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Value of Accounting Numbers and Analysts' Forecast Errors

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ABSTRACT

The occurrence of accounting manipulation and creative accounting practices have consequently reduced the value of accounting numbers in the form of decreased earnings quality. Analysts use these reported earnings to make appropriate predictions and as such the underlining principles of the financial statements under review influence the forecast accuracy or otherwise. Thus, in this present study, the effect of earnings quality was examined on EPS forecast errors. This was achieved in three stages, firstly, the EPS forecast were determined using Panel Vector Auto-regressive model of order 2 (AR (2)); secondly, the modified Dechow and Defond accrual quality model by Francis, LaFond, Olsson, and Schipper was used to obtain the earnings quality; and thirdly, the earnings quality derived was regressed against forecast errors along with other firms' characteristics as control variables. Data were gathered from 10 sampled firms selected at random for the 10 year period of 2005 to 2014. Pre-estimation and post estimation tests were conducted on the series and the final regression estimate reveal that firm's value measured by Tobin's q and earnings quality have negative effect on forecast errors. It was therefore concluded that, accrual quality a measure of earnings quality have a negative effect on EPS forecast errors. Implying that the higher the quality of earnings, the lesser the EPS forecast errors. It was recommended that financial analysts should strive towards understanding the quality of earnings reported before forecasting EPS.

Keywords: Forecast, Analysts, Quality, EPS, Accrual, Earnings

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1. INTRODUCTION

The historical evolution of accounting and numbers are intertwined, as there cannot be accounting without numbers. One of the most important products of accounting system is said to be financial reporting which provides information for users to make economic decisions on the evaluation of the reporting organization's performance. As observed by Bolo and Hassani (2007), financial reporting provides the basis for evaluating the past performance and to effectively assess and predict the possible future profitability. Financial reports are seen to be the germane accounting numbers used by both external and internal stakeholders especially the financial analysts. In line with Block (1999), financial analysts rely extensively on accounting information to make forecasts. They ultimately use the extracted financial indicators from these financial statements (which provides historical information) to predict (forecast) future financial position of organizations. As such, the accuracy or otherwise of their prediction is highly dependent on the underlining principles used in the preparation of the financial statements.

In essence, accounting numbers constitute all financial indicators reported in the financial statement. This present study focuses on earnings which Pawel (2014) considered a better aggregate indicator of firm periodic performance than other accounting numbers. Earnings have been observed to be the primary focus of the financial analysts in forecasting future performance and as observed by Rajakumar and Shanthi (2014), Earnings per Share (EPS) is the most important variable which is considered as the prime determinant of market share price and a classical model to measure the performance of business. Since investors take major investments decisions based on EPS, the accuracy of EPS prediction is said to be the major factor of market prediction. Brown (1993) opined that forecasting EPS are of great interest to market investors, top level managers, financial analysts and capital market researchers. Although, prior researchers have used various methods of EPS forecast such as model, Hidden Markov model (HMM) and fusion model comprising of Auto regression (AR) with Adaptive Neuro fuzzy Inference System (ANFIS), Auto regressive moving average (ARMA) with ANFIS, this work uses Auto Regressive (AR) model in forecasting EPS.

The value of accounting numbers in this study implies the quality of earnings reported measured through accrual quality. Accrual quality model developed by Dechow and Dichev (2002) as modified by Francis, LaFond, Olsson, and Schipper (2005) was used in this study. The measure is based on the knowledge that accruals quality is affected by the measurement error in accruals, as such, the residuals of the model represent the quality of earnings. Penman and Zhang (2002) described quality of earnings to refer to reported earnings before extraordinary items that are readily identified on the income statement. Earnings are of good quality if it is a good indicator of future earnings (sustainable earnings), consequently, when an accounting treatment produces unsustainable earnings, those unsustainable earnings deemed to be of poor quality.

Tariq and Rasha (2011) further observed that the quality of earnings figures is important to the financial markets and analysts make earnings forecasts and stock acquisition decisions based on earnings figures. This implies that the accuracy or errors in forecast of EPS is affected by the quality of earnings reported, although there is paucity of literature in this area. Thus, this study empirically examines the effect of financial reporting quality on EPS forecast errors. This objective was achieved in different stages discussed as follows. Firstly, the EPS was forecasted using AR(2) model and the absolute difference between the EPS forecast and EPS actual constituted Forecast Errors (FE); secondly, accrual quality measured by the residuals derived from the modified Dechow and Dichev (2002), model was obtained to determine the financial reporting quality; and lastly, the regression analysis was ran along with various diagnostic test.

The remainder of this paper is presented as follows: Section 2 depicts statement of problem that led to this study along with the paper objective; Section 3 shows a review of extant literature including empirical review of accounting numbers and analyst forecast, the theoretical consideration and hypothesis development; the methodology with description of measurement of study variables are presented in section 4; a detailed data analysis and discussion of the results are shown in Section 5; the conclusion and recommendation of the paper are presented in Section 6.

The occurrence of corporate fraud in the past has led to a loss of confidence in accounting numbers and the overall reliability of reported earnings is questionable. Specifically, fraud cases of Enron, sun beam Inc, Tyco, WorldCom and Nigerian banks show evidence of financial manipulation. Schipper (1989) explained that earnings management is a targeted intervention in financial reporting to achieve some personal interests. Scott (2009) observed that earnings management occurs when management exploits the opportunity to make accounting decisions that might change reported income while earnings quality enables investors to infer a firm's profitability or potential future performance. Maherani, Ranjbar and Fathi (2014) explained that management tries to manipulate price and earnings reporting given the importance of reported earnings for the users. Two main motives to manipulate earnings (earnings management) include encouraging investors to buy company's stocks and increasing the market value.

Creative accounting practices come in when the loop holes in the accounting rules are exploited for personal. An aspect of creative accounting practices is the accrual accounting which provides many options for determining earnings at different periods, as such accruals can be used to manipulate corporate earnings. Management practices in meeting target performance at all cost usually lead to a reduction of earnings quality. For instance, the case of StanbicIBTC of not showing full disclosure of what truly constituted the earnings reported for 2013 and 2014 accounting year. As observed by Tariq and Rasha (2011) poor quality of earnings provide distorted information to the financial markets that lead to inaccurate EPS forecast and defraud investors and other stakeholders. Thus, understanding the relationship between earnings quality through the nature of accounting transactions and EPS forecast errors is important.

The main objective of this paper study is to empirically review the consequent effect of earnings quality on EPS forecast errors. To achieve this, Auto regressive model was used to determine EPS forecasts, which were compared with the actual EPS, and earnings quality measures of accrual quality were derived.

3. LITERATURE REVIEW

The external reports also called financial statements of organizations are used by many groups of users for separate purposes. One of these groups is financial statements' analysts, which ultimately use these statements (which provides historical information) to predict (forecast) future financial position of organizations. As such, the accuracy or otherwise of their prediction is highly dependent on the quality of these financial statements (Mohammadi, 2014) explained that financial reporting quality includes the accuracy of reported information to better describe a firm's operations. IASB (2010) gave more comprehensive qualitative characteristics of financial reporting of the fundamental characteristics (i.e. relevance and faithful representation) and the enhancing qualitative characteristics (i.e. understandability, comparability, and timeliness).

3.1. Accounting Numbers and Earnings Quality

Prior researchers have sought to explain the meaning of earnings quality, financial analysts, in their assessment, must notice not only the quantity of earnings but also the quality of earnings. The quality of earnings is referred to as the potential background of earnings growth and the likelihood of future earnings realization. Roghayeh, Mohammadreza, and Ali (2013) opined that the value of a single share is not only dependent on the company's earnings per share of the current year, but also is dependent on the expectations of the company's future, the profitability strength of future (following) years and the reliability coefficient related to the future earnings. Earnings quality is a multidimensional concept that is seen as a critical Measurement for the financial health of any company.

Earnings quality which is an important accounting number has different definitions as well as different measures, Krishnan and Parsons (2008) defined it as the degree to which reported earnings capture economic reality, in order to appropriately assess a company's financial performance. Khajavi and Nazemi (2005) explained that earnings quality can be sought in earnings sustainability, accruals and profits reflecting economic transactions. Bodie, Kane and Marcus (2002) define earnings quality as the persistence of current level of reported earnings in future periods. According to Williams (2005), earning stability and management determine earnings quality. Hence, earnings quality is the degree at which the earnings reported show the true picture of the financial status of the company irrespective of the method of accounting in use.

The relationship between earnings quality and other firms' characteristics had been researched in the past, Safaeian and Sadeghi (2009) evaluated investment decisions and its relationship with sustainable earnings in eight industries. The results indicated a significant positive relationship between earnings quality and earnings sustainability in five industries. Haghighat and Homayun (2004) examined correlation between accruals and earnings; they found that the quality of accruals is only affected by firm size, earnings and sale. A significant positive relationship was found between accruals quality, sales, earnings persistence, firm size, operating cash flow and earnings. Furthermore, a significant correlation was found between quality of earnings and accruals. Khajavi and Nazemi (2005) examined the impact of accruals on earnings quality of TSE-listed companies. There was no significant difference between the average efficiency of companies, when accruals are reported at lowest and highest rates.

Furthermore, Tian (2007) evaluated the impact of earnings management on earning relevance in company valuation. The results indicated that earnings management affects company valuation, because it reduces the information content of earnings. Francis, et al. (2002) examined the relationship between earnings quality (eight indicators of earnings quality), specific cost of debt and specific cost of equity. The results indicated that companies with poor earnings quality have higher cost of debt and cost of common stocks compared with companies with high earnings quality.

3.2. Conservatism and Earnings Quality

Conservative accounting can be viewed as the case where reported net assets are expected to be lower than market value in the long run (Feltham and Ohlson, 1995). Wolk, Tearney, and Dodd (2001) observed that conservatism applies to measurement of assets and recognition of revenues and expenses: it tends to lead accountants to choose accounting methods in favor of slower recognition of income and lower valuation of net assets. Conservatism has been characterized as biased accounting which causes market value to exceed book value (Feltham and Ohlson 1995;

Zhang 2000) also as accounting choices that relatively lower the book value of net assets (Penman and Zhang 2002). Basu (1997) defines conservatism as accountant's tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses.

Wild, Bernstein, and Subramanyam (2001) state that the quality of conservatively determined earnings is perceived higher because they are less likely to overstate current and future performance expectations compared with those determined in an aggressive manner. Hawkins (1998) states that high-quality earnings result from a consistent conservative accounting policy that results in a prudent measurement of the company's financial condition and net income. White, Ashwinpaul, and Dov (1998) gave a list of fifteen indicators of high earnings quality and the entire list describes conservative accounting methods

Wu (2010) examines the extent to which conservative accounting affecting shareholder value. He finds that there is a positive association between conservatism and cumulative stock returns during the current financial crisis. The results provide supportive evidence to the positive accounting theory that conservatism is an efficient governance mechanism to mitigate information risk and control for agency problems, and shareholders benefit from it.

While Martin (2002) concluded that investors can predict future earnings and book values more accurately for firms using conservative accounting methods. Penman and Zhang (2002) show empirically that conservative accounting can yield lower quality earnings and that stock market does not appear to price the lower quality earnings appropriately. The findings revealed that conservative accounting with investment growth depresses earnings and accounting rates of return and creates hidden reserves. Additionally, slowing of investment releases hidden reserves and creates earnings and higher rates of return. Also, Tariq and Rasha (2011) concluded in their research that conditional conservatism negatively affects both earnings quality and stock prices of Egyptian firms.

Although, the exact consequence of conservatism on quality of earnings remains debatable, prior researchers have proxied conservatism as an indicator of earnings quality (for example, the work of Persakis and Iatridis, 2015)

3.3. Accounting Numbers and Analysts Forecast

Financial analysts are viewed as important information intermediaries within capital market since investment practitioners and advisors rely on analysts' earnings forecast for share valuation and other portfolio decision making (Beaver, 1998; Capstaff, Paudyal and Rees, 1995). However, these analysts rely extensively on financial statements; this means that any fundamental change in the underlining principles that affects earnings will automatically influence the process of forecasting future earnings of companies. According to Alexander (2003), there are two main factors affecting analysts forecast accuracy. These are: firms' characteristics (size of the firm) and analysts' characteristics.

Some works have been done in the quest of finding out the determinants of analysts forecast errors, Pawel (2014) examined the effect of analysts disclosure cash flow forecasts on earnings estimates when earnings quality is low and discovered that as earnings quality decreases, cash flow forecasts become increasingly inaccurate compared to earnings estimates. Also, Liang and Riedl (2014) examined how the reporting model for a firm's operating assets affects analyst forecast accuracy. The sample for the study was drawn from U.K. and U.S. investment property firms having real estate as their primary operating asset, exploiting that U.K. (U.S.) firms report these assets at fair value (historical cost). It was predicted and found that

higher Net Asset Value (NAV) forecast accuracy exists for U.K. relative to U.S. firms; this is consistent with the fair value reporting model revealing private information that is incorporated into analysts' balance sheet forecasts. It was further discovered that lower EPS forecast accuracy exists for U.K. firms when reporting under the full fair value model of IFRS, in which unrealized fair value gains and losses are included in net income. This is consistent with the full fair value model increasing the difficulty of forecasting net income through the inclusion of non-serially correlated elements such as these gains/losses. Overall it was concluded that the fair value reporting model enhances analysts' ability to forecast the balance sheet, but the full fair value model reduces their ability to forecast net income. However, Ionascu (2012) concluded that for Romanian listed companies, forecast errors for earnings per share reported under local GAAP are positively correlated with a conservative approach and negatively associated with fair value based accounting policies. This he done by exploring the effect of the use of fair value on analysts' forecasts accuracy for companies listed on Bucharest Stock Exchange (BSE). Based on a sample of 266 firm-month observations (predictions made in 2008 for 2009 and 2010).

Also, Hope (2003a and 2003b) showed that a high volume of disclosure leads to a decrease in analysts' forecast errors. Based on a sample of 1,553 firm-years from 22 countries, the CIFAR index of the level of annual report disclosure was used to analyze the impact of the quantity of information disclosed on analysts' forecasts accuracy, showing that increased disclosure leads to a decrease in forecasting errors.

Furthermore, various scholars have researched into the effect of adoption of International Financial Reporting Standards (IFRS) by various countries in the world on the analysts forecast accuracy; some of these scholars are discussed here. Cotter, Tarca and Wee (2009) studied 145 large listed Australian firms to explore the impact of IFRS adoption on the properties of analysts' forecasts and the role of firm disclosure about IFRS impact. It was discovered that analyst forecast accuracy improves and analysts have benefited from IFRS adoption. This is in line with Cheong, Kim and Zurbruegg (2010), which provided an investigation into whether financial analysts' forecast accuracy differs between the pre- and post-adoption of the international financial reporting standards (IFRS) in the Asia-Pacific region, namely, for the countries of Australia, Hong Kong and New Zealand. Panel data analysis was applied over a period from 2001 to 2008. It was found that intangibles capitalized under the new recognition and measurement rules of IFRS are negatively associated with analysts' earnings forecast errors. The results are robust to several model specifications across each of the countries, suggesting that the adoption of IFRS may indeed provide more value-relevant information in financial statements for the users of financial reports.

Hodgdon, Tondkar, Harless and Adhikari (2008) also investigated the relationship between analysts' earnings forecast errors and firm compliance with the disclosure requirements of International Financial Reporting Standards (IFRS). Using a comprehensive disclosure index of selected IFRS for which previous research has indicated significant noncompliance, an unweighted and an innovative weighted measure of IFRS disclosure compliance were developed. It was found that forecast error is negatively related to IFRS compliance, and that the magnitude of this effect is larger when controlling for analyst fixed effects. It was suggested that compliance with the disclosure requirements of IFRS reduces information asymmetry and enhances the ability of financial analysts to provide more accurate forecasts. This view is supported by Ernstberger, Krotler and Stadler (2008), and Ashbaugh and Pincus (2000). However, Daske and Gebhardt (2006) found a lower accuracy and higher dispersion for German firms applying international accounting standards (IAS).

From the above empirical review, it can be observed that there exists a paucity of literature relating earnings quality specifically to EPS forecast errors which is the crux of this paper.

3.4. Theoretical Consideration and Hypothesis Development

Agency theory and capital need theory provides the platform on which the hypothesis of this paper is developed. The separation of the role of managers from the owners resulted in the need for financial reporting. The agency theory has opined by Sheikh, Khan, Iqal, and Ahmed (2012) considers how conflict of interest may arise in firms when managers' personal interests override their obligations to comply with principal-agent contract of maximizing shareholders wealth. It examines the principal-agent dilemma. Due to the need to present a better result to the owners and potential owners of the firm, managers tend to engage in earnings management and subsequently reduce the overall quality of earnings reported. Also, the constant need for capital is one reason why managers present a better picture of the financial position of the company. According to Core (2001), capital needs theory holds that companies that have growth opportunities in the capital market seek external financing opportunities from the capital market. Thus, financial analysts make use of this financial statements tailored to attract more capital and to show a better picture to the owners of the company for forecast, this result to a reduction in forecasting accuracy. In essence, the paper makes the following testable hypothesis:

H_0: *Earnings quality has no significant effect on EPS forecast errors.*

4. DATA & METHODOLOGY

The *expost facto* research design was adopted in this study. As such, secondary data were obtained from the annual reports and accounts of ten (10) companies for a period of 10 years (2005-2014). Purposive sampling method was used to select the sampled firms from the total population of one hundred eighty-six (186) firms listed on the Nigerian Stock Exchange (NSE, 2014). To achieve the objective of this paper, three variables were identified and discussed in this section. These are: dependent variable which is represented by EPS forecast errors; Independent variable of earnings quality; and control variables of firms' characteristics. The measurement procedures of each of these variables are discussed below.

4.1. EPS Forecast Errors

Several methods have been used in prior research to determine EPS forecast, such as; Brown and Rozeff (1979) used the time series method to predict the quarterly EPS with a sample size of 23 firms. Also, Zhang and Schniederjans (2002) used cash flow information to predict EPS based on the research by Jegadeesh and Titman (1993). Kenneth and Willinger (1996) showed that logit-based financial statement analysis can predict abnormal returns on investments in equity securities. Qi (1999) used the neural network to predict the stock return. While, Mohammad and Mohammad (2007) forecasted EPS using genetic algorithm of artificial neural network; in this present paper panel vector Auto regressive model were used to forecast EPS.

An autoregressive model is a linear regression of the current value of the series against one or more prior values of the series. Panel Vector Auto Regression models have been used in the past to address various issues, while Canova and Ciccarelli (2012) employ them to examine the cross-sectional dynamics of Mediterranean business cycles; Wei, Cheng, and Wu (2011) observed that they can also be used to forecast out-of-sample. An AR model is a model that includes one or more past values of the dependent variable among its explanatory variables.

The simplest AR(1) is defined as:

$$y_{it} = \beta_1 y_{it-1} \quad (1)$$

When the random error and constant term are taken into account, the modified AR(1) model becomes:

$$y_{it} = \alpha_1 + \beta_1 y_{it-1} + \mu_1 \quad (2)$$

Where: $\beta_1 y_{it-1}$ is the first -order autoregression coefficient and μ_1 is the white noise viewed as a random error. In this present study, AR(2) model was used for the period between 2005 to 2014 and then EPS was forecasted for the same period, the model can be expressed as follows:

$$EPS_{it} = \alpha_1 + \beta_1 EPS_{it-1} + \beta_2 EPS_{it-2} + \mu_1 \quad (3)$$

The EPS forecast is thereafter compared with the actual EPS to determine the absolute values of forecast errors. Thus:

$$FE_{it} = /EPSACTUAL_{it} - EPSFORESCAST_{it} / \quad (4)$$

4.2. Earnings Quality

In calculating the earnings quality, the modified model of Dechow and DeFond (2002) by Francis, LaFond, Olsson, and Schipper (2005) was used. McNichols (2002) proposes this combined model, arguing that the change in sales revenue and PPE are important in forming expectations about current accruals, over and above the effects of operating cash flows.

This measure has been used in previous research such as Persakis and Iatridis (2015). The residual error in the model indicates that the estimated error in the current accruals is not associated with operating cash and it cannot be measured via determining the changes in income, machinery and equipment. Then, the value of the residual error multiplied by -1 represents the earnings quality.

All variables are scaled by average assets

$$TCA_{jt} = \alpha_0 + \beta_1 CFO_{j,t-1} + \beta_2 CFO_{j,t} + \beta_3 CFO_{j,t+1} + \beta_4 \Delta \mathrm{Re}v_{j,t} + \beta_5 PPE_{j,t} + \mu_1 \quad (5)$$

where:

$TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta CASH_{j,t} + \Delta STDEBT_{j,t}$ = total current accruals in year *t*;

$CFO_{j,t} = NIBE_{j,t} - TA_{j,t}$ = firm *j*'s cash flow from operations in year *t*;

$NIBE_{j,t}$ = firm *j*'s net income before extraordinary items in year *t*;

$TA_{j,t} = (\Delta CA_{j,t} - \Delta CL_{j,t} - \Delta CASH_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t})$ = firm *j*'s total accruals in year *t*;

$\Delta CA_{j,t}$ = firm *j*'s change in current assets between year *t-1* and year *t*;

$\Delta CL_{j,t}$ = firm *j*'s change in current liabilities between year *t-1* and year *t*;

$\Delta CASH_{j,t}$ = firm *j*'s change in cash between year *t-1* and year *t*;

$\Delta STDEBT_{j,t}$ = firm *j*'s change in debt in current liabilities between year *t-1* and year *t*;

$DEPN_{j,t}$ = firm *j*'s depreciation and amortization expense in year *t*;

$\Delta \mathrm{Re}v_{j,t}$ = firm *j*'s change in revenues between year *t-1* and year *t*; and

$PPE_{j,t}$ = firm *j*'s gross value of PPE in year *t*.

4.4. Firms Characteristics

Specific firms' characteristics have been said to influence EPS forecast errors. Thus, we controlled for firms' characteristics of actual EPS, firms size measured by natural logarithm of total asset (SIZE), and firms' value measured by Tobin's q. These have been used in prior studies of Harris and Wang (2003); Reza, Mahmood, and Hassan (2010); Pawel (2014).

4.5. Modeling

The main model in this work used in testing the hypothesis previously stated is shown as follows:

$$FE_{it} = \alpha_0 - \beta_1 EQ_{it} - \beta_2 EPS_{it} - \beta_3 SIZE_{it} - \beta_4 TOBINSQ_{it} + \mu_1 \qquad (6)$$

where:

FE_{it} = Forecast error of firm *i* in time t derived from model I and II above;

EQ_{it} = Earnings Quality of firm *i* in time *t* derived from the residuals of the cross sectional accrual model III;

EPS_{it} = EPS of firm *i* in time *t*;

$SIZE_{it}$ = Natural log of total assets of firm *i* in time *t*; and

$TOBINSQ_{it}$ = Tobin's q measuring the value of firm *i* in time *t*

We expected that earnings quality and firms' characteristics will have a negative effect on Forecast errors, hence, the sign of all the coefficients.

5. FINDINGS & DISCUSSION

A total number of 100 firm-year observations were used for the main model. Data obtained from forecast errors in equation 1 and residuals multiplied by -1 in equation 2 were discussed and analyzed in this section.

5.1 Descriptive Analysis

Table 1 shows the summary statistics of all the variables of Forecast Error (FE), Size, Tobin's q, Earnings quality and EPS of the sampled companies for the period under study. Specifically, the mean values stood at 51.128, 17.96, 3.19, 1.67, and 457.89 for FE, SIZE, TOBIN'S Q, EARNINGSQUALITY, and EPS respectively. Their respective minimum and maximum values show large variations of FE which indicates that the series ranges between 0.39 and 310.81; also, the TBINSQ and EPS show large variations by comparing their minimum and maximum values respectively. However, there is no much variations in the data set of size and earnings quality.

The standard Deviation shows the dispersion or spread in the data series. The higher the value, the higher the deviation of the series from its mean and the lower the value and the lower

the deviation of the series from the mean. The variable with a higher degree of dispersion from the mean is the EPS which further confirms the variations within the data set.

Table 1: Descriptive Statistics

	FE	SIZE	TOBIN'S Q	EARNINGSQUALITY	EPS
Mean	51.12873	17.96970	3.190667	1.67E-11	457.8878
Median	29.03090	18.01464	2.650000	0.001961	163.5000
Maximum	310.8080	19.67252	10.20000	0.049997	2808.000
Minimum	0.390100	16.30693	0.250000	-0.077252	-84.00000
Std. Dev.	65.76672	0.787082	2.546825	0.026660	690.3754
Observations	100	100	100	100	100

Source: Field Survey, 2016

5.2. Empirical Analysis

5.2.1. Diagnostic Test

Diagnostic tests were performed on the model to validate the correctness of model estimation. As such, the Hausman test was first used to determine whether fixed or random effect is suitable for the model. The probability of this test showed 0.76 which is higher than the acceptable 5%, thus, the null hypothesis of estimate random effect was accepted. However, running the Breusch and Pagan Lagrangian Multiplier test for random effects gave a p-value of 0.3091 indicating that the null hypothesis that the effects are not statistically significant was accepted. Thus, pooled OLS was estimated for this model, although the Breusch-pagan heteroskedasticty test showed a p-value of 0.000, implying that the null hypothesis of constant variance may not be accepted, thus the model was ran using the robust option on stata. The result is shown below:

Table 2: Regression Estimate

	THE MAIN MODEL			
Variable	**Coefficient**	**Std Error**	**t-Stat.**	**Prob.**
C	-131.267	160.4882	-0.82	0.417
Earnings Quality	-322.049	2555.997	-1.26	0.214
EPS	0.0534	0.0187	2.86	0.006
SIZE	9.5492	9.3886	1.02	0.314
TOBIN'S Q	-4.279	3.277	-1.31	0.197
R Square	0.3376			
Root MSE	55.44			
F-Statistic	3.03			
Prob.(F-Stat)	0.0251*			
Obs	100			
Ramsey's Reset test	1.21(0.3160)			

Auto-correlation	0.006(0.9412)

Dependent Variable: FE *significance at 5%
Source: Field Survey, 2016

The main Model proposed is:

$$FE_{it} = \alpha_0 - \beta_1 EQ_{it} - \beta_2 EPS_{it} - \beta_3 SIZE_{it} - \beta_4 TOBINSQ_{it} + \mu_1$$
$$FE_{it} = -131.2672 - 322.04 EQ_{it} + 0.053 EPS_{it} + 9.55 SIZE_{it} - 4.279 TOBINSQ_{it}$$

The Multiple regression estimate showed that earnings quality and firms value measured by Tobin's q have negative effect on forecast errors (FE); while EPS and firms Size have positive effect on Forecast Errors (FE). This is indicated by the sign of the coefficients, that is β_{1-4} = -322.04<0; 0.053>0; 9.55>0; 4.279<0. This result is inconsistent with a prior expectations. As we expected that earnings quality and firms characteristics should have negative effect on forecast errors.

5.2.2 Interpretation of Result and Discussion

Furthermore, the size of coefficients of the independent variables explained that a 1 unit increase in Earnings quality, ₦1 increase in EPS, 1% increase in Size and 1 unit increase in Tobin's q will cause a 322.04 decrease, 0.053 increase, 0.0955 increase, and 4.279 decrease respectively in Forecast errors (FE).

Although, the overall R-squared showed that about 33% variations in Forecast errors (FE) can be attributed to earnings quality and the control variables of firms characteristics, while the remaining 67% variations in FE are caused by other factors not included in this model. Showing a weak explanatory power of the model, the F-statistic p-value of 0.0251% shows that the panel regression result is statistically significant because this is less than 5%, the level of significance adopted for this study. Thus, the null hypothesis that Earnings quality has no significant effect on Forecast errors may not be accepted.

Several diagnostic tests were also performed on this model, the result of the Ramsey Reset test shows a p-value of 0.3160, implying that the null hypothesis that model has no omitted variables may be accepted. The Wooldrige test for autocorrelation shows a p-value of 0.9412, implying that the acceptance of the null hypothesis that no first order auto correlation. This indicates that the model is sufficient and adequate.

6. CONCLUSION

This study focused on the effect of earnings quality on EPS forecast errors. This was achieved in three stages; firstly, the EPS was forecasted and compared with actual EPS to obtain the absolute value of forecast errors using the AR(3) model; secondly, earnings quality measure was obtained by running a cross sectional regression analysis of the Dechow and Defond accrual quality model as modified by Francis, et al for the sampled firms, the residuals were multiplied by -1 to obtain the earnings quality measures; thirdly, the multiple regression estimate shows that earnings quality and firms value measured by Tobin's q have negative effect on forecast errors. Implying that an increase in quality of the earnings and the financial report as a whole will cause a decrease in analyst EPS forecast errors, this is line with the work of Pawel (2011). Also, Siegel, Lessard, and Karim (2011) concluded that Tobin's q does predict whether analysts forecast

accurately and their result also showed that firms' size measured by the Natural Logarithm of total assets has a positive effect on forecast errors, this is in line with our result. It was therefore concluded that, accrual quality a measure of earnings quality have a negative effect on EPS forecast errors. Implying that the higher the quality of earnings, the lesser the EPS forecast errors. Thus, it was recommended that financial analysts should strive towards understanding the quality of earnings reported before forecasting EPS and to be at alert when firms' size increases as empirical evidence has shown it positively affect Forecast errors.

REFERENCE

Ashbaugh, H., & Pincus, M. (2001). Domestic accounting standards, international accounting standards, and the predictability of earnings. *Journal of Accounting Research*, **39**(3), 417–434.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics,* **24**, 3−37.

Beaver, W. (1998). *Financial Reporting: An Accounting Revolution*. 3rd Edition, NJ: Prentice-Hall.

Block, S. (1999). A study of financial analysts: practice and theory. *Financial Analysts Journal*, **55**(4), 86-95.

Bodie, Z. A., Kane, & Marcus, A.G. (2002). *Investments*. 6th Edition, New York: McGraw-Hill.

Bolo, G., & Hassani, S. A. (2007). Earnings management and its measurement: A theoretical approach. *Iranian Association of Certified Public Accountants,* **4**(12), 72-88.

Brown, L. D., & Rozeff, M. S. (1979). Univariate time-series models of quarterly accounting earnings per share: A proposed model, *Journal of Accounting Research*, **17**(1), 179-189.

Canova, F. & Ciccarelli, M., (2012). ClubMed? Cyclical fluctuations in the Mediterranean basin, *Journal of International Economics*, **88**, 162-175.

Capstaff, J., Paudyal, K., & Rees, W. (1995). The accuracy and rationality of earnings forecasts by UK analysts. *Journal of Business Finance and Accounting*, **22**(1), 67-85.

Cheong, C. S., Kim, S. & Zurbruegg, R. (2010). The impact of IFRS on financial analysts' forecast accuracy in the Asia-Pacific region: The case of Australia, Hong Kong and New Zealand. *Pacific Accounting Review* **22**(2), 124-146.

Core, J. E. (2001). A review of the empirical disclosure literature: Discussion. *Journal of Accounting and Economics*, **31**, 441-456.

Cotter, J., Tarca, A. & Wee, M. (2009). IFRS adoption and analysts' earnings forecasts: *Australian evidence.*

Daske, H. & Gebhardt, G. (2006). International Financial Reporting Standards and Experts' Perceptions of Disclosure Quality. *Abacus*, **42**(3/4), 461-498.

Dechow, P.M., & Dichev, I. D. (2002). The quality of accruals and earnings: the role of accrual estimation errors. *Accounting Review,* **77**(1), 35–59.

Ernstberger, J., Kroter, S. & Stadler, C. (2008). Analysts' Forecast Accuracy in Germany: The Effect of Different Accounting Principles and Changes of Accounting Principles. *Business Research*, **1**(1), 26-53.

Feltham, J. & Ohlson, J. (1995). Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research*, **11**(2), 689-731.

Francis, J. R., LaFond, P. Olsson. & Schipper, K. (2002). The Market Pricing of Earning Quality. *Journal of Accounting and Economics*, 39, 295–327.

Haghighat, H. & Homayoun, A. (2004). *The relationship between accruals quality and profitability of TSE-listed companies*. MA thesis, Islamic Azad University, Mashhad Branch.

Hawkins, D. F. (1998). *Corporate Financial Reporting and Analysis: Text and Cases*. 4th Edition. New York: Irwin/McGraw-Hill.

Hodgdon, C., Tondkar, R. S., Harless, D. W. & Adhikari, A. (2008). Compliance with IFRS disclosure requirements and individual analysts' forecast errors. *Journal of International Accounting, Auditing and Taxation,* **17**, 1–13.

Hope, O. K. (2003a). Disclosure Practices, Enforcement of Accounting Standards, and Analysts' Forecast Accuracy: An International Study. *Journal of Accounting Research*, **41**(2), 235-72.

Hope, O. K. (2003b). Accounting Policy Disclosures and Analysts' Forecasts. *Contemporary Accounting Research*, **20**(2), 295-321.

IASB (2010). *Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics of Decision-useful Financial Reporting Information*. London.

Ionascu, M. (2012). Fair value measurements and earnings forecasts accuracy: evidence for romanian listed companies. *Accounting and Management Information Systems,* **11**(4), 532–544.

Jegadeesh, N. & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency, *Journal of Finance*, **48**(1), 65-91.

Khajavi, S. & Nazemi, A. (2005). The relationship between earnings quality and stock returns with emphasis on the role of accruals in TSE. *Accounting and Auditing Reviews*. **40**.

Krishnan, G. V. & Parsons, L. M., (2008). Getting to the bottom line: An exploration of gender and Earnings Quality. *Journal of Business Ethics,* **78**(1), 65-76.

Liang, L. & Riedl, E. J. (2014). The Effect of Fair Value versus Historical Cost Reporting Model on Analyst Forecast Accuracy. *The Accounting Review American Accounting Association,* **89**(3), 1151–1177.

Lorek, K. S. & Willinger, G. L. (1996). A multivariate time-series prediction model for cash flow data, *The Accounting Review*, **71**(1), 81-101.

Maherani, F., Ranjbar, M., & Fathi, Z. (2014). The Relationship between Earnings Quality, Financing, Corporate Performance and Investment Decisions in Tehran Stock Exchange (TSE)-Listed Companies. *Journal of Life Sciences Biomed,***4**(2), 88-96.

Martin, R. K. (2002). *The Effect of Accounting Method Choice on Earnings Quality: A Study of Analysts' Forecasts of Earnings and Book Value*. Unpublished dissertation submitted to the Virginia Polytechnic Institute and State University.

Mohammad, S. & Mohammad, H. N. (2012). Forecasting of Earnings per Share for accepted firms in Tehran's Stock Exchange by utilizing the genetic algorithm of artificial neural network. *Book of Proceedings – Tourism and Management Studies International Conference Algarve,* **3.**

Mohammadi, M. S. (2014). The Relationship between Financial Reporting Quality and Investment Efficiency in Tehran Stock Exchange. *International Journal of Academic Research in Business and Social Sciences,* **4**(6).

Pawel, B. (2014). Do Analysts Disclose Cash Flow Forecasts with Earnings Estimates when Earnings Quality is Low?. *Journal of Business Finance & Accounting*, **41**(3-4), 401–434.

Penman, S. H., & Zhang, X. J. (2002). Accounting conservatism and the quality of earnings, and stock returns. *The Accounting Review*, 237-264.

Persakisa, B. A., & Iatridis, G. E. (2015). Earnings quality under financial crisis: A global empirical investigation. Journal of Multinational Financial Management, **30**, 1–35

Qi, M. (1999). Nonlinear predictability of stock returns using financial and economic variables, *Journal of Business & Economic Statistics*, **17**(4), 419-429.

Rajakumar, I. M. P. & Shanthi, V. (2014). Forecasting Earnings per Share for companies in IT sector using Markov Process Model. *Journal of Theoretical and Applied Information Technology*, **59**(2).

Reza, G., Mahmood, Y. & Hassan, P. (2010). The Comparison of Methods Artificial Neural Network with Linear Regression Using Specific Variables for Prediction Stock Price in Tehran Stock Exchange. *International Journal of Computer Science and Information Security,* **7**(2).

Roghayeh, P., Mohammadreza, A., & Ali, H. (2013). A Study of the Effects of Financial Reporting Transparency on the Quality of Earnings in Companies Listed in Tehran Stock Exchange Journal of Educational and Management Studies. *Journal of Education Management Studies,* **3**(4), 299-303.

Safaeian, M. & Sadeghi, M. (2009). Evaluating investment decisions and its relationship with earnings sustainability, case study: TSE-listed companies. *Journal of Financial Accounting*, **3**, 69-87.

Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons*, **3**(4), 91–102.

Sheikh, J., Khan, M. M., Iqbal, W., & Ahmed, W. S. (2012). Examination of theoretical and empirical studies on firm's performance in relation to its' board size: A study of small and medium size public firms. *Journal of Management Research,* Vol. 4, No. 2, 242-254.

Tariq, H. I., & Rasha, M. E. (2011). Do Conditional and Unconditional Conservatism Impact Earnings Quality and Stock Prices in Egypt? *Research Journal of Finance and Accounting,* **2**(12).

Tian, Y. (2007). Does Expectations Management Impair Firm Valuation?. *Working paper*.

Wei, L., Cheng, C and Wu, H. (2011). Fusion anfis model based on ar for forecasting eps of leading industries. *International Journal of Innovative Computing, Information and Control.* **7**(9), 5445-5458.

White, G. I., Ashwinpaul C., Sondhi, and Dov, F. (1998). *The Analysis and Use of Financial Statements*, 2nd Edition. John Wiley & Sons (New York).

Wild, J. J., Bernstein, A. L. & Subramanayam, K. R. (2001). *Financial Statement Analysis.* 7th Edition, Boston: Irwin/McGraw-Hill.

Williams, T. (2005). Issuance of subsidiary stock as an earnings management strategy. *The Journal of Applied Business Research*, **21**(1), 1-12

Wolk, H., Tearney, M., & Dodd, J. (2001),.*Accounting Theory*. 5th Edition. Cincinnati, OH: South-Western College Publishing.

Zhang, W., Cao, Q. & Schniederjans, M. J. (2004). Neural network earnings per share forecasting models: A comparative analysis of alternative methods, *Decision Sciences*, **35**(2), 205-237.

Zhang, X. (2000). Conservative accounting and equity valuation. *Journal of Accounting and Economics,* **29**, 125−149.

APPENDIX

```
. hausman fixed random

                ---- Coefficients ----
             |      (b)          (B)          (b-B)     sqrt(diag(V_b-V_B))
             |       fixed       random       Difference
S.E.
-------------+------------------------------------------------------------
  usedresid |   -340.5515    -322.0489       -18.50262
146.7142
        eps |    .0776804     .0534058        .0242746        .0479283
       size |   -12.57319     9.549166       -22.12235        25.16872
    tobinsq |    1.611507    -4.279204        5.890711
8.417186
------------------------------------------------------------------------------
                     b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =        1.87
              Prob>chi2 =
0.7600

 xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        fe[crossid,t] = Xb + u[crossid] + e[crossid,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
           ----------+------------------------------
                  fe |   4325.262       65.76672
                   e |   3211.078       56.66638
                   u |         0              0

Test:   Var(u)= 0
chi2(1) =     1.03
Prob > chi2 =     0.3091

 reg  fe  usedresid eps size  tobinsq

Source |       SS       df       MS              Number of obs =      100
```

```
                                                        F =    7.01
      Model |  86145.5423     4  21536.3856         Prob > F      = 0.0001
   Residual |  169044.896    55  3073.54357         R-squared     = 0.3376
-------------+----------------------------         Adj R-squared = 0.2894
      Total |  255190.439    59  4325.26167         Root MSE      =  55.44

------------------------------------------------------------------------------
fe |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  usedresid |  -322.0489   275.9998    -1.17   0.248    -875.1649    231.0672
        eps |   .0534058   .0113648     4.70   0.000     .0306302    .0761814
       size |   9.549166   9.591333     1.00   0.324    -9.672294    28.77063
    tobinsq |  -4.279204   3.044918    -1.41   0.166    -10.38136    1.822948
      _cons |  -131.2672   170.8394    -0.77   0.446    -473.6371    211.1026
------------------------------------------------------------------------------

 estat ovtest

Ramsey RESET test using powers of the fitted values of fe
       Ho:  model has no omitted variables
                 F(3, 52) =      1.21
                 Prob > F =   0.3160



 estat hottest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of fe

         chi2(1)      =    37.76
         Prob > chi2  =   0.0000

xtserial  fe  usedresid eps size  tobinsq

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
   F(  1,       9) =      0.006
          Prob > F =      0.9412

reg  fe  usedresid eps size  tobinsq, robust

Linear regression          Number of obs =      100
F =    3.03
Prob > F      0.0251
R-squared     = 0.3376
```

Root MSE = 55.44

fe	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
usedresid	-322.0489	255.9969	-1.26	0.214	-835.0782	190.9805
eps	.0534058	.0187003	2.86	0.006	.0159294	.0908821
size	9.549166	9.388552	1.02	0.314	-9.265913	28.36425
tobinsq	-4.279204	3.27716	-1.31	0.197	-10.84678	2.288372
_cons	-131.2672	160.4882	-0.82	0.417	-452.8928	190.3583