

# Impact of qualification of expert directors on audit committee and firm performance

**Basiru Salisu Kallamu**

Putra Business School, University Putra Malaysia, 43400 UPM Serdang, Selangor Darul Ehsan, Malaysia.

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## ABSTRACT

The complexity in operations of finance companies and the various corporate scandals and frauds have necessitated the need for regulators to require firms to have an expert director on audit committee. Using panel data obtained from a sample of finance companies, we extend the literature by examining the impact of type of expertise of directors on audit committee and performance of finance firms in Malaysia. The results suggest that accounting qualification significantly influences return on assets in the positive direction while industry experience affects market valuation of firms negatively. Our result is robust to potential endogeneity problem as shown by the results of estimation based on two stage least squares and generalized method of moments. The results support the requirement by Central bank for finance companies to have at least a director with accounting qualification on audit committee. The study is limited to listed finance companies in Malaysia and based on five-year data.

**Keywords:** Accounting qualification, finance qualification, industry experience, audit experience.

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E-mail: bkallamu001@yahoo.com. Tel: +60176486494.

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## INTRODUCTION

Studying corporate governance and the impact it has on performance of companies is very important especially with the recent global financial crisis and bankruptcies of big finance companies which has shown the impact of poor governance on performance of companies. The Asian financial crisis of 1997 to 1998, the corporate scandals in different parts of the world and the recent global financial crisis of 2007 to 2008 have affected the performance of finance companies and motivated the research and interest in corporate governance in such firms (Becht et al., 2011). These scandals, poor corporate governance and financial crises affected big firms such as Enron, WorldCom, Parmalat, Barrings bank, Bear Stearns, Citigroup, Lehman brothers, Dexia, Washington Mutual and AIG in the West and Wimems Corp Bhd, Transmile, Megan Media, Oilcorp, Ocean capital Bhd, Idris hydraulic Bhd and Southern Bank Bhd in Malaysia (Lee and Ali, 2007; Zulkifli and Abdulsamad, 2007). These corporate failures and crises increased the need for close monitoring of companies especially financial institutions and reforms in corporate governance by regulatory authorities (Bazdresch and Werner, 2000).

The reforms resulted in enactment of several corporate governance codes and legislations for example the Sarbanes Oxley's Act of 2002 in the United States, King's Report of 1994 in South Africa and the Malaysian Code on Corporate Governance (MCCG 2000, revised 2007 and 2012). In the United Kingdom, several committees such as Cadbury (1992), Greenbury (1995), Hampel (1998), Higgs (2003), and Smith committee (2003), whose recommendations were later harmonized into the combined code on corporate governance were formed to look at different aspects of corporate governance such as financial aspect of corporate governance, directors' remuneration, roles of board subcommittees and role of non-executive directors (Leuz and Wysocki, 2008).

Finance firms can be categorized into banks which could be commercial, investment and Islamic banks, insurance companies and Takaful business and other firms that provide wealth management and other related services. Finance firms perform functions such as providing means of payment for goods and services, mobilizing of funds to finance large scale projects, moving funds across sectors, industries and economies,

managing uncertainty and controlling risk (Merton, 1995). Through a bank as one of the finance companies people transfer funds to their business partners either within one financial institution or from one financial institution to another.

Banks also perform maturity and liquidity transformation function by accepting deposits and channeling them to investors who need capital to finance long-term investments (Westman, 2009). In addition to managing risk inherent in its activities, financial institutions (banks in particular) help customers to diversify and manage risks that could occur from the difference in the maturity period for deposits and loans and also provide companies with easy source of funds for their business mainly in emerging markets due to the under development of capital markets in such economies (Westman, 2009; Merton, 1995). Banks provide financial services such as lend money to start a business, to purchase property and lend to finance acquisition of durable goods thereby facilitating economic growth and welfare of the population (Sufian and Habibullah, 2010). With the recent change in financial products and services (such as financial instruments and trading in such financial instruments) and the change in focus of traditional financial institutions, there is an increase need to manage risk of investing in such financial products and the need to constantly monitor the market for such products, which is all done by finance firms on behalf of the customers (Merton, 1995).

The finance companies have invented different range of products and services that are not standardized thereby creating new products and services that are sold in the financial market (Westman, 2009). These innovations of products create growth in the financial sector and the economy in general. In addition, the financial intermediary function of the finance companies enables them to attract savings from surplus sectors and channel it to profitable investments thereby providing investors needing large amount of funds with the needed funds from single financial institution or a group of institutions thereby reducing risk for the investors and providing them with a ready source of financing (Merton, 1995). Furthermore, the financial innovation has changed the traditional lender-borrower relationship to the new form of relationship (originate and transfer) which is based on fee income (Yeh et al., 2011). This exposes the financial institutions to high risk since the banks do not hold the products to maturity and therefore lacks the incentive to monitor the borrower. In addition, this led to a shift in focus of the firms from quality control to quantity thereby leading to more volatile income (DeYoung and Roland, 2001).

Although there are a lot of studies which have examined the impact of expertise of directors on audit committee on firm performance, those studies have focused on developed countries and in other sectors other than finance sector. In addition, prior studies

defined accounting expertise as having an accounting qualification, working in accounting firm and experience in accounting role. We contribute to literature by examining the impact of four forms of audit committee expertise (accounting and finance qualification, industry experience or audit experience) on the performance of finance companies. Therefore, the objective of this paper is to examine the impact of audit committee expertise on performance of finance companies. The rest of the paper is divided into the following sections. Section one contains the introduction; section two contains literature review while section three contains theoretical background and hypothesis development. Section four and five contains the research methodology and results and discussions respectively while section six and seven presents results from additional analyses and conclusion.

## LITERATURE REVIEW

The Malaysian code on corporate governance (revised, 2007, 2012), Bursa Malaysia Berhad (BMB) listing requirements (2007) and the corporate governance guide issued by central bank mandated all companies listed on Bursa Malaysia and all licensed financial institutions in Malaysia to have an audit committee. Central bank was the first to impose the requirement on finance companies to have audit committee in Malaysia which was made a requirement by the bank in 1985 prior to other public companies (Sori, 2005). The requirement for the establishment of audit committee for other companies was mandated in 1993 (Yatim, 2009). The formation of audit committee as a subcommittee of the board was given a boost by the Smith report of 2003 in the UK. The audit committee is to assist the board in discharging its responsibilities with respect to finance and accounting functions. It is responsible to ensure that the internal control function in the company is adequate and that the internal control function is discharged effectively. In addition, the committee is responsible for fair and transparent reporting, ensuring effectiveness of internal and external audit and ensuring that related party transactions are reported (MCCG, 2007). Furthermore, the committee oversees the appointment, resignation, fees and dismissal of the external auditors (MCCG, 2007). The major function of audit committee is to monitor financial performance and ensure integrity of financial reporting (Yatim, 2009).

Paragraph 15.09 of the listing requirements of BMB (2007) gave guidance on the qualification of people to be appointed to the committee which must include at least one director who is a member of Malaysian institute of accountants or someone with experience of working in accounting related field while requirements of the Central Bank requires at least one member with accounting expertise or experience in the finance industry. The major function of audit committee is to monitor financial

performance and ensure integrity of financial reporting (Yatim, 2009). The presence of a director on audit committee with accounting experience or qualification will ensure that the committee performs its monitoring functions effectively (Brown et al., 2011). DeZoort (1998) examined the influence of audit committee members experience on oversight judgment based on a sample of 100 firms and 87 audit committee members using internal control oversight task. The result suggests that both general and role specific experience is significant in influencing internal control assessment. Abbott et al. (2004) examined the impact of certain audit committee attributes suggested by the blue ribbon committee and its influence on misstatement based data from 129 firms in the period 1991 to 1999. They found that frequent meetings, presence of independent directors and directors with finance expertise enhances the financial reporting quality and reduces the incidence of restatement.

The complexity of accounting and auditing issues facing companies requires the audit committee to have members that have expertise in accounting and finance (Abbott et al., 2004). Expertise is required so that the directors will be able to understand audit risk and measures to prevent and detect those risks, understand financial statements and financial reporting issues including issues that involve management's judgment and in case of dispute between external auditor and management the directors will be able to understand the basis of the disagreement and reconcile between the parties (DeZoort, 1998). Dhaliwal et al. (2010) examined 3 types of accounting expertise (accounting, finance and supervisory expertise) based on 1,114 firms and reported a significant positive relationship between accounting expert and quality of accruals. Abernathy et al. (2013) examined the association between audit committee expertise and analysts' ability to predict future earnings based on a sample of 2484 firms and found that accounting financial expertise of the directors on audit committee is associated with high quality earnings forecast but not supervisory expertise. Based on data for six years of observation and using a sample of 33 government linked companies in Malaysia, regression results reported by Hamid and Aziz (2012) also found that there is significant positive impact on performance when audit committee has directors with accounting and finance background.

The directors on audit committee need technical expertise and experience so that they can participate in audit task schedule and planning which will enable them to support external auditor concerns and to be able to justify them in the board meetings. Conversely, it is suggested that expertise of directors is not necessary as the lack of technical expertise of the directors will be compensated by the presence of external auditor (Cohen et al., 2002). In addition, Yeh and Woidtke (2007) examined the relationship between certain audit

committee attributes and earnings informativeness in a sample of 450 listed companies in Hong Kong, Singapore and Malaysia. They reported that fully independent audit committee and audit committee with majority independent directors who have accounting or legal expertise are associated with enhanced informativeness of accounting earnings. Aldamen et al. (2011) examined whether audit committee attributes mitigate the impact of adverse economic condition such as global financial crisis on performance of a sample of 120 S & P 300 firms and reported that small audit committee and audit committee members' expertise measured as education and experience of audit committee members is positively associated with performance based on market measure of performance while long serving audit committee chair negatively affects performance. In addition, they reported that block holder representation, chair of board with directors that have multiple directorships and chair that has prior executive experience is positively associated with performance.

Minton et al. (2011) examined whether independence and expertise of board is related with risk taking and performance in a sample of 652 firms including all US commercial banks from 2000 to 2008. They found that expertise of independent directors in commercial banks negatively affects firm performance and that financial expertise is positively related with risk taking activities of firms in the period leading to the financial crisis. In addition, they found that banks with more expert independent directors had poor performance compared to those with less expert directors. This they added could be explained by familiarity and understanding of the expert independent directors about sophisticated financial instruments which made them to allow management to take excessive risks.

## **THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT**

### **Theoretical background**

#### ***Agency theory***

The principal agent relationship has brought some problems which include: agency cost and information asymmetry. The agency theory assumes that the interest of the principal and agent varies and that the principal can control or reduce this by giving incentives to the agent and incurring expenses from activities designed to monitor and limit the self-interest activities of the agent (Jensen and Meckling, 1976; Hill and Jones, 1992). According to Bonazzi and Islam (2006) the principal will ensure that the agent acts in the interest of the principal by giving the agent incentives and monitoring. Among the measures established to reduce the self-serving nature of the agent is an expert director on audit committee.

Therefore, to reduce information asymmetry, there is the need for governance mechanisms such as board subcommittees composed of directors with the appropriate attributes such as expertise and experience to prevent or reduce the selfish interest of the agent (Wiseman et al., 2012).

### **Stewardship theory**

The assumption of stewardship theory suggests that managers are concerned about the welfare of owners and overall performance of the company. This contradicts agency theory which believes that agents are self-centered and individualistic (Donaldson and Davis, 1991). The theory suggests that managers will work hard towards the attainment of the goal of the owners (Boyd et al., 2011). As suggested by assumptions of stewardship theory, Ntim (2009) argued that firm performance will be enhanced if the executive have more powers and are trusted to run the firm. The theory suggests that presence of majority executive directors on a committee will increase effectiveness and produce superior result than more independent directors on a committee (Al Mamun et al., 2013). This could be as a result of the technical knowledge of the executive directors about the company and industry (Ntim, 2009). Stewardship theory assumes that the steward is capable of unifying the different interests of stakeholders and that the steward willingly acts in a way that will protect the interest and welfare of others (Hernandez, 2012). In other words, the theory assumes that the actions of the steward are aimed at protecting the long term welfare of the principal. In addition, the theory assumes people are motivated to perform their work by the intrinsic reward they derive from their jobs. Thus, the nature of the reward is different from the agency theory where the focus of the reward to managers is extrinsic in nature. In the context of finance firms and based on the assumptions of the stewardship theory, the directors will be able to contribute more in decisions of the board subcommittees due to their technical expertise, experience and knowledge about the company and the finance industry.

### **Expert directors and firm performance**

The need for expert directors on the audit committee became imperative due to prior financial crisis and the previous corporate scandals (Güner et al., 2008). Davidson et al. (2004) report that market valuation of a firm is positively related with appointment of a director with finance expertise on audit committee. Ghafran and O'Sullivan (2012) found that investors value the presence of audit committee and they perceive the appointment of expert director on audit committee positively. The presence of accounting or finance expert on audit

committee will enhance the quality of financial reporting (Abbott et al., 2004) and internal control oversight (Krishnan and Lee, 2008). Furthermore, the presence of accounting or finance expert will help a company to prevent the incidence of accounting restatement (Abbott et al., 2004), help reduce possibility of litigation against the company and reduce the attention of regulators on the company. The effectiveness of members of the audit committee in discharging their functions depends on their level of expertise in accounting and finance (Raber, 2003). The various scandals, the nature of operations and assets of finance companies make the appointment of accounting or finance expert very important to finance companies. The presence of expert directors on audit committee enhances the effectiveness of audit committee in performing its monitoring function (Carcello et al., 2011).

The complexity of accounting and auditing issues facing companies requires the audit committee to have members that have expertise in accounting and finance (Abbott et al., 2004). Expertise is required so that the directors will be able to understand audit risk and measures to prevent and detect those risks, understand financial statements and financial reporting issues including issues that involve management's judgment and in case of dispute between external auditor and management the directors will be able to understand the basis of the disagreement and reconcile between the parties (DeZoort, 1998). Dhaliwal et al. (2006) reported a significant positive relationship between accounting expert and quality of accruals. Accounting or finance expertise of the directors on audit committee is associated with quality earnings forecast (Abernathy et al., 2013). Hamid and Aziz (2012) also found that there is significant positive impact on performance when audit committee has directors with accounting and finance background.

According to Dickins et al. (2009), the reliability of the financial statement of a company to analysts is enhanced when the audit committee has a member with financial expertise. This is the case because the presence of finance expert will enhance the quality of the financial report. Krishnan and Visvanathan (2008) found that expert directors on audit committee reduces the audit fees charge by the external auditors and that firms with expert on audit committee are more conservative in financial reporting. Farber (2005) also found that firms with expert directors on audit committee have low incidence of financial fraud. Livingston (2003) reported that expertise gained through experience in the form of serving as CEO or president does not provide a director with adequate understanding of the accounting matters. In the same line, Abernathy et al. (2013) argued the evidence from prior studies indicates that having expert director on audit committee is beneficial and that markets values differently accounting and non-accounting expertise. Dickins et al. (2009) reported that financial

analysts have more confidence in financial statement when the expert director on the audit committee has accounting qualification and not when the expertise is acquired through supervisory experience.

Although the presence of expert directors is associated with enhanced controls and reduced chances of accounting manipulations (Krishnan, 2005; Dhaliwal et al., 2006), the ability of a company to attract accounting or finance experts depends on the quality of governance arrangements in a particular company (Kishnan and Lee, 2008). In addition, the effect of expertise of directors on audit committee may not be significant for all types of companies and may vary with company's lifecycle stage (Carcello et al., 2011). Conversely, it is suggested that expertise of directors is not necessary as the lack of technical expertise of the directors will be compensated by the presence of external auditor (Cohen et al., 2002). In the same line, Minton et al. (2011) reported that expertise of directors on board of commercial banks influence firm and stock value negatively. In addition, they reported that high risk was taken by firms with expert directors in the period prior to the global financial crisis as indicated by firm performance based on both market and accounting based measure of performance. This could be as a result of the influence of powerful CEO in appointing directors to the board and subsequently board committees. Therefore, we hypothesized as follows:

H<sub>1</sub>: There is a significant positive relationship between audit subcommittees' expertise and performance of finance companies.

H<sub>1a</sub>: There is a significant positive relationship between accounting qualification of directors on audit subcommittee and performance of finance companies.

H<sub>1b</sub>: There is a significant positive relationship between finance qualification of directors on audit subcommittee and performance of finance companies.

H<sub>1c</sub>: There is a significant positive relationship between directors with industry experience on audit subcommittee and performance of finance companies.

H<sub>1d</sub>: There is a significant positive relationship between directors with audit experience on audit subcommittee and performance of finance companies.

## METHODOLOGY

### Sample and data

The sample comprised of all the thirty-seven finance companies listed under the finance sector of the main market of Bursa Malaysia and the observation period covers year 2007 to year 2011. The sample consists of companies spread across the various segments of the finance sector. The study used secondary data that was collected from the annual report of the companies available from the website of Bursa Malaysia or the company's website. In addition to the annual reports, financial information about the companies was obtained from Bloomberg data source. The annual report was used to extract information on the attributes of the audit committee members and to determine the number of

directors on the board while information on firm performance (return on assets and Tobin's Q (that is, the dependent variable) was obtained from financial information available from Bloomberg database. Multiple regression analysis was used to analyze the relationship between the dependent and independent variables. Specifically, the study was operated based on the following research model:

$$Fp_{it} = \alpha + \beta_1 ACCQ_{it} + \beta_2 FINQ_{it} + \beta_3 FINEXP_{it} + \beta_4 AUDEXP_{it} + \beta_5 COMS_{it} + \beta_6 BODS_{it} + YD + \varepsilon_{it}$$

The variables in the research model were measured as follow:

Firm Performance = Return on Assets (ROA) and Tobin's Q.

$ACCQ_{it}$  = proportion of directors with accounting qualification to total number of directors on the audit committee

$FINQ_{it}$  = proportion of directors with finance qualification to total number of directors on the audit committee

$FINEXP$  = proportion of directors with finance industry experience to total number of directors on the audit committee

$AUDEXP$  = proportion of directors with audit experience to total number of directors on the audit committee

$COMS$  = committee size measured as the total number of directors on the committee

$BODS$  = total number of directors on board of directors

$YD$  = year dummies for each year of observation

### Dependent and control variables

Two variables were used as proxies for firm performance. Return on assets (ROA) was used as proxy for accounting performance while Tobin's Q was used as market measure of performance. Accounting based measures are preferable in the context of corporate governance study because they reflect the ability of the management in utilizing the firm's assets and other resources to generate profit and add value to the firm (Hutchinson and Gul, 2004; Sufian and Habibullah, 2010). ROA was measured as profit before tax at the year-end divided by total assets (Yermack, 1996; Praptiningsih, 2009). According to Sufian and Habibullah (2010), ROA and ROE are the main proxies used to measure profitability of finance companies and that profitability of banks is determined by internal factors such as the amount of provision for loans, firm size and its ability to manage its expenses and external factors which includes industry and other macroeconomic variables. In addition, following prior studies (Abbott et al., 2004; Abernathy et al., 2013), committee size and board size were used as control variables to control for possible endogeneity problem resulting from omitted variable bias.

## RESULTS

### Descriptive statistics

Descriptive statistics is important in order to describe the nature of the data and assess the assumptions of ordinary least squares regression. The assumptions of multiple regression analysis include data normality, absence of multicollinearity, heteroskedasticity and autocorrelation. Data is normally distributed when the skewness and kurtosis values are within the range  $\pm 1.96$  and  $\pm 3.00$  respectively (Haniffa and Hudaib, 2006). From another perspective, a skewness and kurtosis statistics is normal when the value is within the range of  $\pm 3.00$  and  $\pm 10.00$  for skewness and kurtosis (Kline, 1998). The

**Table 1.** Summary of descriptive statistics.

	AQ	FQ	IE	AUE	BODS	CSIZE
Mean	0.353	0.006	0.097	0.042	7.986	3.518
Median	0.333	0.000	0.000	0.000	8.000	3.000
Maximum	1.000	0.333	0.500	0.666	13.000	6.000
Minimum	0.000	0.000	0.000	0.000	0.000	0.000
Std. Dev.	0.242	0.040	0.149	0.133	2.273	0.927
Skewness	0.402	6.420	1.066	3.376	0.029	0.436
Kurtosis	3.012	44.369	2.518	14.140	3.345	4.956
Obs.	185	185	185	185	185	185

Note: AQ = accounting qualification, FQ = finance qualification, IE = finance industry experience, AUE = audit experience, BODS = board size, CSIZE = committee size.

**Table 2.** Results of correlation analysis.

	AQ	FQ	IE	AUE	BODS	CSIZE
AQ	1.000	-0.028	-0.183	0.303	-0.094	0.108
FQ	-0.028	1.000	0.103	-0.050	0.110	0.117
IE	-0.183	0.103	1.000	-0.087	0.164	0.081
AUE	0.303	-0.050	-0.087	1.000	-0.309	-0.170
BODS	-0.094	0.110	0.164	-0.309	1.000	0.302
CSIZE	0.108	0.117	0.081	-0.170	0.302	1.000

Note: AQ = Accounting qualification, FQ = Finance qualification, IE = Finance industry experience, AUE = Audit experience, BODS = Board size, CSIZE = Committee size.

result of the descriptive statistics presented in Table 1 indicates that some audit committees are composed of directors all of whom are expert directors. In addition, the result indicates that finance qualification, industry experience and audit experience have a maximum value of 33, 50 and 66%. With regards to average values, the result suggests an average value of 35, 0.6, 9.7 and 4.2% for AC members with accounting qualification, finance qualification, finance industry experience and audit experience respectively. This shows that more directors with accounting qualification are appointed to the AC. This could be as a result of the regulatory requirement.

The result of skewness and kurtosis indicates that the data is normally distributed except for finance qualification and audit experience which shows a slight deviation from normality. The result of correlation analysis presented in Table 2 indicates no multicollinearity problem in the model since none of the bivariate correlation coefficient is larger than the 0.7.

### Results of multiple regression analysis

The result of the Hausman test for the model is presented along with results of multiple regression analysis. The hypothesis for the Hausman test is to test whether there is significant correlation between random effect and the

independent variables. If the correlation is not significant REM is the most appropriate while significant results indicates that FEM is appropriate. Summary of the regression results for pooled sample (OLS), random effect and fixed effect for the model based on ROA is presented in Table 3.

The results presented based on REM shows an adjusted  $R^2$  of 13%, which indicates that the independent variables collectively explain 13% of the variation in the dependent variable (ROA). The  $f$ -statistics (3.163) is large and the corresponding  $p$ -value ( $p < 0.01$ ) was highly significant or lower than the alpha value of 0.05. This indicates that the slope of the estimated regression model is not equal to zero confirming that the research data fit the proposed six predictor least squares model of the study. The hypothesis of the study test whether there is any significant positive relation between audit committee expertise and firm performance. The results indicate that accounting qualification is significant and positively related with ROA. This is similar to prior studies such as Güner et al. (2008) and Abernathy et al. (2013) but contrary to Cohen et al. (2002). The positive relationship could be explained by more effective and efficient monitoring of the firm's financial reporting by the expert directors and due to their ability to understand financial reporting issues and take necessary action when necessary. Due to their expertise in accounting and finance or due to the understanding of the finance

**Table 3.** Results of regression analysis for the model based on ROA.

	<b>Pooled OLS</b>	<b>REM</b>	<b>FEM</b>
Constant	0.032 (3.594)***	0.046 (4.962)***	0.057 (5.140)***
AQ	0.015 (2.267)**	0.018 (2.743)***	0.018 (2.374)**
FQ	-0.074 (-1.410)	-0.022 (-0.545)	-0.006 (-0.157)
IE	0.001 (0.1317)	0.008 (0.657)	0.007 (0.478)
AUE	-0.009 (-0.542)	-0.025 (-1.280)	-0.055 (-1.626)
Committee size	-6.46E (-0.000)	-0.002 (-1.365)	-0.005 (-2.107)**
Board size	-0.000 (-0.604)	-0.000 (-1.048)	-0.001 (-1.370)
Year dummies	-0.005 (-0.990)	-0.008 (-2.467)**	-0.009 (-2.658)
Year dummies	-0.013 (-2.504)**	-0.014 (-4.318)***	-0.014 (-4.068)***
Year dummies	-0.012 (-2.325)**	-0.015 (-4.559)***	-0.016 (-4.506)***
Year dummies	-0.010 (-2.018)**	-0.012 (-3.716)	-0.013 (-3.709)***
R-squared	0.103	0.192	0.742
Adjusted R-squared	0.035	0.131	0.619
f-statistics	1.528	3.163***	6.067***
Durbin Watson statistics	0.609	1.432	2.013
Hausman's test	NA	10.831 (0.370)	NA

Note: AQ = accounting qualification, FQ = finance qualification, IE = finance industry experience, AUE = audit experience, BODS = board size, CSIZE = committee size, REM = random effect method, FEM = Fixed effect method, \*, \*\*, \*\*\* depicts significant at 10 %, 5% and 1% respectively.

**Table 4.** Results of regression analysis for the model based on Tobin's Q.

	<b>Pooled OLS</b>	<b>REM</b>	<b>FEM</b>
Constant	0.013 (6.602)***	0.012 (5.405)***	0.011 (3.973)***
AQ	0.000 (0.224)	-0.001 (-0.888)	-0.003 (-1.550)
FQ	-0.004 (-0.470)	-0.004 (-0.474)	-0.002 (-0.190)
IE	-0.004 (-1.683)*	-0.006 (-1.913)*	-0.008 (-2.039)**
AUE	-0.002 (-0.808)	-0.001 (-0.422)	-0.008 (-0.655)
Committee size	-0.001 (-3.536)***	-0.000 (-1.811)*	-0.000 (-0.308)
Board size	-0.000 (-1.293)	-0.000 (-1.407)	-0.000 (-1.378)
Year dummies	0.000 (0.905)	0.001 (1.211)	0.001 (1.286)
Year dummies	0.001 (1.316)	0.001 (1.791)*	0.001 (1.918)*
Year dummies	0.002 (2.039)**	0.002 (2.597)***	0.002 (2.686)**
Year dummies	0.001 (1.125)	0.001 (1.513)	0.001 (1.700)*
R-squared	0.146	0.111	0.579
Adjusted R-squared	0.090	0.052	0.423
f-statistics	2.613***	1.903**	3.702***
Durbin Watson statistics	0.828	1.291	1.610
Hausman's test	NA	7.517(0.675)	NA

Note: AQ = accounting qualification, FQ = finance qualification, IE = finance industry experience, AUE = audit experience, BODS = board size, CSIZE = committee size, REM = random effect method, FEM = Fixed effect method, \*, \*\*, \*\*\* depicts significant at 10%, 5% and 1% respectively.

industry, expert directors will be able to provide more monitoring of the activities of the management and contribute more to the activities and roles of the audit committee and the board as a whole thereby enhancing firm performance. The remaining hypotheses were statistically insignificant.

### Results of regression analysis based on Tobin's Q

The regression results presented in Table 4 indicates that the six predictor variables explain 5% of the relationship between corporate governance and firm performance. The *f*-statistics (1.903) is very large and the

corresponding  $p$ -value ( $<0.01$ ) is highly significant or lower than the alpha value of 0.05. The result reported is based on REM as suggested by the result of Hausman's test. We predicted a significant relationship between audit committee expertise and firm performance. The results indicate that industry experience of directors is significant but negatively related with firm performance.

The result is contrary to evidence reported by Abernathy et al. (2013) who argued that expertise enhances performance and Davidson et al. (2004) who reports that market valuation of a firm is positively related with appointment of a director with finance expertise on audit committee. However, the result supports evidence reported by Dickins et al. (2009) who reported that financial analysts have more confidence in financial statement when the expert director on the AC has accounting qualification and not when the expertise is acquired through supervisory experience. This could be because experience of serving in the industry in a supervisory role is not the same as having an accounting and finance qualification which will enable the expert to differentiate between what is professional right and what is the practice in the industry. The control variable committee size is significant and negatively related with firm performance while the remaining variables are insignificant.

## ADDITIONAL ANALYSIS

Apart from fulfillment of the assumptions of regression, problem of endogeneity also needs to be addressed in corporate governance studies because the validity of empirical models is limited when there is endogeneity problem and endogeneity occurs when a variable predicted to be exogenous is endogenous (Chenhall and Moers, 2007). Furthermore, the presence of endogeneity could lead to wrong interpretation of findings (Larcker and Rusticus, 2008). From statistical perspective, endogeneity occurs when variable  $X$  is correlated with structural error term (Wooldridge, 2002). Endogeneity arise due to simultaneity or reverse causation (Wintoki et al., 2012), omitted variables and measurement error (Brown et al., 2011). Omission of relevant variable from the research model due to unavailability of data or difficulty in measurement will result into omitted variable bias (Roberts and Whited, 2012). Reverse causation may result when a variable that is assumed to predict a dependent variable is also determined by the dependent variable (Wintoki et al., 2012). For example, instead of audit committee members' expertise influencing firm performance, performance may also influence proportion of expert directors on audit committee.

Therefore, in order to control for potential problem of endogeneity and in addition to the use of panel data and control variables, the models in the study were re-estimated using the generalized method of moments

(GMM) and two stage least square (2SLS) to address the potential problem of endogeneity. GMM is appropriate where the time section is small and the sample is large (Arellano and Bond, 1991). In this case, the data comprise of 37 companies with five-year observation period therefore it is appropriate to use GMM. Similar to prior corporate governance studies (Reyna et al., 2012), we re-estimate the model based on GMM to address potential endogeneity problem. GMM model has the ability to account for unobserved heterogeneity (Chhaochharia et al., 2012); address simultaneity, autocorrelation, heteroskedasticity and measurement error which could make the result of the model spurious (Griffiths et al., 2012). The system GMM approach allows researchers to control for endogeneity problem and get consistent estimates (Blundell and Bond, 1998). The result of the estimation based on GMM and 2SLS is presented in Tables 5 and 6 side by side with the result based on least squares model in order to enable comparison. With respect to the coefficients on the predictor variables, some changes could be observed based on the GMM and 2SLS estimation.

In order to re-estimate the model based on two stage least squares and generalized method of moments, we used the lagged values of the predictor variables as instruments and the results presented above based on ROA indicate accounting qualification is significant and positive based both 2SLS and GMM, secondly our result based on Tobin's Q remained unchanged meaning that our result based REM is robust to potential endogeneity problem that may arise in the model. Overall the results indicate that our result is robust to different types of endogeneities and proxies of performance.

## CONCLUSION

While prior research provides evidence that having an accounting expert on audit committee improves firm performance, little is known as to which type of qualification of expert directors enhances firm performance. We extend the literature by examining the impact of type of expertise of directors on audit committee on performance of finance firms in Malaysia. The results suggest that accounting qualification significantly influences return on assets in the positive direction while industry experience affects market valuation of firms negatively. Our result is robust to potential endogeneity problem as shown by the results of estimation based on two stage least squares and generalized method of moments. The result supports the requirement by Central bank for finance companies to have at least a director with accounting qualification on audit committee. These findings are of direct importance to investors in the capital markets since expertise of audit committee members help in determining the quality of financial reports.

**Table 5.** Summary of regression analysis based on ROA for REM, 2SLS and GMM.

	REM	2SLS	GMM
Constant	0.046 (4.962)***	0.036 (4.061)***	0.032 (3.717)***
AQ	0.018 (2.743)***	0.012 (1.792)*	0.015 (2.216)**
FQ	-0.022 (-0.545)	-0.051 (-0.977)	-0.068 (-1.272)
IE	0.008 (0.657)	-0.009 (-0.706)	0.002 (0.189)
AUE	-0.025 (-1.280)	-0.013 (-0.700)	-0.008 (-0.484)
Committee size	-0.002 (-1.365)	0.000 (0.082)	0.000 (0.160)
Board size	-0.000 (-1.048)	-0.001 (-1.246)	-0.000 (-0.632)
Year dummies	-0.008 (-2.467)**	-0.003 (-0.671)	-0.005 (-1.013)
Year dummies	-0.014 (-4.31)***	-0.010 (-1.995)**	-0.013 (-2.539)***
Year dummies	-0.015 (-4.55)***	-0.010 (-1.858)*	-0.012 (-2.279)**
Year dummies	-0.012 (-3.71)	-0.007 (-1.461)	-0.010 (-2.118)**
R-squared	0.192	0.091	0.099
Adjusted R-squared	0.131	0.016	0.032
f-statistics	3.163**	1.224	-
Durbin Watson statistics	1.432	-	-
Hausman's test	10.831 (0.370)	NA	NA

Note: AQ = accounting qualification, FQ = finance qualification, IE = finance industry experience, AUE = audit experience, BODS = board size, CSIZE = committee size, REM = random effect method, FEM = fixed effect method. \*, \*\*, \*\*\* depicts significant at 10%, 5% and 1% respectively. 2SLS = Two stage least squares, GMM = generalized method of moments.

**Table 6.** Summary of regression analysis based on Tobin's Q for REM, 2SLS and GMM.

	REM	2SLS	GMM
Constant	0.012 (5.405)***	0.011 (5.386)***	0.011 (6.490)***
AQ	-0.001 (-0.888)	0.000 (0.296)	0.000 (0.415)
FQ	-0.004 (-0.474)	0.000 (0.0716)	-0.004 (-0.501)
IE	-0.006 (-1.913)*	-0.003 (-1.217)	-0.004 (-1.636)
AUE	-0.001 (-0.422)	0.004 (0.989)	-0.001 (-0.640)
Committee	-0.000 (-1.811)*	-0.001 (-3.312)***	-0.001 (-3.441)***
Board size	-0.000 (-1.407)	2.61E (0.119)	-6.79E (-0.360)
Year dummies	0.001 (1.211)	0.001 (0.831)	0.000 (0.890)
Year dummies	0.001 (1.791)*	0.001 (0.925)	0.001 (1.251)
Year dummies	0.002 (2.597)***	0.002 (1.677)*	0.002 (2.054)**
Year dummies	0.001 (1.513)	0.001 (1.266)	0.001 (1.124)
R-squared	0.111	0.149	0.139
Adjusted R-squared	0.052	0.079	0.083
f-statistics	1.903**	2.132**	-
Durbin Watson statistics	1.291	1.291	-
Hausman's test	7.517 (0.675)	NA	NA

Note: AQ = accounting qualification, FQ = finance qualification, IE = finance industry experience, AUE = audit experience, BODS = board size, CSIZE = committee size, REM = random effect method, FEM = fixed effect method. \*, \*\*, \*\*\* depicts significant at 10%, 5% and 1% respectively. 2SLS= Two stage least squares, GMM=generalized method of moments.

Our findings further contribute to the growing literature on audit committee's expertise by documenting that accounting qualification as a measure of audit committee expertise (and not finance qualification, industry experience or audit experience) is associated with greater firm performance. The results also have important implications for regulators, corporate boards, and others

in defining requirements for audit committee expertise. Our findings suggest that adopting a narrower definition of an expert director as originally proposed by Central bank is likely to enhance the audit committees' effectiveness and ultimately enhance firm performance. Our findings are also relevant to regulators in other countries that are considering steps to enhance the

effectiveness of audit committees. Finally, we acknowledge that our results are subject to some limitations. First, we document an association rather than causation between accounting qualification of directors on AC and firm performance. Secondly, the sample of the study is limited to listed finance companies and based on data for five-year period.

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## APPENDIX

## Descriptive statistics

	<b>AQ</b>	<b>FQ</b>	<b>IE</b>	<b>AUE</b>	<b>BODS_10</b>	<b>YOP_0_13</b>
Mean	0.353019	0.006425	0.097550	0.042135	7.986928	0.294869
Median	0.333300	0.000000	0.000000	0.000000	8.000000	0.180000
Maximum	1.000000	0.333000	0.500000	0.666600	13.00000	0.910000
Minimum	0.000000	0.000000	0.000000	0.000000	0.000000	0.010000
Std. Dev.	0.242838	0.040317	0.149847	0.133697	2.273957	0.236118
Skewness	0.402621	6.420591	1.066655	3.376013	0.029652	1.247266
Kurtosis	3.012696	44.36938	2.518252	14.14071	3.345530	3.845705
Jarque-Bera Probability	4.134669 0.126523	11961.55 0.000000	30.49224 0.000000	1081.871 0.000000	0.783536 0.675861	44.22917 0.000000
Sum	54.01196	0.983000	14.92513	6.446700	1222.000	45.11500
Sum Sq. Dev.	8.963509	0.247073	3.413044	2.716979	785.9739	8.474229
Observations	153	153	153	153	153	153

## Multiple regression analyses

Based on return on assets (ROA)

Dependent Variable: ROA2

Method: Panel EGLS (Cross-section random effects)

Date: 12/25/13 Time: 19:12

Sample: 2007 2011

Periods included: 5

Cross-sections included: 37

Total panel (unbalanced) observations: 144

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.046962	0.009463	4.962806	0.0000
AQ	0.018627	0.006790	2.743161	0.0069
FQ	-0.022766	0.041755	-0.545224	0.5865
IE	0.008226	0.012511	0.657508	0.5120
AUE	-0.025566	0.019960	-1.280836	0.2025
SIZE	-0.002698	0.001976	-1.365388	0.1744
BODS_10	-0.000728	0.000694	-1.048892	0.2961
NUM2008	-0.008597	0.003483	-2.467829	0.0149
NUM2009	-0.014990	0.003471	-4.318995	0.0000
NUM2010	-0.015924	0.003493	-4.559400	0.0000
NUM2011	-0.012895	0.003469	-3.716961	0.0003

### Effects specification

	S.D.	Rho
Cross-section random	0.015830	0.6284
Idiosyncratic random	0.012174	0.3716

### Weighted statistics

R-squared	0.192167	Mean dependent var	0.009349
Adjusted R-squared	0.131428	S.D. dependent var	0.013587
S.E. of regression	0.012332	Sum squared resid	0.020226
F-statistic	3.163804	Durbin-Watson stat	1.432558
Prob(F-statistic)	0.001150		

### Unweighted statistics

R-squared	0.064698	Mean dependent var	0.025542
Sum squared resid	0.052135	Durbin-Watson stat	0.555768

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Dependent Variable: ROA2  
 Method: Panel Least Squares  
 Date: 12/25/13 Time: 19:13  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 37  
 Total panel (unbalanced) observations: 144

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.032542	0.009054	3.594421	0.0005
AQ	0.015920	0.007021	2.267537	0.0250
FQ	-0.074590	0.052879	-1.410593	0.1607
IE	0.001652	0.012538	0.131741	0.8954
AUE	-0.009345	0.017226	-0.542485	0.5884
SIZE	-6.46E-07	0.001815	-0.000356	0.9997
BODS_10	-0.000485	0.000802	-0.604095	0.5468
NUM2008	-0.005274	0.005323	-0.990741	0.3236
NUM2009	-0.013110	0.005236	-2.504051	0.0135
NUM2010	-0.012258	0.005272	-2.325240	0.0216
NUM2011	-0.010540	0.005222	-2.018450	0.0456
R-squared	0.103074	Mean dependent var		0.025542
Adjusted R-squared	0.035636	S.D. dependent var		0.019743
S.E. of regression	0.019388	Akaike info criterion		-4.974972
Sum squared resid	0.049996	Schwarz criterion		-4.748111
Log likelihood	369.1980	Hannan-Quinn criter.		-4.882789
F-statistic	1.528427	Durbin-Watson stat		0.609443
Prob(F-statistic)	0.135899			

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Dependent Variable: ROA2  
Method: Panel Least Squares  
Date: 12/25/13 Time: 19:13  
Sample: 2007 2011  
Periods included: 5  
Cross-sections included: 37  
Total panel (unbalanced) observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057528	0.011192	5.140153	0.0000
AQ	0.018199	0.007665	2.374264	0.0196
FQ	-0.006901	0.043939	-0.157062	0.8755
IE	0.007289	0.015243	0.478205	0.6336
AUE	-0.055121	0.033886	-1.626639	0.1071
SIZE	-0.005145	0.002441	-2.107417	0.0377
BODS_10	-0.001056	0.000771	-1.370136	0.1738
NUM2008	-0.009540	0.003588	-2.658541	0.0092
NUM2009	-0.014630	0.003596	-4.068634	0.0001
NUM2010	-0.016400	0.003639	-4.506555	0.0000
NUM2011	-0.013229	0.003566	-3.709656	0.0003

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.742099	Mean dependent var	0.025542
Adjusted R-squared	0.619795	S.D. dependent var	0.019743
S.E. of regression	0.012174	Akaike info criterion	-5.721369
Sum squared resid	0.014376	Schwarz criterion	-4.752055
Log likelihood	458.9386	Hannan-Quinn criter.	-5.327495
F-statistic	6.067680	Durbin-Watson stat	2.013369
Prob(F-statistic)	0.000000		

#### Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-sq. statistic	Chi-sq. d.f.	Prob.
Cross-section random	10.831110	10	0.3708

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**Based on Tobin's Q (market measure of performance)**


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Dependent Variable: DV  
 Method: Panel Least Squares  
 Date: 12/25/13 Time: 21:52  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 35  
 Total panel (unbalanced) observations: 163

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.013192	0.001998	6.602934	0.0000
AQ	0.000355	0.001582	0.224565	0.8226
FQ	-0.004246	0.009017	-0.470819	0.6384
IE	-0.004320	0.002566	-1.683666	0.0943
AUE	-0.002327	0.002876	-0.808882	0.4198
SIZE	-0.001374	0.000389	-3.536356	0.0005
BODS_10	-0.000228	0.000176	-1.293786	0.1977
NUM2008	0.000985	0.001087	0.905666	0.3665
NUM2009	0.001446	0.001099	1.316461	0.1900
NUM2010	0.002196	0.001077	2.039119	0.0432
NUM2011	0.001229	0.001092	1.125649	0.2621
R-squared	0.146715	Mean dependent var		0.007461
Adjusted R-squared	0.090578	S.D. dependent var		0.004581
S.E. of regression	0.004368	Akaike info criterion		-7.963761
Sum squared resid	0.002901	Schwarz criterion		-7.754981
Log likelihood	660.0466	Hannan-Quinn criter.		-7.878999
F-statistic	2.613517	Durbin-Watson stat		0.828559
Prob(F-statistic)	0.005863			

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Dependent Variable: DV  
Method: Panel EGLS (Cross-section random effects)  
Date: 12/25/13 Time: 21:53  
Sample: 2007 2011  
Periods included: 5  
Cross-sections included: 35  
Total panel (unbalanced) observations: 163  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.012300	0.002275	5.405246	0.0000
AQ	-0.001500	0.001688	-0.888370	0.3757
FQ	-0.004719	0.009950	-0.474209	0.6360
IE	-0.006012	0.003142	-1.913466	0.0576
AUE	-0.001831	0.004333	-0.422524	0.6732
SIZE	-0.000820	0.000452	-1.811707	0.0720
BODS_10	-0.000254	0.000180	-1.407435	0.1613
NUM2008	0.001057	0.000872	1.211778	0.2275
NUM2009	0.001585	0.000885	1.791543	0.0752
NUM2010	0.002255	0.000868	2.597954	0.0103
NUM2011	0.001336	0.000883	1.513591	0.1322

## Effects specification

	S.D.	Rho
Cross-section random	0.002907	0.4112
Idiosyncratic random	0.003479	0.5888

## Weighted statistics

R-squared	0.111299	Mean dependent var	0.003630
Adjusted R-squared	0.052832	S.D. dependent var	0.003576
S.E. of regression	0.003443	Sum squared resid	0.001802
F-statistic	1.903617	Durbin-Watson stat	1.291711
Prob(F-statistic)	0.048587		

## Unweighted statistics

R-squared	0.125893	Mean dependent var	0.007461
Sum squared resid	0.002971	Durbin-Watson stat	0.783469

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Dependent Variable: DV  
 Method: Panel Least Squares  
 Date: 12/25/13 Time: 21:53  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 35  
 Total panel (unbalanced) observations: 163

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.011015	0.002772	3.973532	0.0001
AQ	-0.003034	0.001957	-1.550385	0.1237
FQ	-0.002352	0.012373	-0.190068	0.8496
IE	-0.008495	0.004166	-2.039061	0.0437
AUE	-0.008175	0.012466	-0.655803	0.5132
SIZE	-0.000177	0.000575	-0.308323	0.7584
BODS_10	-0.000281	0.000204	-1.378015	0.1708
NUM2008	0.001135	0.000882	1.286625	0.2007
NUM2009	0.001730	0.000902	1.918501	0.0575
NUM2010	0.002381	0.000886	2.686661	0.0083
NUM2011	0.001531	0.000901	1.700211	0.0917

Effects specification

Cross-section fixed (dummy variables)

R-squared	0.579924	Mean dependent var	0.007461
Adjusted R-squared	0.423286	S.D. dependent var	0.004581
S.E. of regression	0.003479	Akaike info criterion	-8.255242
Sum squared resid	0.001428	Schwarz criterion	-7.401139
Log likelihood	717.8022	Hannan-Quinn criter.	-7.908485
F-statistic	3.702312	Durbin-Watson stat	1.610263
Prob(F-statistic)	0.000000		

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Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.517302	10	0.6759

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## Two stage least square

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Dependent Variable: Tobin's Q

Method: Panel Two-Stage Least Squares

Date: 12/28/13 Time: 18:32

Sample: 2007 2011

Periods included: 5

Cross-sections included: 34

Total panel (unbalanced) observations: 132

Instrument specification: C ROA2-1 AQ-1 FQ-1 IE-1 AUE-1 SIZE-1 BODS-1

TA-1 LEV-1 NUM2007 NUM2008 NUM2009 NUM2010 NUM2011

Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011170	0.002074	5.386489	0.0000
AQ	0.000487	0.001645	0.296036	0.7677
FQ	0.000870	0.012136	0.071660	0.9430
IE	-0.003797	0.003119	-1.217427	0.2258
AUE	0.004289	0.004333	0.989723	0.3243
SIZE	-0.001437	0.000434	-3.312201	0.0012
BODS	2.61E-05	0.000218	0.119639	0.9050
NUM2008	0.001041	0.001253	0.831212	0.4075
NUM2009	0.001143	0.001235	0.925694	0.3564
NUM2010	0.002084	0.001243	1.677229	0.0961
NUM2011	0.001532	0.001209	1.266769	0.2077
R-squared	0.149855	Mean dependent var		0.007568
Adjusted R-squared	0.079595	S.D. dependent var		0.004524
S.E. of regression	0.004341	Sum squared resid		0.002280
F-statistic	2.132862	Durbin-Watson stat		0.776888
Prob(F-statistic)	0.026717	Second-Stage SSR		0.002280
Instrument rank	14	Prob(J-statistic)		0.000011

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Dependent Variable: ROA  
 Method: Panel Two-Stage Least Squares  
 Date: 12/28/13 Time: 18:34  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 34  
 Total panel (unbalanced) observations: 132  
 Instrument specification: C DV-1 AQ-1 FQ-1 IE-1 AUE-1 SIZE-1 BODS-1 TA  
 -1 LEV-1 NUM2007 NUM2008 NUM2009 NUM2010 NUM2011 EE  
 Constant added to instrument list

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.036800	0.009061	4.061372	0.0001
AQ	0.012880	0.007187	1.792133	0.0756
FQ	-0.051859	0.053030	-0.977916	0.3301
IE	-0.009629	0.013628	-0.706572	0.4812
AUE	-0.013268	0.018934	-0.700757	0.4848
SIZE	0.000156	0.001896	0.082443	0.9344
BODS	-0.001187	0.000952	-1.246019	0.2152
NUM2008	-0.003677	0.005474	-0.671680	0.5031
NUM2009	-0.010763	0.005395	-1.995054	0.0483
NUM2010	-0.010091	0.005430	-1.858549	0.0655
NUM2011	-0.007722	0.005285	-1.461142	0.1466
R-squared	0.091878	Mean dependent var		0.025078
Adjusted R-squared	0.016827	S.D. dependent var		0.019128
S.E. of regression	0.018967	Sum squared resid		0.043528
F-statistic	1.224205	Durbin-Watson stat		0.685254
Prob(F-statistic)	0.282327	Second-Stage SSR		0.043528
Instrument rank	15	Prob(J-statistic)		0.000000

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**GMM**


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Dependent Variable: ROA  
 Method: Panel Generalized Method of Moments  
 Date: 12/28/13 Time: 18:46  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 37  
 Total panel (unbalanced) observations: 145  
 2SLS instrument weighting matrix  
 Instrument specification: ROA2-1 C AQ FQ IE AUE SIZE BODS NUM2008  
 NUM2009 NUM2010 NUM2011

<b>Variable</b>	<b>Coefficient</b>	<b>Std. error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	0.032274	0.008683	3.717063	0.0003
AQ	0.015165	0.006843	2.216096	0.0284
FQ	-0.068070	0.053502	-1.272295	0.2055
IE	0.002403	0.012656	0.189907	0.8497
AUE	-0.008309	0.017156	-0.484304	0.6290
SIZE	0.000303	0.001889	0.160626	0.8726
BODS	-0.000565	0.000893	-0.632357	0.5282
NUM2008	-0.005378	0.005307	-1.013448	0.3127
NUM2009	-0.013248	0.005217	-2.539537	0.0122
NUM2010	-0.012001	0.005264	-2.279721	0.0242
NUM2011	-0.010990	0.005188	-2.118440	0.0360
R-squared	0.099947	Mean dependent var		0.025494
Adjusted R-squared	0.032779	S.D. dependent var		0.019683
S.E. of regression	0.019358	Sum squared resid		0.050214
Durbin-Watson stat	0.606875	J-statistic		134.0000
Instrument rank	12	Prob(J-statistic)		0.000000

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Dependent Variable: Tobin's Q  
 Method: Panel Generalized Method of Moments  
 Date: 12/28/13 Time: 18:48  
 Sample: 2007 2011  
 Periods included: 5  
 Cross-sections included: 35  
 Total panel (unbalanced) observations: 164  
 2SLS instrument weighting matrix  
 Instrument specification: DV-1 C AQ FQ IE AUE SIZE BODS NUM2008  
 NUM2009 NUM2010 NUM2011

<b>Variable</b>	<b>Coefficient</b>	<b>Std. error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	0.011988	0.001847	6.490608	0.0000
AQ	0.000639	0.001538	0.415221	0.6786
FQ	-0.004644	0.009254	-0.501823	0.6165
IE	-0.004205	0.002569	-1.636560	0.1038
AUE	-0.001850	0.002889	-0.640564	0.5228
SIZE	-0.001421	0.000413	-3.441842	0.0007
BODS	-6.79E-05	0.000188	-0.360582	0.7189
NUM2008	0.000970	0.001089	0.890599	0.3745
NUM2009	0.001376	0.001099	1.251591	0.2126
NUM2010	0.002224	0.001083	2.054624	0.0416
NUM2011	0.001224	0.001088	1.124986	0.2624
R-squared	0.139399	Mean dependent var		0.007477
Adjusted R-squared	0.083151	S.D. dependent var		0.004571
S.E. of regression	0.004377	Sum squared resid		0.002931
Durbin-Watson stat	0.843844	J-statistic		153.0000
Instrument rank	12	Prob(J-statistic)		0.000000

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