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Relationship Between Earnings and Cash Flow in Estimating Cash Flows: Evidence from Listed Nigerian Banks

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Abstract

This study examines the relationship between earnings and cash flow in estimating future cash flows of firms in Nigeria. The source of data collection is secondary data source which comprises of twenty-one (21) commercial banks listed on the Nigerian Stock Exchange for the period of 2004-2013. The Ordinary Least Square technique was used in testing the hypothesis. The result of the analysis found a positive and significant relationship among future cash flows, past earnings, traditional measure of cash flows and current working capital of the observed firms. It was found that the obtained models were statistical adequate in estimating future cash flow of the firms. Hence, it was recommended among others that the regulatory authorities of accounting and capital market operations in Nigeria should encourage companies to set-up a cash flow system that will encourage the investing public to avail themselves of financial risk capable of jeopardizing their investment. This is expected to detail information on the financial performance of the company to enable investors make effective investment decisions.

Keywords: Cash Flow; Earnings; Commercial Banks; Nigerian Stock Exchange; Financial Risk.

1. Introduction

Cash flow is an index of the money that is actually received by or paid out by a firm for a certain period. In recent times, there has been an increased worldwide interest in cash flow reporting such that information in the cash flow statement is expected to help investors, creditors and other users of financial statements to assess attributes such as the firm's liquidity, financial flexibility and risk (Albrecht, 2003). Cash and cash flow for the company are as blood for the body and plays an important role for users of accounting information in making informed decision. Although changes in cash could be measured by comparing its balance in two sequential statements of financial position, but one of them are able to state the main and complete reasons of these changes. Hence, cash flow prediction is an important task since it is used in various economic decisions. This has made accounting standard-setting bodies all over the world to ensure that statement of cash flow are prepared by companies (Narktabtee, 2000).

On the other hand, earnings occupy a focal point in financial accounting research. The Financial Accounting Standard Board (FASB) and the International Accounting Standard Committee (IASC) have both asserted, without proof that earnings are the most widely accepted measure of firm performance and, therefore, by default is the subject of much interest . Attention has been given to the concept of earnings because it is commonly used in evaluating management performance. Perhaps the biggest reason for the attraction to earnings, though, lies with the notion that earnings serves as a predictor of future cash flows. The Financial Accounting Standard Board (FASB) observed that earnings represent a better predictor of future cash flows than historical cash flows. A company's existence depends on its ability to generate positive cash flows, and research has demonstrated that share price is directly related to an entity's cash flow prospects. Thus, earnings are viewed as a primary predictor of future cash flows (Krishnan and Largay, 2000).

Researchers have attempt studying the relationship between cash flow and dividend changes with respect to earnings and their result have not been successful (Hagerman and Huefner, 1980; Crum and Kothari, 1988; Simons,

1994; Charitou and Vafeas, 1998). Notwithstanding the outcome of previous studies, two reasons have been advanced to explain the superiority of cash flow over earnings. First, managers may manipulate earnings to maximize their bonus awards (Healy, 1985) or to side step restrictive debt covenant violations. The fact that accrual components of earnings can be manipulated makes the cash flow component a more reliable indicator of corporate performance than the accrual component. Secondly, cash flows are a more direct measure of liquidity and this liquidity is likely to be a contributing factor in setting dividend policy. Therefore, even if there is no difference between the market valuation of accruals and cash flows in measuring corporate performance, cash flows are expected to be more useful in predicting the movements in future cash flow.

In addition, most researchers have attempted to investigate the predictive ability of earnings under an accrual accounting basis and cash flows, in predicting future cash flow (Neil et al., 1991). FASB (1978) asserted that earnings are a better predictor of future cash flows than cash flows themselves. However, previous research findings have shown inconclusive results. Some researcher have concluded that the predictive ability of earnings out performs that of cash flows in forecasting future cash flow (see Greenberg et al., 1986; Dechow et al., 1998). In contrast, some findings showed conflicting results in which cash flows are the better predictor of future cash flow, such as the studies of Finger (1994), Bowen et al. (1986), and Percy and Stokes (1992). However, study by McBeth (1993) rejected both conclusions and claimed that neither cash flows nor earnings are good predictor of future cash flows. In addition, to single variable testing, some researchers have focused on multiple variables, such as the components of earnings including cash flow and accrual accounting data (Barth et al., 2001), they used a simple time series model to test the relationship between accrual components of earnings and future cash flows. They concluded that each accrual components reflects different information relating to future cash flows.

Moreover, most research has focused narrowly on operating cash flow, earnings and accrual components of earnings. Those previous studies ignored the potential of other cash flow variables, particularly cash flow ratios. Cash flow ratios are calculated by using data from both the cash flow statement prepared on a cash basis (which paid out), and the income statement and balance sheet based on the accrual basis (which records revenue as they are incurred even if cash has not been received and expenses when they are incurred even if cash has not been paid out).

Furthermore, these prior studies concentrated on developed markets and have been able to find whether earnings are good predictor of future cash flows. However, because of differences in institutional contexts, the empirical relationship between earnings and future cash flows in an emerging market like Nigeria may be different from what is obtained in the developed market. This study therefore carries the debate to Nigeria. Study by Efayena (2015) showed that cash flows are better predictors of future cash flows, which is in contrast with previous findings by most of the foreign researchers aforementioned. From the literature review carried out, it was observed that some of pervious research work carried in this area has shown inconclusive result. Hence, this study reexamines the predictive ability of cash flows and accrual accounting data and extends the analysis by investigating the ability of cash flow ratios to predict future cash flows.

The objectives of this study includes to examine the relationship between future cash flows and past cash flows of firms in Nigeria, to examine the relationship between future cash flows and earnings of firms in Nigeria, to examine the relationship between future cash flow and current working capital of the firm and to examine the relationship between cash flow ratios and future cash flow of firms in Nigeria.

2. Literature Review

What is the most effective component for predicting future cash flows, earnings or cash flows? This issue has remained open for argument and yet unclear. Several studies have examined the correlation between the results and future cash flows (see Finger, 1994; Dechow *et al.*, 1998; Barth *et al.*, 2001). Some of the researcher were able to show that accounting earnings and cash flows both have a capacity for estimating cash flows. Others have supported the assertion of FASB, thereby emphasizing the superiority of earnings in relation to cash flow. In contrast, another group believe that cash flow has the most interesting predictive power.

The literature in differentiating between the accrual-basis accounting and the cash-basis accounting highlighted the information product of these accounting methods. These are the accrual based earnings information derived from the income statement prepared on the accrual accounting basis; and the cash flow information derived from cash flow statement prepared on the basis of cash accounting. The accrual based earning information is supported for many reason. firstly, it is considered relevant in measuring a firm's performance (Godfrey *et al.*, 2003) because it avoids the distortion of uncertain variations in cash flows (Kremer and Rizzuto, 2000) in the measurement of performance. Secondly, the concept of matching expenses and revenue in arriving at accrual based earnings for predicting a firm's future cash flows has been widely affirmed by a number of researchers (Board and Day, 1989; Watt and Zimmerman, 1986). However, Arnedo *et al.* (2012) reiterated that accruals "are also fraught with measurement error due to the assumptions underlying their determination and the discretion allowed under GAAP".

Other critics of the accrual based earnings approach argue that accrual based earnings suffer from "flexible accounting techniques, subjective judgment, and manipulative practices" (Bernard and Stober, 1989; Lee, 1993).

Bierman (1988) and Sharma (2001) posit that under these circumstances, accrual based earning is less effective in predicting future operating cash flows, and users of financial statements turn to cash flow information instead. In their contribution, Call *et al.* (2009) showed that forecasts of accounting earnings published by financial analysts are more accurate when accompanied by those of the operating cash flows. Also, they added that financial analysts seem to understand better the time series properties of accounting income and its components, when they jointly forecast the earnings and cash flows. In fact, these authors showed that the evaluation of stock prices is significantly improved for firms whose analysts are based on forecasts of cash flows.

Speaking on the cash basis accounting, Al-Debie (2011) examined the relative predictive ability of current operating cash flows and current accrual earnings for the prediction of future operating cash flows for a sample of service and industrial shareholding companies in Jordan for the period 2000 - 2009. The result of his study found that the predictive ability of operating cash flows is stronger than that of earnings for forecasting future operating cash flows for one -to three years ahead forecast horizon. Study by Lev *et al.* (2010) found that for one-to three years forecasting period, the cash flow model had a better predictive ability than the accrual based earnings model for predicting future operating cash flow. Mcinnis and Collins (2011) examining the impact of cash flows forecasting on the quality of accruals found the existence of significant decline in the magnitude of the absolute value of abnormal accruals and better conversion of accruals into cash flows for the period during which analysts start issuing forecasts of cash flows. They found that after the issuance of the forecast cash flows, companies focus on certain types of real transaction management, and their orientation in determining the earnings is rather conservative, with the intention to confront the financial analyst forecasts. These results provide evidence that the issue of forecasting cash flows increases the transparency manipulation of accruals and act as a deterrent to opportunistic manipulation of income, and consequently improves the quality of accruals.

3. Research Methodology

3.1 Method of Data Collection

The population of study are all listed commercial banks in the Nigerian Stock Exchange during the period of 2004-2013. This period was selected based on the following criteria:

i)   Availability of accrual measures (i.e. earnings or net income, working capital from operations, and reported cash flow for this period).

ii) CBN consolidation exercise of commercial banks in Nigeria which took place in 2005.

iii) The financial and economic turbulence and uncertainty of 2009 due to the global economic meltdown where the share prices of a lot of companies crashed leading to their liquidation

iv) The sharp fall in the revenues of companies in late 2013, which led to an economic decline and liquidation of some of these companies.

Given the fact that the population size is not so large, the researcher deem it fit to study all 21 banks listed on the Nigerian Stock Exchange as at 2013. Hence, data from financial statements of 21 commercial banks during the period 2004-2013 was employed in this study. T o focus on the statements of cash flows, cash flows from operating activities were selected directly from the cash flow statement. Earnings were derived from income statements. These data have been deemed valid by standard bodies regulating commercial banks in Nigeria.

Model Specification

The variables in the study includes operating cash flow (OCF), net income (NI), operating income (OI) and future cash flow. All the variables were divided by total assets.

The model (1) was designed to determine the relationship between future operating cash flow and past earnings:

$$OCF = \beta_0 + \beta_1 \times EARNS + \varepsilon \qquad (1)$$

where β_0 and β_1 are regression coefficients, EARNS represents earnings which is the net income after tax, OCF represents operating cash flow and ε represents the noise or random error.

Model (2) measures the relationship between the first traditional measure of cash flow (earnings plus depreciation expense) and future operating cash flow .

$$OCF = \alpha_0 + \alpha_1 \times EDPR + \varepsilon \qquad (2)$$

where α_0 and α_1 are regression coefficients, EDPR represents current earnings (net income) plus depreciation expense, OCF represents operating cash flow and ε represents the noise or random error.

Model (3) measures the relationship between the future cash flow from operations and current working capital from operation.

$$OCF = \gamma_0 + \gamma_1 \times WCFO + \varepsilon \qquad (3)$$

where γ_0 and γ_1 are regression coefficients, WCFO represents working capital from operation (WCFO=operating cash flow - the current liabilities other than short term debt + the current assets other than cash), OCF represents operating cash flow and ε represents the noise or random error.

In addition, Model (4) examines whether cash flow ratios provide a good predictor of future cash flow.

$$OCF = \lambda_0 + \lambda_1 \times CFR + \varepsilon \qquad (4)$$

where λ_0 and λ_1 are regression coefficients, CFR represents cash flow ratio, OCF represents operating cash flow and ε represents the noise or random error.

3.2 Method of Data Analysis

The method of data analysis employed in this study is the descriptive statistics and least square regression analysis. The descriptive statistic was employed to determine the behaviour and nature of the obtained data set while the least square regression analysis was used to design the models and estimate the corresponding parameters. The computing package used for the analysis is the Eview7 package and the SPSS 17.0 version.

4. Data Analysis and Discussion

Descriptive analysis of the variable is presented in table 1

Table 1: Descriptive Statistics of Variables in the Model				
Variables	**Mean**	**Standard Deviation**	**Minimum Value**	**Maximum Value**
OCF	5.678944	38.87032	-75.3039	451.1868
OI	3.945764	29.37926	-77.0678	291.4404
NI	2.70047	22.40948	-88.7377	188.6428

Source: SPSS 17.0

Key: OCF =Operating Cash Flows, OI= Operating Income and NI= Net Income

The result of the descriptive analysis displayed in table 1, showed that the average of operating cash flow , operating income and net income are positive. These result are consistent with result found by (Sloan, 1996; Barth *et al.*, 2001). For the changes in cash flows, it was found that the result is in line with result found by (Dechow, 1994; Dechow *et al.*, 1998). The result also found the minimum values of the variables to be negative.

Table 2: Regression Analysis for Assessing the Relationship between Future Cash Flows and Past Earnings of Firms in Nigeria				
H_{00}: There exist no significant relationship between future cash flows and past earnings of firms in Nigeria				
Dependent Variable: OCF				
Method: Least Squares				
Sample: 2004- 2013				
Included observations: 103				
OCF=C(1)+C(2)*EARNS				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	2.20300	0.631460	2.01000	0.04500
C(2)	0.36400	0.181264	6.6600	0.00000
Adjusted R-squared	0.872013	S.D. dependent var		64071554
S.E. of regression	9.124000	Akaike info criterion		38.590170
Sum squared resid	13.21200	Schwarz criterion		38.839260
Log likelihood	-1377.833	Hannan-Quinn criter.		38.590170
F-statistic	44.38000	Durbin-Watson stat		1.903040
Prob(F-statistic)	0.000000			
Source: Eview7				

The result of the analysis displayed in table 2, found an F-value of 44.38 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level (since p-value=0.00 is less than α=0.05). The result also found a t-value of 6.66 and a corresponding p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level. This result implies that past earnings has significant impact on future operating cash flow of firms in Nigeria. In addition, it was found that as future operating cash flow increases by a unit, past earnings increases by 0.36 coefficient. This result implies presence of positive relationship between past earnings and future operating cash flow of firms in Nigeria. Also, an R-square value of 0.894 (89.4%) was equally obtained from the analysis which implies that the independent variable past earnings was able to explain about 89.4% of total variation in future operating cash flow. This result connotes strong adequacy of the obtained model in estimating future operating cash flow.

In addition, the obtained model can be expressed as given:

$$OCF= 2.20 + 0.36*EARNS \tag{5}$$

where EARNS represents earnings which is the net income after tax and OCF represents operating cash flow

Table 3: Regression Analysis for Assessing the Relationship between Future Cash Flows and Traditional Measures of Cash Flow			
H_{00}: There exist no significant relationship between future cash flows and the traditional measures of cash flow of firms in Nigeria			
Dependent Variable: OCF			
Method: Least Squares			
Sample: 2004- 2013			
Included observations: 103			
OCF=C(1)+C(2)*EDPR			
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	2.506000	0.631460	2.29000	0.02300
C(2)	0.663000	0.181264	6.37000	0.00000
R-squared	0.80152	Mean dependent var		21171150
Adjusted R-squared	0.75130	S.D. dependent var		64071554
S.E. of regression	9.124000	Akaike info criterion		38.590170
Sum squared resid	13.21200	Schwarz criterion		38.839260
Log likelihood	-1379.528	Hannan-Quinn criter.		38.590170
F-statistic	40.55000	Durbin-Watson stat		1.903040
Prob(F-statistic)	0.000000			
Source: Eview7			

The result of the analysis displayed in table 3, found an F-value of 40.55 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level (since p-value=0.00 is less than α=0.05). The result also found a t-value of 6.37 and a corresponding p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level. This result implies that traditional measures of cash flow has significant impact on future operating cash flow of firms in Nigeria.

In addition, it was found that as operating cash flow increases by a unit, traditional measures of cash flow increases by 0.66 coefficient. This result implies presence of positive relationship between traditional measures of cash flow and future operating cash flow of firms in Nigeria. Also, an R-square value of 0.802 (80.2%) was equally obtained from the analysis which implies that the independent variable traditional measure of cash flow was able to explain about 80.2% of total variation in future operating cash flow. This result connotes strong adequacy of the obtained model in estimating future operating cash flow.

The obtained model can be expressed as given:

$$\textbf{OCF= 251+0.66*EDPR} \tag{6}$$

where EDPR represents current earnings (net income) plus depreciation expense and OCF represents operating cash flow and ε represents the noise or random error.

Table 4: Regression Analysis for Assessing the Relationship between Future Cash Flows and Current Working Capital of Firms in Nigeria			
H_{00}: There exist no significant relationship between future cash flows and current working capital of firms in Nigeria			
Dependent Variable: OCF			
Method: Least Squares			
Sample: 2004- 2013			
Included observations: 103			
OCF=C(1)+C(2)*WCFO			
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	2.477000	0.631460	1.112000	0.02700
C(2)	0.46000	0.181264	5.64000	0.00000
R-squared	0.83129	Mean dependent var		21171150
Adjusted R-squared	0.80113	S.D. dependent var		64071554
S.E. of regression	9.124000	Akaike info criterion		38.590170
Sum squared resid	13.21200	Schwarz criterion		38.839260
Log likelihood	-1383.488	Hannan-Quinn criter.		38.590170
F-statistic	31.78000	Durbin-Watson stat		1.903040
Prob(F-statistic)	0.000000			
Source: Eview7			

The result of the analysis displayed in table 4, found an F-value of 31.78 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level (since p-value=0.00 is less than α=0.05). The result also found a t-value of 5.64 and a corresponding p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level. This result implies that current working capital has significant impact on future operating cash flow of firms in Nigeria.

In addition, it was found that as future cash flow increases by a unit, current working capital increases by 0.46 coefficient. This result implies presence of positive relationship between operating income and operating cash flow of firms in Nigeria. Also, an R-square value of 0.831 (83.1%) was equally obtained from the analysis which implies that the independent variable current working capital was able to explain about 83.1% of total variation in future operating cash flow. This result connotes strong adequacy of the obtained model in estimating future operating cash flow.

The obtained model can be expressed as given:

$$OCF= 2.48+0.46*WCFO \qquad\qquad (7)$$

where WCFO represents working capital from operation (WCFO=operating cash flow - the current liabilities other than short term debt + the current assets other than cash) and OCF represents operating cash flow.

Table 5: Regression Analysis for Examining the Relationship between Cash Flow Ratios and Future Cash Flow Ratio of Firms in Nigeria				
H_{00}: There exist no significant relationship between future cash flow and cash flow ratios of firms in Nigeria				
Dependent Variable: OCF				
Method: Least Squares				
Sample: 2004- 2013				
Included observations: 103				
CFR=C(1)+C(2)*CFR				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.26000	0.631460	3.52000	0.02700
C(2)	0.24000	0.181264	3.32000	0.00000
R-squared	0.81129	Mean dependent var		23171150
Adjusted R-squared	0.81213	S.D. dependent var		63071554
S.E. of regression	10.124000	Akaike info criterion		32.590170
Sum squared resid	12.21200	Schwarz criterion		32.839260
Log likelihood	-1283.230	Hannan-Quinn criter.		32.590170
F-statistic	30.21000	Durbin-Watson stat		1.803040
Prob(F-statistic)	0.000000			
Source: Eview7				

The result of the analysis displayed in table 5, found an F-value of 30.21 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level (since p-value=0.00 is less than α=0.05). The result also found a t-value of 3.32 and a corresponding p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level. This result implies that cash flow ratio has significant impact on future cash flow of firms in Nigeria.

In addition, it was found that as cash flow ratio increases by a unit, operating cash flow increases by 0.24 coefficient. This result implies presence of positive relationship between cash flow ratio and future operating cash flow of firms in Nigeria. Also, an R-square value of 0.811 (81.1%) was equally obtained from the analysis which implies that the independent variable cash flow ratio was able to explain about 81.1% of total variation in future cash flow . This result connotes strong adequacy of the obtained model in estimating future cash flow.

The obtained model can be expressed as given:

$$OCF= 0.26 + 0.24*CFR \tag{8}$$

where, CFR represents cash flow ratio and OCF represents operating cash flow

5. Conclusion

This study examines the relationship between earnings and cash flow in estimating future cash flows of firms in Nigeria. The result of the analysis showed that there exist significant relationship between future cash flows and cash flows of firms Nigeria. It was found that significant relationship exist between future cash flows and earnings, future cash flows and current working capital, and cash flow ratios and future cash flow of firms in Nigeria.

It was inferred from the findings of the study that for a simple model based on delay of one year or two years , cash flow ratios have significant predictive ability of future cash flows and that it is the operating cash flows that provide the best predictions. This result does not support the FASB assertion and the ideas developed by some authors (see Beth 1993; Finger, 1994; Barth et al., 2001) that earnings provide better estimation of future cash flow than cash flow measures. The result of the analysis found that the obtained models were adequate in estimating future cash flow since there coefficient of determination were all above 70%.

Based on the findings of this study, we recommend that the regulatory authorities of Accounting and capital market operations in Nigeria such as IFRS, CBN, FRCN, NDIC, SEC and NSE and so should encourage companies to set-up a result oriented cash flow system that will encourage the investing public to avail themselves of financial risk capable of jeopardizing their investment. More so, financial analyst should be encouraged to use cash flows ratios in evaluating the performance of a company to enable investors make effective investment decisions.

In addition, we recommend the implementation of compulsory cash flow policies such as investment policy, divided policy etc, with the aim of restoring the confidence of Nigeria investors and creditors. This action is expected to enhance both individuals and corporate performances of firms listed on the Nigerian Stock Exchange, thereby improving the overall Nigerian economy which is presently unhealthy.

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APPENDIX

S/No.	Names of Banks	Ticker
Table 6: List of Commercial Banks Under Study		
1	First Bank Nigeria Plc	FBN
2	Zenith Bank Nigeria Plc	ZBN
3	United Bank for Africa	UBA
4	Eco Bank Nigeria Plc	ECO
5	Access Bank of Nigeria Plc	ACCESS
6	Unity Bank of Nigeria	UBN
7	First City Monument Bank	FCMB
8	Enterprise Bank Plc	EB
9	Skye Bank Plc	SB
10	Diamond Bank Plc	DB
11	Fidelity Bank Plc	FB
12	Mainstreet Bank Plc	MB
13	Intercontinental Bank Plc	IB
14	Guaranty Trust Bank	GTB
15	Keystone Bank Plc	KB
16	Wema Bank Plc	WB
17	Sterling Bank Plc	SB
18	Standard Chartered Bank Nigeria Ltd	SCB
19	Stanbic IBTC Bank Ltd	IBTC
20	Heritage Banking Company Ltd	HBC
21	Citibank Nigeria Ltd	CN

Source: Researcher's Compilation, 2015