The Relationship between Financial Development and Economic Growth in Nigeria: Linear and Non-Linear Approaches

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Abstract
The paper re-examines the relationship between financial development and economic growth in Nigeria. Both conventional ARDL and the new Non-Linear ARDL approaches to cointegration were utilized over an annual data covering 1980 to 2016. The empirical result shows that relationship between financial development and economic growth is asymmetrical. The results further suggest that the current effort by government towards developing the economy as contained in the economic recovery plan (ERGP) needs to consider nonlinearities in modeling macroeconomic relationships.

Keywords: Finance, Economic Growth, ARDL, Non-Linear ARDL, Nigeria
JEL Classification: E42, O10

1. Introduction
The relationship between financial development and economic growth has been a central issue of focus to researchers and policy makers. Studies on financial development and economic growth relationships got its origin from the pioneering works of Goldsmith (1969), McKinnon (2010) and Shaw (1973). Certain theorists have placed emphasis on the significance of financial development in enhancing investment chances, lowering investment in liquid but unproductive resources, mobilizing savings, enhancing technological innovation and refining risk taking. King and Levine (1993) contend that where enterprises lead, finance follows. Accordingly, economic growth creates demand for certain form of financial arrangements and the financial system responds automatically to these demands.

Studies on financial development and economic growth employing time series data were carried out for the UK, US, Japan, Canada, Netherlands and few other developed countries. However, few studies (Ndebbio, 2004; Nnanna, 2004; Nzotta & Okereke, 2009; Afangideh, 2009; Odeniran & Udeaja, 2010; Oniovwote & Eshienake, 2012) were carried out in Nigeria in particular. The few studies on Nigeria showed that the issue of financial development and growth in Nigeria is yet to be resolved. Most of the studies concluded that financial sector development has no significant impact on economic growth while few others provided evidence to support that economic growth promotes financial development (demand-leading

hypothesis). A cursory look at those studies show that they focus on the linear models. The early stage of Nigeria`s financial sector development was characterized by public ownership and control of the sector. In 1986 resulting from rapidly worsening economic circumstances, Nigeria commenced an economic reform program backed up by World Bank and International Monetary Fund (IMF). The program focuses on adjusting the country structurally to attain a private sector driven growth through a market oriented system. Financial system liberalization forms an important aspect of the reforms. Though the reform attains some success in liberalizing the financial sector, the positive effect of growth on investment appears to be intermittent, whereas the Nigerian financial system continues to be shallow and somewhat underdeveloped (Renhert & Tokatlidis, 2003). In 2004, Nigeria embarked on banking sector consolidation drive under the National Economic Empowerment and Development Strategy (NEEDS). In 2009, following the global financial crises, the Central Bank of Nigeria (CBN) together with government fiscal authorities initiated measures aimed at averting a total failure of the financial sector and foster economic growth. This study contributes to the literature by investigating both the symmetric and asymmetric relationship between financial sector development and Nigeria`s economic growth.

The objective of this paper is to investigate the relationship between financial development and economic growth in Nigerian. Thus this study adopted the Non-Linear Autoregressive Distributed Lag (NARDL) model of Shin et al. (2014) to explore the relationships between financial development and economic growth.

The remainder of this paper is structured as follows. Section two reviews literature, section three is the data and methodology of the study while section four presents the results and discussion of the findings. Section five provides the summary and conclusion of the study.

2. Literature Review

The argument that financial sector advancement drives economic progress stresses the role of funds in financial intermediation and its impact on economic growth (Schumpeter, 1934). Studies on financial development and economic growth nexus present conflicting conclusions. King and Levine (1993), Hassan *et al.* (2011), Nyasha and Ochiambo (2015), Estrada *et al.* (2010), Gondo (2009), Madsen *et al.* (2018), Anwar and Nguyen (2011), Adu *et al.* (2013), Arestis *et al.* (2015) found that financial development stimulates economic growth. On the other hand, Odhiambo (2005), Liang and Teng (2006), established a causality in the opposite direction (i.e economic growth causes financial development). Others like Demetriades and Hussein (1996), Hassan *et al.* (2011) Kar *et al.* (2011), Jedidia et al. (2014) found a bi-directional causality between financial development and economic growth. The conflicting results of these researches indicate that the relationship between financial development and economic growth could vary on the basis of a country, methodology or data used. The important role of financial system is key in any nation basically because moneys are routed to the economic units with productive investment prospects (Schumpeter, 1912). The major hindrance to an effective working of a financial structure is asymmetric information (Andersen & Tarp, 2003; Stiglitz , 1998; Asongu &

Moor, 2017) leading to two problems in the financial markets; adverse selection or moral hazard.

Hassan Sanchez and Ya (2011) employing panel data technique on the data of low and middle income countries covering 1980 to 2007 established that financial development impact positively on developing economies. Nyasha and Odhiambo (2015) using UK data spanning 1980 to 2012 adopted the ARDL bound test to study the impact of financial development on economic growth. They concluded that financial development impacts economic growth negatively. In their studies, Estrada et al. (2010) applying panel data technique on 125 countries concluded that financial structure advancement has a positive influence on growth performance. In the African context, Gondo (2009) using a Robust standard error on the South African data for 1970 to 1999 established that financial markets development enhances economic growth in South Africa. Djoumessi (2009) concluded that financial development bears positive and long run association with economic growth for Cameroun and South Africa over the period 1970 to 2006. In a similar study, Anwar and Sun (2011) showed a positive with significant association between financial development and economic growth in Malaysia. Abida et al.(2015) established a robust positive relationship between financial development with economic growth in North Africa. They employed panel General moment's method (GMM) technique on the data covering 1980 to 2012. Arestis and Demetriades (1996) investigated the financial development-growth nexus in twelve countries. They inferred that the direction of causality depends on the variable employed and that every country exhibits a variant result.

Empirical studies on the Finance-growth nexus in Nigeria are limited not only in quantity and scope but in data and methodology. Ndebbio (2004) found that financial advancement bears weak influence on the per capita growth of output. He applied ordinary Least squares (OLS) technique in his analysis. Nnanna (2004) established that financial development has no meaningful effect on output growth. Nzotta and Okereke (2009) using annual data covering 1986 to 2007 also established that development in financial sector has no impact on Nigeria`s economic growth. Nonetheless, Afangideh (2009) using a time series data for 1970 to 2005 with three stage least square method concluded that a well advanced financial structure removes growth financing restraints through raising bank credit with investment activities thereby raising up output. Odeniran and Udeaja (2010) examines the financial structure development and economic growth adopting Granger causality and vector autoregressive (VAR) technique for 1960-2009. They established a birectional causal relation amongst financial development with economic growth. Oniovwote and Eshienake (2012) using cointegration and error correction mechanism investigated the effects of financial structure development on economic advancement in Nigeria over the period 1990-2011. They concluded that financial development has no significant influence on economic growth.

From evidence on the available literature, all studies on finance-economic growth nexus were modelled based on the linear framework. However, considering the existence of non-linearity behavior in time series modelling, we employed a non-linear approach to modelling the relationship. This is because when a time series variable components (positive with negative) appeared to be associated, then the time series might exhibit a hidden

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cointegration (Granger & Yoon, 2002). The presence of asymmetry in financial development and economic growth relationship triggers the need to use a nonlinear cointegration procedure to investigate the relationship among the series.

3. Methodology

The study adopted the ratio of broad money to GDP as proxy for the financial development following Hassan et al. (2011). Equally in line with Hassan et al. (2011), the study used GDP as a proxy for economic growth. This is considered as a standard measure by the World bank (World Bank, 1989). Data for the variables covering the period 1980 to 2016 were obtained from World Bank indicators.

In accordance with current studies, the variables; FD, GDP and EXR data were converted into their natural logarithmic (ln) usage, so that the estimated coefficients signify efficient elasticities. A log-linear model is usually expressed thus;

$$\ln GDP_t = \beta + \delta_1 \ln FD_t + \delta_2 \ln EXR_t + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

where GDP_t, the economic growth proxied by Gross domestic product, FD_t is financial development computed by the ratio of broad money to GDP, EXR_t is exchange rate for local

currency. Subscribe t stands for time period, while υ_t is a stochastic error term.

From equation (1) we can derive the empirical model for ARDL to explore the relationship amongst financial development with economic growth in the context of Nigeria. Hence,

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \sigma_1 \Delta \ln GDP_{t-i} + \sum_{i=0}^{q} \sigma_2 \Delta \ln FD_{t-i} + \sum_{i=0}^{r} \sigma_3 \Delta \ln EXR_{t-i}$$

$$+ \vartheta_1 \ln GDP_{t-1} + \vartheta_2 \ln FD_{t-1} + \vartheta_3 \ln EXR_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

Equation (2) depicts error correction model that shows both the short as well as long run coefficients. Here Δ is a first-difference operator, α_0 is a constant, $\sigma_1, \sigma_2,$ and σ_3 represents coefficients for short run estimates. While, ϑ_1, ϑ_2 and ϑ_3 represents long run dynamic association, and μ_t is the stochastic error term. p, q and r represents the lag lengths for the series in the model for distributed lag. To capture an asymmetric impact of financial structure development on economic growth, a linear equation (2) can be transformed into an asymmetric form by replacing FD_t by its positive and negative components thus;

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \sigma_1 \Delta \ln GDP_{t-i} + \sum_{i=0}^{q} \sigma_2 \Delta \ln FD_{t-i}^+ + \sum_{i=0}^{r} \sigma_3 \Delta \ln FD_{t-i}^- + \sum_{i=0}^{s} \sigma_4 \Delta \ln EXR_{t-i}$$

$$+ \vartheta_1 \ln GDP_{t-1} + \vartheta_2 \ln FD_{t-1}^+ + \vartheta_3 \ln FD_{t-1}^- + \vartheta_4 \ln EXR_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots\dots 3$$

In accordance with Shin et al.(2014), financial development variable FD_t is decomposed into its increasing and decreasing partial sums as;

$$FD_t = FD_0 + FD_t^+ + FD_t^- \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots .4$$

Where FD_t^+ and FD_t^- symbolizes the partial sum of a positive (an increase in financial development) and the negative changes (a decrease in Financial development). Nonetheless, the partial sums for positive as well as negative changes in FD_t are generated through following formulas;

$$FD_t^+ = \Sigma_{i=0}^t \Delta FD_i^+ = \Sigma_{i=0}^t \max\left(\Delta FD_i, 0\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots...5$$

$$FD_t^- = \Sigma_{i=0}^t \Delta FD_i^- = \Sigma_{i=0}^t \min\left(\Delta FD_i, 0\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots...6$$

The long run asymmetric impact can be tested with the use of Wald test by evaluating the Null hypothesis for an asymmetry $H_0 : \vartheta^+ = \vartheta^-$ against an alternative for an asymmetry $H_1 : \vartheta^+ \neq \vartheta^-$. Rejection of Null hypothesis shows a presence of asymmetrical impact of financial structure development on economic growth. A long run impact of an increase or decrease in financial development are provided by $\beta_2 = \dfrac{-\vartheta^+}{\alpha_0}$ and $\beta_3 = \dfrac{-\vartheta^-}{\alpha_0}$ respectively.

Also, $\sum_{i=0}^s FD_i^+$ and $\sum_{i=0}^s FD_i^-$ captures the influence in short run of an increase and decrease in Financial advancement. Therefore, we also capture the asymmetric short run effect of financial expansion changes on economic growth.

A Wald test is use in testing cointegration amongst the series Wald-F test expressed thus, $H_0 : \alpha = \vartheta_0 = \vartheta_1 = \vartheta^+ = \vartheta^- = 0$.

The NARDL model has certain advantages over other techniques such as ECM, Markov-Switching ECM, a Threshold ECM and Smooth transition ECM. This is because NARDL jointly model cointegration dynamics and the asymmetries in a variable of interest. Apart from being simple in estimation, it equally provides a flexible framework by lessening the assumption that variables have to possess same order of integration, which differs with ECM that requires this condition to hold (Katrakilisdis & Trachanas, 2012). The technique is also suitable for this study since it distinguishes between a linear and non-linear cointegration, unlike the Pesaran et al. (2001) ARDL and other cointegration methods that simply presume a linear or symmetric effects of the variations of an independent variable over the dependent variable (Fousekis, Katrakilidis & Trachamas, 2016). Katrakilidis and Trachanas (2012) observed that the Shin et al. (2014) NARDL outperforms other cointegration techniques in testing small samples cointegration as the case with our study. Several works have employed this method to investigate whether a decrease or an increase in independent variable bears a different influence on the dependent variable (for e.g see Fousekis et al, 2016, Bahmani-Oskooee & Ghodsi, 2017, Ali, Shan, Wang & Amin, 2018). Following these studies, we specify and estimate a non-linear model to capture a possible asymmetric effect of financial development on the Nigeria`s economic growth.

4. Results and Discussion

For purpose of comparison, we estimated both the conventional ARDL and the NARDL. To do this we first established the integration order of the variables in the model to make sure none is I(2).We employed the ADF and a PP Unit root tests. Table 4.1 presents the results which indicates that the variables are all I(1), none is at I(2) level. More so, both tests have shown that our dependent variable (GDP) is I(1) thereby meeting up with precondition of Pesaran et al.(2001) to undertake an ARDL cointegration tests. We then proceed to estimate the linear ARDL and the outputs are presented in Table 4.1.

Table 4.1: *Unit Root Tests*

A: Augmented Dickey Fuller				
Variable	Level		First Difference	
	Intercept	With Trend	Intercept	With Trend
LGDP	-0.3203	-1.9193	-5.4162***	-5.3407***
LFD	-0.5671	-2.1798	-3.5226***	-3.4537***
LEXR	-1.7650	-1.1184	-5.0936***	-5.3524***
B: Phillip-Peron				
LGDP	-0.3243	-2.1574	-5.4106***	-5.3325***
LFD	-0.2412	-2.0670	-3.6773***	-3.5955***
LEXR	-1.7690	-1.1857	-5.0937***	-5.3798***

Note: ***, **,and * imply significance at 1%, 5% and 10% levels respectively. The figures show the t-statistic value for testing the null hypothesis that the variable possess a unit root. The Scwarz Information Criterion (Schwert, 1987) is used in the lag length selection. The critical values for constant without trend are -3.479, -2.883 and -2.578 while that of constant with trend are -4.028, -3.443 and -3.146 for 1%, 5% and 10% respectively. For PP the bandwidths are determined based on the Newey-West using Bartlett Kernel.. The critical values for constant without trend are -3.479, -2.883 and -2.578 while that of constant with trend are -4.028, -3.443 and -3.146 for 1%, 5% and 10% respectively. The figures are based on Mackinnon (1991).

Examining long run relationship in an econometric model is sensitive to optimal lag selection (Bahmani-Oskooee & Bohl, 2000). A long this proposition, Stock and Watson (2012) established that employing fewer number of lags could not include most vital facts from the set model, also using additional lags tends to over-fit the model. Thus, we employed 2 optimal lags based on Scwarz Information Criteria (SIC) to estimate the model in equation (2). Table 4.2 presents the results. A bound test for cointegration outputs are presented in the respective tables. The F-statistic value of 2.86 in table 2 shows absence of long run cointegration since the F-statistic is below the lower bound critical figure. Looking at effects of financial development on economic growth one may conclude that there is no significant impact over the period. Results on Table 4.2 Panel A depict short run results. The coefficients in the short run failed to be statistically significant across all lags excepts in lag 3 for financial development. Exchange rate bears a significantly negative coefficient. In panel B, long run estimates, financial development is insignificant which might not be unconnected to misspecification of the model. However, this might be due to the symmetric

assumption of the conventional model. The result might appear different if the relationship is modelled in an asymmetric form. For that, we estimate equation (3) by imposing a highest of two 2 lags to every first-difference variable using SIC criteria. The outputs are shown in table 4. From the table, short run estimates in Panel A indicate that the coefficient of the FD_t^+

which represents an increase in financial structure development is highly significant and positive. This confirms the asymmetric impact of financial development on the economic growth in Nigeria over the short run period. The error correction term is significant and negative signifying the existence of strong long run association between financial sector development with economic growth.

Table 4.2: Linear ARDL Estimates

Panel A: Short-Run Coefficients					
Lag order	0	1	2	3	
ΔLFD	0.38(0.15)	0.72(0.03)	0.55(0.10)	-0.71(0.01)	
ΔLEXR	-2.67(0.02)	1.05(0.01)	0.33(0.00)	-	
ECT_{t-1}	-	-1.28(0.00)	-	-	
Panel B: Long-Run Coefficients					
	LFD	LEXR		Constant	
	0.43(0.13)	-0.52(0.07)		5.81(0.00)	
Panel C: Diagnostic Tests					
F	LM-Test	BGP Test	RESET	NORMAL	CUSSUMS
2.86	1.13(0.56)	3.67(0.88)	0.12(0.01)	1.78(0.41)	Stable

Note: a) Number in parenthesis are p-values; b) F= Bound test for cointegration. Upper bound critical values for F-Statistics at 5% level is 4.35 obtained from Pesaran et al (2001); c) LM=Langrange Multiplier test for serial correlation; d) BGP= Breusch-Godfrey test for Heteroscedasticity; e) RESET= Ramsey`s Specification test; f) NORMAL= Normality tests based on the test of skewness and kurtosis of residuals

From the table, looking at a long run asymmetric effect for financial sector development on GDP, the coefficient associated with positive FD_t^+ is also positive and highly significant at

1% implying that an upsurge in financial development by 1 percent rises economic growth by 0.42 percent on average. Also it can be observed that the coefficient associated to a decline in financial development (FD_t^-) bears a positive sign suggesting that a 1 percentage

decrease in the financial sector development decreases economic growth with about 6.09 percent.

These results show that an increase and a decrease in financial sector development have different influence on Nigeria`s economic growth. The results provide further evidence that the effect of financial sector development over economic growth appears to be asymmetric. More so, the Error correction term in the model is negative and highly significant implying that economic growth responds to a long run stable equilibrium. It further confirms an existence of a long run causality from an increase and decrease of financial development and exchange rate to the economic growth.

We investigated whether the effect of increasing financial sector development differs from the decrease in financial development on economic growth in Nigeria. For that, we compared the coefficients of positive deviations with that of negative deviations in the model. From the result a one percentage increase in the financial development results into 0.43% increase in the GDP growth. When financial development decreases by one percentage point, the GDP response through a negative change by falling with 6.09%. Looking at the size of the coefficients, the response to the negative changes is larger implying that negative shock in financial development bears a decreasing impact on growth.

Table 4.3: Non- Linear ARDL Estimates

Panel A: Short-Run Coefficients					
Lag order	0	1	2	3	
ΔLFD^+	0.4(0.0)	1.16(0.00)	-	-	
ΔLFD^-	0.1(0.0)	0.15(0.01)	0.27(0.02)	0.13(0.08)	
ΔLEXR	0.6(0.0)	-0.07(0.50)	-0.42(0.0)	-	
ECT_{t-1}	-	-0.11(0.0)	-		
Panel B: Long-Run Coefficients					
LFD^+	LFD^-	LEXR		Constant	
0.4256(0.028)	6.0(0.0)	-0.557(0.060)		1.8510(0.000)	
Panel C: Diagnostic Tests					
F	LM-Test	BGP Test	RESET	NORMAL	CUSSUMS
15.40	1.8(0.4)	1.33(0.85)	2.56(0.45)	1.36(0.50)	Stable
Wald (Joint significance)		Wald(Short run)		Wald(Long run)	
14.47(0.000)		8.692(0.003)		7.15(0.007)	

Note: a) Number in parenthesis are p-values; b) F= Bound test for cointegration. Upper bound critical F value for 5% significance level is 4.01; c) LM= Langrange Multiplier test for serial correlation; d) BGP= Breusch-Godfreay test for Heteroscedasticity; e) RESET= Ramsey`s test for specification; f) NORMAL= Normality tests on the basis of skewness and Kutosis of residuals.

As indicated from the table, both FD_t^+ and FD_t^- appears to be highly significant with different sign and size implying that an increase and decrease in financial system improvement has different effect on the nation`s growth. Secondly, a presence of asymmetric effects of financial structure development on growth is further established by applying the standard asymmetry test suggested by Shin et al. (2014) through Wald test application. The highly significant F-Statistic (14.47) indicates rejection of the Null hypothesis of symmetric impact of a financial expansion on growth. It is also observed that all diagnostic tests associated with the asymmetric model shows that the model is well specified. The model stability is examined via the CUSUM and CUSUM of squares of recursive residuals tests indicating that the parameters are stable as the value fall inside the 5% critical bands (Figure 1). All these facts present a very strong evidence that implementation of asymmetric model provides valid results to draw further inferences.
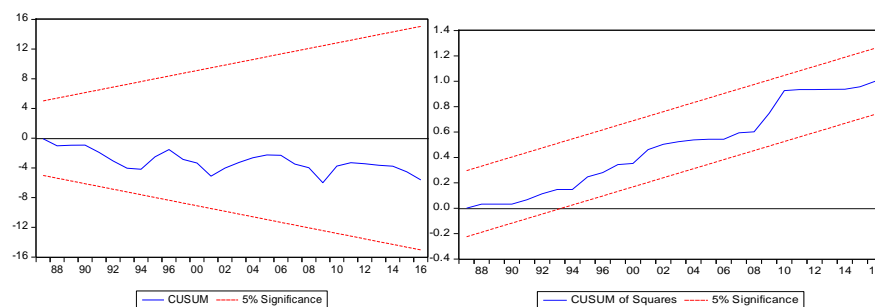
Figure 1CUSUM and CUSUMQ

5. Conclusion and Recommendation

This paper explored the relationship between financial sector development and economic growth in Nigeria applying annual time series data covering 1980-2016. The empirical results indicate asymmetries relationship between financial sector development and economic growth for both long and short run periods. The study also compares the conventional ARDL with the NARDL approaches to show the superiority of the later over the former. The results of the non-linear ARDL reveal that there is an asymmetric relationship amongst financial expansion and economic growth in Nigeria. The findings of the study are contrary to results of earlier studies (such as Nnanna, 2004, Ndebbio, 2004, Odeniran & Udeaja, 2010, Oniovwote & Eshiennake, 2012) claiming a symmetric relationship. The findings of previous studies are largely limited by the use of linear or symmetric econometric models in their analysis.

The empirical findings suggest that the relationship between financial development and economic growth in Nigeria is asymmetric contrary to the earlier studies that simply assumed the relationship to be symmetrical. The findings further reveal that changes in financial development through an increase or decrease have significant positive influence on economic growth in Nigeria. Overall, the findings of the study suggest that the role of financial development should not be over-emphasized in an attempt to boost economic growth in Nigeria rather it should adopt pro-growth policies to foster financial development.

Government should focus on pro-growth policies aimed at boosting economic growth of the country.

References

Adu, G., Marbuah, G., & Mensah, J. T. (2013). Financial development and economic growth in Ghana: Does the measure of financial development matter?. *Review of Development finance*, *3*(4), 192-203.

Afangideh, U. J. (2009). Financial development and agricultural investment in Nigeria: Historical simulation Approach" *West African Journal of Economic and Monetary Integration* 9 (1),223-246.

Ali, U., Shan, W., Wang, J. J., & Amin, A. (2018). Outward foreign direct investment and economic growth in China: evidence from asymmetric ARDL approach. *Journal of Business Economics and Management*, *19*(5), 706-721.

Andersen, T. B., & Tarp, F. (2003). Financial liberalization, financial development and economic growth in LDCs. *The Journal of the Development Studies Association*, *15*(2), 189-209.

Anwar, S., & Nguyen, L. P. (2011). Financial development and economic growth in Vietnam. *Journal of Economics and Finance*, *35*(3), 348-360.

Anwar, S., & Sun, S. (2011). Financial development, foreign investment and economic growth in Malaysia. *Journal of Asian Economics*, *22*(4), 335-342.

Arestis, P., & Demetriades, P. (1997). Financial development and economic growth: assessing the evidence. *The economic journal*, *107*(442), 783-799.

Arestis, P., Chortareas, G., & Magkonis, G. (2015). The financial development and growth nexus: A meta- analysis. *Journal of Economic Surveys*, *29*(3), 549-565.

Asongu, S. A., & De Moor, L. (2017). Financial globalisation dynamic thresholds for financial development: evidence from Africa. *The European Journal of Development Research*, *29*(1), 192-212.

Bahmani-Oskooee, M., & Bohl, M. T. (2000). German monetary unification and the stability of the German M3 money demand function. *Economics letters*, *66*(2), 203-208.

Bahmani-Oskooee, M., & Ghodsi, S. H. (2017). Asymmetric causality and asymmetric cointegration between income and house prices in the United States of America. *International Real Estate Review*, *20*(2), 127-165.

Bhattacharya, P. C., & Sivasubramanian, M. N. (2003). Financial development and economic growth in India: 1970–1971 to 1998–1999. *Applied Financial Economics*, *13*(12), 925-929.

Demetriades, P. O., & Hussein, K. A. (1996). Does financial development cause economic growth? Time-series evidence from 16 countries. *Journal of development Economics*, *51*(2), 387-411.

Djoumessi, E. C. K. (2009). *Financial development and economic growth: a comparative study between Cameroon and South Africa* (Doctoral dissertation).

Estrada, Gemma Bolotaulo and Park, Donghyun and Ramayandi, Arief, Financial Development, Financial Openness, and Economic Growth (August 2015). Asian Development Bank Economics *Working Paper Series* No. 442. Available at SSRN: https://ssrn.com/abstract=2707518 or http://dx.doi.org/10.2139/ssrn.2707518

Fousekis, P., Katrakilidis, C., & Trachanas, E. (2016). Vertical price transmission in the US beef sector: Evidence from the nonlinear ARDL model. *Economic Modelling*, *52*, 499-506.

Goldsmith, R. W. (1969). *Financial structure and development*. Yale University Press, New Haven.

Gondo, J. (2009, April). Financial development and economic growth: Evidence from South Africa: 1970-1999. In *Annual Western Cape Economics Postgraduate Student Conference. Stellenbosch*.

Granger, Clive W. J. and Yoon, Gawon, Hidden Cointegration (January 2002). U of California, *Economics Working Paper* No. 2002-02. Available at SSRN: https://ssrn.com/abstract=313831 or http://dx.doi.org/10.2139/ssrn.313831

Hassan, M. K., Sanchez, B., & Yu, J. S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of economics and finance*, *51*(1), 88-104.

Jedidia, K. B., Boujelbène, T., & Helali, K. (2014). Financial development and economic growth: New evidence from Tunisia. *Journal of Policy Modeling*, *36*(5), 883-898.

Kar, M., Nazlıoğlu, Ş., & Ağır, H. (2011). Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis. *Economic modelling*, *28*(1-2), 685-693.

Katrakilidis, C., & Trachanas, E. (2012). What drives housing price dynamics in Greece: New evidence from asymmetric ARDL cointegration. *Economic Modelling*, *29*(4), 1064-1069.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics*, *108*(3), 717-737.

Liang, Q., & Jian-Zhou, T. (2006). Financial development and economic growth: Evidence from China. *China economic review*, *17*(4), 395-411.

Lucas Jr, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, *22*(1), 3-42.

Madsen, J. B., Islam, M. R., & Doucouliagos, H. (2018). Inequality, financial development and economic growth in the OECD, 1870–2011. *European Economic Review*, *101*, 605-624.

McKinnon, R. I. (2010). *Money and capital in economic development*. Brookings Institution Press.

Moyo, C., Khobai, H., Kolisi, N., & Mbeki, Z. (2018). Financial development and economic growth in Brazil: A Non-linear ARDL approach. Online at https://mpra.ub.uni-muenchen.de/85252/ MPRA Paper No. 85252,

Ndebbio, J. E. U. (2004). Financial deepening, economic growth and development: Evidence from selected sub-Saharan African Countries. *African Economic Research Consortium (AERC)* Research paper *142*, Nairobi, Kenya.

Nnanna, O. J. (2004). Financial sector development and economic growth in Nigeria: An empirical investigation. *CBN Economic and Financial Review*, *42*(3).

Nyasha, S., & Odhiambo, N. M. (2015). Economic growth and market-based financial systems: a review. *Studies in Economics and Finance*, *32*(2), 235-255.

Nzotta, S. M., & Okereke, E. J. (2009). Financial deepening and economic development of Nigeria: An Empirical Investigation. *Economic and Financial Review*, *58*(6), 91-124

Nzotta, Samuel Mbadike and Okereke, Emeka J.(2009). Financial Deepening and Economic Development of Nigeria: An Empirical Investigation. *African Journal of Accounting, Economics, Finance and Banking Research, 5*(5), 65-79.

Odeniran, S. O., & Udeaja, E. A. (2010). Financial sector development and economic growth: Empirical evidence from Nigeria. *Economic and Financial Review*, *48*(3), 91-124.

Odhiambo, N. M. (2005). Financial development and economic growth in Tanzania: A dynamic causality test. *African Finance Journal*, 7(1), 1-17.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Reinhart, C. M., & Tokatlidis, I. (2003). Financial liberalisation: The African experience. *Journal of African Economies*, *12*(2), 53-88.

Schumpeter, J. A. (1934). *The Theory of Economic Development* (translation of second German edition by Redvers Opie). Cambridge, MA, Harvard University.

Shaw, E. (1973). *Financial deepening in economic growth*. Oxford University Press, NY.

Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. In *Festschrift in Honor of Peter Schmidt* (pp. 281-314). Springer, New York, NY.

Stiglitz, J. (1998, June). The role of the financial system in development. In *Presentation at the Fourth Annual Bank Conference on Development in Latin America and the Caribbean* (Vol. 29).

Stock, J. H., & Watson, M. W. (2012). Disentangling the Channels of the 2007-2009 Recession (No. w18094). *National Bureau of Economic Research*.