Earnings quality and audit attributes in high concentrated ownership market

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Abstract

Purpose – *The purpose of this study is to examine the effect of the audit committee (AC) independence, financial expertise, internal audit function, audit quality and ownership concentration on earnings quality (EQ) and, consequently, ascertain whether the AC's independence and financial expertise has a moderating effect on the relationship between internal audit function and EQ.*

Design/methodology/approach – *The study sample is 508 firms listed on the Main Market of Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange) for the years 2009 to 2012. EQ was measured using two modified Jones models of discretionary accruals.*

Findings – *The findings reveal that the independence of AC and investment in internal audit function, as well as the Big4 audit firm, are related to greater EQ. Ownership concentration is found to be associated with lower EQ. The study provides evidence that AC's independence moderates the relationship between internal audit function (investment in and sourcing arrangements of internal audit function) and EQ. It also shows that AC's financial expertise moderates the relationship between sourcing arrangements of internal audit function and EQ.*

Practical implications – *This study extends the prior related literature by examining the AC's independence and financial expertise as moderating variables on the relationship between internal audit function and EQ.*

Social implications – *Policymakers might use the findings regarding EQ in relation to governance practices, to recognize the important roles played by the AC's independence and financial expertise on the effectiveness of internal audit function with EQ.*

Originality/value – *This study uses the agency theory and resource dependence theory to provide empirical evidence on the impact of internal audit function and AC on EQ in the ownership concentration environment.*

Keywords *Malaysia, Ownership concentration, Earnings quality, Audit committees, Discretionary accruals, Internal audit function*

Paper type *Research paper*

1. Introduction

The world financial crisis emphasised and drew attention on the importance of transparency for promoting fair competition, investment and improving confidence on the public and corporate sectors' accountability (Nam and Nam, 2004). Therefore, the failures of publicly known businesses, such as Enron, WorldCom and Parmalat, among others, have shed light on corporate governance reforms on a global scale (Kim, 2008). Special attention has been given to key players in the corporate governance, such as the effectiveness of the audit committee (AC), internal audit and external audit quality. The ultimate objective of corporate governance is to produce reliable financial reports, upon which the investment decisions can be taken to produce sufficient returns (Bin-Zulkafli *et al.*, 2007). According to Klein (2002), effective corporate governance is required to reduce the opportunistic behaviour of managers to manage earnings and would lead to the improvement in financial reporting quality.

JEL classification – M41, M48, G34, G38

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Generally speaking, earnings management (EM) is evidenced by earnings quality (EQ), where higher EM leads to lower EQ and vice versa. Management gets involved in EM for several reasons, including to minimize political costs (Warfield *et al.*, 1995), to steer clear of default in debt covenant (Klein, 2002; Davidson *et al.*, 2005) and to maximize manager's wealth (Radzi *et al.*, 2011). There has been increasing investors' concern over EM following the major accounting scandals, and for this reason, a great demand for EQ is notable for the purpose of improving the quality of financial reporting (Bedard and Johnstone, 2004). Specific aspects like discretionary accruals (DAs) have garnered attention as significant EQ indicators. In this regard, high EQ and transparency in financial reporting and in auditing are all significant in obtaining the confidence of stakeholders. Based on the agency theory view, the internal monitoring mechanisms, such as the AC and internal audit function (IAF), are considered as important monitoring mechanisms to safeguard the interests of the shareholders.

During the adoption and reinforcement of corporate governance practices, the East Asian countries (including Malaysia) have experienced certain problems, as the economies of these countries have particular characteristics. For example, the level of ownership is highly concentrated, the government intervenes excessively, legal systems and enforcement are weak, low quality of information and legal structures and institutions are not well developed, all of which pose particular and challenging difficulties for the enhancement of effective governance practices (Hashim, 2009; Nam and Nam, 2004). In the case of Malaysia, a series of revised corporate governance codes was introduced to improve the corporate governance practices (MCCG, 2000, revised MCCG 2007, and MCCG 2012).

The ownership structure in Malaysian listed companies may also have contributed to this crisis (Nam and Nam, 2004). According to Thillainathan (1999), shareholdings in Malaysian corporations are often concentrated via cross-holdings and a pyramid structure, where the controlling shareholders can be individuals or families having over 50 per cent ownership, which constitutes a scenario that could cause deficiencies in corporate governance. Claessens *et al.* (2000) found that Malaysia ranks the third out of the nine East Asian Countries in terms of concentration of ownership control.

Previous studies in Malaysia have shown the existence of high agency problem (Kallunki *et al.*, 2007), high EM practices (Abdul Rahman and Ali, 2006, Ardekani *et al.*, 2012) and high insider trading (Ali *et al.*, 2011) among firms. Specifically, in the same context, Saleh *et al.* (2005) noted that poor corporate governance could be the cause of higher EM in Malaysia. Fan and Wong (2002) found that the accounting earnings informativeness is lower for East Asian firms including Malaysia, whose controlling shareholders have higher voting rights and higher divergence between voting rights and cash flow rights. This ensures the importance of examining the impact of the governance monitoring of the financial reporting quality in this environment (Kallunki *et al.*, 2007). The MCCG has emphasized the important role of AC and IAF as monitoring mechanisms to enhance the quality of financial reporting.

Therefore, it is important to examine the influence of such mechanisms on the level of EQ in Malaysian listed firms. Thus, this study would provide answers to the questions of whether AC's independence (ACIND), financial expertise (ACEXPERT), IAF, external audit quality (Big4) and ownership concentration (OWCO) affect EQ and, consequently, ascertain whether the AC has a moderating effect on the relationship between IAF and EQ. In this study, the main objective is to investigate the effect of ACIND and ACEXPER, IAF and Big4, as governance monitoring mechanisms that are responsible to evaluate the quality of financial reporting. The study found that ACIND, investment in IAF and Big4 are related to higher EQ. However, the study reveals that OWCO is related to lower EQ. In addition, the study found that high EQ is achieved by having high ACIND and ACEXPERT, as well as by having a high investment in IAF.

This study extends prior related literature by examining whether or not the ACIND and ACEXPERT moderate the relationship between IAF (sourcing arrangements and investment in IAF) and EQ. In addition, prior studies (Porta *et al.*, 1999; Fan and Wong, 2002; Yunos *et al.*, 2010; Kamardin and Haron, 2011; Abdullah and Nasir, 2004; Abdul Rahman and Ali, 2006) evidenced the impact of OWCO on the monitoring mechanisms and on EQ. Therefore, in this study, we investigate the effect of OWCO (five largest shareholders) upon the EQ among Malaysian firms listed in the Main Market.

This study is organized into seven sections. Section 1 is the introduction, which provides research questions, objectives, background, motivation, theoretical and empirical motivation and the contributions to the literature. Section 2 covers the corporate governance, ownership concentration, accounting and auditing reforms in Malaysia. Section 3 presents the study's theoretical framework. Section 4 presents the literature review and hypotheses development. This section provides literature review on EQ followed by a discussion of the theory and related empirical studies on the study variables. The research design, data analysis technique and the models used to test the hypotheses are presented in Section 5. Section 6 presents the empirical findings and discussion. This study concludes in Section 7 with a discussion and summary of the findings, study implications, limitations and recommendations for future research.

2. Corporate governance reforms in Malaysia

The government of Malaysia adopted specific steps to enhance its corporate governance and to improve the financial reporting quality among Malaysian firms. This led to the establishment of the Malaysian Code on corporate governance in March 2000. This code emphasizes the role of board of directors, accountability, shareholders and remuneration of directors. The Code was revised in 2007 and became known as the revised MCCG 2007 to accommodate, among others, higher internal monitoring control and the members of AC to only include non-executive directors. The internal auditor directly reports to the AC to acknowledge and tackle risks (Hassan *et al.*, 2010). Added to this, the Code was revised again in 2012 and became known as the MCCG 2012. The latest Code gives more emphasis on the board composition and structure and the board process, where the director is mandated to ensure the strength of an effective governance structure to accommodate risk and internal control management. In this regard, IAF has become significant as an internal monitoring corporate governance mechanism (Al-Shetwi *et al.*, 2011). These reforms are considered critical, considering the presence of high ownership concentration in Malaysia. High ownership concentration might lead firms to not gain the advantage of corporate governance because of the failure to detect EM (Park and Shin, 2004). In addition, Hu *et al.* (2010) and Setia-Atmaja (2009) posit that major shareholders may have a tendency to select a weak governance structure and appoint less independent directors on the board.

3. Theoretical framework

The agency theory posits that increased internal control system could result in increased monitoring of the company processes, and this, in turn, would support and increase the financial information outcomes (Jensen and Meckling, 1976). The agency theory also postulates that independent directors and auditors are the main corporate monitoring mechanism used to minimize the agency conflict (Jensen and Meckling, 1976). By monitoring the behaviour and controlling the executive directors' actions, independent directors can curb the agency conflict between owners and managers (Benkraiem, 2009), while at the same time, a good level of monitoring enables the principals to be aware of the opportunistic behaviour and to hold the agents accountable if they are less motivated to conduct such behaviour. Therefore, the resource dependence theory emphasizes that independent directors on the firm are very important for enhancing internal monitoring effectiveness, and the independent directors and auditors could protect firms' resources

and reduce information asymmetry by improving the information flow between the firms and stakeholders (Pfeffer and Salancik, 2003). In Malaysia, the weak corporate governance contributes to high conflict of interests between majority and minority shareholders (Kallunki *et al.*, 2007; Fan and Wong 2002). The high ownership concentration by family and managerial ownership and the agency conflict found between minority and majority shareholders lead to an improvement of corporate governance regulations in Malaysia (MCCG 2000, revised MCCG 2007 and MCCG 2012), which focus on the internal and external monitoring mechanisms to safeguard the interest of minority shareholders. Thus, listed firms are required to have an effective monitoring mechanism to ensure the high quality of financial reporting, which in turn minimizes information asymmetry and agency conflict between management and shareholders and between minority and majority shareholders.

4. Empirical literature review and hypotheses development

4.1 Investment in internal audit function

The role of IAF is to enhance the internal control system. Garcia *et al.* (2012) and Adiguzel (2013) reported that companies having internal audit function had higher EQ than companies without IAF. According to Prawitt *et al.* (2009), IAF that is well invested in is likely to be able to detect and prevent material misstatements. However, Davidson *et al.* (2005) found an insignificant relationship between internal audit function and EM. Therefore, investing in the IAF indicates that competent internal audit personnel will be able to assist management in establishing considerable controls over financial reporting and to minimize the occurrence of control issues (Lin *et al.*, 2011). In other words, increased investments in IAF allow the internal audit department to employ and maintain skilled workers.

In Malaysia, the revised MCCG 2007 elaborates the IAF's roles and responsibilities. The Code mandates that the establishment of an IAF is accountable to the AC, who is responsible for the recognition and management of risks. Yasin and Nelson (2012) reported a positive relationship between external audit quality and IAF cost. Additionally, a negative and significant relationship between IAF and the absolute value of DAs (proxy of EQ) was reported by Johl *et al.* (2013). Al-Rassas and Kamardin (2015a, 2015c) also found a significant and negative relationship. Thus, a higher investment in the IAF implies that firms have more competent IAF personnel to help the management establish stronger controls over financial reporting. Thus, it is hypothesized that:

H1. Investment in internal audit function is positively associated with earnings quality.

4.2 Sourcing arrangements of internal audit function

IAF can be employed through internal employees with the help of the internal audit department, or it can be outsourced to professional firms (Carcello *et al.*, 2005; Desai *et al.*, 2011). An internal audit that is outsourced is described as where the functions of the internal audit are undertaken by a third party (Carcello *et al.*, 2005; Desai *et al.*, 2011). Bursa Malaysia mandates listed firms to disclose whether their IAF is employed in-house or outsourced. Several studies found that the former type of IAF results in a higher internal oversight and control over audit processes, hence safeguarding the confidential information and providing a better insight into the business process and related risks from the environment and non-employees. It also serves as a learning opportunity for the employees of the organization (Vecchio and Clinton, 2003; Rittenberg, 1999). Some of the advantages of this type of audit function are in-depth knowledge, loyalty and crisis situation handling (e.g. fraud) (Spekle *et al.*, 2007).

Contrastingly, outsourced IAF proponents claimed that the in-house internal auditors are not as independent as their outsourced counterparts and that it is challenging for an employee to be totally independent from the firm's management (James, 2003; Ahlawat and Lowe, 2004). However, some external auditors believe internal auditors to be more

objective and independent in their decisions when they are not working for the company (Gramling and Hermanson, 2006). Mansor *et al.* (2013) reported that the in-house internal audit function is related to a decrease in EM (high EQ). While Al-Rassas and Kamardin (2015c) found that the outsourced IAF is related to a decreased DA and a higher EQ. On the basis of the above arguments, this study hypothesizes that:

H2. Sourcing arrangements of internal audit function is associated with earnings quality.

4.3 Audit committee independence

ACs supplement the internal governance mechanisms of the firm by minimizing the occurrence of conflicts that is innate in the ownership structure (Cai *et al.*, 2015). Judging from the perspective of the agency theory, the AC's effectiveness is based on its characteristics (Ika and Ghazali, 2012; Klein, 2002; Garcia *et al.*, 2012; Vafeas, 2005). It is important for the members of the AC to be independent from the firm's management to perform its functions effectively (Ismail *et al.*, 2009; Krishnamoorthy, 2002). According to Lin *et al.* (2006), an AC whose members are mostly independent are more effective in monitoring management and lessening the potential for erroneous reporting due to the minimal interference from the management.

Moreover, independent directors bring about high-quality financial reporting (Mustafa and Youssef, 2010). There are many empirical studies that highlighted the effectiveness that stem from the independence of the AC. Specifically, Klein (2002), Yang and Krishnan (2005) and Yunos (2011) revealed that the independence of the AC is related with lower DAs (proxy of EQ). Such independence is also related with a higher EQ as evidenced by Bradbury *et al.* (2006) and Garcia *et al.* (2012), as well as financial reporting quality as evidenced by Agrawal and Chadha (2005), Bedard and Johnstone, 2004, Garcia *et al.* (2012) and Siagian and Tresnaningsih (2011). Other studies highlighted an insignificant relationship between AC independence and earnings informativeness (Petra, 2007), DAs (Adiguzel, 2013; Garcia *et al.*, 2010; Xie *et al.*, 2003) and quality of accruals (Baxter and Cotter, 2009).

In the context of Malaysian studies, some authors (Saleh *et al.*, 2007; Salleh and Haat, 2014; Mansor *et al.*, 2013) revealed a negative association between ACIND and EM. On the other hand, a positive association was evidenced by other authors (Ahmad-Zaluki and Wan-Hussin, 2010; Al-Rassas and Kamardin 2015b) between independent AC and the quality of earnings, whereas some others evidenced no significant association between AC independence and EM (Abdul Rahman and Ali, 2006; Abdullah and Nasir, 2004; Ismail *et al.*, 2009). According to the agency theory, it is predicted that an independent AC is more capable of monitoring management behaviour in terms of EM, and thus, we propose the following hypothesis:

H3. Audit committee independence is positively associated with EQ.

4.4 Audit committee independence moderates the relationship between internal audit function and earnings quality

The revised MCCG 2007 emphasized the effectiveness of internal monitoring by mandating Malaysian listed companies to establish IAF that directly coordinates and has regular meetings with AC, and subsequently, the internal audit report is submitted to the committee. Consequently, the integrity of financial reporting is the responsibility of the AC. AC plays an important role as a monitoring device to review the internal auditor's work. Having an effective AC can help internal auditors confront management and, thus, potentially enhance the actual and perceived independence of auditors.

By working closely together, internal auditors and AC can preserve and promote financial reporting quality (Krishnamoorthy 2002). Scarbrough *et al.* (1998) showed that AC that consists solely of independent directors that have a tendency to hold meetings frequently together with internal auditors to go over their work. Cooper (1993) noted that the head of

the department of internal audit ought to give account to the AC directly and ought to hold frequent meetings with the AC. DeZoort and Salterio (2001) indicated that when internal auditors have good communication with AC, it may result in an improvement in the quality of corporate governance. From the above arguments, the independence of AC is very important because independent directors in the AC bring about high-quality IAF and strengthens internal monitoring and high EQ. Thus, we hypothesize that:

H4. Audit committee independence moderates the relationship between investment in internal audit function and earnings quality.

H5. Audit committee independence moderates the relationship between sourcing arrangements of internal audit function and earnings quality.

4.5 Audit committee's financial expertise

The financial expertise of the AC is significant for the committee's effectiveness in enhancing the financial reporting quality. According to the MCCG, there should be at least a member of the AC that is financially knowledgeable. The resource dependence theory explains that the AC's role is to provide resources in the form of expertise and experience for firms to gain competitive advantage, especially in financial reporting quality. These experts are expected to mitigate the agency problem that arises from the managers' ability to manipulate earnings reports. It is the duty of the AC to perform the assigned task diligently with the skills, knowledge and expertise that they have acquired to produce quality financial reporting. Because they indicate support for the financial statement credibility, ACs having financial expertise have been considered as a strength (Burrowes and Hendricks, 2005), as they lower EM (Badolato *et al.*, 2014; Baxter and Cotter, 2009; Chen and Zhou, 2007, He and Yang, 2014; Saleh *et al.*, 2007; Sharma and Kuang, 2014; Soliman and Ragab, 2014; Yusof, 2010; Xie *et al.*, 2003) and produce high-quality earnings reporting (Badolato *et al.*, 2014; He and Yang, 2014; Hoitash and Hoitash, 2009; Qin, 2007; Sharma and Kuang, 2014; Soliman and Ragab, 2014).

In the context of Malaysian firms, Saleh *et al.* (2007) and Yusof (2010) showed that a financial expert AC results in high EQ. However, no relationship was found between the AC's financial expertise and EQ by Mohamad *et al.* (2012). On the basis of both the agency theory and the resource dependence theory, it can be contended that the AC's financial expertise lessens the DAs and improves the quality of earnings. Thus, the following hypothesis is proposed:

H6. Audit committee financial expertise is positively associated with earnings quality.

4.6 Audit committee's financial expertise moderates the relationship between internal audit function and earnings quality

ACs having financial expertise have been considered effectively strong (Burrowes and Hendricks, 2005) to lower EM and to achieve high-quality earnings reporting (Badolato *et al.*, 2014; Baxter and Cotter, 2009; He and Yang, 2014; Sharma and Kuang, 2014; Saleh *et al.*, 2007; Soliman, and Ragab, 2014; Yusof, 2010). Having financial expertise in the AC shows that the internal audit programme will be reviewed (Raghunandan *et al.*, 2001), and this activity decreases the tendency for the misappropriation of assets in companies held by the company (Mustafa and Youssef, 2010). Indeed, the AC is potentially capable of improving the IAF effectiveness and the practices of external audit and result in high audit quality. The presence of EM and weak corporate governance may create a demand for better monitoring, which would suggest a positive relationship between corporate governance monitoring and the need for financial experts (Krishnan and Lee, 2009).

Malaysian revised code on corporate governance (MCCG 2007) states that the duty of internal auditors includes being effective monitoring entities and the head of the internal audit department who should submit the IAF reports to AC and have regular meetings with

the committee. Thus, an efficient IAF is commonly a reflection of an effective AC. Hence, the following hypotheses are proposed:

H7. Audit committee's financial expertise moderates the relationship between investment in internal audit function and earnings quality.

H8. Audit committee's financial expertise moderates the relationship between sourcing arrangements of internal audit function and earnings quality.

4.7 External audit quality

According to the agency theory, internal and external monitoring mechanisms are required to reduce the conflict of interests between managers and shareholders, and increasing the quality of monitoring could reduce the asymmetry of information (Jensen and Meckling, 1976). Also, the resource dependence theory proposes that company's internal and external monitoring mechanisms that have different knowledge and expertise bring important resources to the company, which leads to an increase in the firm's monitoring and enhances the financial reporting quality (Hillman and Dalziel, 2003). External monitoring mechanisms such as external audit firm are supposed to mitigate EM and enhance financial reporting quality. Big4 audit firms are commonly used as proxy for external audit quality, which is considered as an external monitoring mechanism (Fan and Wong, 2005). Having experts and resources, the Big4 audit firms have more advantages as compared to their smaller counterparts.

Previous studies recognize that the Big4 audit firms provide higher audit quality and higher reliability and quality to financial reporting than the non-Big 4 auditors. Krishnan (2003) showed that Big 4 audit firm can better detect EM as compared to non-Big 4 audit firm; they found that firms audited by non-Big 4 audit firms have higher levels of EM. This is consistent with the result of the study by Habib (2011), who found that Big 4 audit firm associates with less EM. Big4 audit firms affect earnings positively with respect to the detection of EM activity (Davidson *et al.*, 2005). Ye (2014) and Soliman, and Ragab (2014) found that the firms audited by Big4 audit firm reported less EM. It is therefore hypothesized that:

H9. Big4 audit firms are positively associated with earnings quality.

4.8 Ownership concentration

Concentrated ownership can trigger agency problems, particularly in the case of high ownership concentration which can limit the power to a few shareholders. This in turn may lead to the expropriation of the interests of minority shareholders (Porta *et al.*, 1999; Woidtke and Yeh, 2013). This occurs when there is a close relationship between the largest shareholders and managers. In most high ownership concentration, firm's managers are either members of the controlling shareholders or they have close personal relations. This close relationship may direct managers to manage earnings toward the interest of the majority at the expense of the wealth of minority shareholders (Fan and Wong, 2002).

Fan and Wong (2002) reported that ownership concentration is related with lower accounting conservatism and Kamardin and Haron (2011) indicated that concentrated ownership among Malaysian firms facilitate conflict of interest between the two groups of shareholders (minority and majority). The block ownership is found to be related to less corporate governance effectiveness (Ntim *et al.*, 2012a, 2012b, 2015), which in turn affects firm value (Ntim *et al.*, 2012a, 2012b). Meanwhile, Abdullah and Nasir (2004) and Abdul Rahman and Ali (2006) provided evidence on the potential influence of concentrated ownership on the independence of the board. Thus, based on the above findings and considering the agency theory, we propose that:

H10. Ownership concentration is negatively associated with earnings quality.

5. Research design

The population of this study comprises 822 firms listed in the Main Market of Bursa Malaysia for the years 2009 to 2012. The study considered data from 2009, as it was the initial year wherein the cost of investment in IAF was disclosed following its mandate by the Bursa Malaysia. To obtain suitable homogeneity of the data, the study follows previous studies by excluding 51 financial-related companies and unit trust firms (Yatim *et al.*, 2006; Yunos *et al.*, 2010), 124 firms with an uncompleted online annual report among the study period and 139 companies that have missing data of the study variables. As a consequence, the final sample was 508 firms. Data collection was conducted through data stream and annual reports available in the website of Bursa Malaysia. The details of the sample based on the industries are presented in Table I.

5.1 Measurement of earnings quality

The main factor that auditors believe that lead to poor quality in financial reporting is EM, that is, poor corporate governance (Tasios and Bekiaris, 2012). Ismail *et al.* (2009) described EQ as the absence of EM. Accrual-based measures are widely accepted as indicators of earning management activity (Healy, 1985; DeAngelo, 1986; Jones, 1991; Dechow *et al.*, 1995; Becker *et al.*, 1998). Also, Leuz *et al.* (2003) shows that EM is more practiced in countries having high concentrated ownership. In particular, the controlling shareholders prefer to use accruals to manipulate earnings to achieve the targeted performance.

The total accruals include non-discretionary accruals (NDAs) and discretionary accruals (DAs); the former is out of managers' estimations, but the latter is under managers' estimations and they can use it to manage earnings. Therefore, DA reflects EM, and to separate NDA and DA, Jones (1991) put forward a model to calculate DA. Jones model (1991) has been modified by some researchers (Dechow *et al.*, 1995; Kasznik, 1999; Kothari *et al.*, 2005; Yoon *et al.*, 2006). DAs are often used as EQ proxy, and in this study, two measures of DA are used to determine whether the results are consistent throughout the models. First, DA1 was measured using the modified Jones model proposed by Dechow *et al.* (1995), who added the change in accounts receivable and deducted it from the change in revenue. This model has been extensively utilized in prior studies. Following Dechow *et al.* (1995), the first step to calculate DA is to calculate total accruals (ACC) as follows:

$$ACC_{it} = EBXI_{it} - CFO_{it} \quad (1)$$

where *ACC* is total accruals for specific firms in a specific year and industry which is equal to the earnings before extraordinary items (EBXI) minus the cash flows from operations (CFO), *i* is industry and *t* is the year. As the total accruals resulted from revenue and operating activities, the ordinary least squares (OLS) cross-sectional analysis was ran to the entire firm years and industries for the estimation of the fitted values (coefficients of a_1, a_2 and a_3)[1]. DA is then calculated from the residuals based on the following equation:

Table I Sample of study by industries

Industries	*Firms*	*Observations*	*%*
Construction	30	120	6
Consumer	83	332	16
Industrial products	163	652	32
Plantation	33	132	6
Property	49	196	10
Technology	23	92	5
Trading and services	127	508	25
Total	508	2,032	100

$$\frac{ACC_{it}}{TA_{t-1}} = a_0 + a_1\left(\frac{1}{TA_{t-1}}\right) + a_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{t-1}}\right) + a_3\left(\frac{PPE_{it}}{TA_{t-1}}\right) + \varepsilon \quad (2)$$

where *TA* is the prior year total assets, Δ*REV* is the change in revenue, Δ*REC* is the change in trade receivables, *PPE* is the property, plant and equipment and ε is the error term.

This study follows Dechow *et al.*'s (1995) suggestion in terms of deducting the change in accounts receivable from the change in revenues prior to the estimation. The industry- and year-specific aspect is then used for the estimation of parameter estimates (coefficients a_0, a_1, a_2, and a_3), which is calculated from equation (2), and then, the NDAs are obtained following equation (3):

$$NDA_{it} = a_0 + a_1\left(\frac{1}{TA_{t-1}}\right) + a_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{t-1}}\right) + a_3\left(\frac{PPE_{it}}{TA_{t-1}}\right) \quad (3)$$

The total DA (residuals) is obtained from the difference between the estimation in equation (3) and the actual accruals as presented in the following equation:

$$DA_{it} = ACC_{it} - NDA_{it} \quad (4)$$

where *NDA* is non-discretionary accrual and *DA* is discretionary accrual. The second discretionary accrual (DA2) measurement followed the extended modified Jones model proposed by Yoon *et al.* (2006). This is because Yoon *et al.*'s (2006) study in the context of Bangladesh reported that the modified Jones model proposed by Dechow *et al.* (1995) is not robust to be used for Asian firms. According to Yoon *et al.*'s (2006) model, the total accruals are linked to the cash revenue/sales changes, the cash expenses changes and non-cash expenses, such as depreciation expenses changes, and the changes in the retirement benefits expenses. Therefore, the model in terms of DA2 is presented in the following equation:

$$\frac{ACC_{it}}{REV_{it}} = a_0 + a_1\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{REV_{it}}\right) + a_2\left(\frac{\Delta EXP_{it} - \Delta PAY_{it}}{REV_{it}}\right) + a_3\left(\frac{\Delta DEP_{it} - \Delta RET_{it}}{REV_{it}}\right) + \varepsilon \quad (5)$$

where ΔEXP is the change in sum of cost of goods sold and selling and general administrative expenses excluding non-cash expenses, ΔPAY is the change in accounts payable, DEP is the depreciation expenses and RET is retirement benefits expenses. DA is obtained by deducting NDA from the total accruals for each observation as presented in the equation below:

$$DA_{it} = \frac{ACC_{it}}{REV_{it}} - \left[a_0 + a_1\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{REV_{it}}\right) + a_2\left(\frac{\Delta EXP_{it} - \Delta PAY_{it}}{REV_{it}}\right) + a_3\left(\frac{DEP_{it} - \Delta RET_{it}}{REV_{it}}\right)\right] \quad (6)$$

The absolute value of discretionary accruals |DA| in the two measurements reflects the EM practices, as EM can either be income-increasing or income-decreasing. According to Bedard and Johnstone (2004), Klein (2002) and Abdul Rahman and Ali (2006), the absolute value of DA functions as an effective proxy for the total effect of income-increasing and income-decreasing EM and, as such, the high absolute value of DA represent low EQ and vice versa.

The examination of the validity of DA measurement models is required before applying these models, that is, the property, plant and equipment should have a negative relationship with total accruals (because it determines the depreciation expenses). Table II shows that the coefficient of property, plant and equipment has a negative relationship with DA in both models. The coefficient of change in revenue is positive with DA1 and negative with DA2, which is because the change in revenue is related to the increase or decrease in total accruals. The extended model of Yoon *et al.* (2006) is presented in Table II. The model is significant at 1 per cent level, with an explanatory power (R^2) of 47.54 per cent. This exceeds Dechow *et al.*'s (1995) model with 0.81 per cent. The R^2 provides evidence

Table II Multiple regression results of discretionary accruals measurements

M-Jones by Dechow et al. (1995)			*Extended M-Jones by Yoon et al. (2006)*		
Variables	*Coefficient*	t-*statistics*	*Variables*	*Coefficient*	t-*statistics*
_cons	−0.0110**	−2.31	_cons	0.0852	1.57
1/TA	−485.35	−1.31	(ΔREV– ΔREC)/REV	−0.092***	−19.91
(ΔREV–ΔREC)/TA	0.0112	1.06	(Δ EXP–ΔPAY)/REV	0.1321***	23.50
PPE/TA	−0.0346***	−3.78	(DEP + RET)/REV	−3.855***	−29.95
F-value	5.25			613.74	
Significance	0.000			0.000	
R^2	0.0081			0.4754	
N	2,032			2,032	

Note: *, **, *** are significant levels at 10, 5 and 1%, respectively

on the ability of the extended model by Yoon *et al.* (2006) to capture DA of firms listed in the Malaysian Main Market.

5.2 Discretionary accruals model specification

Specifically, the first model of this study attempts to examine the relationship between IAF, Big4 audit firm, AC independence and financial expertise, OWCO and EQ. Additionally, like prior studies (Abdul Rahman and Ali, 2006; Dechow *et al.*, 2003; Ismail *et al.*, 2009; Peasnell *et al.*, 2005), this study considers firm size, return on assets, leverage, income loss and sales growth as control variables. Also, years and industries are considered as dummy variables to control the effects and differences of business cycles throughout industries as recommended by Datta *et al.* (2013). The proposed model used to achieve the study objectives is as follows:

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 BIG4 + \beta_6 OWCO + \beta_7 ROA + \beta_8 LEV + \beta_9 FSIZE + \beta_{10} LOSS + \beta_{11} SGROWTH + \beta_{12} YEARS + \beta_{13} INDUSTRIES + e \quad (7)$$

where |DA| is the absolute value of discretionary accruals, ACIND is the AC independence, ACEXPERT is the audit committee's financial expertise, IAFINV is the cost of internal audit function, IAFSOUR is the internal audit function sourcing arrangements, BIG4 is the big 4 audit firms, OWCO is the ownership concentration, ROA is the return on assets, LEV is the leverage, FSIZE is the firm size, LOSS is the net loss and SGROWTH is the sales growth.

Therefore, to examine the moderating effect on the relationship of AC's independence and expertise on IAF (sourcing arrangements and investment in IAF) and EQ, this study applies the second model below:

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 ACIND \times IAFINV + \beta_6 ACIND \times IAFSOUR + \beta_7 ACEXPERT \times IAFINV + \beta_8 ACEXPERT \times IAFSOUR + \beta_9 BIG4 + \beta_{10} OWCO + \beta_{11} ROA + \beta_{12} LEV + \beta_{13} FSIZE + \beta_{14} LOSS + \beta_{15} SGROWTH + \beta_{16} YEARS + \beta_{17} INDUSTRIES + e \quad (8)$$

The summary of the study variables' measurements are presented in Table III.

6. Empirical findings and discussion

The descriptive statistics of the continuous variables are presented in Table IV and those of the dichotomous variables are presented in Table V. Specifically, in Table IV, the statistics shows that on average, 88 per cent of the audit committee members are independent, and 47.47 per cent of them are financial experts. A marked increase is noted in ACIND and ACEXPERT in this study as compared to the finding in the study by Yunos *et al.* (2010), where the former and the latter were found to be 70 and 37 per cent,

Table III Summary of variables measurement

Variables	*Measurement*
ACIND	Percentage of total number of independent non-executive directors divided by the total number of AC members (Abdul Rahman and Ali, 2006; Mohamad *et al.*, 2012)
ACEXPERT	The ratio of audit committee members with accounting and financial knowledge to total members of AC (Goh, 2009; Saleh *et al.*, 2007; Zaman *et al.*, 2011)
IAFINV	The natural log of Internal audit cost (Johl *et al.*, 2013; Yasin and Nelson, 2012)
IAFSOUR	Equals "1", if IAF is established in-house and "0" otherwise (Johl *et al.*, 2013)
BIG4	Equals "1" if the firm is audited by Big4 auditors and "0" otherwise (Abdul Rahman and Ali, 2006; Davidson *et al.*, 2005; Ntim *et al.*, 2013)
OWCO	Ownership by largest five shareholders (Gedajlovic and Shapiro, 2002; Al-Jaifi, 2015)
FSIZE	Natural log of total assets (Abdul Rahman and Ali, 2006; Ismail *et al.*, 2009; Peasnell *et al.*, 2005)
LEV	The ratio of total liabilities to total assets (Klein, 2002; Davidson *et al.*, 2005)
ROA	The annual net profit of individual firm before tax divided by total assets (Abdul Rahman and Ali, 2006; Ismail *et al.*, 2009; Ntim, 2015)
LOSS	Dummy variable equals to "1" if the net income is loss and "0" otherwise (Dechow *et al.*, 2003)
SGROWTH	Sales growth, annual sales growth (current year sales – prior year's sales)/prior year's sales (Ahmed *et al.*, 2002; Ntim *et al.*, 2013)

Table IV Descriptive statistics of continuous variables

Variable name	*Minimum*	*Maximum*	*Mean*	*SD*	*Skewness*	*Kurtosis*
DA1	0.002	0.195	0.056	0.050	1.266	4.028
DA2	0.007	1.452	0.256	0.338	2.258	7.801
IAFINV (log)	8.923	15.607	11.408	1.350	0.808	3.433
ACIND	0.667	1.000	0.885	0.150	−0.581	1.423
ACEXPERT	0.200	1.000	0.475	0.202	0.910	3.013
OWCO	17.850	85.730	54.241	15.735	−0.161	2.318
ROA	−0.599	0.337	0.033	0.093	−0.892	6.647
LEV	0.004	1.652	0.391	0.220	0.997	5.710
FSIZE (log)	10.402	17.453	12.897	1.440	0.863	3.692
SGROWTH	−0.593	1.581	0.071	0.337	1.818	9.254

Notes: DA1 is discretionary accrual (DA)-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model by Yoon *et al.* (2006)

Table V Descriptive statistics of dichotomous variables

		Frequency		*%*	
Variable name	*Observations*	*1*	*0*	*1*	*0*
IAFSOUR	2,032	937	1,095	46.10	53.90
BIG4	2,032	1,135	897	55.90	44.10
LOSS	2,032	438	1,594	21.60	78.40

respectively, using data from the years 2001-2007. Such an increase might be attributed to the revised MCCG 200 for the domination of independent directors in the AC of the listed firms. Therefore, the independent members' dominance in the audit committee in this study is evidenced by the 67 per cent minimum level of independence.

Table IV shows that the average IAF investment is 11.41, which equals to RM370,658, with the least value of 8.92 (RM3000) and the highest of 15.61 (RM39,000,000). These results show a clear effort by the listed firms towards investing in IAF to improve internal control, the quality of earnings and the financial reporting quality in the listed firms in the Malaysian Main Market. Furthermore, the firms' shares are concentrated among the largest five shareholders with an average of 54.24 per cent, indicating that the majority of the shares are held by few shareholders (high concentration of ownership).

The descriptive statistics in Table V indicate that 46.1 per cent of the Main Market listed firms in Malaysia employ in-house IAF, while the remaining 53.9 per cent outsource their audit function. Added to this, 55.9 per cent of the firms are audited by the Big4, while the remaining 44.1 per cent are audited by non-Big4 firms. With regards to the controlled variables, the companies' sizes differ from a minimum of 10.4 to a maximum of 17.45. The average leverage level of the sample is 39 per cent with a ROA of 3.3 per cent – the negative sign Kasznik shows losses in some firms. The firms have an average sales growth of 7 per cent, with some having a negative value, indicating that the revenue of the current year is lower as compared to that of the previous year. The figures in Table V also show that 21.6 per cent of the firms reported net income loss.

As with prior studies (Ball and Shivakumar, 2005; Bonetti *et al.*, 2013; Gaio, 2010; Kothari *et al.*, 2005; Kraft *et al.*, 2014; Prawitt *et al.*, 2009; Saleh *et al.*, 2007; Yoon *et al.*, 2006), this study carried out Winsorized distributions to prevent potential outliers from occurring in the entire continuous variables at the top and bottom 1 per cent of the data distribution. This approach also assists in maintaining the original data's characteristics. Added to this, a thorough standard error test was carried out to estimate the regression model to handle possible problem of heteroskedasticity. In relation to this, the normality assumption was tested with the help of skewness and kurtosis, where a higher threshold of ±3 was used for skewness as recommended by Hair *et al.* (2006). As for kurtosis, a higher threshold of ±10 was used as suggested by Kline (1998). Table IV presents the detailed results of the process, indicating the normal distribution of the data set. Furthermore, to confirm the absence of multicollinearity, the correlation matrix between variables was examined through the Pearson correlation. Table VI shows that no correlation exceeds 0.80, which indicates the non-existence of multicollinearity issue (Hair *et al.*, 2006).

Data analysis was conducted using OLS regression, through which the model fit was found to be significant for the first dependent variable (DA1) at the significant level of 1 per cent (F-value = 6.55, R^2 = 0.0755). As for the second dependent variable (DA2), the model fit was also found to be significant at the significant level of 1 per cent (with F-value = 20.196, R^2 = 0.2426).

Based on the results presented in Table VII, the cost of IAF (IAFINV) was found to be insignificantly related to DA1, but significantly and negatively related to DA2 at the significance level of 1 per cent ($t = -2.97$, $p < 0.01$), indicating that *H1* is supported. The underlying implication of the finding is that an increasing investment in IAF would lead to increased monitoring and decreased EM, which, in turn, could result in higher EQ. In other words, increasing investment in IAF is an effective way to improve internal monitoring. These results support the agency theory and resource dependence theory, as IAF is an effective resource to enhance firm's monitoring device to decrease the agency problem between managers and financial reporting users. This contention is supported by Prawitt *et al.* (2009) and Al-Rassas and Kamardin (2015a, 2015b). Moving on to the second hypothesis, the results in Table VII show an insignificant relationship between sourcing arrangements (IAFSOUR) and both DA1 and DA2, indicating that *H2* is rejected. This result is supported by Johl *et al.* (2013). Also, the table presents a negative and significant relationship between ACIND and DA1 ($t = -1.74$, $p < 0.10$), indicating that *H3* is supported. Such result is also supported by both the agency theory and the resource dependence theory as both posit that ACIND are effective monitoring devices to facilitate the acquisition of external resource in an effort to improve the quality of financial reporting. Prior studies reported similar results (Klein, 2002; Xie *et al.*, 2003; Davidson *et al.*, 2005; Sharma and Kuang, 2014; Saleh *et al.*, 2007; Mansor *et al.*, 2013; Al-Rassas and Kamardin, 2015a). With regards to the relationship between ACIND and DA2, the analysis revealed an insignificant relation.

In terms of ownership concentration (OWCO), the coefficient is significantly and positively associated with DA1 ($t = 2.89$, $p < 0.01$). Thus, *H10* is supported. This result suggests the influence of OWCO on EQ, which supports the agency theory. On the other hand, Table VII

Table VI Correlation matrix of study variables

No.	*Variables*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1	DA1	1.0000												
2	DA2	0.278***	1.0000											
3	ACIND	−0.045**	0.031	1.0000										
4	ACEXPERT	−0.002	−0.023	0.051**	1.0000									
5	IAFSOUR	−0.075***	−0.044	0.072***	−0.045**	1.0000								
6	IAFINV	−0.098***	−0.089***	−0.006	−0.057***	0.64***	1.0000							
7	BIG4	−0.120***	−0.066***	−0.039*	−0.053**	0.174**	0.32***	1.0000						
8	OWCO	0.0073	0.0316	−0.112***	0.008	0.069***	0.122***	0.152***	1.0000					
9	ROA	−0.177***	−0.173***	−0.0123	0.011	0.080***	0.159***	0.182***	0.16***	1.0000				
10	LEV	0.117***	0.011	0.023	−0.032	0.036*	0.111***	−0.127***	−0.14***	−0.34***	1.0000			
11	FSIZE	−0.131***	−0.049**	0.034	−0.123***	0.44***	0.76***	0.35***	0.114***	0.175***	0.178***	1.0000		
12	LOSS	0.156***	0.158***	0.041	−0.005	−0.094***	−0.172***	−0.158***	−0.129***	−0.699***	0.27***	−0.215***	1.0000	
13	SGROWTH	0.042*	−0.083***	0.045*	0.011	0.039*	0.032	0.012	−0.001	0.187***	0.0375*	0.070***	−0.17***	1.0000

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model by Yoon *et al.* (2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFSOUR is sourcing arrangements of internal audit function; IAFINV is investment in internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net income loss and SGROWTH is sales growth

Table VII First model: multiple regression results (OLS)

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 BIG4 + \beta_6 OWCO + \beta_7 ROA + \beta_8 LEV + \beta_9 FSIZE + \beta_{10} LOSS + \beta_{11} SGROWTH + \beta_{12} YEARS + \beta_{13} INDUSTRIES + e$$

		DA1		*DA2*	
Variables	*Predicted sign*	*Coefficient*	t-*statistics*	*Coefficient*	t-*statistics*
_cons	±	0.10017***	6.02	0.31381***	3.69
IAFINV	−	0.00123	0.71	−0.02964***	−2.97
IAFSOUR	±	−0.00321	−0.98	0.02691	1.50
ACIND	−	−0.01478*	−1.74	0.03692	0.86
ACEXPERT	−	−0.00522	−0.83	−0.03443	−1.06
BIG4	−	−0.00518*	−1.90	−0.01405	−0.93
OWCO	+	0.00024***	2.89	0.000326	0.78
ROA	−	−0.07537*	−1.94	−0.63268***	−3.48
LEV	+	0.02069***	2.60	0.01864	0.45
FSIZE	−	−0.00433***	−3.02	0.00742	0.96
LOSS	+	0.00570	1.23	0.05878**	2.12
SGROWTH	+	0.01258***	2.61	−0.04363*	−1.71
YEARS	±	Include		Include	
INDUSTRIES	±	Include		Include	
F-value		6.55		20.96	
Significance		0.000		0.000	
R^2		0.0755		0.2426	
N		2,032		2,032	

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model by Yoon *et al.* (2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFINV is investment in internal audit function; IAFSOUR is sourcing arrangements of internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net loss and SGROWTH is sales growth

shows an insignificant association with DA2, while the Big4 audited firms significantly associated with DA1 ($t = -1.9$, $p < 0.1$), which supports the argument that high external audit quality, as a monitoring mechanism, decreases DA (high EQ). Thus, *H9* is supported. This result is similar to the finding of Soliman and Ragab (2014). With regards to the relationship between Big4 audit firm and DA2, the results show an insignificant coefficient. In addition, the result indicates that AC's expertise (ACEXPERT) is not related to EQ and thus rejects *H6*. This result is consistent with the study of Mohamad *et al.* (2012).

With regards to control variables, the ROA coefficient was found to be significantly negative for DA1 at the significance level of 5 per cent and for DA2 at the significant level of 1 per cent. The results evidenced a positive relationship between firm performance and EQ, a result aligned with that reported by Abdul Rahman and Ali (2006), who found low-performing firms to have a greater inclination towards adopting EM. Added to this, leverage (LEV) was evidenced to positively and significantly relate to DA1 at the significance level of 1 per cent, showing that firms that are highly leveraged are more prone to engaging in EM to steer clear of violating their debt covenant. Also, the results showed the negative and significant relationship of firm size with DA1 at the significance level of 1 per cent. This indicates that large firms report higher EQ, as they are strictly overseen by the firms' financial processes. Meanwhile, sales growth (SGROWTH) was found to have a positive and significant relationship with DA1 at 1 per cent significance level and had a negative significant relationship with DA2 at 10 per cent significance level. This is aligned with the results reported by Warfield *et al.* (1995) that showed increasing sales growth to facilitate EM among managers. Moreover, loss was found to have a significant and positive relationship with DA2 at the significance level of 5 per cent, indicating that firms with loss net income possess high DA and thus low EQ.

According to Aiken and West (1991), to detect moderator effects, an interaction term must be created. The interaction term is the product of multiplying the predictor variable with the

moderator variable. After interaction terms have been created, everything should be in place to structure a multiple regression equation using STATA to test moderator effects. Accordingly, Table VIII shows that for the first dependent variable (DA1), the model is fit and significant at 1 per cent level (with *F*-value = 5.98, R^2 = 0.0773), and for the second dependent variable (DA2), the model is also fit and significant at 1 per cent level (with *F*-value = 17.85, R^2 = 0.2486).

As shown in Table VIII, the interaction of ACIND and investment in IAF (ACIND × IAFINV) is negatively significant at 10 per cent level ($t = -1.99$, $p < 0.10$) and at 1 per cent level ($t = -3.71$, $p < 0.01$) with DA1 and DA2, respectively. These results indicate that an increased investment in IAF decreases DA depending on the effectiveness of ACIND. Thus, *H4* is supported. Hence, ACIND moderates the relationship between investment in IAF and DA. Also, the coefficient of ACIND × IAFSOUR is positively significant at 5 per cent level with DA2 ($t = 2.2$, $p < 0.05$), which indicates that ACIND plays a moderating effect in the relationship between IAF sourcing arrangements and DA2. Thus, *H5* is supported. This can be attributed to the fact that increases in ACIND with regards to in-house IAF lead to increased EM (low EQ) and the increases in ACIND with regards to outsourcing IAF lead to decreased EM (high EQ).

Table VIII indicates that the coefficients of the interaction in AC's expertise with sourcing arrangements of IAF (ACEXPRT × IAFSOUR) and DA2 is significant and negative at the significance level of 10 per cent ($t = -1.72$, $p < 0.10$). This indicates that the AC's expertise moderates the relationship between in-house IAF and DA2. Thus, *H8* is

Table VIII Second model: Multiple regression results of moderating effect of audit committee

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 ACIND \times IAFINV + \beta_6 ACIND \times IAFSOUR + \beta_7 ACEXPERT \times IAFINV + \beta_8 ACEXPERT \times IAFSOUR + \beta_9 BIG4 + \beta_{10} OWCO + \beta_{11} ROA + \beta_{12} LEV + \beta_{13} FSIZE + \beta_{14} LOSS + \beta_{15} SGROWTH + \beta_{16} YEARS + \beta_{17} INDUSTRIES + e$$

		DA1		*DA2*	
Variables	*Predicted sign*	*Coefficient*	t-*statistics*	*Coefficient*	t-*statistics*
_cons	±	−0.0270	−0.4	−0.72068**	−2.48
ACIND	−	0.127*	1.83	1.17636***	3.67
ACEXPERT	−	−0.0101	−0.23	−0.01050	−0.05
IAFINV	−	0.0126**	2.03	0.06603**	2.48
IAFSOUR	±	−0.0144	−0.73	−0.12074	−1.30
ACIND × IAFINV	±	−0.0128**	−1.99	−0.10868***	−3.71
ACIND × IAFSOUR	±	0.0160	0.8	0.22968**	2.20
ACEXPERT × IAFINV	±	0.000758	0.19	0.00339	0.17
ACEXPERT × IAFSOUR	±	−0.00715	−0.49	−0.12463*	−1.72
BIG4	−	−0.00526*	−1.95	−0.01543	−1.02
OWCO	+	0.000228***	2.73	0.00019	0.45
ROA	−	−0.0968***	−4.57	−0.66967***	−3.69
LEV	+	0.0144**	2.01	0.01114	0.27
FSIZE	−	−0.00400***	−2.79	0.00867	1.13
LOSS	+	0.00202	0.56	0.05187*	1.87
SGROWTH	+	0.0144***	3.01	−0.04339*	−1.70
YEARS	±	Include		Include	
INDUSTRIES	±	Include		Include	
F-value		5.98		17.85	
Significance		0.000		0.000	
R^2		0.0773		0.2486	
N		2,032		2,032	

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model by Yoon *et al.* (2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFSOUR is sourcing arrangements of internal audit function; IAFINV is investment in internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net income loss and SGROWTH is sales growth

supported. However, Table VIII also shows that the interaction of AC's expertise and investment in IAF is insignificant, indicating that the AC's expertise does not moderate the relationship between investment in IAF and DA1. Thus, *H7* is rejected.

For the robustness test, we re-estimated the first model (Table VII) using different measurements for some variables. Measurement for ACIND was changed to dummy variable that equals "1" if all AC members are independent and "0" otherwise. IAFINV was measured by the percentage of the cost of IAF to firm size. In addition, OWCO was measured by the largest ten shareholders. Table IX shows that the results, in general, are similar to the results in Table VII. We also reran our model using firm-level fixed effect approach to control for unobserved heterogeneity and also using random effect approach, which assumed that the years' error term is not correlated with the predictors allowing for time-invariant variables to play a role as explanatory variables. Tables X and XI show that majority of the results from fixed effect and random effect approaches are similar to the results in the OLS pooled approach.

7. Summary and conclusion

The objective of the study is to examine the effect of AC's independence and financial expertise, internal and external audit, ownership concentration and their association with EQ in the emerging market. The results provided evidence that AC's independence, investment in IAF and Big4 audit firm are related to higher EQ. Also, the study found ownership concentration to be associated with lower EQ. Moreover, the result reported an insignificant relationship between AC's financial expertise, sourcing arrangements of IAF and EQ. The study also found evidence that AC's independence moderated the relationship between IAF (investment and sourcing arrangements) and EQ. In addition, AC's financial expertise was found to moderate the relationship between sourcing arrangements of IAF and EQ. This study has added to the understanding of the agency theory and resource dependence theory in an emerging developing country, where firms

Table IX First model: Multiple regression results using different measurements

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 BIG4 + \beta_6 OWCO + \beta_7 ROA + \beta_8 LEV + \beta_9 FSIZE + \beta_{10} LOSS + \beta_{11} SGROWTH + \beta_{12} YEARS + \beta_{13} INDUSTRIES + e$$

		DA1		*DA2*	
Variables	*Predicted sign*	*Coefficient*	t-*statistics*	*Coefficient*	t-*statistics*
_cons	±	0.0853***	5.75	0.282***	3.69
ACIND	−	−0.00508*	−1.91	0.0118	0.87
ACEXPERT	−	−0.00493	−0.79	−0.0433	−1.33
IAFINV	−	0.00332*	1.84	−0.0187*	−1.89
IAFSOUR	±	−0.00327	−1.16	0.00666	0.42
BIG4	−	−0.00519*	−1.91	−0.0176	−1.17
OWCO	+	0.000221**	2.4	0.000175	0.38
ROA	−	−0.0733*	−1.89	−0.611***	−3.31
LEV	+	0.0208***	2.63	0.0113	0.27
FSIZE	−	−0.00303***	−2.82	−0.0120**	−2.11
LOSS	+	0.00577	1.25	0.0641**	2.3
SGROWTH	+	0.0125***	2.59	−0.0445*	−1.71
YEARS	±	Include		Include	
INDUSTRIES	±	Include		Include	
F-value		6.55		20.96	
R^2		0.0755		0.2426	
N		2,032		2,032	

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model (Yoon *et al.*, 2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFSOUR is sourcing arrangements of internal audit function; IAFINV is investment in internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net loss and SGROWTH is sales growth

Table X First model: Multiple regression results using fixed effect and random effect

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 BIG4 + \beta_6 OWCO + \beta_7 ROA + \beta_8 LEV + \beta_9 FSIZE + \beta_{10} LOSS + \beta_{11} SGROWTH + \beta_{12} YEARS + \beta_{13} INDUSTRIES + e$$

		DA1				*DA2*			
		Fixed effect		*Random effect*		*Fixed effect*		*Random effect*	
Variables	*Predicted sign*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*
_cons	±	0.107***	11.13	0.100***	10.70	0.261***	6.77	0.315***	8.49
ACIND	−	−0.0162**	−4.95	−0.0148***	−4.45	0.0756	2.24	0.0392	1.39
ACEXPERT	−	−0.00533	−1.09	−0.00522	−1.00	−0.0438	−1.20	−0.037	−1.01
IAFSOUR	±	−0.00322	−2.11	−0.00321***	−3.49	0.0121	0.85	0.0276**	2.02
IAFINV	−	0.00167	1.05	0.00123	1.11	−0.0298**	−5.13	−0.0288***	−4.23
BIG4	−	−0.00632**	−3.83	−0.00518**	−2.56	−0.0305*	−2.51	−0.0153	−1.30
OWCO	+	0.000213**	3.22	0.000242***	4.63	0.00147**	3.55	0.000308	0.68
ROA	−	−0.0761**	−3.63	−0.0754***	−3.19	−0.485**	−5.24	−0.602***	−7.92
LEV	+	0.0221	2.02	0.0207**	2.11	−0.077	−1.26	0.0172	0.31
FSIZE	−	−0.00513***	−6.07	−0.00433***	−5.76	0.0199**	3.88	0.00654	1.58
LOSS	+	0.00594	1.83	0.0057	1.63	0.0629	1.87	0.0618***	3.51
SGROWTH	+	0.0134	2.02	0.0126**	2.02	−0.0543***	−6.35	−0.0476**	−2.29
YEARS	±	Not include		Include		Not include		Include	
INDUSTRIES	±	Not include		Include		Not include		Include	
R^2 within		0.064		0.0715		0.0482		0.2419	
N		2,032		2,032		2,036		2,036	

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is and extension of modified Jones model (Yoon *et al.*, 2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFSOUR is sourcing arrangements of internal audit function; IAFINV is investment in internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net loss and SGROWTH is sales growth

Table XI Second model: Multiple regression results of interaction model using fixed effect and random effect

$$|DA| = \beta_1 ACIND + \beta_2 ACEXPERT + \beta_3 IAFINV + \beta_4 IAFSOUR + \beta_5 ACIND \times IAFINV + \beta_6 ACIND \times IAFSOUR + \beta_7\ ACEXPERT \times IAFINV + \beta_8 ACEXPERT \times IAFSOUR + \beta_9 BIG4 + \beta_{10} OWCO + \beta_{11} ROA + \beta_{12} LEV + \beta_{13} FSIZE + \beta_{14} LOSS + \beta_{15} SGROWTH + \beta_{16} YEARS + \beta_{17} INDUSTRIES + e$$

		DA1				*DA2*			
	Predicted	*Fixed effect*		*Random effect*		*Fixed effect*		*Random effect*	
Variables	*sign*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*	*Coefficient*	*t-statistics*
_cons	±	0.000445	0.02	−0.00445	−0.18	−0.831**	−2.34	−0.714**	−2.24
ACIND	−	0.110**	3.59	0.103***	3.05	1.171***	3.15	1.173***	3.52
ACEXPERT	−	−0.0169	−0.41	−0.00724	−0.17	0.199	0.70	−0.0154	−0.06
IAFSOUR	±	−0.0132	−1.38	−0.0155*	−1.78	−0.0383	−0.33	−0.124	−1.20
IAFINV	−	0.0114**	5.03	0.0109***	5.49	0.0672**	2.01	0.0665**	2.21
BIG4	−	−0.00643**	−3.82	−0.00532**	−2.54	−0.0311*	−1.91	−0.0167	−1.13
OWCO	+	0.000198**	3.20	0.000227***	4.69	0.00131***	2.71	0.000172	0.39
ACIND × IAFINV?	±	−0.0116**	−4.35	−0.0110***	−3.75	−0.102***	−2.92	−0.108***	−3.48
ACIND × IAFSOUR	±	0.0151	1.74	0.0171**	2.10	0.142	1.17	0.235**	2.16
ACEXPERT × IAFINV	±	0.00137	0.34	0.000494	0.12	−0.0142	−0.54	0.00369	0.16
ACEXPERT × IAFSOUR	±	−0.00793	−0.56	−0.00666	−0.47	−0.164*	−1.91	−0.127*	−1.65
ROA	−	−0.0801**	−3.55	−0.0791***	−3.16	−0.533***	−4.15	−0.639***	−5.52
LEV	+	0.0214	1.95	0.0199**	2.04	−0.0848**	−2.24	0.00973	0.28
FSIZE	−	−0.00507**	−5.64	−0.00425***	−5.56	0.0212**	2.56	0.00782	1.01
LOSS	+	0.00518	1.43	0.00500	1.28	0.0545**	2.15	0.0549**	2.41
SGROWTH	+	0.0134	2.05	0.0126**	2.07	−0.0539**	−2.40	−0.0474**	−2.35
YEARS	±	Not include		Include		Not include		Include	
INDUSTRIES	±	Not include		Include		Not include		Include	
R^2 within		0.064		0.0733		0.0563		0.2479	
N		2,032		2,032		2,036		2,036	

Notes: *, **, *** are significant levels at 10, 5 and 1%, respectively; DA1 is DA-modified Jones model (Dechow *et al.*, 1995); DA2 is an extension of modified Jones model (Yoon *et al.*, 2006); ACIND is AC independence; ACEXPERT is AC financial expertise; IAFSOUR is sourcing arrangements of internal audit function; IAFINV is investment in internal audit function; BIG4 is largest four audit firms; OWCO is ownership concentration; ROA is return on assets; LEV is leverage; FSIZE is firm size; LOSS is net loss and SGROWTH is sales growth

are following the recommendations of code of corporate governance and are controlled by high ownership concentration, in which the agency relationships are complex. To this end, the results of the study provide practical implications that are expected to help investors, regulators and market participants. Policymakers might use the findings regarding EQ to

recognize the important role played by the internal and external audit and AC in enhancing the EQ. The significant results on the moderating effect support that due to more investment in internal audit function in situations under which there is high AC independence and financial expertise, the AC is able to enforce management to increase EQ, which in turn would ultimately lead to a high quality of financial reporting. Nevertheless, this study's scope is confined to the Malaysian Main Market listed firms for a period of four years (2009-2012), and as such, the researchers recommend that future studies embark on examining other potential influential variables and measurements to gauge the effectiveness of the internal and external audit function and AC.

Note

1. To calculate discretionary accruals, we run 28 OLS multiple regressions (specific year and industry) for both models.

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