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The Effect of Working Capital Management on Profitability of Deposit Money Banks in Nigeria: A Case Study of First Bank PLC

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Abstract
The importance of working capital management to the going concern of financial institutions is very crucial. This paper examines the effectiveness of working capital management by banks in Nigeria using the oldest and biggest bank in the country as the case study. It conducts a time series analysis over thirty-five years (1981-2015) and observes that cash conversion cycle does not explain the relationship as much as using debt collection and creditors payment as separate variables in a single regression. The study opines that accessibility to long term funds will boost efficient working capital management and also enhance banks profitability.

INTRODUCTION

The banking institution serves as a very important sector for the development of the economy as they serve as a viable tool for mobilizing excess funds from the surplus sector to the deficit sector of the economy. They perform this function through intermediation by pooling resources together in form of savings and deposits and subsequently make the funds available to the needing sector in form of loans and advances. The loans granted to their customers no doubt impact the economy positively as it enables the firms to increase their productive capacity thereby enhancing the productive base of the economy (Oluitan, 2013). This will ultimately impact the populace as per capita income will be increased.

Banks in developing economy are known to dwell essentially on granting of short tenured facility to customers. This is largely attributed to the source of funds at their disposal which is usually short tenured. It is understandable that markets for long term funds are not so developed hence the scenario depicted above. The above situation implies that banks are more posited to grant short term credits hence the importance of working capital management.

Working Capital Management is a measure of ability to meet short term financial obligations (Gitman, 2005). It entails management of current assets and current liabilities and has direct impact on the profitability of the firm. (Dash and Ravipati, 2009). Where a firm expends a large chunk of capital into current assets, it impacts funding of other areas which ultimately affects profitability. Likewise, when current liability is withdrawn either in form of delay in payment of creditors, this also affects the image of the firm culminating in a decline in its overall profit. This process requires proper planning and management that aids elimination of risks associated with delay in meeting obligations and unnecessary investment in short term assets. Lack of proper control of working capital can destroy the smooth running of the firm. It therefore infers that the management must be capable to strike a balance between the ideal current assets and current liabilities that maximizes the overall profit of the firm.

Profitability is the rate of return on investment by a firm. It signals the efficiency of the management to use the resources of the firm judiciously to create wealth. It is desirable and every effort is geared to improve this on a periodical basis. It is argued that efficient working capital impacts profitability positively while excessive investment in current assets reduces profitability (Vishnani, 2007). Likewise Nobance (2008) posits that efficient management of working capital can positively impact firm liquidity and profitability. Since most banks grant short tenured facility to their customers and serves as the major source of funding for them, it is important that this important source of funding is maintained adequately to prevent mismatch or unnecessary investment that could lead to runs which will signal serious setback for the economy. The case of Northern Rock in the United Kingdom during the 2007 financial crisis is an issue that banks must be conversant with and avoid such occurrence.

This study examines the effect of working capital management on the profitability of banks in Nigeria. It uses First Bank Plc. as a case study as this bank is the only one that has data available for a considerable length of time that is considered good for this study. The study covers 1981 to 2015 and conduct a vector error correction method to ascertain the impact of working capital management on profitability. There are several studies on this area of research generally, but highly limited with banks in Nigeria. The one conducted by Adamu and Hussaini (2015) covered six years (2007 to 2013) while this research will cover thirty-five years. It will examine the results with that obtained in the paper.

LITERATURE REVIEW – THEORETICAL AND EMPIRICAL CONCEPTS

Working capital management as earlier stated entails optimization of the firm's liquidity in such a way that it produces maximum returns. This implies that the firm must manage the current assets by ensuring minimal and sufficient investment in current assets while current liabilities is also judiciously applied. To effectively manage

this, the firm must know how much of debt financing it needs to acquire and how much to allocate to equity financing. In essence, the underpinning theory for this study is the concept of trade off theory of capital structure. Capital structure consists of a mix of debt and equity and the choice of the mix can be very crucial as it can lead to excessive loss, distress and possible bankruptcy. According to the theory, debt financing is cheaper than equity but it must be appropriately mixed. This denotes the importance of working capital management which entails short term debt obligation and the firm must ensure appropriate mix and proper investment of funds in short term assets.

The study on working capital management and profitability generally is very robust all over the world but few conducted on Nigeria. Padachi (2006) examined some manufacturing firms in Mauritius for six years (1998 – 2003). The study conducts regression analysis with return on total assets as the dependent variable while cash conversion cycle, repayment period and collection period; inventory turnover were explanatory variables. It was observed that the profitability of the firms are positively affected where there are greater scores as observed for the printing industry thus large investments in current assets results in lower profitability.

Samiloglu and Demirgunes (2008) equally conducted the same study on about 5,843 Turkish firms listed on the exchange for ten years (1998-2007). With the aid of multiple regression conducted, observed that sales is positively correlated to profitability while account receivables, leverage and inventory period are negatively related to profitability. The study conducted by Flop and Ajilore in 2009 made use of fifty firms equally for ten years. The paper did panel estimation and found that cash conversion cycle is negatively related to profit with no appreciable variations in the large and small firms used in the sample.

Raheman et al (2010) examined the impact of working capital management on firm's performance for 204 listed firms in Pakistan for ten years (1998 – 2007). The study opined that cash conversion cycle, inventory turnover and net trade cycle are important determinants of firm performance. This view is similar to that expressed by Akoto et al (2013) in a study of 13 firms over 4 years (2005-2008) in Ghana. They posit that cash conversion cycle and other components of firm's balance sheet namely size, current assets ratio, and turnover have positive and significant relationship on profitability but account receivable exhibits inverse relationship. Both studies support the importance of working capital management to the continued survival of the firm.

Quayyum (2011) also studied four corporations in Bangladesh using panel approach over five years (2005-2009) and observed that the working capital components along with liquidity and profitability are strongly related. Bieniasz and Golas (2011) in the study of food industry in Poland and selected countries in Europe supports the above view but the results suggest profitability is inversely related to inventory, account receivables and current liabilities. Likewise Yeboah and Yeboah (2014) in a panel study of selected banks in Ghana between 2003 and 2010 observed that cash conversion cycle is inversely related to profitability only marginally while leverage exhibit significantly positive relationship to profitability.

From the foregoing literature review, all the papers support the importance of efficient working capital management on profitability but the indices used are varied with different level of impact observed. They opine that liquidity management is very important to the continued survival of the firm.

METHODOLOGY

This study uses First Bank as case study for a period covering 1981 to 2015. Data used was collected from the website of the bank. It uses variables as defined by Yeboah and Yeboah (2014) and conducts Descriptive Statistics; unit root tests (ADF and Philip Peron) along with a vector error correction model (VECM) analysis using Stata 10 as the analytical tool to estimate the relationship. Two separate equations were estimated. The first equation is with Cash Conversion Cycle and the second is with the components of cash conversion cycle namely debtors' collection period and creditors' payment period. The estimation included a variable for debt maturity structure in the estimation which is the ratio of long term debt to total debt. This we believe will capture the ability of banks to provide long term funds for the banking public. The model tested in the study is:

$$EBIT_t = \beta o + \beta_1 CCC_t + \beta_2 CRISK_t + \beta_3 LDEBT_t + \beta_4 SIZE_t + \beta_5 GRO_t + \beta_6 RISK_t + \beta_7 TDA_t + e_t$$

$$EBIT_t = \beta o + \beta_1 CPP_t + \beta_2 DCP_t + \beta_3 CRISK_t + \beta_4 LDEBT_t + \beta_5 SIZE_t + \beta_6 GRO_t + \beta_7 RISK_t + \beta_8 TDA_t + e_t$$

Where

EBIT represents the ratio of earnings before interest and taxes to equity fund for FBN in time t

CCC represents the difference between debtors' collection period and creditors' repayment period for FBN in time t

DCP represents the ratio of bank current assets to interest income in a year for FBN in time t

CPP represents the ratio of bank's short term debt to interest expense in a year for FBN in time t

SIZE represents the log of total assets for FBN in time t

TDA represents the ratio of total debt to total net assets for FBN in time t

GRO represents the year on year change in interest income for FBN in time t

RISK represents the standard deviation of EBIT for FBN in time t

LDEBT represents the long term debt to total debt for FBN in time t

CRISK represents the ratio of non-performing loans to gross loans for FBN in time t

Various diagnostic tests were conducted such as normality, heteroscedasticity and multicolinearity test. These processes provides information on the ordering of events and control for unobserved heterogeneity. It also provides information on the degree of freedom and the level of colinearity and variability.

Discussion on the Empirical Results

Descriptive Statistics

Variables	Obs	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
PROF	35	0.352771	1.177049	-0.012328	0.362486	0.835426	2.532610	4.389880
CCC	35	50.18699	4012.411	-1158.227	752.8945	4.084442	23.62123	717.4501
CPP	35	33.90289	4000.145	-1171.777	752.6506	4.104021	23.74180	725.6581
CRISK	35	96.86418	1041.779	0.008333	264.1867	2.657890	8.664395	88.00005
DCP	35	16.28410	155.5175	7.443498	24.39858	5.535131	32.11195	1414.665
GRO	35	9646.792	59496.00	-3606.000	15606.20	1.596457	4.601522	18.60771
LDEBT	35	0.413278	8.483770	0.034183	1.407088	5.623835	32.76765	1476.742
RISK	35	16510.05	60010.89	1400.051	13802.78	2.130907	6.595939	45.34519
SIZE	35	3.919966	5.662519	2.151603	1.229449	-0.007824	1.624259	2.760491
TDA	35	29.30885	238.5522	1.755382	48.61782	3.300326	13.36569	220.2318

The descriptive statistics show that PROF ranges within -0.012328 and 1.177049. This implies that profitability could be as low as 1.2% and as high as 118% for the bank. The mean and Standard deviation measures central tendency and good fit. The mean is positive for all the variables, so also the standard deviation. The skewness implies positive tail for the distribution except SIZE that is negative. LDEBT and DCP had the largest coefficient of above 5. The high values for skewness for the variables except PROF and SIZE suggest possible outliers in the figures.

Analysis of Correlation Coefficient

Variables	PROF	CCC	CPP	CRISK	DCP	GRO	LDEBT	RISK	SIZE	TDA
PROF	1.000000	0.153783	0.166895	-0.199991	-0.402927	-0.413583	-0.027205	-0.215217	-0.508308	-0.275706
CCC	0.153783	1.000000	0.999475	0.350943	0.026198	0.110033	0.912334	0.109482	0.059209	-0.259201
CPP	0.166895	0.999475	1.000000	0.353136	-0.006211	0.114709	0.513291	0.112023	0.064745	-0.258233
CRISK	-0.199991	0.350943	0.353136	1.000000	-0.064163	0.502179	0.064009	-0.048728	0.452319	0.514875
DCP	-0.402927	0.026198	-0.006211	-0.064163	1.000000	-0.143140	-0.020398	-0.077295	-0.170194	-0.032469
GRO	-0.413583	0.110033	0.114709	0.502179	-0.143140	1.000000	0.243769	0.062398	0.075886	0.135285
LDEBT	-0.027205	0.912334	0.513291	0.064009	-0.020398	0.243769	1.000000	0.016368	0.238677	0.130107
RISK	-0.215217	0.109482	0.112023	-0.048728	-0.077295	0.062398	0.016368	1.000000	0.050718	-0.290911
SIZE	-0.508308	0.059209	0.064745	0.452319	-0.170194	0.075886	0.238677	0.050718	1.000000	0.214681
TDA	-0.275706	-0.259201	-0.258233	0.514875	-0.032469	0.135285	0.130107	-0.290911	0.214681	1.000000

Correlate(obs=35)

The correlation coefficient figures show high correlation between PROF and SIZE; CPP and CCC; LDEBT and CCC; LDEBT and CPP; GRO and CRISK; TDA and CRISK. However, the highest is between CCC and CPP. These two variables will not be used together in the same estimation equation.

UNIT ROOT TESTS FOR THE VARIABLES

VARIABLES	ADF 1% CV	ADF LEVEL STAT	PP 1% CV	PP LEVEL STAT
DPROF*	-3.646342	-9.599717	-3.646342	-19.72184
CCC	-3.639407	-6.351172	-3.639407	-14.32588
CPP	-3.699871	-10.73797	-3.639407	-14.06075
DCP	-3.639407	-5.538237	-3.639407	-5.538361
CRISK***	-3.711457	-7.806797	-3.646342	-4.980908
DGRO	-3.646342	-7.131947	-3.646342	-7.415021
LDEBT	-3.639407	-5.631685	-3.639407	-5.628990
DRISK	-3.711457	-7.055888	-2.954021	-3.166105**
DSIZE	-3.646342	-7.062180	-3.646342	-7.405841
DTDA*	-3.653730	-6.578038	-3.646342	-6.371399

From the table above, most of the variables are stationary at level for both ADF and PP. The exceptions are PROF, GRO, RISK, SIZE and TDA which are stationary first level difference for both ADF and PP. Of these, PROF and TDA are signicant at 5% at the level statistics. However CRISK and RISK are equally found significant at first difference for PP only with RISK at 5%.

VECM Result with CCC

Beta	Coefficient	Standard Error	T-Ratio	P-Value
CONSTANT	5.614257	4.655112	-1.21	0.228
CCC	.006151	.019659	0.31	0.754
CRISK	-.000818	.0235524	-0.03	0.972
LDEBT	13.2003	6.86846	1.92	0.055
SIZE	-.1033617	.8356062	-0.12	0.902
GRO	-.0003048	.0001542	-1.98	0.048
RISK	.000353	.0002144	1.65	0.100
TDA	-.0744259	.0763853	-0.97	0.330
VECM	-.0400743	.1431861	-0.28	0.780
No of Obs	32		AIC	34.84777
R^2	0.1998		SBIC	41.44358
Log likelihood	-413.5643		HQIC	37.03409

From the vecm result above, all the variables are not significant except LDEBT at 10% and GRO at 5%. The vecm coefficient shows the expected negative sign but is statistically not significant. The standard error for GRO is very tiny while that for LDEBT is much larger. The R^2 is also very small at about 20% while the result suggests negative relationship between profitability and growth.

Generally, the result suggests that lumping the two variables i.e CPP and DCP together may not give the best result. It is at variance with the observation of Yeboah and Yeboah. We shall estimate the second equation by replacing CCC with DCP and CPP to analyze the impact on profitability.

VECM Result with CPP and DCP

Beta	Coefficient	Standard Error	T-Ratio	P-Value
CONSTANT	-1.83324	.5807973	-3.16	0.002
CPP	-.0063443	.0018403	-3.45	0.001
DCP	-.008219	.0029326	-2.80	0.005
CRISK	-.0147066	.0021419	-6.87	0.000
LDEBT	7.306376	.6486383	11.26	0.000
SIZE	.2438501	.0860074	2.84	0.005
GRO	-.0002208	.000017	-12.98	0.000
RISK	-1.21e-06	.0000259	-0.05	0.963
TDA	.0010358	.0101551	0.10	0.919
VECM	-.7822565	.1826007	-4.28	0.000
No of Obs.	32		AIC	41.45452
R^2	0.6990		SBIC	49.69928
Log likelihood	-483.2723		HQIC	44.18743

From the vecm result above, all the variables are significant at 1% except risk and TDA. It conforms to the result of Yeboah and Yeboah who also had the risk variable not significant in both OLS and Fixed Effect estimations but at variance for TDA as this variable was significant in both estimations.

The vecm coefficient shows the expected negative sign and equally significant at 1%. The standard error for the variables are tiny except the constant and LDEBT and the ecm coefficient. The R^2 is about 70% which affirms high influence of the variables used in the analysis. The result shows positive relationship between profitability and the duo of LDEBT and size. This result is in line with existing literature that long term debt is an important variable for enhancing profitability more than short tenured credits. The coefficient for LDEBT is the largest in the estimation and significant at 1%. This further buttress the literature that banks cannot do without long term debt to grow their profitability and also help the banking public. It will reduce the usual portfolio mismatch usually associated with financial institutions from developing economies and provide a very good platform for banking operation. Based on this, one can postulate that long term debt is sine qua non to banking survival.

However CPP; DCP; CRISK and GRO exhibit negative relationship with profitability. A possible explanation for CPP; DCP and GRO could be as a result of portfolio mismatch which the bank makes use of and may have to pay back when it is most inconvenient hence the negative impact. The result if CRISK is in line with literature because the higher the ratio of non-performing assets, the greater the impact on profitability. Likewise, it is also possible that the major component of credit risk is short term facilities. This is a possible explanation as literature is settled on the composition of bank credits mostly in the developing countries like Nigeria.

Most banks in these countries are not positioned to participate in the global long term cheap credits hence

make do with available short term credits. This has a lot of effect on the ability of banks to avail customers the much needed long term funds. Secondly, our possible local source such as pension fund is still largely undeveloped. The previous recapitalization has helped but this result shows that the bank is yet to be fully positioned for more cheap long term funds that will positively impact profitability. The result of TDA which is not significant is consistent with Deloof (2003) and inconsistent with Agyei & Yeboah (2011) and Yeboah and Yeboah (2014).

CONCLUSIONS

This study examined the effect of working capital components on profitability using two methods of cash conversion cycle in one regression and creditor payment period and debt collection period in the other. The result favours the use of creditor payment period and debt collection period as the estimation gave a good result with high impact of the explanatory variables. The result shows that all the variables exhibit significant impact on the dependent variable except RISK which is the standard deviation of profitability and TDA which is the ratio of total debt to total net assets. It was observed that accessibility to long term debt is very important for bank profitability and that the lower the level of non-performing assets, the higher the profitability of banks in general.

It is therefore important that management communicates the importance of working capital management to all stakeholders so that they can all pursue the efficient utilization within the company. They should also ensure proper mix of capital and adequate monitoring against political, economic and other vices that could adversely affect it. Lastly, a proper forecasting formular should be put in place that assists to minimize waste and ensure maximum and efficient utilization of working capital for the overall benefit of all stakeholders and the economy in general.

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