

Causal Relationship between Liquidity and Profitability of Nigerian Deposit Money Banks

Odunayo. M. Olarewaju

Department of Accounting.

Faculty of Management Sciences,

Ekiti State University, Ado Ekiti, Nigeria.

Email: olarewaju_odunayo@yahoo.com

Received: September 22, 2017 Accepted: October 17, 2017 Published: June 25, 2018

doi:10.5296/ieb.v4i1.13315 URL: <http://dx.doi.org/10.5296/ieb.v4i1.13315>

Abstract

The aim of this paper is to examine the existence and direction of causality between liquidity and profitability of deposit money banks in Nigeria. Fifteen quoted banks out of the existing nineteen banks were selected for the study. They are; Guarantee Trust bank, Zenith bank, Skye bank, Wema bank, Sterling bank, First City Monument bank, United Bank for Africa, Eco bank, First bank, Access bank, Diamond bank, Unity bank, Fidelity bank, Union bank and IBTC bank. Pairwise Granga Causality test was carried out to determine the presence and direction of causality between banks' liquidity and profitability. From the finding of this study, at 5% and 10% level of significance, it was revealed that the F-statistics corresponding to the null hypotheses of no causal relationship (both unidirectional and bidirectional) between LODEP (a proxy for liquidity) and ROE (profitability measure) for banks like Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank, are too low and as such there is no enough evidence for the rejection of the corresponding null hypotheses. Thus, the result revealed that there is no causal relationship (be it unidirectional or bidirectional) between liquidity and probability of Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank. The result also shows that there is a trace of unidirectional causality relationship running from liquidity to profitability for banks like Skye bank, First bank, Access bank and FCMB. Based on the findings and conclusions, the study recommend that the apex bank (Central Bank of Nigeria) should ensure close supervision and monitoring of deposit money banks' strength and level of liquidity in an attempt to stabilize and strengthen the financial sector of the economy.

Keywords: Deposit Money Banks, Liquidity, Unidirectional, Bidirectional, Granga causality

1. Introduction

Banking system is the heart beat of every economic system, and many factors affect and determine its performance. Liquidity as one of these determinants performs a crucial function in the successful operation of a business firm and it is mostly important to make it known that a bank is liquid when it has the ability to settle obligations instantly. Consequently, a bank is illiquid if it is unable to settle obligations as it arises. In this case, banks default and it will result to shareholders and possibly depositors' losses. On the other way round, liquidity is a bank's capacity to fund increase in assets and meet both anticipated and unanticipated obligations at reasonable cost without running into unacceptable losses. Traditionally, liquidity has been defined as the capacity of financial institutions to finance increases in their assets and comply with the terms of their liabilities as they mature. Often, deposit money banks in Nigeria have failed or at times required government assistance because they had inadequate capital, lack of liquidity, or the combination of the two circumstances. Central Bank of Nigeria's guidelines on liquidity for banks is that these banks must meet up with the minimum liquidity ratio set up for them and consider any bank to be illiquid if; the bank's current account with the CBN is overdrawn and not covered consecutively for five working days within a month, the bank is unable to pay maturing obligations and lastly, the bank is a net taker of interbank deposit of up to one- quarter of its total deposits.

It is worthy of note that liquidity has a relationship with banks financial performance.

So many researchers have worked on liquidity and profitability, to mention a few; Lartey, Antwi and Boadi (2013) in Ghana, Purbaningsih (2014) in Indonesia, Mahshid (2011); Dezfouli, Hasanzadeh and Shahchera (2014) in Iran, Olagunju, Adeyanju and Olabode (2011); Agbade and Osuji(2013) in Nigeria; Sushil and Bivab (2013) in Nepal; Lamberg, Valming and Vincent (2009) in USA; Maaka (2013) in Kenya. All these researchers examined the impact of liquidity on profitability which could either result to a positive or negative relationship, but no known author has examined the causal effect of liquidity and profitability of deposit money banks in Nigeria. There is therefore, a need to know whether increase in profit of banks will make them more liquid or not, vice versa and it is necessary to affirm whether if a bank is showing all these illiquidity signs as specified by the Central Bank Nigeria, can still be making profit as they should; hence this study.

1.1 Research Question

- a) Is there existence of causality between banks' liquidity and profitability?
- b) What is the direction of causality between liquidity and profitability that is, does liquidity cause profitability or does profitability cause liquidity or both?

1.2 Research Objective

- a) To identify the existence of causality between banks' liquidity and profitability.
- b) To examine the direction of causality between liquidity and profitability of deposit money banks in Nigeria.

2. Literature Review

2.1 *The Concept of Liquidity*

According to business dictionary, liquidity is a measure of the extent to which a person or organization has cash to meet immediate and short-term obligations or assets that can be quickly converted to do this. Liquidity can also be a measure of the ability and ease with which assets can be converted to cash. Liquid assets are those that can be converted to cash quickly if needed to meet financial obligations; examples of liquid assets generally include cash, central bank reserves and government debt. To remain viable, a financial institution must have enough liquid assets to meet its short term obligations, such as withdrawals by depositors.

According to GARP (2013), liquidity can further be termed as a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at a reasonable cost and without incurring unacceptable losses. Also, liquidity is a financial term that means the amount of capital that is available for investment. Today, most of this capital is credit, not cash. Bank Liquidity simply means the ability of the bank to maintain sufficient funds to pay for its maturing obligations. It is the bank's ability to immediately meet cash, cheques, other withdrawals obligations and legitimate new loan demand while abiding by existing reserve requirements.

The Relevance of Liquidity in Deposit Money Banks

According to Nwaezeaku (2006), liquidity in banking measures the availability of cash and the rate at which current assets are converted into cash to meet ordinary and extra – ordinary request. Several scholars have viewed liquidity as a measure of bank's bargaining power and strength. One of the views is that, the more effective a deposit money bank is in managing its liquidity, the stronger its ability to provide loanable funds. Adequate liquidity enables a bank to meet three risks namely: Time risk (which is the ability to compensate for non repayment of funds. That is, if the borrower defaults their commitment at a specific time), funding risk (which signifies the ability to replace net out flows of funds, either via usual withdrawals of retail deposits or non-renewal of wholesale funds), lending risk (which denotes ability to meet occasional withdrawals of funds from cogent customers). Monitoring deposit money banks' liquidity reduces the possibility of raising loans under unfavourable loan agreements, restrictions and at a high interest bearing costs. Liquidity management in deposit money banks also reduces the incidence of bankruptcy and liquidation which are simply the result of illiquidity, and thereby, help to protect customers' deposits. To simply conclude, liquidity helps to enhance and maintain public confidence of depositors and the financial markets. If the financial market perceives a bank to have liquidity problems, the bank may not be permitted to raise further funds and if allowed, it will be at an increased rate (premium). Also, liquidity monitoring also serves as a tool through which over-liquidity and under-liquidity, which can pose negative impact on profitability can be avoided.

2.2 Theoretical Underpinning

Anticipated Income Theory

This theory postulates that a bank's liquidity can be managed through the proper arrangement and structuring of the loan commitments made by a bank to the customers. Here, liquidity can be planned if the scheduled loan redemption by customers is based on the future of the individual borrower. According to Nzotta (2004), the theory lays more emphases on the earning potential and the credit worthiness of a borrower as the greatest guarantee for ensuring adequate liquidity. This theory has encouraged many deposit money banks to adopt an advanced collection of investment.

2.3 Related Empirical Review

Maaka (2013) in their research sought to establish the relationship between liquidity risk and financial performance of commercial banks in Kenya. The study adopted correlation research design where data was retrieved from the balance sheets, income statements and notes of thirty- three (33) Kenyan banks during 2008-2012. Multiple regressions was employed to assess the impact of liquidity risk on banks' profitability and the findings were that profitability of the commercial bank in Kenya is negatively affected due to increase in the liquidity gap and leverage. With a significant liquidity gap, the banks may have to borrow from the market even at a higher rate thereby pushing up the cost of banks. The level of customer deposit was also found to positively affect the bank's profitability and it will therefore be encouraged for banks to open more branches in the country. Agbada and Osuji (2013) in the study of the efficacy of Liquidity management and Banking performance in Nigeria found that there is significant relationship between efficient liquidity management and banking performance and that efficient liquidity management enhance the soundness of bank.

In the study of the determinants of liquidity and their impact on financial performance in Nepalese commercial banks by Sushil and Bivab (2013), the results of regression analysis showed that capital adequacy, bank size, share of non-performing loans in the total volume of loans and liquidity premium paid by borrowers had negative and statistically significant impact on banks' liquidity. Growth rate of gross domestic product on the basis price level, short term interest rate and inflation rate had negative and statistically insignificant impact on banks' liquidity. And, loan growth rate had positive and statistically insignificant impact on banks liquidity. Among the statistically significant factors affecting banks liquidity capital adequacy, bank size and growth rate of gross domestic product on the basis price level had negative impact on financial performance whereas, liquidity premium paid by borrowers had positive impact on financial performance. Therefore, the impact of bank liquidity on financial performance was non-linear. Results suggest that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, *ceteris paribus*. Moreover, empirical evidence also suggests that this relationship varies depending on a bank's business model and the state of the economy. These results are particularly relevant as policymakers devise new standards establishing an appropriate level of liquidity for banks. While it is generally agreed upon that banks

undervalued liquidity prior to the recent financial crisis, one must also consider the trade off between resilience to liquidity shocks and the cost of holding lower-yielding liquid assets as the latter may impact banks' ability to generate revenues, increase capital and extend credit.

3. Methodology

This study used an explanatory approach by using panel research design. Data was collected from 15 quoted deposit money banks out of the 19 existing deposit money banks in Nigeria. The study used secondary data, which was retrieved from published annual reports and accounts of the 15 deposit money banks both from the Nigeria Stock Exchange and the respective deposit money banks for ten-year period (2004-2013). The respective ratios were then computed from the data retrieved from the statements of accounts of the banks. The collected data was analyzed using E-view 7 statistical software. The study carried out the Granga causality test to examine the direction of causality between bank's liquidity and their profitability.

3.1 Estimation Techniques Model Specification;

$$ROE_t = \alpha + \sum_j^k \beta_j ROE_{t-j} + \sum_j^k \delta_j LODEP_{t-j} + U_i$$

Where;

t = 1, 2, 10

j = 1, 2, k

LODEP = Total loan and advances/ Total deposit

ROE = Profit before interest and tax/ Total equity

U_i = Stochastic error term

ROE is the proxy for profitability, while LODEP is proxy for banks' liquidity.

3.2 A Priori Expectation

By expectation past level of banks liquidity as measured by the loan deposit ratio should exert significant influence on the present level of profitability as measured by return on equity, and vice versa. That is, there should be bidirectional causal relationship between deposit money banks' liquidity measure and level of profitability.

4. Results and Findings

Table 1. Granger causality test result

GUARANTY TRUST BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	2.46686	0.2325
ROE does not Granger Cause LODEP	3.21468	0.1795
ZENITH BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	2.32665	0.2454
ROE does not Granger Cause LODEP	0.10170	0.9063
STERLING BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	1.36026	0.3798
ROE does not Granger Cause LODEP	0.94899	0.4794
SKYE BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	28.5774	0.0111*
ROE does not Granger Cause LODEP	0.94985	0.4791
FIRST BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	81.5400	0.0024*
ROE does not Granger Cause LODEP	5.19456	0.1061
ACCESS BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	6.94512	0.0749**
ROE does not Granger Cause LODEP	0.02672	0.9739
DIAMOND BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	3.32548	0.1733
ROE does not Granger Cause LODEP	0.01134	0.9888
FCMB		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	67.1055	0.0032*
ROE does not Granger Cause LODEP	0.03243	0.9684
IBTC		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	0.55715	0.6226
ROE does not Granger Cause LODEP	0.80862	0.5237
UNITY BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	1.16642	0.4219
ROE does not Granger Cause LODEP	1.11636	0.4341
UBA		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	0.36753	0.7198
ROE does not Granger Cause LODEP	0.48949	0.6547
FIDELITY BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	1.34091	0.3837

ROE does not Granger Cause LODEP	0.46632	0.6663
WEMA BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	0.74465	0.5463
ROE does not Granger Cause LODEP	4.19785	0.1351
UNION BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	0.06361	0.9396
ROE does not Granger Cause LODEP	2.44619	0.2344
ECO BANK		
Null Hypotheses	F-Statistics	Probability
LODEP does not Granger Cause ROE	2.71603	0.2122
ROE does not Granger Cause LODEP	4.47793	0.1257

Note: (*)(**) indicate the rejection of hypotheses at 5% and 10% significant level.

Source: Author's Computation 2015

4.1 Discussion and Implication of Findings

The result of granger causality test conducted to ascertain the causal link between liquidity and profitability of deposit money banks as presented in table 4, it revealed the tested hypotheses, alongside the F-statistics and probability values for 15 selected banks including Guaranty Trust Bank, Zenith Bank, Sterling Bank, Skye Bank, First Bank, Access Bank, Diamond Bank, First City Monument Bank (FCMB), IBTC bank, Unity Bank, United bank for Africa (UBA), Fidelity Bank, Wema Bank, Union Bank, Eco Bank respectively, and rejection of the null hypotheses were done at 5% and 10% levels of significant, thus giving 5% and 10% freedom respectively to commit type one error (that is, reject instead of accept).

From the table it was revealed that the F-statistics corresponding to the null hypotheses of no causal relationship (both unidirectional and bidirectional) between LODEP (a proxy for liquidity) and ROE (profitability measure) for banks like Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank, are too low and as such there is no enough evidence for the rejection of the corresponding null hypotheses. Specifically the probability values corresponding to the hypotheses of no causal relationship running from liquidity measure LODEP to profitability measure ROE and vice versa as presented in table 4 stands at 23% and 17% for Guaranty trust bank, 24% and 91% for Zenith bank, 38% and 48% for Sterling bank, 17% and 99% for Diamond bank, 62% and 52% for IBTC bank, 42% and 43% for Unity bank, 72% and 65% for UBA bank, 38% and 67% for Fidelity bank, 55% and 14% for Wema bank, 94% and 23% for Union bank, 21% and 13% for Eco bank respectively. Thus the result reveals that there is no causal relationship (be it unidirectional or bidirectional) between liquidity and probability of Guaranty trust bank, Zenith bank, Sterling bank, Diamond bank, IBTC, Unity bank, UBA, Fidelity bank, Wema bank, Union bank, and Eco bank. It thus implies that for these banks, previous liquidity level has no significant influence on the profitability of the present period and vice versa, which is completely in contrast with the a priori expectations.

The result also shows that there is a trace of unidirectional causality relationship running

from liquidity to profitability for banks like Skye bank, First bank, Access bank and FCMB. As revealed in table 4 the probability corresponding to the hypotheses of no causal relationship between liquidity and profitability stands at 0.0111 for Skye bank, 0.0024 for First bank, 0.0032 for FCMB bank and 0.0749 for Access bank respectively. Thus the hypotheses of no causal relationship running from liquidity to profitability is rejected at 5% significant level for Skye bank, First bank and FCMB bank and 10% significant level for Access bank. The result reported in table 4 in the same vein reveals that there is no enough evidence to conclude that there is causal relationship running from profitability to liquidity for Skye bank. First bank, FCMB bank and Access bank as the probability values reported in the table are too high for the rejection of the null hypotheses.

The observed absence of unidirectional and bidirectional causal relationships between liquidity and profitability of most of the deposit money banks contrast the expectation and thus implies that the ability of those deposit money banks to meet their short term obligations, that is, their capacity to finance increases in their assets and comply with the terms of their liabilities as they mature, in the previous years does not provoke significant increase in their profitability and that their previous level of profitability does not culminate into improved liquidity, which is a pernicious situation for the operation of the banks, as this could drag the banks along the precipice of overdrawing their current account with the CBN such that they will not be able to covered-up for five working days consecutively within a month, and/or become net taker of interbank deposit of up to one- quarter of its total deposits. The findings could be traced to the institutional and managerial problems suffered in the banking industry as a whole during the period covered, which as pointed out by (Soludo, 2004 and Sanusi, 2009) include structural and operational weaknesses, failures in corporate governance, Lack of investors and consumer sophistication, over dependence on public sector funds, inadequate disclosure and transparency about financial positions of banks and so on, all of which ushered in reforms such as consolidation reform and stress test of the Central Bank in 2005 and 2009 respectively.

The observed unidirectional causality relationship running from liquidity to profitability of banks such as Skye bank, First bank, Access bank and FCMB might be attributed to the fact that these banks had been long standing in the industry and are not too retail oriented in their operations, thus their level of liquidity in previous periods could significantly culminate into improvement in their profitability. However the previous level of profitability that could not engender significant improvement in liquidity in the present period (that is, absence of causal relationship running from profitability to liquidity), might be traced to the intrinsic structural weakness in the industry during the period covered by the study.

5. Conclusions and Recommendations

The study has so far investigated the causal relationship between liquidity and profitability of Nigerian deposit money banks using 15 selected banks for the periods 2004-2013 and based on the findings presented above the study succinctly conclude that there is no significant unidirectional and bidirectional causal relationship between liquidity and profitability of most deposit money banks of Nigeria for the period covered in the study, and that if at all the issue

of causal link will be raised in Nigeria deposit money banks, it will only be in the purview of unidirectional causal relationship running from liquidity to profitability and can only be possible in few banks with standardized managerial and institutional make up that can withstand shocks in the industry.

Thus, premise on the findings and conclusions, the study recommend that the apex bank (Central Bank of Nigeria) should ensure close supervision and monitoring of deposit money banks' strength and level of liquidity in an attempt to stabilize and strengthen the financial sector of the economy and also place a benchmark for their loan portfolio. Bank loans should be wisely collected and defaults should be catered for because it cannot be completely avoided. There should be proper measures set aside for credit risk management.

Deposit money banks should also ensure that they put in place managerial structure that can help in their ability to meet their short term occasional withdrawals and obligations to the point that their level of liquidity will be potent enough to significantly spur profitability.

References

- Agbada, A. O., & Osuji, C. C. (2013). The efficacy liquidity management and banking performance in Nigeria. *International Review of Management and Business Research*, 2(1).
- Bordeleau, E., & Graham, C. (2010). The impact of liquidity on bank profitability. Bank of Canada working paper 38. Retrieved from www.bank-banque-canada.ca
- Dezfouli, M. H. K., Ali, H., & Marshid, S. (2014). Inspecting the effectiveness of liquidity risk on banks' profitability. *Kuwait chapter of Arabian journal of Business and Management Review*, 3(9).
- Global Association of Risk Professionals. (2013). Liquidity risk management overview and practitioner's challenges of Commercial banks. Dubai.
- Lartey, V. C., Antwi, S., & Boadi, E. K. (2013). The relationship between liquidity and profitability of listed banks in Ghana. *International Journal of Business and Social Science*, 4(3).
- Maaka, Z. A. (2013). *The relationship between liquidity risk and financial performance of commercial banks in Kenya*. A research submitted to school of business, university of Nairobi.
- Mabwe, K., & Robert, W. (2010). A Financial Ratio Analysis of commercial bank performance in South Africa. *Journal of Africa Review of Economics and Finance*, 2(1).
- Mahshid, S. (2012). Impact of Liquidity Asset on Iranian Bank profitability. *International conference on management, behavioural sciences and Economic issues*. Penang, Malaysia.
- Manish, K., & Gbanshyam, C. Y. (2013). Liquidity risk management in bank; A conceptual

framework. *AIMA Journal of Management and Research*, 7(2/4).

Nwaezeaku, N. C. (2006). *Theories and Practice of Financial Management*. Ever Standard Publishing.

Nzotta, S. M. (2004). *Money, Banking and Finance: Theory and Practice*. Owerri.

Olagunj, A., Adeyanju, O. D., & Olabode, O. S. (2011). Liquidity management and commercial banks' profitability in Nigeria. *Research Journal of Finance and Accounting*, 2(7/8).

Purbaningsih, Y. P. (2014). The effect of liquidity risk and non performing financing (NPF) ratio to commercial Sharia bank profitability in Indonesia.

Sushil, S., & Bivab, N. (2013). *Determinants of banks liquidity and their impact on financial performance in Nepalese Commercial banks*. Unpublished thesis submitted to Ace Institute of Management, Pokhara University.

Appendix

Guranty Trust Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 10:38			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	2.46686	0.2325
ROE does not Granger Cause LODEP		3.21468	0.1795

Zenith Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 10:47			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	2.32665	0.2454
ROE does not Granger Cause LODEP		0.10170	0.9063

Sterling Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 10:53			

Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	1.36026	0.3798
ROE does not Granger Cause LODEP		0.94899	0.4794

Skye Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 10:57			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	28.5774	0.0111
ROE does not Granger Cause LODEP		0.94985	0.4791

First Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:01			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	81.5400	0.0024
ROE does not Granger Cause LODEP		5.19456	0.1061

Access Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:06			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	6.94512	0.0749
ROE does not Granger Cause LODEP		0.02672	0.9739

Diamond Bank

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:11			
Sample: 2004 2013			

Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	3.32548	0.1733
ROE does not Granger Cause LODEP		0.01134	0.9888

FCMB

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:18			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	67.1055	0.0032
ROE does not Granger Cause LODEP		0.03243	0.9684

IBTC

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:23			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	0.55715	0.6226
ROE does not Granger Cause LODEP		0.80862	0.5237

UNITY BANK

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:28			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	1.16642	0.4219
ROE does not Granger Cause LODEP		1.11636	0.4341

UBA

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:31			
Sample: 2004 2013			
Lags: 2			

Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	0.36753	0.7198
ROE does not Granger Cause LODEP		0.48949	0.6547

FIDELITY BANK

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:34			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	1.34091	0.3837
ROE does not Granger Cause LODEP		0.46632	0.6663

WEMA BANK

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:37			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	0.74465	0.5463
ROE does not Granger Cause LODEP		4.19785	0.1351

UNION BANK

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:41			
Sample: 2004 2013			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	0.06361	0.9396
ROE does not Granger Cause LODEP		2.44619	0.2344

ECO BANK

Pairwise Granger Causality Tests			
Date: 03/09/15 Time: 11:44			
Sample: 2004 2013			
Lags: 2			

Null Hypothesis:	Obs	F-Statistic	Prob.
LODEP does not Granger Cause ROE	8	2.71603	0.2122
ROE does not Granger Cause LODEP		4.47793	0.1257

References

- Confederation of Indian Industry and Instead. (2010). Global innovation Index. Retrieved from <http://www.globalinnovationindex.org/gii/main/home.cfm>
- Heston, A., Robert, S., & Bettina, A. (2012). *Penn World Table Version 7.1, Center for International Comparisons of Production*. Income and Prices at the University of Pennsylvania. Retrieved from https://pwt.sas.upenn.edu/php_site/pwt71/pwt71_form.php
- Hibbs, D. A. Jr., & Olsson, O. (2004). Geography Biogeography, and Why Some Countries are Rich and Others are Poor. *Proceedings of the National Academy of Sciences U.S.A.*, 101(1), 3715-3720. <http://dx.doi.org/10.1073/pnas.0305531101>
- Jones, G. (2011). IQ and National Productivity, *New Palgrave Dictionary of Economics*. Retrieved from <http://mason.gmu.edu/~gjonesb/IQandNationalProductivity.pdf>
- Jones, G., & Schneider, W. J. (2000). Intelligence, Human Capital, and Economic Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach. *Journal of Economic Growth*, 11(1), 71-93. <http://dx.doi.org/10.1007/s10887-006-7407-2>
- Lederman, D., & Maloney, W. F. (2007). Natural resources, Neither Curse Nor Destiny. *Washington: The International Bank for Reconstruction and Development, World Bank*. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/7183/378930LAC0Natu101OFFICIAL0USE0ONLY1.pdf>
- Lynn, R., & Vanhanen, T. (2006). *IQ and Global Inequality*. Atlanta: Washington Summit Publishers. Retrieved from <http://gentlecynic.net/Articles/IQ%20and%20Global%20Inequality.pdf>
- Patterson, F. (2002). Great Minds Don't Think Alike? Person-Level Predictors of Innovation at Work. *International Review of Industrial and Organizational Psychology*, 17, 116-144. Retrieved from <http://books.google.com/books?hl=en&lr=&id=WuiROhPnAtkC&oi=fnd&pg=PA115&dq=innovation+and+iq&ots=Y19fkgtiCo&sig=2gxHqiFFSi0qs4h1nLiXLvf9aao#v=onepage&q=innovation%20and%20iq&f=false>
- Ram, R. (2007). IQ and Economic Growth: Further Augmentation of Mankiw-Romer-Weil Model. *Economics Letters*, 94(1), 7-11. <http://dx.doi.org/10.1016/j.econlet.2006.05.005>
- Weede, E., & Kampf, S. (2002). The Impact of Intelligence and Institutional Improvements on Economic Growth. *Kyklos*, 55, 361-380. <http://dx.doi.org/10.1111/1467-6435.00191>

World Bank. (2011). *Changing Wealth of Nations*. World Bank, 2011. Retrieved from <http://siteresources.worldbank.org/ENVIRONMENT/Resources/ChangingWealthNations.pdf>

World Bank. (2013). *World Wide Governance Indicators*. Retrieved from <http://databank.worldbank.org/data/views/reports/tableview.aspx>

Copyright Disclaimer

Copyright for this article is retained by the author(s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).