial reporting processes, to assist the EA in carrying out their audit. Thus, the EA can potentially reduce the testing level and better solve prominent accounting problems (Zain, Zaman, and Mohamed 2015).

Among the control variables, the return on assets (ROA), and negative operating cash flow (NEGCF) have a significant relationship with EM. The negative coefficients between ROA and discretionary accruals were observed. These results are in line with the results by Abdallah (2018), who suggested that firms with profitability difficulties and external financing needs have more incentive to become involved in EM. Furthermore, firms with a negative operating cash flow are more likely to become involved in EM, to send positive signals to investors. This result is in line with the prior studies, which show positive associations between negative operating cash flow and EM (Bédard, Chtourou, and Courteau 2004; Albersmann and Hohenfels 2017).

Conclusion

Three main conclusions can be derived from this study concerning the interaction impacts of external and internal audit corporate governance mechanisms on earnings management in Malaysian GLCs. First, an effective AC and a high-quality IAF occurring jointly can decrease the management's incentive to become more deeply engaged in EM. This indicates that a high-quality IAF moderates the relationship between the AC and EM. Second, the interaction of the IAF and EA leads to an improvement in earnings quality. This implies that a high-quality IAF moderates the relationship between the EA and EM. Third, contrary to expectations, there is an insignificant interaction effect between the AC and the EA on EM. This indicates that the relationship between the AC and the EA does not guarantee the anticipated advantages. Overall, the present study highlights evidence

of the complementary roles of the IAF in curbing EM. This research suggests that the IAF significantly moderates the relationship between the AC, EA, and EM. Similar to the observations made by Hassan, Hijazi, and Naser (2017), the complementary effects of corporate governance mechanisms are evident in this study. Based on the resource dependence theory, the results show that firm governance mechanisms can potentially result in the generation of specific resources to assist a firm in achieving its key strategic objective – financial reporting quality.

This research has practical implications for policymakers and companies concerned with corporate governance contributions to ensure financial reporting quality. This study highlights the positive complementary effects of corporate governance mechanisms. Thus, regulators and companies should focus on directing and strengthening the interfaces between/among the governance mechanisms to achieve its expected benefits. Next, this study specifically focuses on corporate governance in Malaysian GLCs. The findings contribute additional evidence to the government's regulatory bodies, such as the Putrajaya Committee, in assessing the contribution of corporate governance mechanisms to attaining high quality financial reporting among Malaysian GLCs. The results of this study could be helpful to the Putrajaya Committee in forming specific policies or programs for GLCs to maintain their business competitiveness.

This study comes with some limitations. First, the sample applied relates only to Malaysian GLCs. Therefore, the results of this study cannot be generalized to other firms listed on Bursa Malaysia. Second, the conclusion of this study may not be generalized to other nations with different regulated markets, as GLCs in Malaysia are defined differently compared to GLCs originating in other countries. Nevertheless, this study could offer useful findings to developing countries with similar market regulations. Finally, this study only examines the interaction effects of three key governance mechanisms; it may be the case that other mechanisms, such as the board of directors, play a role in reducing earnings management practices. Moreover, future research is necessary to gain a more substantive understanding of the nature and quality of the interactions between external and internal audit corporate governance mechanisms in GLCs. Additionally, this study utilizes only one proxy measure of accounting-based earnings quality; future research may use alternative measures of earnings quality.

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