THE LINEAR EFFECT OF BANK LIQUIDITY ON PROFITABILITY IN SELECTED AFRICAN ECONOMIES

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Abstract

Given the importance attached to sound liquidity management in the banking industry, this paper investigates the effect of bank liquidity on profitability. The study employs the bankruptcy cost and risk-return hypotheses to examine the linear effect of bank liquidity on bank profit. Annual bank-specific data from commercial banks in Kenya, Nigeria and South Africa, for the period 2000-2014, are used in the study. The two-step system generalised method of moments technique of analysis, an instrumental variable technique that addresses issues such as endogeneity, reverse causality and auto-correlation, is used for the investigation. The results revealed a statistically significant and positive relationship between liquidity and bank profit indicating the applicability of the bankruptcy cost hypothesis. This implies that banks in the study benefit from reduced financial distress and funding costs thereby increasing profits. The study thus recommends that commercial banks in the selected countries hold higher levels of liquidity to mitigate the risk of failure and increase profit.

Keywords: bankruptcy cost, endogeneity, liquidity risk, profitability

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1. Introduction

Basel Commission on Banking Supervision (BCBS) (2010) defines liquidity as the "ability of a bank to fund increases in assets and meet obligations as they come due without incurring unacceptable losses." The risk associated with the inability of a bank to meet these obligations is what is termed as liquidity risk which, may be decomposed into funding and market liquidity risks (Decker, 2000, Musembi, Ali & Kingi, 2016). Funding liquidity risk is defined as the inability of the bank to meet its obligation as they fall due as a result of being unable to sell assets / obtain adequate funding sources. It may also be referred to as the risk associated with a bank not being able to meet the expected and unexpected current and future cash flows and collateral needs without affecting either daily operations or the financial conditions of the bank. Market liquidity risk is the risk associated with the inability to easily offset specific liabilities without a reduction in market prices due to market imperfections (Fu, Lin & Molyneux, 2016; Shen, Chen, Kao, & Yeh, 2009).

The financial crisis of 2007 highlighted the importance of liquidity risk management and liquidity in financial markets (Matz, 2008; BCBS, 2010). The US subprime mortgage crisis of 2007/2008, with its global contagion effect, led to a dry up in liquidity in global financial markets, banks inclusive (Baur, 2012; Cornett, McNutt, Strahan, & Tehranian, 2011; Mebounou, Karan & Dannon, 2015). Consequently, banks faced with insufficient liquidity had to contend with the problem of accessing funds without it affecting the profitability of their operations (Shen et al., 2009). Shen et al. (2009) identified that banks' failure to consider the amount of liquidity needed in satisfying contingent obligations was one of the reasons they found themselves in uncomfortable positions. The resultant effect was that when the crisis happened, the banks were unable to handle the ripple effects that occurred to the extent that some banks had to go into mergers acquisitions or even outright failure (Bordeleau & Graham, 2010; Moussa, 2015; Singh & Sharma, 2016). In addition, Cabral (2013) argued that one of the causes of the financial crisis was the high level of liquidity mismatch between bank assets and liabilities such that banks paid a high premium for liabilities from low yielding liquid assets. This reduced the profitability of the banks because the high profits prior to the crisis were achieved through balance sheet expansion and growing default, liquidity, and term risk mismatches between assets and liabilities. Accordingly, banks' financial leverage rose as they became less liquid, setting the conditions for a systemic banking crisis.

In the aftermath of the crisis, one of the policy decisions taken by most regulatory authorities was that banks should increase the portion of their liquid assets to meet obligations as they fall due. For instance in Nigeria, there was a reduction in cash reserve ratio from 4% to 2 % and

statutory liquidity ratio was reduced from 40% to 30% by the Central Bank of Nigeria to tackle the problem of illiquidity in the banking system (Soludo, 2009). This action increased the amount of cash in the system and improved the liquidity position of banks.

On the international level, the need for common measures and standards for liquidity risk is observed in the introduction and ongoing work of the Basel Committee on Banking and Supervision (BCBS) of 2010.[2] Specifically, pillar 2 of the Basel accord focuses on supervisory review by providing improved tools for regulating the banking system especially as it relates to risk management. One of such is the requirement that financial institutions maintain enough cash reserves to adequately protect them from risks incurred in their operations (an example is liquidity risk). Hence, the policy decision of a decrease in cash reserve and statutory liquidity ratio not only ensures that banks have sufficient liquidity to sustain their operations; it also ensures the stability of the financial system, thus highlighting the importance of adequate liquidity risk management.

Liquidity risk affects banks in several ways. One of such is bank profitability. A second effect is on bank reputation where customers lose confidence in a bank that is unable to meet its obligation when they fall due. Third, banks may be subject to regulatory penalties when they fall short of regulatory liquidity requirements (Jenkinson, 2008). Nonetheless, in the absence of regulations and considering the trade-off relationship between bank profitability and liquidity, most banks would rather hold liquid assets that maximises bank profits. This position would ultimately put the banks and financial system in serious problem given the systemic importance of banks in the economy.[3] In addition, risk management structure is constantly changing given the various advances in technology and wide range of funding products available in both money and capital markets (Akhtar, 2007; Ibiam & Chinedu, 2017). This paper therefore focuses on funding liquidity risk because extant literature in the African setting do not give enough attention to the liquidity position of banks and its effect on bank profitability. The area of concern of such literature is on credit and operational risk and determinants of bank profitability.[4]

To carry out the investigation in this study, we make use of bank-specific factors that affect profitability over the period 2000 to 2014 in three top African bank-based economies. These

[2] The BCBS provides a framework for dealing with the different risks inherent in the banking system. Some of these include systemic risk, liquidity risk, operational risk among others.

[3] The assumption here is that such banks hold minimal amount of liquidity that maximises profit. By so doing, they may be unable to meet up with obligations when they fall due.

[4] For example, see Flamini, Mcdonald, and Schumacher (2009); Kargi (2011); Kithinji (2010); Kolapo, Ayeni, and Oke (2012); Obamuyi (2013); Ongore and Kusa (2013)

countries are Kenya, Nigeria and South Africa. We employ an instrumental variable technique to take care of the dynamism, endogeneity and unobservable fixed effects inherent in our data. Our results indicate that liquidity risk management contributes significantly to profits in the selected countries. The sections in this study are structured as follows: Section 2 covers theoretical framework upon which the study is built. Section 3 provides an insight into data, model, variables and method of analysis employed in the study. Section 4 discusses the results while Section 5 concludes the study with relevant policy implications.

2. Theoretical Framework

The theoretical explanation for the linear relationship between bank liquidity and profitability may be explained with either the expected bankruptcy cost hypothesis (EBCH) or the risk return trade-off hypothesis (RRTH). The EBCH asserts that banks that hold more liquid assets have advantageous positions in funding markets with symmetric information. This position reduces financing costs and increase profits (Bordeleau & Graham, 2010). Furthermore, Morris and Shin (2016) show that the probability of bank default due to illiquidity reduces when banks increase their liquidity ratio. These arguments depict a positive effect of liquidity on bank profits. The RRTH explains that maintaining high liquid ratios to meet up with liquidity requirements when it arises has an opportunity cost to the bank in terms of alternative investment opportunities for the liquid assets and cost of maintaining the increased ratio (Anees, 2012). Consequently, and given the low return attributable to holding high levels of liquid assets as indicated by the RRTH, a negative effect is likely to occur. The positive and negative effect explained by the EBCH and RRTH ultimately indicates that a non-linear relationship between liquidity and bank profit is possible. This comes up when increased bank liquid assets improve bank earnings via the EBCH. However, when the marginal benefit of holding additional liquid assets exceeds the opportunity cost of their low return, the negative effect starts to set in. This implies that further holding of liquid assets reduces banks' profits (Bordeleau & Graham, 2010). However, this study examines only the linear relationship between bank profitability and liquidity. The variable description in Section 3.3 discusses empirical evidences of the relationship in detail.

3. Data and Methods

3.1 Data

Our sample consists of commercial banks in three selected African countries namely, Kenya, Nigeria and South Africa. These countries have the most developed banking sector on the

continent specifically for the period of this study (Mlachila et al., 2013).[5] Annual bank-specific data are extracted from consolidated statements from Bankscope for the period 2000 to 2014 to remove duplicate information.[6] Following the method of Dietrich and Wanzenried (2011), we include only listed commercial banks and exclude investment banks, central banks and investment houses. We ensure that only banks with at least three-year observations are included in the sample to guard against small cross-sectional variations (Vithessonthi, 2014). The final sample comprises of an unbalanced panel of 37 banks because not all banks enter the sample at the same time, besides issues of mergers and acquisitions are considered.

3.2 Econometric Specification

To investigate the effect of bank liquidity on bank performance, we model bank performance as a function of bank-specific factors in a multivariate unbalanced panel regression form shown in Equations 1 and 2. The profitability variables are one period lagged to capture the persistence of profits and the effect of past profit performance on current performance.

$$ROA_{i,t} = ROA_{i,t-1} + LONTASS_{i,t} + ETA_{i,t} + LLRGL_{i,t} + LNTOT_{i,t} + SQLNTOT_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$ROE_{i,t} = ROE_{i,t-1} + LONTASS_{i,t} + ETA_{i,t} + LLRGL_{i,t} + LNTOT_{i,t} + SQLNTOT_{i,t} + \varepsilon_{i,t} \quad (2)$$

where i = individual bank, t = year, ε is the error term. All other variables as described in Table 1.

3.3 Variable Description

To determine the linear effect of bank liquidity on profitability, we employ two measures of profitability as the dependent variable and a set of bank-specific independent variables established in literature to affect bank profitability. Table 1 presents a summary of the variables, description, source and *a priori* expectations. This study adopts two measures for the dependent variable as well as the main independent variable of interest.

Dependent Variable:

The dependent variables are the return on assets and return on equity. These two variables capture differences that may occur in assets and equities acquired during the years. The return on assets indicate the amount of profit generated from banks assets by its management while return on equity reflects profit made from shareholders equity.

[5] To support this claim, we obtained values for access to banking services from World Development Indicators (WDI) 2014 which revealed that the number of bank branches per 100,000 adult were 10.96, 5.72 and 5.56 for South Africa, Kenya and Nigeria respectively. This is against 2.99, 4.48 and 4.34 for Uganda, Egypt and Rwanda in that order. Similarly, the percentages of people with a bank account were 68.77, 55.20 and 44.17 for South Africa, Kenya and Nigeria respectively. Values for Uganda, Egypt and Rwanda were 27.78, 13.65 and 38.14 in that order.

[6] The choice of period is guided by data availability.

Independent Variables:

1. Liquidity: This is the main independent variable of interest and is measured as total loans to total asset (LONTASS). The variable focuses on liquidity on the assets side of a bank's statement of financial position. For robustness check, we use liquid assets to total deposits and borrowing (LATOBOR) to capture the liquidity variable. Unlike LONTASS, LATOBOR captures the liquidity position of both the asset and liability side of a bank's statement of financial position. There are two positions on the effect of liquidity on bank profit. On the one hand, Demirguc-Kunt, Laeven, and Levine (2003) argue that banks with higher level of liquid assets have lower profits than banks with lower liquid levels. This argument is based on banks not having the required level of liquidity to meet due obligations consequently leading to bank failure. Therefore, to avoid failing, a bank would hold higher amounts of liquid assets which can be quickly converted to cash. However, liquid assets are generally linked with lower rates of return. This position implies a negative effect of bank liquidity on profit. On the other hand, Bordeleau and Graham (2010) using the bankruptcy cost hypothesis assert that increase in the level of a bank's liquid asset decreases the possibility of default and the bank is viewed as being safe. Such banks benefit from a superior perception in funding markets, reducing their financing costs and increasing profitability. For this reason, the holding of liquid assets should have a positive effect on bank profit. The two different positions of the effect of liquidity on profit thus make the effect ambiguous.
2. Control Variables: Control variables that also affect bank liquidity are added to the regression model. These include:
    i. *Capital strength*: We measure this as the ratio of equity to total assets as against a risk based measure suggested by Basel II and Basel III because of the unavailability of the data for most banks (Dietrich & Wanzenried, 2014, Lee, Growe & DeBruine, 2015). According to the capital buffer theory, banks build up capital to guard against liquidation risk (Ahmad, Koh & Shaharuddin, 2016; Marcus, 1984; Milne, 2002). This action has the potential to increase expected profit by increasing banks credit worthiness which reduces costs related to financial distress costs and funding (Kosmidou, 2008). Furthermore, higher equity to total assets ratio indicates a lower need for external funding which also increase profits. Thus, a higher ratio of equity to total assets would imply more bank profit (Barth, Nolle, Phumiwasana, & Yago, 2003; Djalilov & Piesse, 2016; Kosmidou, Tanna, & Pasiouras, 2005).

ii. *Credit risk*: The ratio of loan loss reserves to gross loan is used to capture credit risk. A higher (lower) credit risk may reduce (increase) bank performance (Anees, 2012; Cooper, Jackson, & Patterson, 2003; Dietrich & Wanzenried, 2014). This occurs when banks are exposed to highly risky loans which may go unpaid ultimately having a negative impact on bank profit. For this reason, we expect an inverse relationship between credit risk and bank performance.

iii. *Size*: In the presence of significant economies of scale (increased operational efficiency), cost differences for banks may result in bank profit and size having a positive relationship (Alharbi & Alharbi, 2017; Dietrich & Wanzenried, 2014; Goddard, Molyneux, & Wilson, 2004). The economies of scale are generally applied to costs related to information gathering and processing. Furthermore, the ability of large banks to raise cheap capital increases the profit of such banks as argued by Dietrich and Wanzenried (2014) and Shuremo (2016). Nonetheless, banks that become too big may be faced with diminishing returns due to bureaucratic and management problems (Athanasoglou, Brissimis, & Delis, 2008; Demirguc-Kunt et al., 2003). The negative effect resulting from this position captures the non-linear relationship between bank size and profitability. Following previous studies, we use the natural logarithm of total assets to proxy size and the square of same to capture the non-linear effect (Athanasoglou et al., 2008; Demirguc-Kunt et al., 2003; Goddard et al., 2004).

Table 1: Variable Definition

Variable	Description	Source	A priori Expectation
Profitability 1 (ROA)	Measured as the return on assets	Bankscope	
Profitability 2 (ROE)	Measured as the return on equity	Bankscope	
Liquidity 1 (LONTASS)	Measured as ratio of total loans to total assets	Bankscope	+ / -
Liquidity 2 (LATOBOR)	Measured as ratio of liquid assets to total deposits and borrowings	Bankscope	+/ -
Capital Strength (ETA)	Measured as the ratio of equity to total assets	Bankscope	+
Credit Risk (LLRGL)	Measured as the ratio of loan loss reserves to gross loan	Bankscope	-
Size (LNTOT)	Measured as the natural logarithm of total assets	Bankscope	+
Non-linear Size (SQLNTOT)	Measured as the square of natural logarithm of total assets	Bankscope	-

3.4 Method of Analysis

We employ the instrumental variable technique of Blundell and Bond (1998, 2000) i.e. the two-step system generalised method of moments (GMM). This method addresses issues that relate to the persistence of the dependent variable, endogeneity and autocorrelation that may arise due to the inclusion of the lagged dependent variable in the equation. In this study, we consider liquidity as an endogenous determinant of bank profitability because of reverse causality between it and bank profit. In addition, the GMM technique yields consistent coefficient estimates over other methods such as the ordinary least squares and generalised least squares methods (Delis & Kouretas, 2011; Dietrich & Wanzenried, 2014). To guard against the influence of outliers, we run the GMM regression with robust standard errors (Frank & Goyal, 2009; Verardi & Croux, 2009). Following Roodman (2009), we include year dummies to control for unobserved time specific effect. To validate the regression estimates, we report Arellano and Bond AR(1) and AR(2) test statistics to test for the absence of first and second order serial correlation in the first-differenced residuals. Instruments are valid only when there is no second order serial correlation in the residuals of AR (2) (Arellano & Bover, 1995; Roodman, 2009). We also report Sargan test for overidentifying restrictions and absence of correlation between the error term and the instruments used in the equation.

4. Results and Discussion

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics of the variables employed in this study. The return on equity is observed to have a higher variability around the mean (22.99%) than the return on assets (1.77%). This implies that the ROE is more volatile than the ROA which may be due to the unpredictable nature of equities in the stock market. The higher mean of LONTASS at 50.67% over that of LATOBOR supports the use of LONTASS as the main independent variable and the use of LATOBOR for robustness whose mean is 28.21%. To prevent the influence of outliers in the regression estimates which may be observed from the minimum and maximum values, we report robust standard errors following the procedure of Frank and Goyal (2009) and Verardi and Croux (2009).

Table 2: Summary Statistics

Variable	Observation	Mean (%)	Standard Deviation (%)	Minimum (%)	Maximum (%)
Return on Assets (ROA)	276	2.126	1.771	-8.05	6.34
Return on equity (ROE)	276	16.099	22.986	-209.03	64.25
Loan to total assets (LONTASS)	281	50.668	16.059	4.67	81.6
Liquid assets to total borrowing (LATOBOR)	275	28.206	28.206	5.36	132
Equity to Total Assets (ETA)	281	12.463	5.344	-12.08	29.67
Loan loss reserve to gross loan (LLRGL)	275	4.319	4.771	0.19	43.64
Size (LNTOT)	281	7.634	2.072	3.55	11.75
Square of size (SQLNTOT)	281	62.559	33.430	12.57	138.06

Source: Authors' computation from data described in Section 3.1

4.2 Pairwise Correlation Analysis

The bivariate relationship between variables in the models is examined using the pairwise correlation analysis with the results reported in Table 3. This is done to determine the direction and strength of the relationship between the variables. Furthermore, the correlation analysis helps to detect the presence of muliticollinearity among the regressors in the model. According to Cohen, Cohen, West, and Aiken (2013), coefficients with values less than 0.5 signifies low correlation and no problem of multicollinearity. A summary of the results in Table 3 shows that most of the variables have values lower than 0.5 except for LONTASS /LATOBOR (-0.51) and ROA / ROE (-0.79). However, these observations do not pose a problem because the variables are not included in the same regression specification (see Equations 1 & 2 and the robustness check).

Table 3: Pairwise Correlation Analysis Results

Variable	LONTASS	LATOBOR	LNTOT	ETA	LLRGL	ROA	ROE	SQLNTOT
LONTASS	1.000							
LATOBOR	-0.510***	1.000						
LNTOT	0.251***	-0.361***	1.000					
ETA	-0.114*	0.231***	-0.279***	1.000				
LLRGL	-0.376***	0.134**	-0.123**	0.031	1.000			
ROA	0.166***	-0.066	-0.124**	0.377***	-0.374***	1.000		
ROE	0.251***	-0.055	-0.001	0.043	-0.404***	-0.789***	1.000	
SQLNTOT	0.282***	-0.340***	0.190***	-0.319***	-0.144**	-0.155**	0.001	1.000

Source: Authors' computation from data described in Section 3.1
Note. Table 3 presents results of pairwise correlation analysis for variables described in Section 3.3.
*,**, *** indicates 10%, 5% and 1% level of significance respectively.

The main independent variable of interest (LONTASS) is observed to be positively correlated with ROA (0.17) and ROE (0.25) confirming the a-priori expectation. Nevertheless, we still

run the regression equation to determine the influence of the liquidity variable on profit in the presence of other important factors.

4.3 The Effect of Bank Liquidity on Bank Profitability

Table 4 presents the result of Two-step system GMM for Equations 1 and 2. Model 1 in the table has return on assets as the dependent variable while model 2 has return on equity as the dependent variable. The coefficient for the two lagged dependent (ROA_{t-1} and ROE_{t-1}) are both positive and statistically significant at 1% level of significance. This implies that the models are correctly specified as dynamic models whose past profit level affects current profit performance (Dietrich & Wanzenried, 2014). It also indicates the need to use an instrumental variable technique of analysis that addresses endogenous problems of lagged dependent variables such as the GMM method. The diagnostic tests validates the use of such a method as observed in the absence of serial correlation in AR(2) ($p>0.1$), non-significance of the Sargan test ($p>0.1$) and joint significance of the variables as indicated by the F-Statistic ($p<0.01$).

The main variable of interest, liquidity (LONTASS), has a positive and significant effect on profitability in the two models. This confirms the bankruptcy cost hypothesis that banks holding more liquid assets benefit from the higher perception in funding markets which reduce their financing costs and increase profitability (Bordeleau & Graham, 2010; Bourke, 1989). This is in contrast to Demirguc-Kunt et al. (2003) argument that banks with higher level of liquid assets have lower profits than banks with lower liquid levels.

Table 4: Two-Step System GMM Results for the Effect of Bank Liquidity on Bank Profit

Variables	Model 1 (Dependent variable = ROA)	Model 2 (Dependent variable = ROE)
ROA_{t-1}	0.377*** (0.074)	-
ROE_{t-1}	-	0.127*** (0.032)
LONTASS	0.023*** (0.003)	0.203*** (0.022)
ETA	0.0663*** (0.013)	-0.648*** (0.095
LLRGL	-0.054*** (0.126)	-0.844*** (0.106)
LNTOT	0.428* (0.230)	7.163*** (1.749)
SQLNTOT	-0.029* (0.017)	-0.566*** (0.104)
F-Statistic (p-value)	0.000	0.000
AB test AR(1) (p-value)	0.027	0.063
AB test AR(2) (p-value)	0.635	0.348
SARGAN test (p-value)	1.000	1.000
Number of Banks	37	37
Number of Observations	201	201

Source: Results obtained from two-step system GMM regression for Equations 1 and 2 by authors.
Note. This table presents estimates of the two-step system GMM regression for Equations 1 and 2. Dependent variable in model 1 is ROA and ROE in model 2. Other variables are as defined in Table 1. Values in parenthesis are robust standard errors. P-values for the F-statistic, Arellano-Bond (AR1 and AR2) statistics and the Sargan test are reported in the table. AB test AR(1) and AR(2) denote the Arellano–Bond test that average autocovariance in residuals of order 1 and order 2 as 0 with the null hypothesis of no autocorrelation. * and *** indicates 10% and 1% level of significance respectively.

The coefficients of the three control variables (capital strength, credit risk and size) have the expected signs with varying degrees of significance. Capital strength variable (ETA) in Model 1 is significantly positive at P<0.01 although negative in Model 2. Model 1 is in line with the a-priori expectation of the capital buffer theory that banks build up capital to guard against liquidation risk (Djalilov & Piesse, 2016; Kosmidou, 2008, Milne, 2002). The reduced risk increases credit worthiness and costs related to funding, and thus profits. This argument is also related to the bankruptcy cost hypothesis that explains the relationship between liquidity and bank profit. Credit risk (LLRGL) in both models is statistically significant and negative at P<0.01 implying that lower credit risk is necessary for increased bank profits (Anees, 2012). The coefficient of the size variable (LNTOT) in both models is positive and statistically significant indicating the presence of economies of scale in operations that reduce costs of information gathering and processing (Dietrich & Wanzenried, 2014; Goddard et al., 2004; Kosmidou, 2008). The non-linear effect of size on profitability is indicated by the negative and statistically significant variable of the square of size (SQNLTOT). This implies that banks that become too big may be faced with diminishing returns due to bureaucratic and management problems (Athanasoglou et al., 2008; Demirguc-Kunt et al., 2003).

4.4 Robustness Test (LATOBOR)

To confirm the robustness of the results reported in Table 4, we replace the liquidity variable in Equations 1 and 2 with an alternative measure of liquidity, liquid assets to total deposits and borrowing. The results reported in Table 5 shows that signs and coefficients of the variables are quantitatively similar to those in Table 4.

Table 5: Two-Step System GMM Results for the Effect of Bank Liquidity on Bank Profit (LATOBOR)

Variables	Model 3 (Dependent variable = ROA)	Model 4 (Dependent variable = ROE)
ROA_{t-1}	0.347*** (0.047)	-
ROE_{t-1}	-	0.121*** (0.013)
LATOBOR	0.009*** (0.003)	0.093*** (0.021)
ETA	0.003 (0.008)	-0.798*** (0.079)
LLRGL	-0.164*** (0.012)	-1.403*** (0.130)
LNTOT	1.160*** (0.294)	14.290*** (1.889)
SQLNTOT	-0.080*** (0.017)	-0.966*** (0.119)
F-Statistic (p-value)	0.000	0.000
AB test AR(1) (p-value)	0.010	0.023
AB test AR(2) (p-value)	0.736	0.483
SARGAN test (p-value)	1.000	1.000
Number of Banks	37	37
Number of Observations	166	166

Note. This table presents estimates of the two-step system GMM regression for Equations 1 and 2. Dependent variable in model 3 is ROA and ROE in model 4. LONTASS in Table 4 is replaced with LATOBOR. Other variables are as defined in Table 1. Values in parenthesis are robust standard errors. P-values for the F-statistic, Arellano-Bond (AR1 and AR2) statistics and the Sargan test are reported in the table. AB test AR(1) and AR(2) denote the Arellano–Bond test that average autocovariance in residuals of order 1 and order 2 as 0 with the null hypothesis of no autocorrelation. *** indicates 1% level of significance.

5. Conclusion and Recommendation

Bank profit is one of the ways liquidity affects bank operations. In the absence of regulations and taking into consideration, the trade-off relationship between bank profitability and liquidity, most banks would prefer to hold liquid assets that will maximise bank profits. Given the important role played by banks in an economy, this position would put the financial system in problem due to banks not having the required level of liquidity (less than the amount required) consequently leading to bank failure. Thus, this study investigated the effect of bank liquidity on bank performance using the bankruptcy cost and risk return relationship hypotheses. Annual bank-specific data for the period 2000-2014 are obtained from 37 commercial banks in Kenya, Nigeria and South Africa while the two-step system GMM is used

to analyse the data. The results revealed a positive and statistically significant relationship between bank profit and liquidity in line with the bankruptcy cost hypothesis. Consistent with previous research, control variables such as bank capital, credit risk and bank size were also found to have significant effects on bank profitability.

Based on these findings, this study recommends that banks should maintain liquidity levels that lower financial distress costs. This is achievable by having high capital ratios that increase credit worthiness and lowers funding costs. However, noting that one of the proxies for liquidity in this study is the ratio of total loans to total assets; it is important for banks to recognise the associated credit risk involved in having a high liquidity ratio emanating from this measure.

The present study nonetheless has some limitations upon which future research may build on. First, the effect of macroeconomic factors (such as the state of the economy, inflation, regulatory effects etc.) are not considered. Second, only banks in three countries were selected which may affect the generalisability of the findings to other countries in the region. Third, the investigation in the study is limited to the linear relationship. Future research may build on these limitations to expand the frontier of knowledge on the topic.

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