

# Capital Structure and Firms Profitability: The Case of Emerging Financial Sector

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**Abstract:** *This study investigates the effect and nature of relationship capital structure has on financial performance of firms in Nigerian pension industry which is the most recent development in Nigeria's financial sector. The population of the study are filtered to obtain 16 PFAs licensed by the PenCom. The study employs unbalance panel data of 80 observations which are drawn from sixteen Pension Funds Administrators from 2007 to 2012. The empirical result based on the 16 PFAs shows that long term liability have significant positive impact on ROE while short term liability have significant negative impact on ROE. Though long term liability is shown to have positive impact on ROA, the result is however not significant. It is also found that most of the firms in the Nigerian pension industry use zero leverage and this limit the chance of each of the firm to expand their earnings. It is concluded that firms in the pension industry underperform due to their inability to use long term debt in their capital structures. Finally, it is recommended PFAs should use debt in their capital structure so as to enhance their performances.*

**Keywords:** Capital structure, Leverage, Profitability, Pension

## 1. INTRODUCTION

Businesses are either financed by the resources contributed by the owners in form of capital or from borrowing from the money and capital markets. The mix of the borrowed capital (loan) and owners' contribution (equity), is what is referred to as the capital structure. A number of debates followed the popular Modigliani and Miller (1958) capital structure irrelevancy theory. Scholars from various fields most notably, accounting, economics, and finance devote more attention studying the nature, determinants and optimality of capital structures and the influence they have on corporate value. In number of studies, capital structure decision is seen as a key performance determinant (Mwang, Makau, Kosimbeig, 2014) and this has triggered effort by managers and financial analysts devoting their times pursuing better equity and debt mix in order to improve their tactical and strategic role in the industry and the economy at large. This brought about the need for firms, small and large in various industries to investigate the effect capital structure has on their performance.

Nigeria Witnessed a remarkable changes in the financial sector with the enactment of 2004 Pension Reform Act. The changes were as a result of issues ascribed to the failure of the old pension system, for that, government opted for the formation of Nation-wide pension system that cut across public and private sector employees. This lead to emergence of new pension industry which comprise of the Pension Funds Administrators (PFAs) and Pension Fund Custodians (PFCs) to be supervised by the National Pensions Commissions (PenCom). This industry has a lot of potential growth as well as number of threats facing

it. Studies have been undertaken on the viability of these new firms but most of the studies look at the external environments such as political influence and the legal aspect. This study tends to look into one of the key financing decisions that are believed to be of no small significance to such firms. The study aimed at examining the capital structures of these new firms with a view to assessing its impact on the firms' profitability. This study analyses six years data from 16 Pension Funds Administrators and the finding indicates that Debt financing is essentially needed in that it help in improving firm performance.

The reminder of this paper is structured into four such that section 2 is the literature review; section 3 is the research methodology while section four is the result and discussions. Section 5 is for summary and conclusion of the study.

## 2. LITERATURE REVIEW

Capital structure decision is one of the key management decisions designed to ensuring that tactical and strategic plans or goals of the organizations are achieved. Various scholars advanced their theoretical views about capital structures and its relationship with firm performances. Earlier among them is the popular Modigliani and Miller (1958) capital structures irrelevancy theory which claims that firms are indifferent about its capital structure because according to them performance doesn't depend on debt structure of firms. However, in their later position they maintained that when tax is introduced, they developed a model that value of firm increase when debt ratio increases due to tax shield. Jensen & Meckling (1976) and Myers (1977) argued that the relationship between capital structure and firm performance could be explained by agency cost theory. According to the theory, agency costs arise due to

conflict of interest between different groups (ie managers, creditors, stockholders). Myers and Majluf (1984) developed the Pecking order hypotheses. The theory states that firms finance their project using internal sources first, then debt and finally using equity if the project require more funding. Market timing theory advanced that firms finance their activities using equity when it is cheap and using debt when debt is cheap (Huang& Ritter, 2004). Stakeholders theory of Frank & Goyal (2003) explains that firms structure their debt relative to their firms for them to keep the confidence of the stakeholders in business. Other theories includes the resource base theory of Barney (1991), signalling theory of Ross (1977) and trade-off theory by Kraus & Litzenger (1973), Miller(1977) and Kim(1978). All these theories attempt to offer convincing explanation about capital structure firms adopt in financing their business in order to improve their overall performance but consensus is not yet reached.

In addition, it is believed that the importance of capital structure decisions cuts across all levels of organization and the effects are on both financial and non-financial aspect of the business. Various empirical studies were conducted to test the theories of capital structures in various industries. Some of these studies include those made in the banking sector by Berger and Di Patti (2002) where they employ simultaneous equation model and find out that capital structure and financial performance have reversed causality. Gropp and Heider (2009) established that financial performance is among the determinants of capital structures of banks in Europe. Awuyo-Victor and Badu (2012) found that there is negative relationship between capital structures and firm performance of banks in Ghana. Aftab, Ehsan, Naseer and Awan (2012) study Pakistani banking sector and the finding shows that capital structure has impact on the overall performance of the banks. Goyal (2013) uses ROE, ROA and EPS as measures of performances and discovered that positive relationship exist between short term debt and profitability. All these studies are on banking industry.

In addition, among the studies on service industry are the works of Kathleen and Kuldeep (2004) and Biger, Pai and Bhutani (2009). While Kathleen and Kuldeep (2004) establish that there is significant relationship between capital structure and performance, Biger, Pai and Bhutani (2009) study US service industry and found that there is significant negative relationship between leverage and profitability. In addition, San and Heng (2009) and Ahmad, Abdullah and Roslan (2012) study the Malaysian consumer goods industry. Although the studies used different time frame and were made at different time, the findings of both studies held that there is significant relationship between capital structure and financial performance as measured

by Return on Assets. San and Heng however used EPS, and profit merging in addition to the ROA as performance measures. Trunova (2011) investigated information and telecommunication sector where he discovered that capital structure are determined by profitability, assets tangibility and firm size. Leon (2013) explored Sri-Lanka manufacturing sector and discovered that there is significant negative relationship between capital structure and Return on Equity (ROE). Nirajini and Priya (2013) study trading companies and used gross profit margin, net profit margin, ROCE, ROE and ROA as measures of performances. The research concludes that capital structure has significant impact on firm performance. Abdul Ghafoor-Khan, (2013) studied companies at the engineering sector in Pakistan. In the work they discovered that both short term and long term leverage ratios have negative impact on ROA, gross profit and Tobin Q. Also firms evolutionary stage are looked at in assessing the capital structure in relation to performances as in (Safar, Saeed and Arshad, 2013). From their analysis it is found that there is a negative relationship between firm's age and debt equity ratio. All these studies are about the relationship between capital structure and firm performance of the respective industry which end up in producing mixed result. These and many more studies tested most of the other sectors but none of the studies attempts to explain the relationship between capital structure and financial performance of firms in the Nigerian industry. It is against that background that need arise to study the firms in the Nigerian pension industry which is an emerging sector of the economy.

In Nigeria, there are couple of studies on capital structure and firm performance. David and Olorunfemi (2010) study Nigerian petroleum industry. Their finding show a positive relationship between Earning per share (EPS) and leverage ratio while a negative relationship are found between the dividend per share and leverage ratios. The research used ordinary least square regression analysis on the panel data obtained from the country's oil industry. to the best knowledge of the researcher, capital structures impact on financial performance of the firms in the pension industry remained unexplored. The researcher is therefore curious about the significance of the capital structure on financial performance of the firms in the industry that control large amount of funds which stood at about N3.75 trillion as at November, 2013. The funds were realised from the employer-employee contribution and managed by these companies (PENCOM, 2013). The profitability of the institutions is of paramount importance therefore all efforts have to be put in place to study all variables that will help in ensuring the firms continuous existences.

The main aim of this study is to assess the impact of capital structure on the financial performance of firms in the Nigerian

pension industry by first, determine the impact of long term debt to total assets on Return on Equity (ROE) and Return on Assets of Pension Funds Administrators. Also the study intends to examine the short term leverages to the profitability of the firms as measured by the ROE and ROA.

### 3. RESEARCH DESIGN

In the light of the nature of the study which requires historical data, the researcher employs the use of data from secondary sources and analyse using the appropriate technique. This design is adopted because data from all approved Pension Funds Administrators are needed from the year of inception of the new scheme which is 2005. The Pension Funds Administrators started presenting their financial reports only from 2006 hence the choice of 2007 to 2012 as the time frame of the study. The dependent variables are the Return on Equity (ROE) and the Return on Assets (ROA). The independent variables for the study are the Ratios of the Total debt to Total Assets (TLTA), Long Term Debt to Total Assets (LTD/TA), Short Term Liability to Total Assets and Firm size.

There were 30 licensed Pension Funds Administrators approved by the National Pension Commission to 2012. However, 10 among them are no longer in existence due to merger, acquisition and withdrawal of license by Pencom. As at 31<sup>st</sup> December 2012, only 20 PFAs are duly licensed operators according to Pencom 2012 annual report. These firms control more than three trillion naira pension money (PENCOM, (2013) third Quarterly report) invested in various sectors of the economy which is significant impetus to the Nigerian economic development.

#### 3.1 Variables of the Study

The variables of the study are the leverage ratios and accounting performance ratios as the independent and the dependent variables respectively. Firm size is used as control variables as used by past empirical studies (Shyam-Sunder and Myer, 2002; Feng, Ghosh and Sirmans, 2007; Olokoyo, 2012; Al-Taani, 2013 and Mwangi, Makau and Kosimbei, 2014)

The dependent variables are the most commonly used accounting performance ratios: the Return on Assets (ROA) and Return on Equity (ROE). ROA is the measured by dividing the earnings before interest and tax to the total assets. It is the income returned on each naira asset. The total asset is defined by the net current assets plus the other assets. This measurement is used in (Feng, Ghosh and Sirmans, 2007; Soumadi and Hayajneh, 2012; Al-Taani, 2013 and Mwangi, Makau and Kosimbei, 2014). ROE is the measure of the ratio of earnings before interest and tax to the ordinary shareholder capital (Feng, Ghosh and Sirmans, 2007; Al-Taani, 2013; Soumadi and

Hayajneh, 2012 and Mwangi, Makau and Kosimbei, 2014). It explains how well management are able to manage the equity invested by shareholders. In other words; it tells us the percentage returned for each naira invested.

Debt to total assets ratio is the most common leverage ratio used by many researchers. It is the ratio of the total debt to the net assets of the organization. Also to understand the nature of the debt the more, it is divided into two; long term debt to total asset; and short term debt to total assets ratios. It is used In (Shyam-sunder and Myers, 2002; Al-Taani, 2013; Mwangi, Makau and Kosimbei, 2014). Firm size is measured by the natural logarithm of the total assets as used in (Kings and Santos, 2008; Onaolapo and Kajola, 2010; Al-Taani, 2013; Mwangi, Makau and Kosimbei, 2014).

#### 3.2 Model Specification

In order to identify the impact of capital structure on firm's financial performance, multiple regression analysis is adopted. The model in this study has been designed by using the ordinary least squares (OLS) model of regression. The model will use two independent variables and one control variable which is similar to (Berger and Patti, 2012 Al-Taani, 2013 and Mwangi, Makau and Kosimbei, 2014).

The model states that financial performance is a function of capital structures as follows;

$$PERF_i = F(LEV_i, Z_i) + \varepsilon_i$$

Where

PERF. Represent the performance ratios of ROA and ROE.

LEV=leverage ratios

Z= control variable.  $\varepsilon_i$ = error term

To test the hypotheses, the function can be expressed as follows;

$$ROA = \beta_0 + \beta_1 LTD/TA + \beta_2 STD/TA + \beta_3 SIZE + \varepsilon_i$$

$$ROE = \beta_0 + \beta_1 LTD/TA + \beta_2 STD/TA + \beta_3 SIZE + \varepsilon_i$$

Where

Return on Assets (ROA) = earnings before interest/total assets.

Return on Equity (ROE) = earnings before interest and tax/total assets.

Leverage ratio (LEV) = total debt/total asset.

LTD/TA = long term debt to total assets

STD/TA = short term debt to total assets. Firm size (SIZE) = is the natural logarithm of the total assets.

## 4. RESULT AND DISCUSSION

### 4.1 Descriptive Statistics

Before running the regression the number of firms having no long term leverage is checked. The Table 4.1 below shows that 66.25% of the observations have zero Leverage. This is consistent to other findings in other industries that greater percentage of firms has zero leverage in emerging economy

(Iavorskyi, 2013). The implication is that the company with low or zero leverage may have poor operational performance due to tax the firm inability to benefit from the tax shield. However, firm avoids long term debt due to the fact that the firms have particular difficulties in accessing the fund or due to high cost of loan (Olokoyo, 2012).

Table 4.1  
*Leverage Structure of the PFAs*

|                  | Observation | Percentages |
|------------------|-------------|-------------|
| <b>Levered</b>   | 27          | 33.75%      |
| <b>Unlevered</b> | 53          | 66.75%      |
| <b>Total</b>     | 80          | 100%        |

Source: PFAs Financial data

Table 4.2 below explains the summary of the statistics for both the dependent and explanatory variables of the study. The dependent variables are the Return on Assets (ROA) and Return on Equity (ROE). The average profit for the period of the study as measured by Return on Assets (ROA) is relatively poor with negative figure of 13.8%. This is an indication that the performance of firms in relation to their assets is lower compared to the performance as measured by Return on Equity (ROE). The average Return on Equity is quite good with a mean value of 43.7%. This shows that firms with large assets under performed during the period of the study. The standard deviation of the variables ranges between 0.205 and 1.39 which indicates that the variables are normally distributed.

Table 4.2

*Descriptive Statistics for the Relationship between Capital Structure and Performance*

|                  | N  | Minimum | Maximum  | Mean      | Std Deviation | Variance |
|------------------|----|---------|----------|-----------|---------------|----------|
| <b>ROA</b>       | 80 | -2.8927 | 1.7293   | -.137904  | .6545639      | 0.428    |
| <b>ROE</b>       | 80 | -1.7249 | 5.8511   | .437401   | 1.3893130     | 1.930    |
| <b>TLTA</b>      | 80 | .0085   | 6.7405   | .868731   | 1.4180292     | 2.011    |
| <b>LTLTA</b>     | 80 | .0000   | 1.2776   | .085671   | .2056935      | 0.042    |
| <b>STLTA</b>     | 80 | .0042   | 6.7405   | .783060   | 1.3604929     | 1.851    |
| <b>Firm Size</b> | 80 | .1832   | 919.1947 | 4.0686961 | 157.7362497   | 2.488E4  |

Note: ROE = return on Equity; ROA = Return on Assets; TLTA = Ratio of total liability to total assets; STLTA= Ratio of long term liability to total assets; STLTA = Ratio of short term liability to total assets

The average total debt for the industry is mean value of 86.9% with standard deviation of 1.42. Equally, the long term debt and short term debt have mean values of 0.87 and 0.09 respectively. This indicates that the long term debt and short term debt occupy 87% and 9% of the total assets. Finally the variances and the standard deviations indicate that the variables are normally distributed.

#### 4.2 Correlation Analysis

A correlation is used to describe the strength and direction of linear relationship between dependent and independent variables. In order to examine the level of relationship among the study variables, Pearson correlation is used. Correlation analysis is used only to show the degree of association among the study variables. Table 4.3 below shows the correlation matrix which gives insight on the relationship between the dependent and independent variables, as well as, the relationship among the independent variables.

Table 4.3

*Correlations matrix for the relationship among the variables*

|             | ROA    | ROE  | TLTA | LTLTA | STLTA | SIZE |
|-------------|--------|------|------|-------|-------|------|
| <b>ROA</b>  | 1      |      |      |       |       |      |
| <b>ROE</b>  | .353** | 1    |      |       |       |      |
| <b>TLTA</b> | .150   | .109 | 1    |       |       |      |

|              |         |        |       |       |       |   |
|--------------|---------|--------|-------|-------|-------|---|
| <b>LTLTA</b> | .096    | .073   | .059  | 1     |       |   |
| <b>STLTA</b> | -.304** | -.229* | -.146 | .210  | 1     |   |
| <b>SIZE</b>  | .092    | .782** | -.037 | -.093 | -.132 | 1 |

Note: \*\* implies statistical significant at 1%; \* =statistically significant at 5%; ROE = return on Equity; ROA = Return on Assets; TLTA = Ratio of total liability to total assets; STLTA= Ratio of long term liability to total assets; STLTA = Ratio of short term liability to total assets

From the Table 4.3, it can be seen that the highest correlation coefficient is 78% which indicates that there is no multicollinearity between the study variable. Multicollinearity is present only if the correlation coefficient is 80% or above (Gangemi, Michael & Brooks, 2000, in Cathode, 2002). It should be noticed that double stars indicates significant at 0.01 while single star indicates significant at 0.05.

The correlation result shows that short term liability is statistically significant to both Return on Assets (ROA) and Return on Equity (ROE) at 1% and 5% level of significance respectively. The nature of the relationship is, however, negative which is contrary to the findings of Omowunmi (2012). The difference in the finding is due to difference in characteristic of the pension industry to those of the quoted companies in Nigeria (Iavorskyi, 2013). The extents of the relationships are 30.4% and 22.9% to ROA and ROE respectively. However, total debt ratio and long term liability ratios indicate negatively insignificant correlation with two performance measures, i.e. ROA and ROE. Firm size is statistically negatively correlated with the Return on Equity at 78% which is due to diseconomies connected to expansion of the firms in the industry. This is in line with the findings of Salawu (2007). Furthermore, there is negative but insignificant relationship between the firm size and the leverage.

It is pertinent to note that both the descriptive statistics and Pearson correlation analysis only explain the level of associativity between and among the study variables. They

in real sense do not necessarily establish a causal relationship no matter the size of the coefficients. Therefore, the above two tools of analysis are not enough to test the hypotheses stated in chapter one as they do not give a vivid interpretation of causal relationship between the study variables. Consequently, the researcher employs ordinary least square to test the hypothesis thereby establishing the relationship between leverage and firms performances variables. The ordinary least square regression analysis is therefore used.

**4.3 Interpretation of Regression Result**

The research employs two models to study the impact of capital structure on firm’s financial performance. The first model uses Return on Equity as the regressant while the second use Return on Assets. The regressors are long term liability, short term liability and log of assets as the firm size. The first model has an f-test significant of 1% which indicates that the model is significant at 99% level of confidence. The second model however, is significant at 95% level of confidence. The two models have the required overall fitness. The regression coefficient of model 1 is 78.9% which is the measure of strength of relationship between the dependent and explanatory variables. The R-square measures the proportion of variation in Return on Equity that was explained by variation in explanatory variable. The R-square value of 62.3% is good and indicates that more than 50% of the variation in ROE is explained by the variation in capital structure variables as used in the model. The adjusted R-square is 60.8% which mean that about 61% proportion of variance in ROE are explained by the explanatory variables. This indicates that the capital structure is good in influencing firm performance in Nigerian pension industry.

Table 4.6:  
Summary of Regression Results

| Model | Model Sig. | variables            | coefficient | P sig. | t-Value | R <sup>2</sup> | Adj. R <sup>2</sup> | DW   |
|-------|------------|----------------------|-------------|--------|---------|----------------|---------------------|------|
| 1     | 0.000      | constant             | 0.045       | 0.736  | 1.642   | 0.669          | 0.651               | 1.79 |
|       |            | Long term liability  | 1.126       | 0.015  | 2.685   |                |                     |      |
|       |            | Short term liability | -0.146      | 0.040  | -2.543  |                |                     |      |
|       |            | Firm size            | 0.007       | 0.000  | 10.515  |                |                     |      |
| 2     | 0.018      | constant             | -0.121      | 0.249  | 0.810   | 0.129          | 0.083               | 2.27 |
|       |            | Long term liability  | 0.519       | 0.145  | 1.560   |                |                     |      |
|       |            | Short term liability | 0.151       | 0.006  | -2.99   |                |                     |      |

|           |       |       |       |
|-----------|-------|-------|-------|
| Firm size | 0.000 | 0.528 | 0.590 |
|-----------|-------|-------|-------|

Table 4.6 shows the beta values for each of the variables. Each of the coefficient represent the nature and extent to which each of the explanatory variables affect Return on Equity if all other variables held constant.

$$ROE = 0.199 + 1.309LTL - 0.132Sstl + 0.007SIZE + \varepsilon$$

-----Equation 1

Where  $\varepsilon$  is the error term of the equation

The above equation explains the relationship between Return on Equity and the explanatory variables. While the relationship between Return on Assets and long term liability and firm size are positive, the relationship of ROE to short term liability is negative. The significant of the relationship for each of the variable is found on the table 4-6 above (all are significant).

The second model also has an overall significance of 5%, the significant of the individual variable is however lower.

$$ROA = -0.71 + 0.54309LTL - 0.132Sstl + 0.007SIZE + \varepsilon$$

-----equation 2

Where  $\varepsilon$  is the error term of the equation

In the model2 above, long term liability has positive but insignificant relationship with ROA while short term liability has positive and significant relationship with return on asset. The R-square and adjusted R-square of the model are 12.3% and 8.9% respectively. However, the overall significance of the model is good (i.e. 5%).

#### 4.4 Test of Hypotheses

The regression models were adopted earlier to test the four null hypotheses for this study. The first regression model (Model 1) is meant for the first two null hypotheses which try to establish relationship between Return on Equity on one hand and the leverage ratios on the other hand

. The leverage ratios are the ratios of long term liability to total assets and that of short term liability to total assets. The second regression model (Model 2) is used to test the third and fourth hypotheses that attempt to establish the likely relationship between the Return on Assets and each of the debt level.

The findings in the research are quite interesting. It upholds the market timing theory that capital structure as measured by the ratio of long term liability to total assets has significant impact on firm performance. The four null hypotheses are tested using the result of the regression analysis. While the first two null hypotheses (long term and short term liability have no significant impact on ROE) are rejected based on significance criteria the, third hypothesis is accepted because there is no significant relationship between

the long term liability and performance as measured by ROA. Fourth hypothesis (short term liability has significant impact on the return on asset) though significant, the model is not strong considering the values of the  $R^2$  adjusted  $R^2$ .

#### 5.0 Conclusions

In the light of the findings of the study, the draw that most of the firms in the Nigerian pension industry use zero leverage and this limit the chance each of the firm in the pension industry to expand their earnings. The result of the empirical analysis supports the alternative hypothesis that long term liability has impact on Return on Equity of the firms. This led to the conclusion that firms in the pension industry underperformed due to their inability to use long term debt in their capital structures. This might be the reason of recurrent loss in some of the firms. The negative impact of short term loan on performance is in line with the agency theory and is due to the fact that the size of firm is not relevant in determining firm performance in the industry. Long term debt has no influence on the Return on Assets of the firms in pension industry. This shows that managers whose performance are rated based on the Return on Assets need not worry themselves taking into cognisance the long term leverage in their assets investment decisions.

The findings shows that pension funds administrators in nigeria do not use much of long term debt in their respective capital structures. This could be as a result of some rigid policies by the regulatory bodies. Pencom should therefore review their policies and ensure that such are removed if there is any, to encourage the use of long term loan in there capital structure. Government should introduce a better environment that will attract firms in the pension industry to make use of the loan by setting up an enabling environment to reduce the cost of debt which could be what distracts firm from gong for the long term debt. Managers in the pension industry should search for a ways of ensuring that long term debt becomes relevant in influencing performance as measyred by Return on Assets by making proper investment of the loan capital. Pension regulatory body (PENCOM) should put an extra effort to ensure that all firms in the industry (more importantly the pension Funds Administrators) comply fully with financial reporting on the retiree saving account and their end of the year financial account. Such diclosure will help researchers to explore number of areas of study on the industry. Pencom should equally ensures that the PFAs, CPFAs and PFCs present their financial reports uniformly.

This is a pilot study and therefore lays a good foundation for researchers to explore more in this young and promising industry. A further research can be developed by formulating new hypotheses and design new variables for investigation. Furthermore, a more detailed work is required to include some specific factors such as ownership structure of the firms, age and growth. In addition, investigation can be made about relationship between retiree savings account and return on invested fund and the effect of managerial shareholding on firm performance in the industry among others.

#### LIST OF ABBREVIATION

EPS = Earnings Per share; LTD = Long term Debt; LEV= Leverage; OLS = Ordinary Least Square; PENCOM = National Pension Commission; PFA = Pension Fund Administration; PFC = Pension Fund Custodian; SIZE = Firm Size; STD = Short Term Debt; TA = Total Assets; ROE = Return on Equity; ROA = Return on Assets; PASB = Public Sector Accounting Standard Board; TA = Total Assets

#### DECLARATION

The authors make the following declaration with respect to this article;

#### AVAILABILITY OF DATA AND MATERIALS

The data and all the materials used for this study are with the authors and will be made available to the Journal when the need arise.

#### COMPETING INTERESTS

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

#### FUNDING

The author(s) received no financial support for the research, authorship, and/or publication of this article.

#### ACKNOWLEDGEMENTS

We thank Cheif Editor together with the team of editors and the anonymous reviewers for their insightful comments and suggestions throughout the review process. We are also thankful to all the staff of Accounting Department for their constructive advise in seeing the work is done well. All errors and omissions remain our own.

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