

---

**IMPACT OF BANK CREDIT ON ECONOMIC GROWTH IN NIGERIA:  
APPLICATION OF REDUCED VECTOR AUTOREGRESSIVE (VAR) TECHNIQUE**

**DR. B. C. EMECHETA**

Department of Management, Faculty of Management Sciences, Uniport

**R. C. Ibe**

Department of Finance and Banking, Faculty of Management Sciences, Uniport

---

**ABSTRACT:** *This study investigates the impact of bank credit on economic growth in Nigeria applying the reduced form of vector autoregressive (VAR) technique using time series data from 1960 to 2011. Current gross domestic product (GDP) is the dependent variable and proxy for economic growth while bank credit to the private sector (CPS) to GDP ratio and broad money (M2) to GDP ratio were proxies for financial indicator and financial depth respectively. We tested the stationarity of the variables using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. All the variables were integrated of order one i.e.,  $I(1)$ . A major finding is that there is a significant positive relationship between bank credit to the private sector, broad money and economic growth. The past values of all the variables were significant in predicting their current values. This result implies that the bank consolidation and recapitalization exercise was a welcome development and further steps should be taken to ensure the stability of the banking sector.*

**KEYWORDS:** Bank credit, Broad money, Economic growth, Vector Autoregression

---

## **INTRODUCTION**

A large part of the literature on growth suggests that the development of financial sector should lead towards economic growth. Usually financial services work through efficient resource mobilization and credit expansion to raise the level of investment and efficient capital accumulation. The possible positive link between credit market and economic growth is fairly obvious because developed countries, without exception have more developed credit markets. Therefore, it would seem that policies to develop the financial sector would be expected to raise economic growth. Indeed, the role of bank credit is considered important to economic growth and development (Khan and Senhadji, 2000). The literature on financial economics provides support for the argument that countries with efficient credit systems grow faster while inefficient credit systems bear the risk of bank failure (Kasekende, 2008). Moreover, credit institutions intermediate between the surplus and deficit sectors of the economy. Thus, a better functioning credit system alleviates the external financing constraints that impede credit expansion, and the expansion of firms and industries (Mishkin, 2007).

One of the principal conclusions from the papers reviewed above is that finance is good for growth, especially in middle and high-income countries. The contribution of bank development is stronger than stock market growth. Do these conclusions apply to African countries in general

especially Nigeria?

Abu-Bader and Abu-Qarn (2008) examine the causal relationship between financial development and economic growth in Egypt during the period 1960-2001 using a tri-variate VAR framework. The paper employs four different measures of financial development (ratio of money to GDP, ratio of M2 minus currency to GDP, ratio of bank credit to the private sector to GDP, and the ratio of credit issued to private sector to total domestic credit). The paper suggests that the causality is bi-directional. Moreover, the paper shows that the impact of financial development on growth is through both investment and efficiency.

Baliamoune-Lutz (2008) explores the short-run dynamics and long-run relationship between real output and financial development in three North African countries: Algeria, Egypt and Morocco for the period 1960-2001. He uses co-integration and VECM models and four indicators of financial development. The results indicate a stable long-run relationship between finance and income when the ratio of liquid liabilities to GDP (LIQ) is used. Besides, in the short-run real output adjusts to equilibrium in all three countries when LIQ is used. Overall, the paper suggests that finance leads growth when finance is measured by LIQ and the mixed results are linked to differences in banking regulation and supervision.

Kar et al. (2011) explore the direction of causality between finance and growth in the SEMCs region. The approach used is based on the Seemingly Unrelated regressions (SURE) and Wald tests applied to a panel of fifteen countries for the period 1980-2007. The results suggest that the direction of causality depends on the measure of the financial development measure and the country investigated.

Ben Salem and Trabelsi (2012) explore the importance of financial development as a determinant of growth in seven SEMCs during the period 1970-2006 by applying the Pedroni's panel co-integration analysis. The paper suggests the existence of a long-run relationship between finance and growth. Besides, very weak support is provided to the supply-side hypothesis. Indeed, economic growth leads to financial sector development. Ben Salem and Trabelsi relate these findings to macroeconomic imbalances, weak institutional development and the weakness of the private sector in the southern and eastern Mediterranean region.

The research on SEMCs is mixed on the relationship between finance and growth, but many papers highlight the fact that banking sector development does not contribute to growth – some argue that it even hampers growth. They related these disappointing results to financial repression, weak institutions and the ineffective allocation of financial resources. The problem with all these studies is that they focus on the size of the banking sector rather than on its quality. Two recent papers have proposed measuring banking sector development by using efficiency in order to assess the extent to which banks are efficiently using their resources. Hasan et al. (2009) derive a measure for the development of the banking sector by calculating cost efficiency for each individual bank in a sample of 100 countries between 1996 and 2005. They find an independent and significant economic effect of bank cost efficiency on economic growth. The quality effect is stronger in developed economies, while quantity increase is also beneficial in developing economies.

In the same vein, Hasan et al. (2009) and Koetter and Wedow (2010) studied the relationship between the quality of the financial system measured by cost efficiency and economic growth, using a sample of 97 German economic planning regions. They suggest that the quality of the financial system contributes to economic growth while the quantity proxied by credit volume is not related to growth.

In fact, the result indicates that economic growth requires better but not necessarily more credit. The recent global financial crisis has raised concerns that some countries have oversized financial systems compared to the size of the domestic economy. Arcand et al. (2012) examined whether there is a threshold above which financial development stops contributing to growth. This paper posits that in countries with a very large financial sector the relationship between financial depth and economic growth disappears. Credit to the private sector above 80-100% of GDP has a negative impact on economic growth. Arcand et al., (2012) suggest two possible reasons for this negative impact: i) excessive credit growth could lead to high economic volatility and probability of financial crisis and ii) high credit volume is generally related to potential resource misallocation. Cecchetti and Kharroubi (2012), examined the impact of size and growth of the financial system on productivity growth and economic level using a sample of 50 countries observed over the period 1980-2009. The paper finds that financial sector size has an inverted U-shaped effect on productivity growth and a further increase in the size of the financial system contributes negatively to TFP growth. This suggests that more finance is not always better.

The Nigerian financial system is dominated by the banking sector and has gone through several changes since the enactment of the 1952 banking ordinance. This study covers a fifty one year period (from 1960 to 2011) grouped under three banking eras thus:

1. 1960 – 1985 era of intensive banking regulation
2. 1986 – 1995 era of financial liberalization
3. 1996 to date, era of guided deregulation.

According to Akpan (2004), the Financial Repression Hypothesis believes in a financial market driven by the forces of demand and supply (which is Nigeria's policy stance since the adoption of SAP) hence with freed interest rate, depositors earn greater interest on their deposits and are therefore encouraged to deposit. This in turn leads to capital formation and consequently economic growth through the multiplier effect. It is on this basis of the divergence of opinions that it has become necessary to examine the role of banks in the economic growth process in Nigeria. This paper attempts to contribute to existing literature by investigating the impact of bank credit on economic growth in Nigeria via the reduced vector autoregressive (VAR) technique for the period 1960 to 2011.

There exists a plethora of studies on the role of bank credit in economic development in Nigeria, but this paper brings a unique addition to the various studies in the field by taking a holistic approach to the financial repression hypothesis as it applies to the Nigerian economy. It also provides a platform of relevant reference for future researches in the field as well as to help policy makers in making decisions on the regulatory policies that is best suited for the economy if banks must continue to perform a leading role in financing economic growth.

***Hypothesis: Bank credit has significant positive impact on economic growth in Nigeria.***

The rest of the paper is organized as follows. Section 2 is a review of related literature. Section 3 is methodology which discusses the data, variables, and estimation technique. Estimation results and discussions are presented in section 4 and section 5 concludes the study.

## REVIEW OF RELATED LITERATURE

There has been extensive empirical work on the relationship between financial development and economic growth which has been largely surveyed in King and Levine (1993) and Levine (1997). One of the most influential studies on the subject is King and Levine (1993), which shows a strong positive link between financial development and economic growth in a multivariate setting. They also show that financial development has predictive power for future growth and interpret this finding as evidence for a causal relationship that run from financial development to economic growth. The study covers a cross section of 80 countries during the period 1960-1989 and uses four measures of the level of financial development. The first is liquid liabilities of banks and non-bank financial institutions as a share of GDP, which measures the size of financial intermediaries. The second is the ratio of bank credit to the sum of bank and central bank credit, which measures the degree to which banks versus the central bank allocate. The third is the ratio of private credit to domestic credit and the fourth is private credit to GDP ratio. The last two indicators measure the extent to which the banking system channel funds financial sector, to the private sector. They provide evidence that that proxied by the ratio of bank credit granted both through the improvement to the private sector to GDP, affects economic growth either through investment productivity (better allocation of capital) and through higher investment level. Their claim is that banking sector development can spur economic growth in the long run are also supported by the findings of De Gregorio and Guidotti (1995), who consider that financial deepening affects growth through a combination of the two effects but with more importance for the efficiency effect.

The study by Levine (1997) shows that financial development can reduce the cost of acquiring information about firms and managers, and lowers the cost of conducting transactions. By providing more accurate information about production technologies and exerting corporate control, financial sector development can enhance resource allocation and accelerate economic growth in the long-run. Similarly, by facilitating risk management, improving the liquidity of financial assets, and reducing trading costs, financial development can encourage investment in high-return activities. In these regard, Khan and Senhadji, (2000) argued that the fundamental frictions that give rise to financial intermediaries are either a technological or an incentive nature. The former prevents individuals from access to economies of scale, while the latter occurs because information is costly asymmetrically distributed across agents in world where contracts are incomplete because contingencies can be spelt out. Hence, according to them financial intermediaries relax these restrictions by: (i) facilitating the trading, hedging, diversifying, and pooling of risk; (ii) efficiently allocating resources; (iii) monitoring managers and exerting corporate control; (iv) mobilizing savings; and (v) facilitating the exchange of goods and services. In sum, financial system facilitates the allocation of resources over space and time.

Levine et al. (2000) conducted the study on 71 countries for the period 1960 to 1995. The ratio of liquid liabilities to GDP, ratio of deposit money banks domestic assets plus Central bank domestic assets, and ratio of credit issued to private enterprises to nominal GDP were used as financial indicators. The findings supported the positive correlation between bank credit and economic growth. The authors suggested that legal and accounting reforms should be undertaken to strengthen creditor rights, contract enforcement, and accounting practices in order to boost financial intermediary development and thereby accelerate economic growth.

Khan and Senhadji (2003) also examined the relationship between financial development and economic growth for 159 countries over the period 1960-1999 using cross-sectional data. To address the problem of potential endogeneity in the underlying relationship, the two-stage least squares (2SLS) was employed. The study found that financial development has a positive and statistically significant effect on economic growth. The study by Khan et al (2005) that investigated the link between financial development and economic growth in Pakistan over the period 1971-2004 employing the autoregressive distributed lag approach found that financial depth exerted positive impact on economic growth in the long run but the relationship was insignificant in the short-run. The ratio of investment to GDP exerted positive influence on economic growth in the short-run but also insignificant in the long-run. The study also showed a positive impact of real deposit rate on economic growth. The authors recommended that policy makers should focus attention on long run policies to promote economic growth, for example, the creation of modern financial institutions in the banking sector and the stock market.

Sanusi and Salleh (2007) examined the relationship between financial development and economic growth in Malaysia covering the period 1960-2002. Three measures of financial development were used, namely, ratio of broad money to GDP, credit provided by the banking system, and deposit money banks to GDP. By employing the autoregressive distributed lag approach, the study found that ratio of broad money to GDP, and credit provided by the banking system have positive and statistically significant impact on economic growth in the long-run. The results further indicated that a rise in investment will enhance economic growth in the long-run. Using panel analysis and Fully Modified OLS (FMOLS) methods Kiran, et al., (2009) investigated the relationship between financial development and economic growth for ten emerging countries over the period 1968–2007. Three measures of financial development (ratio of liquid liabilities to GDP, bank credit to GDP, and private sector credit to GDP) were used to quantify the impact of financial development on economic growth. The results concluded that financial development has a positive and statistically significant effect on economic growth.

Lastly, the findings of some studies do not support the finance growth relationship. Lucas (1988) does not support the view that finance is a major determinant of economic growth. He argues that its role has been overstressed by economists. Ahmed (2008) employed the fully modified OLS (FMOLS) to estimate long financial development-growth relationship. The ratio of private sector credit to GDP and domestic credit to GDP were the indicators of financial development used, while financial openness was used as a proxy for financial liberalization. The study found that financial development exerted a negative impact on economic growth when private credit was used, while the relationship was positive but insignificant when domestic credit was employed.



## METHODOLOGY

The data used in this study is annual covering the period from 1960 to 2011, from the Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports. The economic growth variable is GDP at current basic prices. The study uses two independent variables, one financial indicator bank credit to the private sector ratio and the ratio of broad money (M2) to GDP for financial depth. Private credit equals the value of credit by domestic financial intermediaries to GDP ratio. This is a measure of financial sector activity or the ability of the banking system to provide finance-led growth. The supply of credit to the private sector is important for the quality and quantity of investment (Demetriades and Hussein, 1996). This ratio also stresses the importance of the role played by the financial sector, especially the deposit money banks, in financing the private economy. It isolates credit issued to the private sector from credit issued to governments, government agencies, and public enterprises. Also, it excludes credits issued by the Central Bank (Levine et al. 2000). The underlying assumption is that credit provided to the private sector generated increases in investment and productivity to a much larger extent than the credits to the public sector. It is also argued that loans to the private sector are given under more stringent conditions and that the improved quality of investment emanating from financial intermediaries' evaluation of project viability is more significant for private sector credits (Levine and Zervos, 1998).

Gelb (1989), World Bank (1989), and King and Levine (1993) use the ratio of broad money to GDP for financial depth. In principle, the increase in the ratio means the increase in financial depth.

### Model Specification

The model to be estimated can be stated as follows:

$$Y = F(X_1, X_2) \quad \text{Eq. (1)}$$

$$GDP = F(BCPS, M2)$$

Using  $t$  to denote time period (years) the model can be written as follows:

$$GDP_t = F(BCPS_t + M2_t)$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \quad \text{Eq. (2)}$$

We specify the above model linearly in the form of an equation

$$GDP_t = \beta_0 + \beta_1 BCPS_t + \beta_2 M2_t + U_t \quad \text{Eq. (3)}$$

GDP = Gross Domestic Product at current basic prices.

BCPS = Bank Credit to the private sector to GDP

M2 = Broad money to GDP

$\beta_0$  = Constant

$\beta_1, \beta_2$  = Coefficients of the explanatory/Independent variables

$U_t$  = Stochastic or error term

All the variables are expressed in their logarithms

$$\ln GDP = \beta_0 + \beta_1 \ln BCPS + \beta_2 \ln M2 + U_t$$

The following are a priori expectations of the coefficients of the model.

$$\beta_1, \beta_2 > 0$$

## Estimation Techniques

### Unit Root test for Stationarity

The prerequisite for co-integration test is the stationarity of each individual time series over the same time period. Hence, before turning to the analysis of the long-run relationships between the variables we check for the unit root properties of the single series, as non-stationary behavior is a prerequisite for including them in the co-integration analysis. If the time series are stationary in their first differences, then they are said to be integrated of order one, i.e.,  $I(1)$ ; if stationary in their second differences, then they are integrated of order two, i.e.,  $I(2)$ . The order of integration of the variables is investigated using the Augmented Dickey-Fuller (ADF) [Dickey and Fuller, 1981] and Phillips-Perron (PP) [Phillips and Peron, 1988] unit root tests for the presence of unit roots.

### Vector Autoregression (VAR)

The general idea consists of assuming that financial development improves the efficient allocation of resources, which implies higher long-run economic growth. These theoretical predictions are confirmed by a large body of empirical evidence. Multivariate analysis investigates dependence and interactions among a set of variables in multi-values process. One of the most powerful methods of analyzing multivariate time series is the vector Autoregression (VAR) model used in this study. It is a natural extension of the univariate autoregressive model to the multivariate case.

## RESULTS AND DISCUSSION

We apply the ADF and PP unit root tests to check for the stationarity of the individual time series. The results are summarized in table 4.1 below. The result indicates that none of the series were stationary at level but became stationary after first differencing, that is they are integrated of order one,  $I(1)$ .

**Table 4.1: Unit Root Tests**

Variables	ADF test	PP Test	Status
LOGGDP 5%	T-Stat -5.661545 -2.921175	T-Stat -5.658406 -2.921175	$I(1)$
LOGCPS 5%	T-Stat -6.405651 -2.921175	T-Stat -6.495493 -2.921175	$I(1)$
LOGM2 5%	T-Stat -7.187010 -2.921175	T-Stat -7.189148 -2.921175	$I(1)$

Source: Eviews 7. software package

### VAR RESULT

Three columns correspond to the three equations in the VAR model. There are three significant

coefficients besides the intercept. The first lag of GDP is significant in the GDP equation. The first lag of credit to private sector is significant in the CPS equation and the first lag of broad money is also significant in the GDP equation. This means that the estimated model explains about 99.6 per cent of the variations in Gross domestic Product. The F-statistics result also supports this conclusion.

### Lag length Selection

An important aspect of empirical research based on VAR is the choice of the lag order, since all inference in the VAR model depends on the correct model specification. Hence, the optimal lags required in the co-integration test were chosen using the most common traditional information criteria being the Akaike Information Criteria (AIC), Schwarz Criterion (SC), Hannan and Quinn's (HQ) and the likelihood ratio (LR).

#### VAR Lag Order Selection Criteria

Endogenous variables: LOGGDP LOGCPS  
LOGM2

Exogenous variables: C

Date: 01/19/14 Time: 12:35

Sample: 1960 2011

Included observations: 50

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-107.3265	NA	0.016564	4.413061	4.527783	4.456748
1	107.3651	395.0325	4.43e-06	-3.814602	-3.355717*	-3.639856
2	119.8359	21.44980*	3.87e-06*	-3.953435*	-3.150385	-3.647629*

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

A reasonable strategy on how to determine the lag length of the VAR model is to fit VAR ( $p$ ) models with different orders  $p=0, \dots, p_{max}$  and choose the value of  $p$  which minimizes some model selection criteria. All criteria indicate that the optimal lag order of the model is 2, implying that the VAR model is an appropriate model to explain the impact of bank credit on economic growth in Nigeria.

### VAR Granger Causality/Block Exogeneity Wald Tests

One of the main uses of VAR models is forecasting. The structure of the VAR model provides information about a variable's or a group of variables' forecasting ability for other variables. If a variable, or group of variables,  $Y_1$  is found to be helpful for predicting another variable, or group of variables,  $Y_2$  then  $Y_1$  is said to Granger-cause  $Y_2$ .



## VAR Granger Causality/Block Exogeneity Wald Tests

Date: 01/19/14 Time: 12:59

Sample: 1960 2011

Included observations: 50

Dependent variable: LOGGDP

Excluded	Chi-sq	df	Prob.
LOGCPS	3.015370	2	0.2214
LOGM2	4.298118	2	0.1166
All	5.955535	4	0.2025

Dependent variable: LOGCPS

Excluded	Chi-sq	df	Prob.
LOGGDP	7.813789	2	0.0201
LOGM2	3.555682	2	0.1690
All	9.896574	4	0.0422

Dependent variable: LOGM2

Excluded	Chi-sq	df	Prob.
LOGGDP	3.155365	2	0.2065
LOGCPS	1.807060	2	0.4051
All	4.152982	4	0.3857

**Source: EvIEWS 7 software**

With GDP as the dependent variable, there is no causal relationship between the three variables whereas with CPS as the dependent variable, there is a causal relationship between GDP and CPS and jointly between the three variables. There is no causal relationship between the three variables with M2as the dependent variable.

## CONCLUSIONS

This study is an attempt to examine the impact of bank credit on economic growth in Nigeria. The study uses time series data over the period 1960 to 2011, which represents 52 years prior and post financial sector reforms and bank consolidation. The analysis is based on vector autoregressive (VAR) econometric model for time series data in which current GDP is used as dependent variable and bank credit to private sector and broad money are used as financial indicator and financial depth respectively. Based on the results of our study there is strong evidence that a significant and positive relationship exist between bank credit to the private sector and gross domestic product (GDP). The VAR granger causality test result also indicates no causal relationship with GDP as the dependent variable but there is a unidirectional causal relationship when credit to private sector is used as the dependent variable. The direction of causality is from gross domestic product to bank credit to private sector.

## REFERENCES

- Abu-Bader, S., & Abu-Qarn, A.M. (2008). Financial development and economic growth: empirical evidence from MENA countries, *Review of Development Economics*, Vol. 12, pp. 803-817.
- Ahmed, A.D. (2008). Financial liberalization, financial development and growth in sub-Saharan Africa's economic reform: An empirical investigation, *Centre for Strategic and Economic Studies*, Victoria University, Australia.
- Akpan, I. (2004). Fundamentals of Finance. 2<sup>nd</sup> edition, Uyo: Nelgrafik Nigeria Ltd.
- Arcand, J-L, Berkes, E., & Panizza, U. (2012). Too Much Finance?, IMF Working Paper WP/12/161, International Monetary Fund, Washington, D.C.
- Bali moune-Lutz, M. (2008). Financial Development and Income in North Africa, *International Advances in Economic Research*, Vol. 14, No. 4, pp. 422-432.
- Ben Salem, J.B., & Trabelsi, M. (2012). More on finance and growth in the MENA region: more growth, more finance, *Middle Eastern Finance and Economics*, Vol. 17, pp. 113-124.
- Cecchetti, S., & Kharroubi, E. (2012). Reassessing the Impact of Finance on Growth, mimeo, BIS.
- De Gregorio, I., & Guidotti, P.E. (1995). Financial Development and Economic Growth, *World Development*, 23 (3): pp. 433-448.
- Demetriades, P.O., & Hussein, K. (1996). Does Financial Development Cause Economic Growth? Time Series Evidence from 16 countries, *Journal of Development Economics*, 51, pp. 387-411.
- Dickey, D.A., & Fuller, W.A. (1981). The Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root, *Econometrica* 49, pp. 1057-1072.
- Gelb, A. H. (1989). Financial Policy, Growth, and Efficiency, *Planning and Research Working Papers*, No. 201 (World Bank).
- Granger, C.W.J. (1988). Developments in a Concept of Causality, *Journal of Econometrics* 39, pp. 199-211.

- Hasan, I., Koetter, M., & Wedow, M. (2009). Regional growth and finance in Europe: Is there a quality effect of bank efficiency?, *Journal of Banking and Finance*, Vol. 33, No. 8, pp. 1446-1453.
- Kar, M., Nazlioglu, S., & Agir, H. (2011). Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis, *Economic Modelling*, Vol. 28, Nos. 1-2, pp. 685-693.
- Kasekende, L. (2008). Developing a Sound Banking System. Paper presented at IMF Seminar, Tunisia.
- Khan, M.A., Qayyum, A., & Saeed, A.S. (2005). Financial development and economic growth: the case of Pakistan, *The Pakistan Development Review*, 44, 4(2), pp. 819-837.
- Khan, M.S., & Senhadji, A. (2000). Financial Development and Economic Growth: An overview, IMF Working Paper, WP/00/209, December.
- Khan, M.S., & Senhadji, A.S. (2003). Financial Development and Economic Growth: A review and new evidence, *Journal of African Economics*, 12, AERC Supplement 2: ii89-ii110.
- King, R., & Levine R. (1993). Finance and Growth: Schumpeter might be right, *Quarterly Journal of Economics*, 108: pp. 717-737.
- Kiran, B., Yavuz, N.C., & Guris, B. (2009). Financial development and economic growth: A panel data analysis of emerging countries, *International Research Journal of Finance and Economics*, 30, pp. 1450-2887.
- Levine, R., & Zervos, S. (1998). Stock Markets, Banks and Economic Growth, *American Economic Review*, 88, pp. 537-558.
- Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, 35, pp.688-726.
- Levine, R., Loyaza, N., & Beck, T. (2000). Financial intermediation and Growth: Causality and Causes, *Journal of Monetary Economics*, 46: pp.31-77.
- Lucas, R.E. (1988). On the mechanics of economic development, *Journal of Monetary Economics*, 22(1), pp. 3-42.
- Mishkin, F.S. (2007). The Economics of Money and Financial Markets, Pearson/Addison Wesley.
- Phillips, P.C.B., & Perron, P. (1988). Testing for a Unit Root in Time Series Regression, *Biometrika*, 75, pp. 335-346.
- Sanusi, N.A., & Sallah, N.H.M. (2007). Financial development and economic growth in Malaysia; An application of ARDL approach.[Online], available: [http://www.ibacnet.org/bai2007/proceedings/papers/2007bai744\\_3.doc](http://www.ibacnet.org/bai2007/proceedings/papers/2007bai744_3.doc).
- World Bank (2011). World Development Indicators.