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External auditor type, discretionary accruals and investors' reactions

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Abstract

Purpose – The purpose of this paper is to investigate, in an Egyptian context, the external auditor type (Big 4 vs local) implications on reporting quality proxied by discretionary accruals (DA) and also examine whether auditor type impacts the market's pricing of DA, where pricing is considered a proxy for the perceived DA quality.

Design/methodology/approach – The sample period is 2012–2015, that is meant to be post the Egyptian revolution financial crisis; all Egyptian stock exchange (EGX) listed firms (except banks and financial institutions) are considered. DA are estimated using modified Dichev and Dechow's (2002) model (McNicholas, 2002). Ordinary least squares regression tests are used to investigate the external auditor type implications on DA level and the related EGX investors' pricing.

Findings – The findings generally show the external auditor's minimal role in mitigating DA. Moreover, the findings reflect the EGX investors' negligence and/or lack of confidence in regards to DA and external auditor type factors in stock pricing.

Practical implications – The paper findings highlight to regulators the need for effective monitoring of audit firms earnings management mitigation performance to help reinforce investor confidence in financial reporting quality.

Originality/value – This paper is the first that investigates the external auditor monitoring mechanism implications on investors' perceptions of earnings quality in Egypt. The paper findings would provide important contributions, particularly post the Egyptian revolution crisis, where the EGX market is trying to restore the investors' confidence.

Keywords External auditor, Discretionary accruals, EGX market, Investors' pricing

Paper type Research paper

1. Introduction

Over the last two decades, the corporate failings (including Enron, Tyco and WorldCom) have interrogated the public trust in the auditing profession and resulted in increased regulatory scrutiny. For instance, the Sarbanes–Oxley Act (SOX) inaction in 2002, to call for reinforced auditor independence and the formation of Public Company Accounting Oversight Board (PCAOB) to monitor the external audit services quality (Lamoreaux, 2016). The audit market dramatic changes have increased the audit requirements demands (e.g. internal controls systems effectiveness assessment) that resulted in shifting from Big 4 audit firms to local audit firms mainly due to enlarged audit fees (Blokdiijk *et al.*, 2006; Rama and Read, 2006; Lawrence *et al.*, 2011; Cassell *et al.*, 2013; Comprix and Huang, 2015). Especially after 2002, local auditors are progressively exposed to higher business risk due to their acceptance of bigger size clients approaching from predecessor Big 4 auditors (Hogan and Martin, 2009). However, clients could be hesitant to engage local audit firms because of the apparent variances in name recognition or reputation, practical competences and industry know-how. Market participants' prospects or assurance requests (e.g. shareholders, creditors, etc.) could be of major significance in their unwillingness to consider local audit firms (Cullinan *et al.*, 2012).

Commonly, literature studies have documented the relative high quality of Big 4 audit firms' services (e.g. Boone *et al.*, 2009; Samaha and Hegazy, 2010; Rutledge *et al.*, 2014; Comprix and Huang, 2015). However, PCAOB suggested no audit quality differences between Big 4 and local audit firms. The US market research supported the PCAOB's



argument, for example, Lawrence *et al.* (2011) found that controlling for client's size diminished the differences in audit quality between Big 4 and local audit firms. Jenkins and Velury (2011) found non-significant difference in conservatism between clients of Big 4 and local auditors in either the pre- or post-SOX periods. Moreover, Boone *et al.* (2010) did not evidence a significant difference in the performance-adjusted abnormal accruals between the clients of Big 4 and local audit firms. Also, Cassell *et al.* (2013) showed that the financial reporting credibility of local firms audited clients was indistinguishable from Big 4-audited counterparts. Consistently, Geiger and Rama (2006) documented no discretionary accruals (DA) significant differences between clients of Big 4 and local audit firms.

Investigating the stakeholders' perceptions, Gray and Ratzinger (2010) reported that vs Big 4 firms, stakeholders generally agreed that local firms provided comparable audit quality. Moreover, post the SOX, Kao *et al.* (2013) investigated whether local auditors have enhanced their ability to resist client pressure over accrual reporting. Regressing abnormal accruals on proxies for economic bonding, they found that changes in the association, defined as (post-pre), were significantly negative, implying local audit firms' independence improvement. Also, Lai (2013) found that Ex-Andersen clients of non-Big 4 auditors had a higher likelihood of going-concern opinions and lower levels of DA.

On the other hand, very minor research literature focused on the Big 4 audit quality against local firms in developing markets. For example, Muttakin *et al.* (2017) investigated the moderating role of audit quality on the association between business group affiliation of firms and earnings management in the South Asian emerging economy of Bangladesh. Results showed that the level of DA was positively associated with business group affiliation status, and higher audit quality reduced this association. However, Muttakin *et al.* (2017) did not consider the audit firm type in their analysis. Mo *et al.* (2015) examined a sample of Chinese financially-distressed companies from 2001 to 2010, and revealed that the Chinese affiliates of Big 4 auditors had a higher propensity to issue going concern reports than local auditors not only in the post-bankruptcy law period, but also in the pre-bankruptcy law period. Also, Wang *et al.* (2009) found that the Chinese audit market expansion did not provide the local auditors any price advantage. They argued that this may be a strategy to win future clients that seek low-priced audits. In Serbia, Stanisic *et al.* (2015) tried to define the so-called "second tier" auditor by investigating the listed firms' financial statements. However, exploring the quality of these second tier audit firms was not considered in the analysis. However, Rusmin *et al.* (2014) indicated across Indonesia, Malaysia and Singapore that audit quality had negative relationships with earnings management measure (DA). The result of univariate analysis suggested that mean of DA in companies audited by Big 4 auditors were significantly smaller compared to that of in non-Big 4-audited firms. However, the results of multivariate analysis suggested that audit quality had only partially significant association with earnings management.

In Egypt, as a developing market example, Samaha and Hegazy (2010) showed a wide variation in analytical procedures use by Big 4 audit firms and its counterparts. Moreover, Khlif and Samaha (2016) evidenced that the association between audit committee activity and internal control quality was more pronounced for Big 4-audited firms. For only industrial Egyptian stock exchange (EGX) firms over 2005–2010, Reyad (2013) concluded a general positive audit quality impact on reducing total accruals as a proxy for earnings management. However, the implications of Big 4 vs local audit firms on earnings quality (DA) have not explored in an Egyptian context yet.

Egypt is an emerging market case with diverse predictions about the accruals superiority as an accounting-based performance measure. In the Egyptian capital market, the financial analysis industry is still not long established, forecasted financial information is not commonly disclosed by listed firms (Ragab and Omran, 2006; Ebaid, 2010). So, hard copy/on-line financial statements could be the core information source for the potential

Egyptian capital market investors. Accordingly, most Egyptian market stock transactions are based on accrual accounting information. Therefore, the significance of accruals-based measures for stock pricing appears to be very high in the Egyptian context (e.g. Ragab and Omran, 2006; Hassan *et al.*, 2009; Ebaid, 2010).

Previous research studies suggested that Egyptian-listed companies may engage in manipulating earnings to keep previous year earnings performance, avoid reporting losses, ease the external financing and achieve high-share valuation (Ebaid, 2012a). Recording manipulative provisions, expenditures capitalizing not expensing and inventory overestimation are the common techniques used in earnings manipulation (Kamel and Elbana, 2010). Though, relative and incremental value relevance tends to be statistically higher for the accrual-based performance measures than operating cash flows (Ebaid, 2012b).

In 2011, the EGX witnessed unique market crash (the Egyptian revolution crisis) with adverse shocks that triggered a sudden loss of investor confidence in the EGX market. In such crisis period, managers may be motivated to opportunistically manipulate earnings using DA choices to cover poor firm performance. However, after many firms collapse during the crisis, investors may have less confidence about these discretionary accounting choices. Investors' confidence loss in return would lead to a significant decline in the relative DA value relevance.

In light of these institutional characteristics, exploring the role of external auditor as a monitoring mechanism would be so crucial, more specifically; many economists have tried to identify the role of auditors post-financial crisis due to reduce information asymmetry (Persakis and Iatridis, 2016). The EGX-listed firms are trying to restore the public trust and the provision of high quality financial reporting would be highly regarded. The economic position was deteriorating and some firms would not have the enough resources to hire the Big 4 firms. Non-Big "local" audit firms could compromise a suitable alternative if they provide comparable audit services quality. Moreover, a listed Egyptian firm may ask for the public sector audit services provision. The Accountability State Authority (ASA) is a public governmental-based Egyptian audit firm. ASA is an independent entity that aims mainly to achieve control over the state funds and funds of other public persons. Assuring the credibility of financial reporting for the sake of public wealth protection can be provided by ASA. A listed Egyptian firm is free to choose the type of the external audit, so being audited by ASA is optional. No previous research in Egypt has focused on exploring the role of the ASA vs other local private audit firms in mitigating earnings management to help the EGX investors make more sound capital decisions.

Extending prior literature, this paper investigates the Big 4 vs local firms audit quality implications in terms of DA and related market reactions. Furthermore, this paper investigates the public vs private local firms audit quality implications. One recent study of El Ghouli *et al.* (2016) evidenced the importance of auditor choice to the *ex ante* cost of capital for public firms from 37 countries. They found corporate equity financing worldwide was cheaper when Big 4 auditors monitored the financial reporting process, although this relation was weaker outside the USA where the implicit insurance coverage that auditors afforded investors was much lower. They argued that equity pricing role of Big 4 auditors was stronger in countries with better institutions governing investor protection and disclosure standards. This evidence is in line with Persakis and Iatridis' (2016) findings, as they documented that higher (lower) audit quality implied higher (lower) earnings quality in countries with high (low) investor protection. Moreover, Persakis and Iatridis (2016) documented that audit quality and earnings quality were lower during crisis periods. The findings of El Ghouli *et al.* (2016) along with Persakis and Iatridis (2016) give motivation toward investigating the general potential effects of the external auditor firm type on reporting quality and stock pricing in an emerging market like Egypt, especially after the investor confidence shock of the Egyptian revolution

financial crisis, where the Egyptian institutional-based and accounting-based structures would give incentives to be uncertain regards reliability of earnings components; specifically accruals as a firm performance measure.

Over the sample period 2012–2015, the empirical results reveal that external audit firms generally seem to play an ineffective role in reducing DA. Moreover, clients of Big 4 are more likely to report higher DA level. In regards to EGX stock pricing, investors generally do not consider either DA or external audit firm type as relevant stock valuation factors.

This paper makes several contributions. To the best of the author's knowledge, this paper is the first that examines the role of auditors on reporting quality and its related pricing implications, in an Egyptian context. The paper extends prior developing market context literature of audit quality and earnings quality in general. The paper provides comparative analysis of the local public and private Egyptian audit firms' quality which is not considered before. The paper examines the auditor type quality implications over 2012–2015, i.e. meant to be mainly post the recent Egyptian revolution crisis period, which has not been addressed before. Giving the sample period, the paper provides insights on the managerial reporting behavior after crisis periods. Also, the paper findings highlight to regulators the need for effective monitoring of audit firms' performance to help reinforce investor confidence in financial reporting quality.

The remainder of this paper is organized as follows. Section 2 provides related theoretical background and hypotheses development. Section 3 presents the research design. Section 4 shows the empirical results, and Section 5 concludes.

2. Background and hypotheses development

External auditor is regarded as one of the most effective monitoring mechanisms that help lessen the interest conflicts between management and shareholders and also improve the financial reporting credibility (Jensen and Meckling, 1976).

The accrual-based accounting system provides managers with flexibility in communicating private information about the firm's future prospects (Watts and Zimmerman 1986; Healy and Palepu, 1993); however, it can also be opportunistically used by management to maximize their utility (e.g. to conceal economic losses). Accruals are the core of the accrual accounting system. However, accruals recognition relies on valuations, allocations and deferrals, which all require a higher degree of subjectivity (e.g. Dechow *et al.*, 2010). Based upon, DA can be regarded as a proxy for earnings management (e.g. Jones, 1991; Dechow and Dichev, 2002). Higher quality audits are likely to be more effective in constraining the opportunistic reporting of DA, which, in turn, shall result in higher relative and incremental accruals information content and more appropriate DA pricing.

According to the agency theory, shareholders (principals) would bear monitoring costs to mitigate the management (agent) opportunistic behavior. When the managers who initiate and implement important decisions are not the major residual claimants and therefore do not bear a major share of the wealth effects of their decisions, consequently they would have an incentive to make decisions that expropriate shareholders' wealth (Jensen and Meckling, 1976; Fama and Jensen, 1983). This agency conflict between managers and shareholders is derived from the manager's tendency to appropriate perquisites out of the company's resources for his own consumption (Jensen and Meckling, 1976). The control of agency problems is important; without effective control procedures, such decision managers are more likely to take actions that deviate from the shareholders' interests (wealth maximization). According to Jensen and Meckling (1976), shareholders could limit divergences from their interest by establishing appropriate incentives for the managers and by incurring monitoring costs designed to limit the management opportunistic activities. From an agency theory perspective, managers are more likely to hire larger audit companies when the corporate firm has high agency costs and potential gains of external monitoring are expected.

In addition, signaling theory indicates that companies would like to distinguish themselves to avoid the adverse selection problem as market investors would interpret the inadequate earnings information as “bad news.” Accordingly, managers would prefer to hire big audit companies to signal to the market their good performance and acceptance of higher audit requirements.

DeAngelo’s (1981) theoretical framework indicates that auditors’ independence may be compromised due to the relative client economic position. DeAngelo (1981) argued that audit quality is not independent of audit firm size even if auditors would have identical technological abilities. In regards, Big 4 auditors with greater number of clients have “more to lose” if they fail to report a breach in a client’s financial statements. Small audit firms are less likely to resist the threat because they have “less to lose” compared with large audit firms (e.g. they bear less reputation loss and litigation risk), and therefore small audit firms may provide lower audit quality (Khurana and Raman, 2004). In this setting, literature generally suggests that large auditors are more effective in restraining managerial opportunism in terms of accruals-based earnings management, and thus are able to lend greater credibility to reported earnings (Khurana and Raman, 2004). However, Wilson (2015) argued that local firms’ service-related independence improves financial reporting reliability of important clients. Moreover, Kao *et al.* (2013) found that after SOX, non-Big 4 auditors did not yield to client pressure to compromise reporting objectivity.

Egypt is an example of an emerging capital market that tries to support the current and future investors in order to attract overseas investment and promote its capital. A critical factor for achieving these objectives is the credibility and fairness of financial reporting. Recently, the EGX witnessed a unique market crash (the Egyptian revolution crisis) with adverse shocks. In such crisis period, managers may be motivated to opportunistically manipulate earnings using DA choices to cover poor firm performance. As the managers’ motivations to opportunistically manage earnings for the sake of private gain (such as executive compensation contracts) or to meet or beat earnings benchmarks are known (Bartov *et al.*, 2002; Graham *et al.*, 2005), investors can be indeterminate as to whether or not the stated earnings are the result of a rational and fair standards application. For example, Makhaiel and Sherer (2017) showed that Egyptian corporate executives could be motivated to manage the earnings number to meet the stakeholders’ expectations. Over 2005–2010, Reyad (2013) showed that external auditor could limit the accruals component of earnings. However, post the Egyptian revolution crisis, the external audit role in mitigating earnings management has not investigated yet.

According to the Egyptian Corporate Governance code (ECGC, 2011), a company should have an external auditor (elected by the general assembly) who is independent, with high technical skills and does not have any business relationship with the corporation. The board of directors should not control the decision to continue the external auditor assignment or to decide his/her remuneration. The external audit should not be contracted for more than consecutive five years. Further, the company’s board should not contract the external auditor to carry out any additional tasks in conflict with the financial audit duties, except with the audit committee approval. External auditor should submit a report on the company’s compliance with the governance principles to the general authority for financial control and the general assembly (ECGC, 2011). In light of these governance recommendations, external auditor would be expected to help monitor the managerial (agents) reporting behavior for the sake of the public stakeholders. Higher audit quality would be more likely to provide higher earnings quality presented by lower DA level.

Previous developed markets research showed the non-significant quality differences between Big 4 and local firms. Moreover, Rusmin *et al.*’s (2014) study of Malaysia, Indonesia and Singapore emerging markets revealed that Big 4 vs local audit firms audit quality had only partially significant association with earnings management. However, the

Egyptian context related research (Samaha and Hegazy, 2010; Khelif and Samaha, 2016) asserted the relative higher audit quality provision of Big 4 than local audit firms before the Egyptian revolution crisis.

Post the Egyptian revolution crisis, firms may choose to be audited by local firms to bear less audit fees. Moreover, based on DeAngelo's (1981) theoretical framework, managers would assign private local firms to pressure the auditors to report misleading discretionary earnings information giving the economic conditions. The ASA Egyptian public sector audit firm is expected to provide relatively higher audit services quality. ASA is subject to the government oversight and it operates for the sake of public wealth protection.

Based on theories and according to the Egyptian related literature, the following hypotheses are formulated:

H1a. Clients of Big 4 audit firms report less DA than private local audit firms' counterparts.

H1b. Clients of ASA audit firm report less DA than private local audit firms' counterparts.

Although investors in an efficient market can rationally foresee earnings management, they cannot see through it, i.e. they cannot disengage the earnings manipulations effects to reach the fundamental (but unobservable) economic earnings number, and therefore price the expected earnings opportunism (Bhattacharya *et al.*, 2003). Given this pricing behavior, managers may be expected to continue to manage earnings even when investors cannot be systematically fooled (Stein, 1989).

Considering the accruals subjective estimation nature, prior research argued that investors naively fixate on earnings level and neglect the distinction of accruals future prospects (e.g. Xie, 2001; LaFond, 2005; Pincus *et al.*, 2007). In future periods, accruals have a tendency to reverse. However, investors may be wrongly optimistic (pessimistic) in regards to the future prospects of high (low) accruals firms. Consequently, firms with high (low) accruals earn low (high) abnormal returns because of investor mispricing (e.g. Sloan, 1996). The inability of investors to distinguish the accounting distortions embedded in accruals estimation causes their fixation on observed earnings level and consequently improper assessment of stock returns. Literature (e.g. Sloan, 1996; Xie, 2001) regarded the investors' accruals fixation and mispricing to the managerial earnings opportunism.

In an Egyptian context, Ebaid (2010) investigated the persistence of the accruals and cash flow components of earnings and the implications of the associated reliability of estimating different accruals categories. Ebaid's (2010) findings revealed that the persistence of earnings performance was attributed more to the cash flow component than to accruals. Also, the findings revealed, consistent with Richardson *et al.* (2005), that the persistence of accruals was affected by their reliability, where less reliable accruals components have lower persistence than more reliable accruals components. However, Ebaid's (2010) analysis did not consider the investigation of the associated investors' stock pricing for each accruals reliability level.

Considering the external auditor effects on investors perception of accrual-earnings quality, Wang *et al.* (2009) showed that Big 4 audit firms earned additional premiums; however, the market provided no stock price premium advantage for the non-Big 4 firms. Krishnan (2003) documented that equity investors assigned greater importance to DA reported by firms audited by Big 4 relative to firms audited by local auditors. The higher weight assigned to DA for valuation implied that investors find DA of Big 4 clients as relatively more informative. To the best of author's knowledge, no previous research has investigated in an Egyptian context, the external auditor type and quality implications on stock pricing.

In regards to the financial reporting quality after crisis periods, concerns can be raised toward the management use of the accounting system to adjust earnings strategically

(Persakis and Iatridis, 2016). Based on the literature findings, it can be argued that investors cannot spread away the negative effects of earnings management and consequently to the level that investors are aware of the link between earnings management and audit quality and perceive Big 4 and local firms audit quality to be dissimilar, they may be anticipated to react with price protection for the lower quality audit by requesting going forward expected returns differentials.

Accordingly, post the Egyptian revolution crisis, the market investors are expected to react more positively for the DA reported by Big 4 clients. Moreover, the market investors are expected to react more negatively to the DA reported by private local audit firms' clients. Accordingly, the following hypotheses are formulated:

H2a. Investors pricing is more optimistic for Big 4 audit clients than private local audit firms' counterparts.

H2b. Investors pricing is more optimistic for ASA audit clients than private local audit firms' counterparts.

3. Research design

3.1 Audit firm type and DA

According to the agency theory, competent and independent external auditor is an effective monitoring mechanism that can mitigate the level that executive managers would undertake earnings management.

DA are estimated as the residuals from the cross-sectional modified Dechow and Dichev's (2002) model (McNichols, 2002). Some previous research papers have used the modified Dechow and Dichev (2002) model for assessing the quality of reported accruals (e.g., Francis *et al.*, 2005; Chen *et al.*, 2008; Kim and Qi, 2010; Mashruwala and Mashruwala, 2011; Ogneva, 2012). Dechow and Dichev (2002) estimated DA through regressing accruals on past, present, and future cash flows. In Dechow and Dichev's (2002) model discussion, McNichols (2002) proposed a combined model that added operating cash flows to the modified Jones model (Dechow and Dichev's 2002 modified model). McNichols (2002) suggested that adding operating cash flow to the modified Jones model should improve DA estimation (more explanatory power and less type I and type II errors). DA measure for each firm in each year is the standard deviation of the residuals from the following cross-sectional regression:

$$TAC_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta REV_{i,t} + \beta_5 PPE_{i,t} + e, \quad (1)$$

where $TAC_{i,t}$ is total current accruals for year t estimated using the balance sheet approach, $TAC_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t}$; $\Delta CA_{i,t}$ is one-year change in current assets; $\Delta CL_{i,t}$ is one-year change in current liabilities; $\Delta Cash_{i,t}$ is one-year change in cash; $\Delta STDEBT_{i,t}$ is one-year change in short term debt; $CFO_{i,t}$: cash flow from operations for year t is estimated as $NIBE_{i,t} - TA_{i,t}$, where $NIBE_{i,t}$ is net income before extraordinary items; $TA_{i,t}$ is total accruals; $\Delta REV_{i,t}$ is one-year change in revenues; and, $PPE_{i,t}$ is property, plant and equipment for year t .

To investigate each audit firm type (Big 4, private and public) implications on DA level. The following regression model is estimated:

$$DA_{i,t} = \beta_0 + \beta_1 AUDIT_{i,t} + \beta_2 MARKET_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CURRNT_{i,t} + \text{year fixed effect} + \text{industry fixed effect} + e, \quad (2)$$

where $DA_{i,t}$ is modified Dechow and Dichev's (2002) model estimated discretionary accruals; $AUDIT_{i,t}$ is a dummy variable equal to one or zero otherwise; $MARKT_{i,t}$ is the market value

of equity at the beginning of the year t ; $ROA_{i,t}$ is income before extraordinary items divided by the beginning of year assets; $LEV_{i,t}$ is leverage ratio, calculated as total debt divided by total assets; and $CURRNT_{i,t}$ is current assets divided by total assets.

In case the AUDIT coefficient is positive, it means that the relevant audit firm type does not limit the opportunistic earnings management that can be regarded to either the insufficient expertise or violated independence. Following Comprix and Huang (2015), the market value of equity (MARKT) is considered to control for size and growth opportunities. Further, the return on assets (ROA), debt ratio (LEV) and current assets to total assets ratio (CURRNT) are considered to control for the effect of firm's performance.

3.2 Audit firm type and DA pricing reactions

The literature documented consistent and robust evidence advocating that investors might not process the accrual-based earnings information efficiently in evaluating firms' performance and assessing its future prospects (e.g. Collins and Hribar, 2000; Xie, 2001; Thomas and Zhang, 2002; Chan *et al.*, 2006). To investigate the external auditor firm type potential effects on investors' pricing of DA perceived quality, the following regression model is formulated as follows:

$$R_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 AUDIT_{i,t} + \beta_3 DA_{i,t} \times AUDIT_{i,t} + \beta_4 MARKET_{i,t} + \beta_5 M/B_{i,t} + \beta_6 ROA_{i,t+1} + \beta_7 LEV_{i,t} + \beta_8 CURRNT_{i,t} + \text{year fixed effect} + \text{industry fixed effect} + e, \quad (3)$$

where: $R_{i,t}$ is stock annual return of a firm i in a year t , and $M/B_{i,t}$ is the net assets market value to book value ratio of a firm i in a year t .

The stock returns calculation starts three months after the financial year end, since this is the period within which financial statements are required to be published in the EGX. Following Doukakis and Papanastasopoulos (2014), stock returns are identified as the growth in the value of a share-holding unit of equity at the closing price. The raw equity return for a firm at month j is calculated as:

$$R_{i,j} = R_{i,j+1}/R_{i,j-1}. \quad (4)$$

With reference to Doukakis and Papanastasopoulos (2014), once firm monthly returns are collected, one-year-ahead annual stock returns are calculated using compounded 12-monthly buy-and-hold returns.

3.3 Data and sample

The sample includes all listed EGX firms (except banks and financial services firms) for the period of 2012–2015. The sample period is chosen to be post the EGX unique market crash (Egyptian revolution) that triggered a sudden loss of investor confidence. Managerial opportunism seems more probable in a revolutionary crisis period to cover the poor performance. However, the investor confidence loss can lead to a significant decline in the DA value relevance. An independent and qualified external auditor is expected to lessen the managerial earnings manipulations and cut down the investors doubt in financial information reliability.

The type of each EGX sample firm's external auditor for each year is identified through hard/on-line financial statements. Sample EGX firms with dual external audit firms are excluded. The empirical investigation tests use financial statement data extracted from Thomson Reuters annual database. Sample EGX firms with missing financial and/or market data (i.e. market capitalization value and stock returns) are excluded. By this, the sample would reach an average of 188 EGX firms in each sample year to be classified into 52 firms using Big 4 audits, 110 firms using private local audits and 26 firms using ASA public audit services.

4. Empirical results

4.1 Descriptive analysis

Table I presents the descriptive statistics for the listed EGX sample firms in total and for each external auditor firm type group (Big 4, private and public). The mean log of total assets (ASSET-log) is 8.90 for the full sample. Asset turnover (ATURN) is, on average, 0.8929 times per year and leverage (LEV) has a mean value which indicates that 54 percent of assets are financed through debt. Current assets represent, on average, 55.4 percent of total assets (CURRNT). The average return on assets (ROA) is 3.78 percent and the mean sales growth (SG) is almost 10 percent per year. The mean log of market capitalization (MARKT-log) is 8.658, and market to book ratio (M/B) is on average 1.5 times per year.

The correlations between all variables are reported in Table II. The choice of private local audit firms is negatively correlated with the log of total assets (ASSET-log) and log of net assets market value (MARKT-log); inconsistently, a positive correlation is found for the Big 4 audits. Accordingly, it can be suggested that smaller size and less market exposed firms are more likely to engage the local private audit firms. Also, the correlations statistics indicate that firms with more earnings profitability (ROA) are more likely to choose Big 4 audit firms to signal the reliability of its increased earnings. In contrast, the correlations coefficients show that firms with higher DA are more probable to hire Big 4 audit firms. Consistent with the agency conflict argument, the correlation analyses indicate that firms with high current asset (CURRNT) and debts (LEV) report more DA. However, a negative correlation is found between DA and return on assets (ROA) and asset turnover (ATURN). This highlights the reliability of sales recognition among the sample EGX listed firms. All significant correlations are tested for multicollinearity issues through calculating the variable inflation factor (VIF). A VIF score of more than 5 reflects a detrimental multicollinearity problem (Zikmund *et al.*, 2010). The VIF score for all variables are less than 5 while the VIF mean value is 1.0725; accordingly, it seems that the empirical analyses do not suffer from multicollinearity issues. Therefore, the regression analyses results can be interpreted with a high confidence level.

4.2 Audit firm type and DA implications

Table III presents the regression results (Equation 2) for the possible auditor firm type implications on earnings management proxied by the DA level. The Big 4 audit type

	All obs mean SD	Private obs mean SD	Difference in means (<i>t</i> statistics)	Big 4 obs mean SD	Difference in means (<i>t</i> statistics)	Public obs mean SD
ASSET-log	8.90 0.676	8.7156 0.65043	8.60840*** 88.433	9.1239 0.66881	8.70841*** 102.341	8.9690 0.53581
ROA	0.0378 0.09697	0.0328 0.11855	0.01409 0.775	0.0621 0.07979	0.03288* 2.112	0.0278 0.06494
MARKT-log	8.658 0.664	8.4837 0.62362	8.39163*** 96.009	8.8850 0.66173	8.46937*** 105.106	8.6843 0.65364
M/B	1.5359 2.75579	1.0595 1.66103	0.91273** 3.295	1.4092 1.36190	1.04661*** 4.807	3.0270 5.13378
ATURN	0.8929 0.94245	0.8562 0.95158	0.98955*** 6.129	0.6875 0.46798	0.85186*** 6.822	1.1817 1.33084
LEV	0.5447 0.25915	0.5597 0.27016	0.55341*** 12.110	0.5188 0.23456	0.56661*** 16.299	0.5696 0.23391
CURRNT	0.5544 0.22476	0.5617 0.20907	0.51568*** 16.705	0.5692 0.21581	0.56508*** 20.752	0.5865 0.27541
SG	0.0992 0.50702	0.1247 0.56767	0.08386 1.029	0.1088 0.48477	0.11729 1.582	0.1265 0.50943

Table I.
Auditor firm type:
descriptive analysis

Note: *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels (two-sided), respectively

	ASSET-log	CURRNT	LEV	SG	ROA	M/B-log	MARKT-log	ATURN	DA
Private	-0.281**	0.033	0.059	0.051	-0.052	-0.033	-0.268**	-0.109	-0.153
BIG	0.002	0.723	0.527	0.580	0.574	0.734	0.003	0.241	0.106
	<i>0.293**</i>	0.059	-0.089	0.017	<i>0.224*</i>	-0.017	<i>0.305**</i>	-0.079	<i>0.242**</i>
Public	0.001	0.527	0.337	0.855	0.015	0.862	0.001	0.397	0.010
	0.049	0.071	0.047	0.027	-0.051	0.068	0.019	0.129	-0.040
	0.595	0.447	0.611	0.774	0.585	0.481	0.834	0.165	0.674
ASSET-log	1	-0.152	0.160	0.041	<i>0.193*</i>	-0.030	<i>0.918**</i>	<i>-0.253**</i>	<i>0.215*</i>
		0.100	0.083	0.657	0.037	0.758	0.000	0.006	0.022
CURRNT		1	<i>0.417**</i>	0.139	<i>0.209*</i>	<i>0.289**</i>	-0.163	0.021	<i>0.194*</i>
			0.000	0.132	0.023	0.002	0.077	0.822	0.039
LEV			1	0.058	<i>-0.210*</i>	<i>0.400**</i>	0.054	-0.087	<i>0.317**</i>
				0.532	0.023	0.000	0.565	0.351	0.001
SG				1	0.159	0.039	0.036	0.149	-0.017
					0.085	0.681	0.699	0.106	0.861
ROA					1	0.098	<i>0.215*</i>	<i>0.310**</i>	<i>-0.189*</i>
						0.304	0.019	0.001	0.045
M/B-log						1	<i>0.275**</i>	-0.027	0.152
							0.003	0.781	0.119
MARKT-log							1	<i>-0.255**</i>	<i>0.189*</i>
								0.005	0.045
ATURN								1	<i>-0.301**</i>
									0.001
DA									1

Notes: The statistics reported in this table are based on Pearson correlations, **, **Values displayed in italic are significant at the 0.1 and 0.5 significance levels, respectively

Table II. Pearson's correlations for all variables

Dependent variable: discretionary accruals

Firm characteristics	BIG 4		Private		Public	
	Mean diff.	Coefficients <i>t statistics</i>	Mean diff.	Coefficients <i>t statistics</i>	Mean diff.	Coefficients <i>t statistics</i>
Intercept	<i>0.44068***</i>	<i>0.471**</i>	<i>0.50847***</i>	-0.213	<i>0.19492***</i>	-0.204
	9.601	2.664	11.002	-1.223	5.322	-0.970
MARKT-log		<i>-3.251**</i>		<i>3.548**</i>		<i>-4.080**</i>
		2.661		-2.768		-3.349
ROA		<i>0.267*</i>		<i>0.334*</i>		<i>0.387**</i>
		1.923		2.367		2.832
LEV		<i>-2.938**</i>		<i>-2.655**</i>		<i>-2.807**</i>
		-3.006		-2.654		2.792
CURRNT		<i>0.724*</i>		0.641		0.597
		1.841		1.595		1.485
Year dummies		<i>0.809**</i>		<i>0.931*</i>		<i>1.004*</i>
Industry dummies		2.664		2.014		2.106
Adj R ²		Included		Included		Included
		Included		Included		Included
		0.207		0.166		0.161

Note: *, **, ***Values displayed in italic are significant at the 0.1, 0.05 and 0.01 significance levels, respectively

Table III. Auditor firm type and discretionary accruals implications

coefficient is significantly positive (p -value by 5 percent). However, non-significant negative coefficients are showed for both private local and public ASA audit types. So, firms choosing Big 4 audits are more likely to report higher level of DA. In contrast, local private and public ASA audits might lessen the reported DA.

The findings do not support the formulated *H1a* and *H1b*. *H1a* predicts lower DA for Big 4-audited firms, while a significant positive Big 4 coefficient is evidenced for the DA dependent variable. Moreover, *H1b* predicts lower DA for public ASA audited firms. However, non-significant effects are explored for either local private or public audit firms for the DA level. So, *H1a* and *H1b* are rejected.

Accordingly, the findings suggest the weak external audit firms monitoring role in alleviating earnings management post the Egyptian revolution crisis (2012–2015). These findings are in contradiction with the agency theory presumption that external auditors would play an independent monitoring role mitigating the potential managerial earnings opportunism such as reporting DA that can mislead the earnings information users. Moreover, inconsistent with DeAngelo's framework, the findings indicate that, particularly, Big 4 firms' engagement may fail to reduce the earnings management behavior, although such Big 4 firms are exposed to reputational risk and market name loss. In addition, investors may be misled by firms' management that choose Big 4 audits to signal the reliable reporting performance.

These finding are in contrast with prior Egyptian context literature indicating the higher Big 4 audit quality provision (e.g. Samaha and Hegazy, 2010; Khlif and Samaha, 2016). More particularly in regards to DA, the empirical findings are contrary to the evidenced accruals mitigating effects of external audit by Reyad (2013) pre the Egyptian revolution crisis. However, the findings are in line with Rusmin *et al.*'s (2014) findings indicating only partial monitoring external auditor effects on DA.

Some prior literature studies (e.g. Fairfield *et al.*, 2003; Richardson *et al.*, 2006; Linck *et al.*, 2013) argued that DA could be used in a non-opportunistic way to signal the potential value-increasing investment opportunities; in such case, auditors would help firms make use of beneficial DA signaling the good news and accordingly the evidenced audit type coefficients would be reasonably justified. For example, Linck *et al.* (2013) hypothesized that firms with financial constraints would make credible use of DA to signal any valuable positive projects prospects. The positive Big 4 coefficient for DA is shown with negative (ROA) and positive (LEV) coefficients; indicating that firms with profitability difficulties and external financing needs are more likely to disclose higher DA. This evidence is consistent with the preceding signaling DA tool argument (Linck *et al.*, 2013). However, such argument appropriateness needs further research. Future research can consider partitioning the positive and negative DA separately or using different DA estimation model like modified Jones model (Dechow *et al.*, 1995) or performance-matched DA model (Kothari *et al.*, 2005).

Regarding control variables, the findings reveal that higher market value (MARKT-log) firms report more DA. This finding questions the investors' ability to differentiate the DA nature. Moreover, with more current assets firms tend to show higher DA. This finding indicates that current assets value recognition is suspected. A negative DA relationship is shown for profitability level (ROA), indicating that management of low earnings generating firms have more incentives to mislead stakeholders disclosing more DA.

4.3 Audit firm type and DA pricing implications

Table IV (Equation 3) presents the following results. The coefficients of audit firm type (AUDIT), DA and the interaction term between DA and audit firm type (DA×AUDIT) are non-significant. These findings indicate that investors do not consider both of DA level and audit firm type as important pricing factors. Such evidence could be regarded to the naïve

Firm characteristics	Big 4 Coefficients <i>t</i> statistics	Private Coefficients <i>t</i> statistics	Public Coefficients <i>t</i> statistics
Intercept	-0.782 <i>-1.182</i>	-0.550 <i>-0.812</i>	-0.420 <i>-0.635</i>
DA	0.029 <i>0.441</i>	0.059 <i>0.912</i>	-0.022 <i>-0.441</i>
AUDIT	-0.067 <i>-0.746</i>	-0.008 <i>-0.100</i>	0.126 <i>1.242</i>
DA × AUDIT	-0.052 <i>-0.553</i>	-0.129 <i>-1.424</i>	0.193 <i>1.496</i>
MARKT·log	0.059 <i>0.800</i>	0.030 <i>0.412</i>	0.016 <i>0.224</i>
M/B ·log	-0.326* <i>-2.029</i>	-0.276* <i>-1.778</i>	-0.329* <i>-2.121</i>
ROA	0.282 <i>0.527</i>	0.173 <i>0.329</i>	0.314 <i>0.596</i>
LEV	0.011 <i>0.043</i>	0.061 <i>0.247</i>	0.038 <i>0.155</i>
CURRNT	0.765** <i>3.247</i>	0.674** <i>2.853</i>	0.637** <i>2.692</i>
Year dummies	Included	Included	Included
Industry dummies	Included	Included	Included
Adj R^2	0.084	0.095	0.107

Note: *,**Values displayed in italic are significant at the 0.1 and 0.05 significance levels, respectively

Table IV.
Auditor firm type
and discretionary
accruals pricing

investor's explanation where investors are short of recognizing the DA nature or understanding the external auditor's monitoring role in mitigating the potential managerial opportunism.

On the other hand, these findings can be regarded to the investors' lack of trust in the DA information reliability, so they do not consider it in their assessment of the firms' performance and valuation of stocks. This justification can be due to the EGX market revolutionary crisis period.

The DA coefficient is positive for both of Big 4 and private local audits and negative for ASA public audit. But the (AUDIT) and (DA × AUDIT) coefficients are negative for Big 4 and private local audits and positive for ASA audit. The negative (AUDIT) and (DA × AUDIT) coefficients of private audit firms are higher than Big 4's related coefficients. These non-significant coefficients directions indicate a partial audit type effect. The findings reflect that DA would be perceived by investors as of higher reliability level if the firm's earnings are audited by the public ASA. However, DA are perceived by investors as of lower reliability level for the private local audited firms. Accordingly, *H2b*, which states that investor's DA pricing would be more optimistic for ASA audit clients than local audit firms' counterparts, is supported. So, *H2b* can be partially accepted. Giving the higher negative non-significant (AUDIT) and (DA × AUDIT) coefficients for private local firms than Big 4, it can be argued that investors perceive DA of firms audited by Big 4 as more reliable relatively to firms audited by local private counterparts. Accordingly, *H2a* can be partially supported.

The findings are consistent with the agency theory perspective that investors would trust the more independent governmental-based audit services than private local counterparts. Moreover, as per the signaling theory and DeAngelo's framework, investors can be more confident about the Big 4 firms rather than the local private ones due to their market name and reputation along with their relative competence. Given the evidence of greater DA reporting level for firms hiring Big 4 audits, this highlights the need for effective enforcement and regulative promulgations that could monitor the auditors' performance to help raise investors' trust regarding earnings information quality.

In regards to the firm characteristics variables, only the market value of net assets (MARKT-Log) and current assets ratio (CURRNT) are the priced factors by investors while estimating stock prices.

5. Summary and conclusion

The paper investigates, in an Egyptian context, the external auditor type (Big 4 vs local) implications on reporting quality (measured by DA) and related investors' pricing reactions over 2012–2015, that is meant to be post the Egyptian revolution crisis.

The findings reveal the minimal external auditor's role in mitigating earnings management. More specifically, EGX firms choosing Big 4 audits are significantly expected to report more DA, whether the disclosure of such DA is for signaling potential value increasing investments needs future research investigation.

Investigating the investors' perspectives of audited DA, the empirical analysis indicates that neither DA nor the external audit firm type are considered as important factors for EGX firms' stocks pricing.

The paper findings call for attention from the side of regulatory authorities in regards to establishing effective mechanisms to enhance the effectiveness of the external auditor role in regards to mitigating earnings management to help reinforce investor confidence in financial reporting quality.

In emerging capital markets like Egypt, where the level of information asymmetry appears to be greater than in developed markets, investors may be discouraged by perceptions of unfair trading. It is essential to have effective enforcement, and regulatory processes, as the external audit related mechanisms for monitoring the managerial behavior in developing countries (i.e. imposing penalties on non-violators of the promulgated auditing standards) is a key player in promoting higher confidence levels by investors.

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