Loan Loss Provisions and Audit Quality: Evidence from MENA Islamic and Conventional Banks

Abstract

This paper examines the impact of audit quality on earnings management through loan loss provisions among both conventional and Islamic banks operating in MENA countries. Using the Generalised Method of Moments (GMM) and Random Effects, we found that Big-4, Co-audit, audit committee size, and audit committee independence restrain earnings management practices of Islamic bank managers. In contrast, audit committee mechanisms do not influence earnings management practices in conventional banks. We also found that the extent of earnings management is lower in Islamic banks operating in countries experiencing turmoil as compared to conventional banks. Using the T-test and the Wilcoxon Signed-ranks, we found that the audit quality in conventional banks is lower compared to Islamic banks. Our findings have implications for policymakers since it helps them to enhance the regulations regarding audit quality and accounting standards. It also provides helpful insights into the determinants of earnings management in both conventional and Islamic banks operating in MENA countries.

Keywords Audit quality, Earnings Management, Loan loss provisions, Islamic and Conventional banks, MENA countries.

1. Introduction

During the last decade, academic researchers and regulators focused on the manipulation of earnings through loan loss provisions in the banking sector. The issue of earnings management is more problematic in banks as compared to non-financial institutions due to high leverage, and bank managers take more risk since they rely on depositors and the central bank for funding. Prior studies reported that loan loss provisions provide an opportunity to managers in Islamic and conventional banks to use their discretion and misrepresent earnings since managers estimate loan loss provisions to absorb estimated credit losses that constitutes the main business activities (Beatty et al., 2002; Cavallo & Majnoni, 2002; Fonseca & Gonzalez, 2008; Kanagaretnam et al., 2010; Pinto & Picoto, 2018). Therefore, it is essential to ensure that the financial reporting of banks is of higher quality to avoid such issues like loan loss provisions. However, the high leverage level and opacity of banks increase the risk, which encourages managers to manipulate earnings. The level of information asymmetry between the agent (bank manager) and principles (owners) increases due to earnings management that reduces reported earnings quality (Quttainah et al., 2013).

The Islamic principles (Shariah) consider activities like earnings management unethical, as it is against the Shariah law. Elnahass et al. (2014) pointed out that the principles of Islamic banks must be ethically embedded and have a socially responsible business model. Besides, Islamic banks are prohibited from investing in risky investments or in products that are based on gambling and speculation (Farook et al., 2014; Lassoued et al., 2018). Therefore, Islamic banks may not have a huge incentive to engage in activities like earnings management as compared to conventional banks. Dyreng et al. (2012) and Leventis et al. (2018) investigated the impact of religious norms on earning quality and found that firms who follow religious norms are unlikely to involve in earnings manipulation or fraud.

Furthermore, Callen and Fang (2015) found that religion plays a vital role in establishing the economic behaviour of firms. However, literature related to Islamic banks provides contradictory findings of earnings management. While Haniffa and Hudaib (2007), reported that the principles of Islamic banks mitigate earnings management, others found that Islamic banks have a similar objective of profit maximisation like conventional banks, which motivated them to engage in earnings management (Othman & Mersni, 2014; Taktak, 2011; Maghyereh et al., 2007). Therefore, it would be interesting to examine whether there is a

difference in the extent of earnings management among Islamic and conventional banks in MENA region or not.

Prior studies argued that auditors should provide a fair and accurate view of the firm performance and guarantee the absence of activities like earnings management, fraud, or any misstatement of financial statements (Alhadab & Clacher, 2018; Alzoubi, 2018). Hence, higher audit quality is expected to enhance the transparency of disclosed information, promote the efficiency of the capital market, and reduce earnings management (Yasser & Soliman, 2018). On the other hand, the financial crisis scandal of 2008 has eroded the trust among users of financial reports, which raises the question of the importance of audit quality and whether audit independence enhances the quality of disclosed information (Barlaup et al., 2009). This crisis has affected the stakeholder's trust in the financial information assured by auditors, which were considered as the credible source for such information.

Previous literature considered the impact of internal governance mechanisms on reducing earnings manipulation (Abdelsalam et al., 2016; Leventis et al., 2013). However, to constrain any opportunistic behaviour such as earnings manipulation, management decisions need to be monitored (Lassoued et al., 2018). Therefore, auditors should not only express their opinion about whether the financial statement of a firm was prepared according to the reporting standards but also highlight all doubtful transactions to protect both creditors and shareholders (Alhadab & Clacher, 2018). Also, the independence and effectiveness of auditors are always linked to high audit quality. Consequently, audit quality has always been a significant element in enhancing reporting quality and securing corporate accountability, which in turn reduces earnings management. However, in the absence of a Shariah audit framework, Islamic banks employ the same auditing framework used by its competitors (Quttainah et al., 2017).

Although prior studies focused on the approaches employed by bank managers when manipulating earnings in the banking sector (Anandarajan et al., 2005; Beatty et al., 2002; Kanagaretnam et al., 2010; Kanagaretnam et al., 2015), few studies have addressed the influence of audit quality on earnings management only in conventional banks (Taktak & Mbarki, 2014; Zgarni et al., 2016). It would be beneficial to investigate how audit quality influences earnings management among Islamic and conventional banks in MENA region since both banks follow a similar audit framework.

We, therefore, examine the impact of audit quality proxies on earnings management among conventional and Islamic banks operating in MENA countries. We have chosen MENA countries, which is the home of most Islamic banks. Furthermore, reforms are undertaken to enhance the supervision and regulation of both conventional and Islamic banks and to raise transparency level. More specifically, there is a need for policymakers to create a legal framework that ensures investor protection and attracts foreign investors (Othman & Mersni, 2014). We used a sample of 1378 firm-year observation of Islamic and conventional banks operating in 16 MENA countries over 13 years. Our paper employed a commonly used Two-stage model of Kanagaretnam et al. (2004), and Yasuda et al. (2004) to assess earnings management. We used audit quality proxies including Big-4, Co-Audit, audit committee independence, audit committee size, gender diversity, and audit committee meetings (Taktak & Mbarki, 2014; Waweru, 2014; Zalata et al., 2018) and compared the mean values of earnings manipulation and audit quality using T-test and Wilcoxon Signed-ranks. Comparing the mean value will show whether Shariah law increases audit quality and decrease managers' opportunistic behaviour. This study employed both random effects and GMM models to explore the impact of audit quality proxies on earnings management proxy, which is the discretionary loan loss provision. Additionally, two-stage least squares (2SLS) model is adopted to control for any possible concerns about heterogeneity and endogeneity effect (Gull et al., 2018; Sayari & Omri., 2017).

Based on full sample and sub-samples (Islamic and conventional banks), we found that Big-4, Co-audit and audit committee size, and audit committee independence reduce the extent of earnings manipulation. However, audit committee meetings and gender diversity seem to have no influence on earnings management. The results also revealed that conventional banks operating in countries experiencing turmoil are highly involved in earnings manipulation as compared to Islamic banks. This confirms that the Islamic principles (Shariah) restrain managers of Islamic banks from involving in practices like earnings management. Besides, the T-test and the Wilcoxon Signed-ranks reported that audit quality is higher in Islamic banks than conventional banks, even as they follow a similar audit framework.

This paper offers several contributions to the existing literature that compares conventional and Islamic banks as well as literature on earnings management. We examined the impact of audit quality on earnings management among both conventional and Islamic banks operating

in MENA region as prior studies focused only on conventional banks (Taktak & Mbarki, 2014; Zgarni et al., 2016). Additionally, no study to date examined the influence of Co-audit on earnings manipulation in the banking sector, especially Islamic banking. Finally, we use two different estimation techniques (random effects and GMM) to examine this relationship since using two techniques will strengthen the results of our paper.

The remainder of this study is organised as follows. In the second section, we reviewed the relevant literature and developed the study's hypotheses. In our third section, we outline the research design. In the fourth section, we report the key empirical findings and presented our conclusion in the last section.

2. Review of the literature and hypothesis development

Earnings management is of significant interest to policy-makers and stakeholders as it is linked with the issue of information asymmetry, which may affect their decisions and fortune (Healy & Wahlen, 1999). Prior studies reported many reasons why managers manage earnings, such as improving financial reports, meeting a profit benchmark, and increasing bank market value (Alzoubi, 2016; Kanagaretnam et al., 2015; Leventis et al., 2011). The extant literature suggests that managers smooth earnings through loss provision by shifting it across different periods (Kanagaretnam et al., 2005; Lobo & Yang, 2001).

Islamic banks face the risk of losing all or some of the investments since they invest their funds along with their clients by using contracts like Musharakah, Murabaha and Mudarabah (Quttainah et al., 2013). Hence, there is an allowance available to Islamic and conventional banks to avert the possibility of future losses. Banks establish such allowance as a contra-asset account since the expected losses from the remaining balances, loans Musharakah investments, Murabaha, and Mudarabah is represented. Like conventional banks, Islamic banks must follow and cope with internationally recognised banking standards. One notable example is their ability to follow Basel requirements, including internal controls, risk management, external audits, and capital adequacy regulations. Islamic banks could be a public or private entity. Like any public company, the financial reporting system of the public Islamic banks should be in line with the financial reporting standards of that specific country (Kpodar and Imam 2010).

Hamdi and Zarai (2012) found several earnings manipulation incentives by managers of Islamic banks. Firstly, Islamic banks must avoid reporting negative earnings as it will reduce the confidence level of their investors. Secondly, there is a massive incentive for Islamic banks insiders to hide asset substitution behaviour by engaging in earnings management. Lastly, like conventional banks, Islamic bank's liquidity ratio, capital adequacy ratio are regulated strictly. Hence, Islamic banks' compliance with such regulations may be through earnings management (Shen and Chih, 2005).

Nevertheless, Islamic principles underpin the establishment of Islamic banks, and their operations should comply with Islamic regulations (Shariah), including the protection of stakeholders' rights (Hasan, 2008). Islamic banks should adhere to Shariah law and ensure the distribution of wealth and income, resource allocation, and appropriate financial reporting. The Islamic philosophy represents business ethics as a religious-based system that is characterized by the socially committed moral and ethical norms.

The role of religion in modelling firms economic behaviour has also been suggested (Abdelsalam & El-Komi, 2014), since religiosity appears to be an additional controlling mechanism which affects the credibility and transparency of financial report. Although existing literature examined the influence of religious norms on a firm's economic conduct (Abdelsalam et al., 2016; Othman & Mersni, 2014; Taktak, 2011), only a few studies investigate how earnings management is influenced by audit quality. These studies only focused on conventional banks (Taktak & Mbarki, 2014; Zgarni et al., 2016). Our study examines how audit quality impacts earnings management in MENA countries since the Islamic norms influence banks' economic behaviour in this region. Furthermore, Institutions and economics in MENA countries are almost the same as it's driven by the same social and cultural factors which differentiate them from other emerging economies. For instance, the religion practised in MENA countries is Islam, which influences the social, cultural, and economic decisions. Additionally, several MENA countries such as Libya, Tunisia, Egypt, Yemen, Morocco, Bahrain and Jordan experienced political instability in 2011. Since the economy of MENA region is distinguished by either tourism or oil sectors' revenues, the asset tangibility, bank size, and leverage are almost comparable across the region (Omar, 2019). Furthermore, institutions operating in MENA countries encounter institutional environment deficient due to the lack of creditors and investors' rights and protection, which could

negatively impact their ability to access to external funds (Touil and Mamoghli 2020; Belkhir et al., 2016).

Due to the lack of specific financial reporting standard for MENA countries, banks in the region are required to disclose information to the market in line with IFRS 7 (Abdallah et al., 2015). This compliance with IFRS is necessary since the priority of most GCC governments is to improve corporate governance (CG) for all firms. In line with this objective, the United Arab Emirates (UAE) established the Institute of CG in 2004 to reform the corporate sector and encourage the development of sustainable CG practices that are adaptable to the requirements of individual nations in MENA region (Baydoun et al., 2013).

It is argued that the commitment of Islamic institutions to religion decreases the cost of agency through influencing institutional moral accountability. In this sense, Ha-Brookshire (2017) indicated that earnings management practices could be restrained within firms that impose moral and social values. With regard to Islamic banks, the Shariah supervisory board (SSB) is an additional controlling mechanism. The SSB aims to assure that these banks' compliance with Islamic law (Shariah) and Islamic moral and social values go beyond traditional legal accountability (Abdelsalam et al., 2016). Therefore, Islamic social and moral values compel managers of Islamic banks to consider shareholders' interest. The existence of SSB and Shariah law is likely to improve the quality of the information provided by these institutions by reducing opportunistic behaviour.

With regards to audit quality in Islamic banks, SSB plays a significant function in the internal auditing procedure, ensuring that managers commit to Shariah law, which in turn reduces earnings management. Karim (1990) argued that audit committee members of Islamic banks are more accountable, and therefore, ensure that their responsibilities and duties are fulfilled. Besides the conventional audit, auditors of Islamic banks have to comply with the principles and rules of Shariah law and perform the audit in accordance with Auditing Standards for Islamic Financial Institutions (ASIFIs). Auditor's key objective is to assure the integrity of disclosed information in the financial report and to ensure that it reflects the actual firm performance. In this sense, previous studies found that high audit quality has a significant impact on reducing earnings manipulations (Alhadab & Clacher, 2018; Alzoubi, 2016; Khalil & Ozkan, 2016; Liu et al., 2014). In addition, based on different measurements of audit quality (e.g., Big-4, auditor experience, auditor tenure, and independence), a significant mitigating

effect on earnings management was found (Alzoubi, 2016; Lin & Hwang, 2010). Based on the above evidence, we can argue that audit quality in Islamic banks could be higher compared to conventional banks since full cooperation with SSB is demanded of auditors.

H_{1a} Audit quality is more likely to be higher in Islamic banks compared to its counterparty.

Big audit firms are likely to detect earnings manipulation as compared to small audit firms, due to tendency to minimize potential risks and boost their reputation (Khalil & Ozkan, 2016), which could be attributed to their expected loss, if an audit failure takes place (Behn et al., 1997). Alzoubi (2016) indicated that clients of big-4 firms are unlikely to manage earnings. In this regard, previous studies documented that higher audit quality is associated with auditor's brand name, size, and reputation (Francis et al., 1999). Big audit firms have more experience, capital, and resources and continuously upgrade their technology, which enables them to provide high audit quality and uphold their reputation and great client base (Rusmin, 2010). Francis and Yu (2009) and Lin and Hwang (2010) documented a negative relationship between earnings manipulation and big audit firms. In contrast, Alves (2013) and Lin et al. (2006) indicated that big-4 has a positive relationship with earnings management. Nevertheless, Davidson et al. (2005) found insignificant relationship between earnings management and big-4. Banks operating in MENA countries tend to deal with international audit firms to ensure that their financial reports meet the international standards (Aljughaiman & Salama, 2019). To discharge their responsibilities to their communities, Islamic banks are required to choose more qualified and experienced auditors (Karim, 1990). We assume that banks audited by one of the big-4 will show ethical behaviour and therefore propose the following hypothesis:

H_{2a}. Audit size (Big-4) has a negative impact on earnings management concerning both types of banks.

Co-audit appears as an interesting solution to ensure the independence of auditors to express their opinion as two auditors cannot be influenced by bank managers at the same time. In this sense, Piot and Janin (2007) indicated that companies audited by more than one auditing firm have the possibility of comparing both auditors' opinions, increasing the independence of each auditor, and reducing any possible control of auditees. Therefore, co-audit improves the quality of auditing, which in turn increases the reliability of disclosed information in the financial report (Taktak & Mbarki, 2014). The impact of co-audit on earnings management has

not been examined in MENA countries. Based on the above discussion, the following hypothesis is formulated:

H_{3a}. Co-audit is negatively associated with earnings management in both Islamic and conventional banks.

Effective monitoring is highly linked to the independence of the audit committee (IAC) from management pressure. It has been argued that the possibility of independence of the auditor report lies in disclosing inconsistencies in annual reports (Watts & Zimmerman, 1983). In this sense, auditors' independence is equivalent to their ability to resist any pressure from managers to endorse compromised report and their ability to act impartially. Previous literature reports contradictory evidence regarding how IAC influence earnings management. For example, Abbott et al. (2004) and Bédard et al. (2004) documented that IAC's effectiveness associated with earnings management mitigation, which supports the SOX Act requirement of 100% IAC. However, Klein (2002) and Lin et al. (2006) found no evidence that IAC influences earnings management. In MENA countries, not much is known about the effect of IAC on earnings management. We, therefore, propose the following hypothesis:

H_{4a}: IAC is negatively linked to earnings management in both types of banks.

Audit committee size (ACS) leads to better audit quality and a high level of earnings quality since it mitigates the possibility of restating financial statements (Agyei-Mensah and Yeboah, 2019). Vafeas (2005) suggests that monitoring effectiveness is linked to the size of the audit committee and that small audit committees are unable to perform all duties efficiently. In contrast, Jensen and Payne (2005) indicated that the audit committee with many members would have a problem with coordination, which will negatively influence their performance in the monitoring procedure. Previous studies indicated that four members are considered as the supreme average of ACS (Abbott et al., 2004; Cohen et al., 2008). ACS has been shown to reduce managers' involvement in earnings manipulation (Lin et al.,2006). In contrast, Xie et al. (2003) found no relationship. Based on the above literature, our hypothesis is as follows:

H_{5a}: ACS has a negative impact on earnings management in both types of banks.

Previous studies illustrate that the regular meeting of audit committee members (ACM) will result in superior governance for the firm and lessen managers' involvement in manipulating earnings (Abbott et al., 2004; Zgarni et al., 2016). An active audit committee that meets more

often are more efficient and are linked to effective monitoring procedure (Sun et al., 2014). Consequently, Lin and Hwang (2010) reported that ACM has a significant impact on earnings quality. Furthermore, Ebrahim (2007) found that more active audit committees reduce earnings manipulation. Mishra and Malhotra (2016), on the other hand, found an insignificant association between ACM and earnings manipulation. We, therefore, formulate the following hypothesis based on the above literature:

H_{6a}: ACM is negatively related to earnings management in Islamic and conventional banks.

It has been argued that females are more risk-averse, better at managing their time, and multitasking under pressure (Hutchinson et al., 2015). Pathan and Faff (2013) argue that women take their jobs more seriously and allocate more effort into monitoring, while men react more impulsively in complex situations. Female directors are linked to higher moral standard (Sun et al., 2011), and are more trustworthy (Gull et al., 2018), suggesting that women are unlikely to involve in earnings manipulation than their male counterparts. The existence of a female member on the audit committee can strengthen the monitoring procedure (Gull et al., 2018). However, several studies suggested that men are less conservative and take more risk compared to female directors (Johnson & Powell., 1994; Schubert., 2006). In this regard, several studies show that gender diversity on the audit committee greatly benefits all stakeholders and constrains firm failure (Burgess & Tharenou, 2002; Grosvold et al., 2007). Furthermore, Barua et al. (2010) found that managers of firms that have a female director on the audit committee are unlikely to engage in earnings management. Therefore, our last hypothesis is proposed as follows:

H_{7a}: ACD has a negative relationship with earnings management in both types of banks.

3. Research design

3.1 Sample selection

Our sample is based on Islamic and conventional banks listed in 16 MENA countries, namely, Oman, UAE, Bahrain, Qatar, Kuwait, Saudi Arabia, Lebanon, Jordan, Syria, Palestine, Egypt, Tunisia, Morocco, Iraq, Iran, and Yemen. Dataset was collected from the bank's annual report and DataStream. Our sample covers 13 years period beginning from 2006 till 2018. It starts from 2006 because it was the year when Islamic banks adopted IFRS (Elnahass et al., 2014).

The selection of MENA countries was due to their credit levels, banking assets, and their rank (second) in terms of the banking sector development (Lassoued et al., 2018; Maatoug et al., 2019). Besides, the majority of Islamic banks are mainly concentrated in this region. We carefully reviewed the data to eliminate inconsistencies and ensure data availability. Banks with limited data for audit quality (i.e., external audit, independence of audit committee, audit committee size and meetings) for the entire period investigated and banks with inadequate financial data were precluded from the sample. In line with Abdelsalam et al. (2016) data for at least four banks should be avalible for every country included in the analysis to ensure the generalisation of the results. Applying these conditions, our final sample contains 29 Islamic banks and 77 conventional banks, which generates a total of 1378 bank-year observation for our empirical analyses.

3.2 Earnings management through loan loss provisions (LLPs)

To estimate earnings management, we employed the two-stage model (Kanagaretnam et al.,2004). This model offers valid evidence of earnings management since its equations include LLPs, which is important in the managerial decision and is the largest accrual proportion in the banking sector (Kanagaretnam et al., 2010).

Our model includes variables that explained non-discretionary elements achieved in the first stage of the estimation process. The N_DLLPs, which is part of total accrual, cannot be captured directly but rather detected through changes in the business situation of banks. One possible way of estimating N_DLLPs is by including variables that show the loan loss portfolio level or by employing a set of informational variables involving changes in non-performing loans, non-performing loans, and total loans, following previous studies (Kanagaretnam et al.,2004; Kwak et al., 2009). Our study estimates N_DLLP using the first equation (1) and evaluation achieved through its predicted coefficient (β_0 β_1 β_2 β_3). The D_LLP consists of the predicted L_LPs' estimation error achieved through the residual achieved from the previous estimation (see Equation 1).

The last phase in the estimation process is the calculation of D_LLPs through variation in the estimated N_DLLP and the D_LLP. Prior studies have indicated the relevance of D_LLP for the decision about possible over-estimation of firms' earnings through underestimating L_LPs (Beatty et al., 2002). Consequently, the D_LLPs is a key part in the estimation of what is

regarded as ''abnormal accruals'' in the earnings management literature (Grougiou et al., 2014).

$$L\_LP_{it} = \beta_0 + \beta_1 N\_PL_{it-1} + \beta_2 \Delta N\_PL_{it} + \beta_3 \Delta T\_L_{it} + \varepsilon_{it} \quad (1)$$

$$N\_DLLP_{it} = \beta_0\hat{} + \beta_1\hat{} N\_PL_{it} - 1 + \beta_2\hat{} \Delta N\_PL_{it} + \beta_3\hat{} \Delta T\_L_{it} \quad (2)$$

$$D\_LLP_{it} = L\_LP_{it} - N\_DLLP_{it}. \quad (3)$$

Where:

L_LP_{it}: represents total loan loss provisions for bank i at the year t, N_PLit_{-1}: stands for a non-performing loan for bank i at the year t, ΔNPL_{it}; is the change in the value of the non-performing loan for bank i at the year t, ΔT_L_{it}: illustrates the change in the value of the total loan, for bank i at the year t. N_DLLP_{it}: presents the Non-discretionary loan loss provisions for bank i at the year t. D_LLP_{it}: is the discretionary loan loss provisions for bank i at the year t. Following Kanagaretnam et al. (2004) and Kanagaretnam et al. (2010), the lag of total loans is used as a scaler in this equation to manage heteroscedasticity.

3.3 Audit quality and earnings management in Islamic and conventional banks

We used Big-4, Co-audit, IAC, ACS, ACM,and ACD as proxies of audit quality to examine how it influences earnings management (Alhadab & Clacher, 2018; Francis & Yu, 2009; Lai, 2009; Lowensohn et al., 2007). Following previous studies, we included a set of bank characteristics and other variables that are specific to the activity of banks and country-specific effects since they have a significant impact on the manipulation of earnings (Abdelsalam et al., 2016; Quttainah et al., 2013). Our model is estimated as follows:

$$EMP_{it} = \beta_0 + \beta_1 Big\text{-}4_{it} + \beta_2 Co\text{-}audit_{it} + \beta_3 IAC_{it} + \beta_4 ACS_{it} + \beta_5 ACM_{it} + \beta_6 ACD_{it} + \beta_7 Bank\text{-}S_{it} + \beta_8 Growth_{it} + \beta_9 Lev_{it} + \beta_{10} Prof_{it} + \beta_{11} LIQ_{it} + \beta_{12} CAP_{it} + \beta_{13} PT_{it} + \varepsilon \quad (4)$$

Equation (4)[1] is employed for the full sample. We used the same equation for the subsamples (Islamic and conventional banks) separately because managers' incentives differ from their needs, and the ability to manipulate earnings is based on bank type. The measurement of variables of interest and the control variables used in this study are derived from previous

[1] appendix 1 shows the measurement and definitions of all study variables used in the model.

studies, namely: Abdelsalam et al. (2016), Taktak and Mbarki (2014), Farber et al. (2018), Gull et al. (2018), Jin et al. (2018), Kanagaretnam et al. (2004), Vishnani et al. (2019), Waweru (2014), Zalata et al. (2018) and Zgarni et al. (2016). We control for country-specific effects as some MENA countries experienced political issues during the years from 2011 to 2016, such as Egypt, Yemen, Syria, Tunisia (Abdelsalam et al., 2016).

Although Ordinary Least Square (OLS) estimation can be used to examine the study's hypotheses, Hsiao (2014) confirmed that when the co-variances between explanatory variables and the error terms are non-zero, the OLS has a higher likelihood of bias. Using OLS results in inconsistency, especially given endogenous variables. Therefore, this study used the dynamic model, the Generalised Method of Moments (GMM) of Arellano and Bond (1991), which use valid instruments to ensure consistent estimation. The model assumes that the difference in the error term does not result in second-order serial correlation (AR2). They tested this assumption by proposing the use of Sargan tests to examine the instruments' validity. Liu and Hsu (2006) suggested that the analysis of the moment condition will be a meaningful test of instruments' validity. We also examined no second-order correlation assumption and confirmed the validity of our estimation since we failed to reject the null hypothesis of these tests. Our dependent variables are all exogenous except those with lagged values. Therefore, as instruments, we used all exogenous variables, the lagged values of regressors (t_{-1} and t_{-2}), and the changes in the lagged endogenous variables.

We included a one-year-lagged value of all explanatory variables as a regressor in our dynamic model due to the persistence of earnings thresholds over time (Habib and Hansen, 2008). Previous literature (e.g., Halaoua et al., 2017; Kasznik and McNichols, 2002) suggested that firms are rewarded if they beat analysts' forecasts and earning changes consecutively.

To estimate Eq. (4), we also used Arellano and Bover (1995) and Blundell and Bond (1998) dynamic panel data model. The advantage of using GMM estimators is due to their appropriateness in resolving any possible bias in a dynamic panel. This bias often arises when lagged dependent variables are included in a relatively large sample and fewer time-periods, as seen in our study. Given earnings threshold persistence, we preference of two-step GMM since it improves estimates efficiency by eliminating problems resulting from weak instruments. Using Xtabond 2 routine, we implemented our estimation procedure through STATA13. Following Roodman (2006), the number of lags used as instruments was restricted

to 2 to avoid the proliferation. This study uses a ''Two-step robust'' estimator to get the finite-sample corrected covariance matrix. Hansen test for the validity of instrument and AR2 test of Arellano & Bond (1991) is employed to ensure that the instruments are valid.

Following previous studies (Samimi et al., 2012; Usman and Tandelilin 2014), we compared the panel and pool regression using the Chow test and found that F statistics is highly significant (F= 0.001) for conventional and Islamic banks. This result confirms the suitability of panel data regression. Additionally, we compared fixed and random effects regression (in both Islamic and conventional banks) using the Hausman specification test (untabulated) and found that random effect is most suitable (Prob > Chi2 = 0.1090 and 0.1029) for our sample.

4. Results

4.1 Descriptive statistics

The summary statistics of the key variables used in the empirical model is presented in two sub-samples reported in Table 1. The mean values of D_LLP are about 8% and 12% for Islamic and conventional banks, respectively, confirming that the bank type influences earnings management level in MENA countries. This variation might be due to the influence of supervisory bodies such as SSB and Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). In respect to audit quality, the mean values of Big-4, co-audit, IAC, ACS, ACM, and ACD are 66%, 60%, 84%, 3, 4.8, and 2.9% in Islamic, whereas, the mean values of Big-4, co-audit, IAC, ACS, ACM, and ACD are 52%, 35%, 39%, 3, 4.6, 4.7% in conventional banks. These outcomes demonstrate that more than half of Islamic and conventional banks usually prefer the services of these Big-4 firms and implies that both types of banks adhere to strengthen governance control. Furthermore, the mean values of Big-4, co-audit, and IAC in Islamic banks are higher than those of conventional banks, suggesting that conventional banks have a low level of audit quality. In addition, the descriptive statistic indicated that Islamic and conventional banks have a similar percentage of females, meeting frequency, and a similar number of the audit committee member, which is consistent with prior studies (D'Amato & Gallo, 2017; Inaam & Khamoussi, 2016). With Regards to other variables, they seem to be in reasonable ranges and aligns with previous studies (Mollah et al., 2017; Quttainah et al., 2013).

We examined the variation in the mean values of variables in both Islamic and conventional banks using additional non-parametric (Wilcoxon signed-ranks) and inferential statistic tests. The Wilcoxon Signed-ranks and T-tests results (Table 2) show a significant difference in mean values of D_LLP between Islamic banks and conventional banks at a 1% level. In line with prior literature, our result confirms that Islamic banks are less likely to be involved in earnings manipulations than conventional banks (Elnahass et al., 2014; Farooq & AbdelBari, 2015). This outcome supports the argument that religiously, ethically, and socially responsible banks show risk aversion and are less likely to engage in unethical behaviour (Dyreng et al., 2012). It also confirms that the commitment of Islamic banks to Shariah law, social and moral values compel managers to consider shareholders' interest, which in turn mitigates earnings management practices (Ha-Brookshire, 2017).

The mean values of Big-4, Co-audit, and IAC (reported in Table 2) are significantly different (1%) in Islamic banks and conventional banks and higher in Islamic banks compare with their counterparts. Also, the Wilcoxon Signed-ranks result shows significance at 1% and confirms that Islamic banks have higher mean values of ACS and ACM, whereas the T-test shows insignificant differences. This outcome shows that Islamic banks' compliance with the AAOIFI's accounting profession framework to enhance financial reporting quality. It also supports the argument that Islamic banks are more conservative and less likely to involve in earnings manipulation compared with their competitor. As expected in $\mathbf{H_{1a}}$, audit quality in Islamic banks is higher, which could be due to the compliance of the auditors of Islamic banks to SSB and AAOIFI's standards.

On the other hand, the comparison tests show no statistical difference in mean values of ACD in both types of banks, which is attributable to the low female representation in the audit committee in both types of banks. Furthermore, the mean values of Bank-S, Growth, and LIQ differ significantly at a 1% level. These outcomes imply that Islamic banks are more controlled compared with conventional banks. In contrast, the mean values of Lev and Profit are higher in conventional banks compare with Islamic banks and significantly different at a 1% level, suggesting that higher profitability in conventional banks could be due to the use of more capital to finance their assets. Furthermore, the mean values of political turmoil (PT) are significantly different and indicate that conventional banks are more likely to be involved in

earnings management compared to Islamic banks, which corroborate the findings of Abdelsalam et al. (2016).

Tables 3 reports the correlation coefficient test for all variables used in our empirical analysis in both Islamic (panel A) and conventional banks (panel B), respectively. Gujarati (2009) suggested that the coefficient of 80% is considered as a cut-off point of a high correlation between explanatory variables. Since the highest coefficients are 0.45 and 0.42 between big-4 and co-audit in Islamic and conventional banks, respectively, the multicollinearity issue does not exist among the variables of interest. Besides, we conducted a variance inflation factor (VIF) test to ensure that the condition index is lower than 5. The untabulated result indicated that there is no influence of collinearity on the drawn inferences.

4.2 The impact of audit quality on earnings management

Table 4 reports the association between earnings management and audit quality (full sample), while Tables 5 and 6 presents the results for both types of banks. As expected in $\mathbf{H_{2a}}$, $\mathbf{H_{3a}}$, $\mathbf{H_{4a}}$, and $\mathbf{H_{5a}}$, both dynamic and static models reported that Big-4, Co-audit, IAC, and ACS mitigate earnings management (based on a full sample). Our findings show that banks with at least two audit firms (co-audit), banks audited by Big-4, and those with independent and large audit committees are more likely to restrain managers' opportunistic behaviour. It also supports the argument that Big-4, co-audit, IAC, and ACS improve the quality of banks' financial reports. Our result supports the findings of Magnis and Iatridis (2017), who reported a higher level of earnings manipulation is linked with banks that deal with non-big-4 auditors. This result is in line with the argument that external auditors (Big-4) mitigate unethical managerial activities and are perceived to perform higher-quality audits as they are highly independent with greater financial expertise (Kanagaretnam et al., 2015).

The findings of ACS are consistent with Alzoubi (2018), who found that the size of audit firms reduces the level of earnings manipulation. This outcome supports the argument that a greater audit committee able to detect and resolve potential issues in the process of financial reporting (Katmon & Al Farooque, 2017). This is because a larger audit committee can provide the diversity of views, necessary strength, and expertise to ensure effective monitoring. However, this result contradicts with (Taktak & Mbarki, 2014). On the other hand, other audit

quality proxies ACM and ACD are not found to have a significant influence on earnings management in all three samples. This outcome is in line with previous studies (Peasnell et al., 2005; Sun et al., 2011), and could be due to audit members' relative lack of knowledge in the company's affairs and lower level of females' representation on audit committee (Haniffa & Ali, 2006).

In terms of bank characteristics variables, the findings of both static and dynamic models on the full sample show that bank-s, growth, profitability, and liquidity mitigate earnings management. This implies that managers of small banks with low performance, low growth opportunities, and low liquidity ratio are more likely to involve in earnings manipulation because they experience a low level of monitoring that increases their possibility to involve in earnings management (Cornett et al., 2009). These outcomes are consistent with previous studies (Ascioglu et al., 2012; Bova, 2013).

With respect to the country effect, the dynamic model seems to provide more significant results compared with the static model. For instance, the dynamic model shows that PT has a positive effect on earnings management. This is in line with the argument that an unstable economic environment leads to bank failures, a credit crunch, and continuous decline in stock exchange prices (Abdelsalam et al., 2016).

Based on Islamic banks' sub-sample, both dynamic and static models report (see table 5) that Big-4, Co-audit mitigate the likelihood of earnings management. Similarly, IAC and ACS signal a higher quality of audit and constrain earnings manipulation. This outcome is in line with the argument that Islamic institutions obligate to Islamic law, social and moral values, and more likely to implement high audit quality within a governance framework, which leads to reducing earnings management and improves the quality of financial reporting (Ha-Brookshire, 2017). Besides, growth, profitability, liquidity are negatively related to D_LLP. However, the random-effects model shows that bank-s is an important factor in reducing earnings management in Islamic banks. Furthermore, the PT factor seems to have no effect on earnings management in those Islamic banks that operate in Egypt, Yemen, Syria, Tunisia, and Iraq.

On the other hand, conventional banks' sub-sample (see table 6) illustrates that among six proxies of audit quality, only Big-4 and Co-audit have a significant impact on constraining

earnings management, indicating audit mechanism do not constrain earnings management in conventional banks. Furthermore, bank-s, growth, and profitability are negatively associated with earnings manipulation. These outcomes are consistent with previous studies (Ascioglu et al., 2012; Bova, 2013; Waweru, 2014). Most importantly, the dynamic model shows that conventional banks that operate in countries experiencing political turmoil are more likely to engage in earnings management, indicating that managers of conventional have a great opportunity to be involved in earnings manipulation in those countries because of the lack of monitoring system. This finding supports the argument that managers of Islamic banks commit to Shariah law, social and moral values, and more likely to implement high audit quality which in turn mitigates earnings management practices and improves the quality of financial reporting (Ha-Brookshire, 2017).

4.3 Additional analysis

We conducted an additional analysis by using an alternative measurement of earnings management to assess the validity of our outcomes. We adopted the modified Jones model for banking institutions developed by Yasuda et al. (2004). We describe total accruals (T_AC) as the difference between operating cash flows and net income.

$$T\_AC_{it} = N\_I_{it} - O\_CF_{it}$$

We used the cross-sectional variations of the adjusted Jones model following previous studies (Abdelsalam et al., 2016; Yasuda et al., 2004). This approach ensures that the influence of industry type and the year is controlled. According to Yasuda et al. (2004), non-discretionary equipment and premises expenses and changes in bank business conditions (operating income) can be used in capturing non-discretionary accruals. Consequently, for Islamic and conventional banks, the discretionary part of the total accrual is achieved by using the (equation A) residual, which relies on managerial discretion, as the D_A portion of the total accruals. This non-discretionally accrual is the main focus of this research. We avoided heteroscedasticity by dividing all variables in this equation (A) by the lagged value of total assets in line with Abdelsalam et al. (2016).

$$\frac{T\_AC_{it}}{T\_A_{t-1}} = \beta_0 \frac{1}{T\_A_{t-1}} + \beta_1 \frac{\Delta\, OI_{it}}{T\_A_{t-1}} + \beta_2 \frac{B\_PE_{it}}{T\_A_{t-1}} + \varepsilon_{it} \qquad \text{(A)}$$

Where:

T_AC = is the total accruals estimated from the difference between net income and operation cash flows. T_A= Total assets. Δ OI= Change in operating income. B_PE= Bank's premises and equipment.

The outcomes in Table 7 confirmed our main results that the big-4, co-audit, IAC, and ACS are linked to low earnings management in Islamic banks, while only big-4 and co-audit have a negative impact on earnings management in conventional banks. Moreover, most of the bank characteristics proxies have a negative and significant relationship with earnings management. We also found that banks that operate in politically unstable countries are highly engaged in earnings management in all three samples.

In addition to the above analysis, we checked the robustness of our findings by re-estimating all models using different sub-samples of banks with relatively strong incentives to involve in earnings management. The reason is that firms with small size, low growth, low profitability, low liquidity, and great leverage are more frequently involved in earnings management to avoid losses, debt covenant violation, and meet capital obligations (Zang, 2011). Also, we adopted the argument of Abdelsalam et al. (2016), that due to the financial crisis and prevalence of political turmoil in some MENA countries, including those in our sample, its impact is likely to be extended to other countries in our sample. Therefore, the influence of the financial crisis was controlled by dividing the sample in two subsamples (before and after the crisis). We examined a set of sub-samples that includes bank-years with small bank size, low growth, profitability, liquidity, high leverage, before the financial crisis, after the financial crisis and banks that operate in countries experiencing political turmoil. Table 8 (Panel A and B)[2] shows that the findings are like those presented in the primary outcomes and confirm that big-4, co-audit, IAC, and ACS are negatively correlated to earnings management.

Besides, we conducted 2SLS regressions to control for endogeneity by using the lagged value of audit quality proxies as instruments variables. Table 9 illustrates that the outcomes are similar to our main findings, signifying that endogeneity has no influence on our main results.

[2] *Panel **A** represents the subsamples based on small bank, low growth, low profitability and high leverage, whereas, Panel **B** outlines the subsamples of banks with low liquidity, before and after the financial crisis and political turmoil.*

5. Conclusion

Our paper sheds new light on the association between audit quality and earnings management by employing a sample of 1378 observations of Islamic and conventional banks operate in MENA countries. This study provides empirical evidence that Big-4, Co-audit, IAC, and ACS restrain managers of Islamic banks from engaging in earnings management. At the same time, our findings show that audit committee mechanisms do not constrain earnings management in conventional banks. Furthermore, random effects and GMM regression results suggest that several bank characteristics proxies are negatively and significantly linked to earnings management. Besides, the T-test and Wilcoxon Signed-ranks results document that there is a significant difference in the mean values of both earnings management and audit quality proxies, where Islamic banks are more likely to provide high-quality auditing with a low level of earnings management compared with conventional banks. Additionally, we found that conventional banks that operate in political turmoil countries are involved in a high level of earnings manipulation.

The key findings remain consistent and robust to additional analysis. These findings have implications for policymakers to boost the regulations with regards to audit quality in the emerging economies. It also implies that financial institutions in MENA countries need to enhance their compliance with audit quality to improve the reliability and integrity of published reports. It also provides helpful insights into the determinants of earnings management in both Islamic and conventional banks operate in MENA countries. There are certain limitations to our study, which creates an opportunity for further research. First, our study focused on the MENA region, thereby making it difficult to generalise its results. Future studies could build on our research by covering Islamic banks across the globe, thereby enriching our understanding of the subject. Finally, we examined religiosity at the bank-level and not on the level of the individual. There is a need for further studies to understand the impact of religiosity on managerial decision-making.

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Appendices

Appendix 1

Symbol	Name of Variable	Definition
EMP	Earnings management through LLPs	Earnings management achieved from Two-stage model of Kanagaretnam et al. (2004)
Big-4	External Big auditors	A dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise.
Co-audit	Cooperation of two audit firms	A dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise
IAC	Independence of Audit Committee	The ratio of independent non-executive directors to total number of audit committee
ACS	Audit committee size	Measured by the number of audit committee members
ACM	Audit committee meetings	Measured by the number of audit committee meetings held in the financial year
ACD	Audit committee gender diversity	Measured as a percentage of female on the audit committee
Bank-S	Bank Size	Measured by the Logarithm of total assets at the year end
Growth	Bank Growth	Measured as the change of total assets divided by the lagged of total assets
Lev	Bank Leverage	Measured by total liabilities to total assets at the end of the financial year. Profit: Profitability as measured by net Income divided by lagged total Assets
Prof	Bank profitability	Measured by net Income divided by lagged total Assets.
LIQ	Bank Liquidity	Measured by current assets divided by current liabilities at the end of the financial year
CAP	Capital adequacy ratio	Measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets
PT	Political turmoil	A dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise

Table 1 Descriptive statistic

	Islamic banks- (377 observations)							Conventional banks- (1001 observations)						
Variables	**Mean**	**Median**	**S. D**	**P5**	**P25**	**P75**	**P95**	**Mean**	**Median**	**S. D**	**P5**	**P25**	**P75**	**P95**
EMP	0.0798	0. 0986	0.0561	0.0024	0.0312	0.1063	0.1395	0.1208	0.102	0.142	0.0196	0.0878	0.1065	0.254
Big-4	0.6684	1	0.4714	0	0	1	1	0.5244	1	0.4996	0	0	1	1
Co-Audit	0.6021	1	0.4901	0	0	1	1	0.3596	0	0.4801	0	0	1	1
IAC	0.8412	1	0.3355	0	1	1	1	0.3938	0.5	0.3829	0	0	0.6666	1
ACS	3.1193	3	0.8956	2	3	3	5	3.1518	3	1.1067	2	2	4	6
ACM	4.7877	5	1.0066	4	4	5	7	4.6553	4	1.2743	4	4	5	7
ACD	0.0291	0	0.1685	0	0	0	0	0.0469	0	0.2116	0	0	0	0
Bank-S	13.5182	12.2841	11.1087	0.0004	2.9883	23.4525	32.423	7.7905	3.4405	9.145	0.0458	2.5222	10.754	27.919
Growth	0.2108	0.1435	0.2009	0.0409	0.1037	0.223	0.8114	0.1544	0.1298	0.1261	0.0583	0.0958	0.1618	0.3865
Lev	0.7628	0.8653	0.2458	0.1374	0.7556	0.9062	0.9606	0.8141	0.8704	0.1909	0.1877	0.8285	0.9037	0.9416
Profit	0.0462	0.0165	0.1301	-0.0207	0.0086	0.032	0.2377	0.6037	0.5901	0.4678	0.0633	0.1605	0.9473	1.3385
LIQ	3.2596	1.1652	10.2606	0.2972	1.1042	1.3815	11.5139	1.4382	1.158	2.1404	1.0602	1.1087	1.2949	1.5461
CAP	0.1758	0.1348	0.1585	0.0579	0.0994	0.1878	0.4352	0.1619	0.1341	0.1608	0.0495	0.0977	0.1754	0.3203
PT	0.0689	0	0.2537	0	0	0	1	0.2477	0	0.4319	0	0	0	1

EMP: Earnings management achieved from Two-stage model, **Big-4**: A dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net Income divided by lagged total Assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 2 Comparison Tests

Variables	Mean		Median		T-Test	Wilcoxon Signed-ranks
	Islamic banks	Conventional banks	Islamic banks	Conventional banks		
EMP	0.0798	0.1208	0. 0986	0.1020	0.001***	0.001***
Big-4	0.6684	0.5244	1	1	0.001***	0.001***
Co-Audit	0.6021	0.3596	1	0	0.001***	0.001***
IAC	0.8412	0.3938	1	0.5	0.001***	0.001***
ACS	3.1193	3.1518	3	3	0.6099	0.0093***
ACM	4.7877	4.6553	5	4	0.0696	0.001***
ACD	0.0291	0.0469	0	0	0.1431	0.1431
Bank-S	13.5182	7.7905	12.2841	3.4405	0.001***	0.001***
Growth	0.2108	0.1544	0.1435	0.1298	0.001***	0.001***
Lev	0.7628	0.8141	0.8653	0.8704	0.001***	0.0705**
Profit	0.0462	0.6037	0.0165	0.5901	0.001***	0.001***
LIQ	3.2596	1.4382	1.1652	1.158	0.001***	0.0372**
CAP	0.1758	0.1619	0.1348	0.1341	0.1513	0.21
PT	0.0689	0.2477	0	0	0.001***	0.001***

***,**,* Indicates statistical significance at 1%, 5% and 10% levels, respectively. **EMP**: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 3 Correlation matrices analysis for Islamic and conventional banks

Panel A (Islamic banks)

	Big-4	Co-Audit	IAC	ACS	ACM	ACD	Bank-S	Growth	Lev	Profit	LIQ	CAP	PT
Big-4	1												
Co-Audit	0.4501	1.0000											
IAC	0.2240	0.1680	1.0000										
ACS	0.2704	0.1024	0.3697	1.0000									
ACM	0.0531	-0.0045	0.1408	0.3084	1.0000								
ACD	0.1221	0.0443	0.0821	0.1707	-0.0731	1.0000							
Bank-S	0.4346	0.4102	0.0231	0.2528	0.1272	0.1813	1.0000						
Growth	0.1719	0.1293	0.0367	0.2829	0.1910	-0.1266	0.2709	1.0000					
Lev	-0.1659	-0.1762	-0.0831	-0.2313	-0.3259	0.0254	-0.1735	-0.3365	1.0000				
Profit	-0.1444	0.0654	0.1172	0.0309	-0.0029	-0.0033	0.1121	0.1368	-0.2899	1.0000			
LIQ	0.1451	0.1655	0.0722	0.1934	0.2613	-0.0373	0.1270	0.2346	-0.4467	0.0774	1.0000		
CAP	0.2834	0.2266	0.1185	0.0727	-0.0026	0.0240	0.1226	0.0228	-0.0397	0.0150	0.1048	1.0000	
PT	-0.2530	-0.2493	-0.0585	-0.0129	0.1928	-0.0472	-0.1783	-0.0452	0.1351	-0.0759	-0.0432	-0.0646	1.0000

Panel B (Conventional banks)

Big-4	1.0000												
Co-Audit	0.4210	1.0000											
IAC	0.0693	-0.0368	1.0000										
ACS	0.1813	0.0703	0.3665	1.0000									
ACM	0.2056	0.0949	0.3341	0.4143	1.0000								
ACD	0.1546	0.0010	0.1765	0.3196	0.1490	1.0000							
Bank-S	0.2678	0.2245	0.1595	0.2241	0.2964	0.1977	1.0000						
Growth	0.3275	0.3479	0.0716	0.1128	0.2343	0.1020	0.3701	1.0000					
Lev	-0.1320	-0.1767	-0.0372	-0.0896	-0.1034	-0.0382	-0.2590	-0.3620	1.0000				
Profit	-0.1242	-0.1170	0.0901	0.0043	0.0031	-0.0330	0.0999	-0.1079	-0.0302	1.0000			
LIQ	0.1254	0.1457	0.1032	0.1291	0.1904	0.1757	0.3101	0.2721	-0.2933	0.1008	1.0000		
CAP	0.2114	0.2531	-0.0194	-0.0118	0.0405	0.0722	0.0593	0.1976	-0.0753	-0.0441	0.1033	1.0000	
PT	-0.3405	-0.4108	-0.0386	-0.1645	-0.2153	-0.1274	-0.3304	-0.1362	0.0775	0.0138	-0.0604	-0.0703	1.0000

EMP: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 4 Regression result (Full Sample)

	Full sample			
Variables	**Random effects**		**GMM**	
	Coef	P> [Z]	Coef	P> [Z]
Big-4	-0.0368	-4.78***	-0.0464	-4.29***
Co-Audit	-0.0564	-5.97***	-0.0881	-6.47***
IAC	-0.0172	-2.19**	-0.0602	-4.98***
ACS	-0.0079	-2.58***	-0.009	-2.02**
ACM	0.0011	0.43	0.0073	1.62
ACD	0.0241	1.38	0.0073	0.23
Bank-S	-0.001	-2.70***	0.0007	1.95*
Growth	-0.1098	-5.28***	-0.1546	-5.52***
Lev	0.0057	1.17	0.0032	1.17
Profit	-0.0381	-5.05***	-0.0622	-5.29***
LIQ	-0.0006	-1.66*	-0.001	-2.22**
CAP	0.0035	0.19	-0.0385	-1.34
PT	0.0138	0.77	0.3197	10.27***
_Cons	0.2861	13.34***	0.3798	13.32***
	R^2= 0.1647	**P>chi2=**0.001		

EMP: Earnings management achieved from Two-stage model, **Big-4:** a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, ACS: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, Growth: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 5 Regression result (Islamic Banks)

	Islamic banks			
Variables	**Random effects**		**GMM**	
	Coef	Z	Coef	P> [Z]
Big-4	-0.0342	-5.25***	-0.0482	-5.72***
Co-Audit	-0.02	-2.99***	-0.04	-3.54***
IAC	-0.0402	-5.25***	-0.0607	-5.68**
ACS	-0.0087	-2.91***	-0.0058	-1.98*
ACM	0.0018	0.7	0.0072	1.1
ACD	-0.0022	-0.13	0.0502	1.46
Bank-S	-0.0006	-2.26**	-0.0004	-1.16
Growth	-0.0274	-1.99**	-0.0244	-2.35***
Lev	0.0049	0.4	0.0163	0.96
Profit	-0.0429	-2.31**	-0.0464	-2.02**
LIQ	-0.0005	-2.43**	-0.0002	-2.98***
CAP	-0.0083	-0. 46	-0.0055	-1.49
PT	0.0037	0.31	-0.0792	-1.4
_Cons	0.1831	9.51***	0.2066	7.27***
	R^2= 0. 5243	**P> chi2=** 0.001		

EMP: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 6 Regression result (Conventional Banks)

	Conventional banks			
Variables	**Random effects**		**GMM**	
	Coef	Z	Coef	P> [Z]
Big-4	-0.0314	-2.85***	-0.0566	-3.64***
Co-Audit	-0.0522	-3.93***	-0.0824	-4.33***
IAC	-0.008	-0.74	-0.0586	-1.59
ACS	-0.0086	-1.22	-0.0068	-1.09
ACM	0.0014	0.38	-0.0182	-1.81
ACD	0.0239	1.13	-0.034	-0.89
Bank-S	-0.0017	-2.72***	-0.0017	-1.97*
Growth	-0.2394	-6.61***	-0.2789	-5.98***
Lev	0.0662	1.15	0.0028	1.02
Profit	-0.0335	-3.67***	-0.0456	-3.20***
LIQ	0.0001	0.01	0.0011	0.62
CAP	0.0171	0.75	-0.0078	-0.23
PT	0.0065	0.35	0.3131	8.16***
_Cons	0.3804	13.18***	0.4834	12.48***
	R^2= 0. 3055	**P> chi2=** 0.001		

EMP: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, Bank-S: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 7 Additional analysis (using alternative measurement EMA)

Variables / EMA	Conventional banks				Islamic banks				Full sample			
	Random effects		GMM		Random effects		GMM		Random effects		GMM	
	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]
Big-4	-0.0267	-4.09 ***	-0.065	-6.33***	-0.017	-2.34**	-0.0193	-1.98**	-0.0233	-4.41***	-0.0391	-4.92***
Co-Audit	-0.0285	-4.05***	-0.089	-7.06***	-0.0246	-3.29***	-0.0504	-3.93***	-0.037	-6.46***	-0.0902	-8.87***
IAC	-0.0066	-1.02	-0.006	-1.42	-0.061	-7.00***	-0.0486	-3.97***	-0.0206	-4.05***	-0.0505	-5.54***
ACS	-0.0013	-0.56	0.0011	0.28	-0.014	-4.09***	-0.0153	-3.57***	-0.0046	-2.22**	-0.0038	-1.81*
ACM	0.0018	0.86	0.0014	1.3	-0.0063	-1.57	0.0043	1.05	0.0043	1.36	0.0094	1.28
ACD	0.0163	1.37	0.0084	1.49	0.0242	1.26	-0.0089	-0.25	0.0196	1.63	0.0451	1. 27
Bank-S	-0.0018	-0.61	-0.0055	-0.95	0.0003	1.14	-0.0004	-1.1	0.0003	1.34	-0.0002	-0.65
Growth	-0.0426	-1.81*	-0.0025	-0.08	-0.006	-0.39	-0.033	-1.92*	-0.0281	-1.91*	-0.0162	-0.79
Lev	0.0098	1.79	0.0132	1.62	0.0376	1.67	0.0454	1.26	0.0819	1.84	0.1046	1.31
Profit	-0.0311	-6.10***	-0.0775	-7.75***	-0.0136	-0.64	-0.0816	-2.65***	-0.0318	-7.13***	-0.0689	-7.55***
LIQ	-0.0014	-1.4	-0.0022	-1.85*	-0.0003	-1.25	-0.0006	-2.18**	-0.0006	-2.13**	-0.0005	-1.74*
CAP	-0.0303	-2.12**	-0.0249	-1.09	0.0039	0.98	-0.2744	-4.44***	-0.0341	-2.74***	-0.0563	-2.61***
PT	-0.0133	-1.94*	0.0362	2.33**	0.0144	1.05	0.0994	1.78*	-0.01	-1.51	0.0385	2.1**
_Cons	0.168	9.87***	0.1699	6.69***	0.1384	6.33***	0.1297	4.04***	0.1441	10.43***	0.1879	8.80***
	R^2= 0.1892	P> chi2= 0.001			R^2= 0.1535	P> chi2= 0.001			R^2= 0.1872	P> chi2= 0.001		

EMA: Earnings management achieved from modified Jones model for banking institutions developed by Yasuda et al, (2004)., **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 8 Robustness test:

Panel A

	Small-Bank-Size				Low-Growth				Low-Profitability				High- Leverage			
	Random		GMM		Random		GMM		Random		GMM		Random		GMM	
	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]
Big-4	-0.0376	-2.58***	-0.0862	-3.44***	-0.0223	-1.88*	-0.0589	-3.25***	-0.035	-3.99***	-0.029	-2.42***	-0.0469	-3.81***	-0.095	-4.48***
Co-Audit	-0.0863	-4.64***	-0.2253	-6.98***	-0.0597	-3.67***	-0.1073	-4.29***	-0.057	-4.76***	-0.023	-2.10**	-0.076	-5.41***	-0.189	-6.99***
IAC	-0.0039	-0.26	-0.0519	-2.00**	-0.0016	-0.14	-0.0332	-1.80*	-0.027	-2.83***	-0.07	-5.16***	-0.0205	-1.96*	-0.088	-3.60***
ACS	-0.0192	-3.10***	-0.0382	-3.60***	-0.0111	-2.26**	-0.0051	-0.68	-0.01	-2.80***	-0.014	-2.59***	-0.0106	-2.30**	-0.029	-3.92***
ACM	-0. 0001	-0.03	-0.042	-1.16	-0.0075	-1.61	-0.0274	-3.36***	9E-04	0.27	0.0096	1.87	-0.0041	-1.01	-0.048	-5.77***
ACD	0.0627	0.99	-0.0637	-0.63	-0.0012	-0.04	0.0319	0.62	0.014	0.64	-0.003	-0.1	0.013	0.49	0. 0414	0.78

Panel B

	Low-Liquidity				Before-Financial Crisis				After-Financial Crisis				political turmoil			
	Random		GMM		Random		GMM		Random		GMM		Random		GMM	
	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]	Coef	P> [Z]
Big-4	-0.0368	-3.37***	-0.0764	-3.64***	-0.0299	-3.63***	-0.0266	-2.10**	-0.047	-4.64***	-0.059	-4.20***	-0.0565	-2.01**	-0.378	-6.54***
Co-Audit	-0.0924	-6.07***	-0.1947	-6.39***	-0.0828	-6.32***	-0.0267	-2.29**	-0.064	-5.73***	-0.111	-6.82***	-0.0692	-1.98**	-0.169	-4.58***
IAC	-0.0216	-2.06**	-0.0789	-4.03***	-0.0199	-2.05**	0.0319	0.62	-0.021	-1.95*	-0.096	-5.67***	-0.0003	-0.01	-0.111	-3.45***
ACS	-0.0027	-0.66	-0.0236	-2.50**	-0.0134	-3.40***	-0.0697	-0.52	-0.014	-3.58***	-0.003	-0.6	-0.0627	-5.02***	-0.043	-2.89***
ACM	-0.0025	-0.68	-0.0178	-1.18	0.006	1.36	-0.0177	-0.21	-0.003	-0.91	-0.027	-4.58***	0.007	0.45	0.0151	0.65
ACD	0.0232	0.88	-0.2098	-1.21	-0.058	-1.28	0.0009	0.27	0.03	1.43	0.0054	0.15	0.0003	0.40	0.0029	0.27

EMP: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.

Table 9 Robustness test (2SLS)

	Conventional banks		Islamic banks		Full sample	
Variables	**Coef**	**P> [Z]**	**Coef**	**P> [Z]**	**Coef**	**P> [Z]**
Big-4	-0.0657	-2.04**	-0.0426	-2.26**	-0.0624	-2.49***
Co-Audit	-0.0337	-1.98**	-0.0282	-2.37***	-0.0586	-2.44***
IAC	-0.0155	-0.65	-0.0355	-1.92*	-0.0601	-3.46***
ACS	-0.0040	-0.48	-0.0271	-1.97**	0.0005	0.07
ACM	0.0027	0.42	-0.0089	-1.41	-0.0066	-1.15
ACD	0.0246	0.65	-0.0145	-0.58	0.0307	0.97
Bank-S	-0.0017	-2.35***	0.0002	0.4	-0.0028	-5.25***
Growth	-0.2383	-5.89***	-0.0114	-0.59	-0.2037	-7.46***
Lev	-0.1681	-7.48***	-0.0143	-0.89	-0.1210	-6.57***
Profit	-0.0345	-3.68***	-0.0534	-2.31**	-0.0262	-3.05***
LIQ	0.0000	-0.01	-0.0002	-0.74	-0.0016	-3.06***
CAP	0.0172	0.72	0.0067	0.31	-0.0539	-2.29**
PT	0.0004	0.02	0.0078	0.57	0.0886	5.38***
_Cons	0.3773	9.72***	0.2948	5.93***	0.2728	7.32***

EMP: Earnings management achieved from Two-stage model, **Big-4**: a dummy variable that takes 1 if a bank is audited by one of a Big-4 firm and 0 otherwise, **Co-Audit**: a dummy variable that takes 1 if the bank is audited by two audit firms and 0 otherwise, **IAC**: the ratio of independent non-executive directors to total number of audit committee, **ACS**: measured by the number of audit committee members, **ACM**: measured by the number of audit committee meetings held in the financial year, **ACD**: measured as a percentage of female on the audit committee, **Bank-S**: measured by the Logarithm of total assets at the year end, **Growth**: measured as the change of total assets divided by the lagged of total assets, **Lev**: measured by total liabilities to total assets at the end of the financial year, **Profit**: measured by net income divided by lagged total assets, **LIQ**: measured by current assets divided by current liabilities at the end of the financial year, **CAP**: measured by ratio of actual regulatory capital (Tier 1 capital) to the total assets and **PT**: a dummy variable encoded 1 if a bank is based in Egypt, Yemen, Syria, Tunisia or Iraq and 0 otherwise.