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Does Financial Deregulation Spurs Economic Development in Nigeria?

Areghan ISIBOR
Banking and Finance Department
Covenant University, Ota, Ogun State, Nigeria
areghan.isibor@covenantuniversity.edu.ng

Joshua OJO
Banking and Finance Department
Mountaintop University, Ogun State, Nigeria
aresforyou@yahoo.com

Ochei IKPEFAN
Banking and Finance Department
Covenant University, Ota, Ogun State, Nigeria
ochei.ikpefan@covenantuniversity.edu.ng

Abstract:

The problem of low investment caused by mismanagement of the financial deregulation process is a worrisome issue that needs to be addressed. Data spanning 46 years from 1970 to 2016 and which are relevant to variables of study like gross fixed capital formation, etc were gathered from secondary sources and analyzed using the Auto-Regressive Distribution Lag model. The result showed that both financial deregulation and investment growth have a long-term but negative significant impact on economic development. The paper recommends amongst others that the deregulation process needs to be properly sequenced into the financial system.

Keywords: financial deregulation; gross fixed capital formation; economic development

JEL Classification: O1; O160; O23

Introduction

Financial deregulation refers to the orderly withdrawal of regulatory controls, structures, and operational rules which may be regarded as suppressive to organized growth, competition, and efficient apportioning of resources in the financial system of a country. Financial repression, which is the opposite of financial deregulation, is a direct control of financial rates by the government in an economy, for example, administrative control of interest rates and exchange rates by the government (Ayadi, Adegbite 2008).

Before the deregulation of the Nigerian economy, the financial sector was the most highly regulated (Ogbu 2010). The reasons for this include first, funds are needed to finance developmental projects, and since fund is also the major financial instrument of the financial sector, the government had to firmly control the sector. The financial system not only collect funds from savers and channel them to investors, it also allows easy payment system services that aid transactions. Furthermore, the financial sector also creates a platform that allows the Central Bank of Nigeria's monetary policy to function perfectly and enable macroeconomic stability for all economic players.

Also, with the major function of the financial system, the government firmly managed all area of its activities (Omankhanlen 2012). For example, under the banking subsector, the Central Bank of Nigeria controlled the interest rates on loans the banks charged, and the amount banks could lend to different sectors. The Central Bank of Nigeria also controlled the deposit interest rate and the rate at which credit could grow. There were strong guidelines controlling entry into the banking sector during the repression era of early 1970s to 1985. The effect of this was that the financial system was suppressed, and it could not create adequate savings at the prevailing interest rate,

and also it could not find enough investment for meaningful development. This made the country to adopt financial deregulation policy for her financial sector.

With the creation of the Structural Adjustment Programme in 1986, the financial markets were deregulated in 1987. Adekanye (2002) posited that "deregulation was adopted in 1987 against a crash in the international oil market, and the reactant deteriorating economic condition in the country due to stringent policies in the financial sector which made savings and investment unrealizable". The deregulation reform stirred up competition in the banking sector with increase financial services such as the usage of debit and credit cards, utilization of payment technologies for example the Automated Teller Machines and electronic transfer of deposits, internet banking services and mobile banking technology (Ikpefan 2012). Other reforms that were introduced include flexible exchange rate which facilitated the introduction of new local and foreign banks, the deregulation of both lending interest rates and deposit interest rates, and so on, thus leading to financial deepening in the economy.

However, there were wide variations and unnecessarily high interest rates and this led to a change of policy in 2004 with the government introducing some regulatory measures to manage the interest rate. This is termed prudential or partial deregulation (Olokoyo 2012). Thus, deposit rates were set at 2 to 5% per annum while lending rate was fixed at a ceiling of 20% per annum (Omole and Falokun 1999). Although prudential deregulation was introduced to reduce financial risk and spring up stability, it imposed increased regulatory costs and hampered competition. Hence, prudential deregulation had opposite effects on bank performance (Olokoyo 2012). First, it hampered the effect of financial deepening on the economy, and second, the vital purpose of monetary policy stability in Nigeria has not been achieved after deregulation. There have been consistent high inflation figures. Both the Federal Government fiscal deficit and the interbank rates were very high and this affected other rates. Also, massive sets of regulations introduced by the regulatory bodies led to the introduction of several new financial products. However, these new financial products led to the liquidation of some financial institutions and banks due to the fact that they were rigidly controlled by the government through its regulatory bodies (Olokoyo 2012).

By contrast, financial deregulation reform in South Korea, Malaysia, and Indonesia was applied step-by-step and together with measures that brought about macroeconomic stability. Hence, financial deregulation made the financial systems in the three countries more efficient, thus pushing the need to reintroduce controls (Ojo 2010). It is generally accepted in theoretical literature that deregulating the financial system plays a vital role in economic development. The literature on financial deregulation posited that the relaxation of government controls on the financial system would lead to more savings since interest rate would be determined by market forces. The increased savings would lead to higher and bigger investment. More investments would result in economic development and growth. Therefore, there would be higher deposit rates (plus increased investment and economic growth) after deregulation; but it has been a different result with Nigeria. Against this background therefore, the basic thrust of this study is to empirically investigate the impact of financial deregulation on the performance of the Nigerian economy from 1970 to 2016 using the McKinnon-Shaw model.

1. Literature review

Financial deregulation is seen as a process of moving towards both market-determined interest rate and market-determined prices on all categories of financial products. Ikhide (2005) stressed the fact that it can also be characterized by symmetric entry and exit conditions of all the participants in the banking system, the opening up of the domestic market to international competition, and limited barriers to the introduction of new financial products. According to Ikpefan, Isibor, and Okafor (2016), financial deregulation reform in Nigeria was driven by the need to deepen the financial system and reposition the Nigerian economy for growth.

Ndebbio (2004) observed that though financial deregulation has been variously portrayed in different empirical literatures, whatever depiction still usually include no government control on interest rate, and removal of controls on foreign exchange deals. Furthermore, deregulation tries to introduce, strengthen, and improve both the price mechanism and the considerations for financial system competition. On the contrary, financial repression is supported by limits on interest rates and credit enlargement, selective policies on credit, high reserve requirements, and limitations on entry into the banking sector.

New Keynesian economists criticized the assumptions of deregulation (Krugman 1998, Laumas 1995). The clearest effort at the refusal of deregulation came from Laumas (1995)'s three sector model, which he divided into households, private business firms and government. According to the model, the high deposit interest rates caused by financial deregulation would benefit households, who saves lower than firms. However, high cost of borrowing would affect firm's profits. Also, savings rate would reduce because high-saving business firms would face the problem of low profits, while low-saving households would collect a larger ratio of total savings. Public revenue would also reduce as it would be affected by low taxes on interest income (which is a deregulation measure), while high interest payments on public debt would increase consumption by private firms. Thus, while the model assumed the McKinnon (1973) and Shaw (1973) theory that an increase in deposits rates would increase financial deepening; such measures were also expected to lower private savings (because of the shift in income from firms to renters) and government saving (because of lower tax revenues and higher interest payments on debt).

However, the most complete rejection of deregulation comes from a debate on the relationship between finance and development that came before the propositions of McKinnon (1973) and Shaw (1973). Thornton (1990) opined that in the developing economies, the banking sector would not have the capacity to mobilize the financial resources essential for economic development. Such undertaking would involve institutional arrangements outside the banking sector. According to Thornton (1990), financial deregulation would also be secondary to the problem of inducting speedy and sustained growth for many African economies. Thornton (1990) also concluded by positioning the needs of developing economies against the potentials of the banking sector. In his view, "the most backward economies face not a large deficit in accumulated capital but also large technological and institutional gaps, as well as a shortage of entrepreneurial talent" (Thornton 1990).

"In the financial system, the banking sector would not only be ineffective in mobilizing enough resources due to limited savings and lack of trust in the banking sector, but would also be ineffective in providing the requisites of technology transfer and entrepreneurship" (Thornton 1990). These situations typically authorized the use of "special institutional factor" in mobilizing additional resources plus reliance on entrepreneurial direction. An example of such "special institutional factor" is government interest in the industrialization process and savings mobilization (as in the case of Russia and Hungary).

1.1. Investment in Nigeria

According to Ikpefan (2012), the Nigerian investment climate is characterized by high production costs, inadequate infrastructure and corruption, high rate of crime, inflation, political instability, and macroeconomic imbalance. Nevertheless, private capital flows are motivated by profit considerations. For government to achieve its desired objectives of high economic growth and rapid development, it must pursue policies that will increase both the public and the private investment. Aggregate investment in any economy comprises both the public and private investments. Although the prime motive of the public sector investment may be different from that of the private sector, they both face the same challenges in financing their investment requirements.

A study by Busari (2007) explained that lack of guarded deregulation was the major cause of low domestic investment figures in Nigeria. According to him, deregulation was supposing to foster domestic investment, thereby reducing the influx of foreign direct investment, but this is not the case in Nigeria, compared to China that developed her local industries and increased the amount of funds that go into her local industries. Hence, Busari (2007) concluded that lack and/or access to funds was the major setback of local investment growth in Nigeria, and this factor is caused by lack of guided deregulation.

1.2. Economic Development

Economic development implies an upward movement of the entire economic and social system in terms of income, savings and investment along with progressive changes in socioeconomic structure of a country (institutional and technological changes). Development relates to growth of human capital indexes, a decrease in income inequality, and structural changes that improve the general population's quality of life (Ayadi, Adegbite, and Ayadi 2008). Economic development is a broader concept than economic growth. Development reflects social and economic progress and requires economic growth.

Growth is a vital and necessary condition for development, but it is not a sufficient condition as it cannot guarantee development. Economic development can be measured by GDP per capita, HDI (Human Development Index), Gender- Related Index (GDI), Human Poverty Index (HPI), infant mortality, and literacy rate etc. All these bring both qualitative and quantitative changes in the economy as compared to growth that brings only quantitative changes in the economy. Economic development is more relevant to measure progress and quality of life in developing nations since it is concerned with structural changes in the economy compared to economic growth which is concerned with increase in the economy's income (Ikhide 2005). GDP per capita is the commonest indicator of material standards of living and it is found by measuring Gross Domestic Product in a year and dividing it by the population.

1.3. Theoretical Evidence and Framework

McKinnon and Shaw Hypothesis: The main thrust of the McKinnon-Shaw framework is that government restrictions on the financial system like interest rate ceilings, high reserve requirements and controlled credit policies suppress financial deepening and hence hamper economic development. Financial deepening refers to the increased provision of financial services with a wider choice of services geared at all levels of society. It means an increased ratio of money supply to GDP or some price index. It also refers to the liquid money. The more liquid money is available in an economy; the more opportunities exist for continued growth. Financial deepening plays a very important role in reducing risk and vulnerability for disadvantaged group, and increasing the ability of individuals and households to access basic services like health and education, thus having a more direct impact on poverty reduction.

On the other hand, researchers such as Kraay (1998) and Stiglitz (2000) are of the view that financial market imperfections like asymmetric information and imperfect competition mean that financial deregulation can have a negative effect on economic growth and development. The McKinnon and Shaw hypotheses assumed that deregulation, which would involve higher real interest rates (since controls on these will be lifted) would stimulate saving. This follows the assumption that savings is reactive to interest rates. The higher saving rates would finance a higher level of investment, leading to higher growth. Therefore, from this view, one should expect to have higher saving rates (as well as higher levels of investment and growth) following financial deregulation. The separate but complementary studies of McKinnon (1973) and Shaw (1973) opened the floodgate of studies on the relationship between financial deregulation and growth.

1.4. Empirical Framework

Uduak and Ubong (2015) studied the banking sector reforms and their impact on the performance of deposit money banks in Nigeria, using co-integration to analyze data from 1999 to 2015; he found out that those reforms in the banking sector increases the profitability of deposit money banks due to high interest rate spread. However, the study failed to specify the particular reform it used in the model.

Abogan, Olajide, and Oloba (2014) studied the impact of deregulation of the economy on Nigerian deposit money banks using the analysis of variance (ANOVA) technique. The study revealed that deregulation of the economy caused high technology information which actually reduced incidence of fraud in banking industry and increased the number of deposit money banks as a result of competitive environment, with increase in skilled manpower. The author should have used secondary data instead.

Asamoah (2008) assessed financial deregulation and its impact on savings, investment and the growth of GDP in Ghana. The empirical estimation of 42 observations *i.e.* January 2000 to June 2003 was evaluated using the Ordinary Least Square regression analysis. The results showed that the rise in interest rate over the years after deregulation of the financial sector has led to a corresponding increase in savings which has a positive impact on the growth of GDP. The findings showed that financial deregulation has increased the rate of capital accumulation and improved efficiency in capital utilization which is both essential for economic growth. The researcher should have used the panel data estimation to get a more concrete result.

Ogunsakin (2013) examined the impact of financial deregulation on the growth of the Nigerian economy, using the Johansen co-integration method. The time-series data from 1980 to 2010 was employed and his results

showed that the financial sector has impact on the growth of the Nigerian economy, but not remarkable impact, which might be due to the underdeveloped financial market, inadequate financial instrument and poor monitoring of the activities of money market by the central bank. The researcher should have extended the study to other emerging economies in order to see if the finding is applicable to them.

Olokoyo (2012) examined the impact of deregulation on Nigerian deposit money bank performance using ordinary least squares single equation technique. She discovered that there is a significant relationship between the regulation of banks and bank performance and hence does not support the position that deregulation brings about improvement in bank performance, that deregulation should be combined with other regulatory policies for better performance. However, a more robust technique like the multiple regression technique or the two-stage least squares technique should have been used instead.

Oyovwi and Eshenake (2013) studied the effect of financial deregulation on economic growth in Nigeria, adopting the methodology of the vector error correction technique. Annual data on GDP, financial deepening (proxied by the ratio of M2 to GDP), government policy (represented as the ratio of total trade to GDP) and investment to GDP were employed for the study. The study found that financial deepening exerts a significant positive impact on economic growth while government policy or trade openness and investment-GDP ratio impact growth significantly but in the opposite (negative) direction. However, financial deepening correlates with investment growth; therefore, it cannot be related positively to growth while investment is negatively related to it.

Donald and Adeyele (2013) examined the effect of both bank consolidation and deregulation on the level of competition in the Nigerian banking industry using the ordinary least squares technique (OLS). They concluded that bank recapitalization and other consolidation catalysis did improve efficiency and economics of scale in the banking industry. Other econometric techniques should have been considered by the researcher apart from OLS.

Donald (2013) examined the impact of financial deregulation on credit mobilization to the real sectors and SMEs in Nigeria. Using a Fitting co-integration technique, he argued that deregulation of Nigeria financial system had an adverse boomerang effect on the credit allocated to the real sector, financial deregulation was insignificant and negative. Credit to other sectors too should have been considered by the author, most especially the business sector. Iganiga (2010) evaluated the Nigerian financial sector reforms using behavioural models and the OLS technique. The study found that the adoption of financial deregulation triggered a significant realignment of financial depth, width and savings mobilization. That financial deregulation promotes the efficiency of the intermediation process. Multiple regression technique would have been a better option here than OLS.

2. Methodology

The model used for this hypothesis will be based on the theoretical framework of financial deregulation as posited by McKinnon (1973) and Shaw (1973) whereby they both explained that deregulation will lead to increase in banks' deposits and with competitive lending rate, there will be enough funds to give out as loans for investment purposes. This will then lead to investment growth which will spur economic development. The implicit form of the model will be:

$$\Delta GDP\ pc = a_0 + a_1 \Delta LER + a_2 \Delta GFCF + U_1 \tag{1}$$

where: $\Delta GDP\ pc$ represents GDP per capita and was used as a proxy for economic development according to the study of Ojo (2008).

Ehinomen and Afolabi (2015) in their study adopted lending rate (LER) as a proxy for financial deregulation. Gross Fixed Capita Formation (GFCF) was used as a proxy for domestic investment following the study of Asamoah (2008). Also, a_0 is the intercept, a_1, a_2, a_3, a_4, a_5, and a_6 are parameters estimating LER, GFCF and their lags while U_1 is error term used to measure variables not mentioned in the model but has impact on GDP pc.

All the data to be analyzed are from 1970 to 2016, thus spanning for 46 years. The reason for this large span is to examine the impact of all the independent variables on the dependent variables for a long period of time. The data will be tested for structural breaks to examine the effect of financial deregulation policy over the years. The data would be analyzed using the Auto-regressive Distributive Lag (ARDL) econometric approach so as to test for long run impact between the dependent variable and the independent variables.

3. Demonstrations

3.1. Zivot-Andrews Unit Root/Structural Break Test

This test was carried out to examine whether the data is stationary or not. The value of the Zivot-Andrews test statistics must be greater than the value of its critical values at 5% significance levels, whether at level or at first difference. Using the table below:

Table 1. Result of Zivot-Andrews unit root/structural break test at trend and intercept with maximum lag of 4

VARIABLES	Zivot-Andrews test statistics	5% Test Critical Values	Remark
LGDP PC	-6.563485	-5.08	Stationary at 1st Difference
LER	-6.020282	-5.08	Stationary at level
LGFCF	-5.204057	-5.08	Stationary at level

Source: Author's computation using Eviews 9 (2017)

From the table above, it can be seen that all the variables were stationary at 5% critical value, trend and intercept. While economic development (LGDP PC) was stationary at first difference, all other variables were stationary at level. Auto - Regressive Distribution Lag ResultModel:

$$\Delta GDP\ pc = a_0 + a_1\Delta LER + a_2\Delta GFCF + U_1 \tag{2}$$

Table 2. Result of Auto - Regressive Distribution Lag

VARIABLES	Coefficient	Std. Error	t-Statistic	Prob.
LGDP PC(-1)	1.988460	0.014879	66.43330	0.0000
LER	-4.018515	0.005355	-3.457872	0.0013
LGFCF	-6.005315	0.005500	-2.966312	0.0394
C	0.076095	0.096056	0.792196	0.4327
R2 = 0.9968	Adjusted R2 = 0.9866	F-statistics=4449.549	Durbin-Watson Test = 2.17	

Source: Author's computation using Eviews 9 (2017)

From the table above, the R2 was 0.99 to show that all the exogenous variables cause 99% changes in the endogenous variable GDP PC. After adjusting for degree of freedom, the adjusted R2 becomes 0.98 to show that all the coefficients now explain 98% changes in GDP PC while holding other factors constant.

Using the probability value to test for the significance of the parameter of the coefficients at 10% significance level, the result shows that both dependent variables financial deregulation (LER) and investment (GFCF) are all statistically significant in impacting economic development (LGDP PC). The next step is to examine if there is the presence of co-integration in the model. The co-integration will reveal whether a short-run or long-run relationship exists between the exogenous variables and the endogenous variable. The Bounds F test will be used to examine this fact. The value of the F Statistics from the ARDL Bounds Test must be greater than all the Critical Value Bounds whether at I0 or at I1 Bound to prove the presence of co-integration in the model. The result of the F Statistics test is shown below.

3.2. ARDL Bounds Test

Table 3. Result of ARDL Bounds Test

F-statistic	I0 Bound	I1 Bound
12.56826	3.17	4.14
	3.79	4.85
	4.41	5.52
	5.15	6.36

Source: Author's computation using Eviews 9 (2017)

From the result above, the F Statistics value of 12.56826 is greater than all the values of the Critical Value Bounds at all the significance levels to establish the fact that there is co-integration in the model. Therefore, the

next step is to carry out the co-integration to establish whether a short-run or long-run relationship exists among all the variables. The ARDL Cointegrating and Long Run Form test will be used to carry out this test. The coefficient value of the co-integration equation CointEq (-1) must be both negative and significant at 10% significance level to establish a long run relationship. If the coefficient value of the co-integration equation is positive and insignificant, then a short-run relationship exists in the model. The result is shown below:

3.3. ARDL Cointegrating and Long Run Form

Table 4. Result of ARDL Cointegrating and Long Run Form

VARIABLES	Coefficient	Std. Error	t-Statistic	Prob.
D(LER)	4.018515	0.005355	3.457872	0.0013
D(LGFCF)	-4.005315	0.005500	-4.966312	0.0394
CointEq(-1)	-3.011540	0.014879	-2.775577	0.0000

Source: Author's computation using Eviews 9 (2017)

From the result above, the coefficient value of the co-integration equation CointEq (-1) is negative and significant at 10% significance level to show that a long run relationship exists in the model. The value of total savings [D (LER)] is also significant at 10% significance level from the probability value to show that it has a long run positive and significant relationship with the dependent variable. The value of D (LGFCF) also proves significant at 10% significance level in explaining the dependent variable.

3.4. Heteroskedasticity Test

This test also be carried out to examine if the error term has a constant variance or not. If both the p-value and the p-chi square values are significant at 10% significance level, then there is the presence of Heteroskedasticity in the data. The result is shown below:

Table 5. Result of Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.258131	Prob. F(3,42)	0.8551
Obs*R-squared	0.832789	Prob. Chi-Square(3)	0.8416
Scaled explained SS	2.587379	Prob. Chi-Square(3)	0.4597

Source: Author's computation using Eviews 9 (2017)

From the result above, none of the probability values are significant at 10%; hence, there is no Heteroskedasticity in the data.

3.5. Breusch–Godfrey serial correlation LM test

This test performs the same function as the Durbin-Watson test which is to test for serial correlation or autocorrelation in the model. Both the probability and probability chi-square values must be significant at 10% significance level to prove that there is evidence of serial correlation in the model. Using the result below:

Table 6. Result of Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.431228	Prob. F(2,40)	0.6527
Obs*R-squared	0.970890	Prob. Chi-Square(2)	0.6154

Source: Author's computation using Eviews 9 (2017)

From the result above, both probability and probability chi square values are not significant at 10% significance level; hence there is no serial correlation in the model.

3.6. Variance Inflation Factor (VIF) Test for Multicollinearity

A variance inflation factor (VIF) looks for Multicollinearity in any given model. The rule of thumb for interpreting the variance inflation factor is if the coefficient variance value for all the variables is approximately 1, then there is no Multicollinearity in the model.

If the coefficient variance is approximately between 2 and 5, then all the dependent variables are moderately correlated. Finally, if the coefficient variance is approximately greater than 5, then there is a high level of Multicollinearity among the dependent variables. Examining the result below:

Table 7. Result of Variance Inflation Factor (VIF) Test for Multicollinearity

VARIABLE	Coefficient Variance	Uncentered VIF	Centered VIF
LGDP_PC(-1)	0.000221	36.88376	2.947172
LER	0.07E-05	15.19919	2.128335
LGFCF	0.03E-05	17.60910	4.037979
C	0.009227	17.68298	NA

Source: Author's computation using Eviews 9 (2017)

From the above result, the value of all the coefficient variance is approximately one; hence there is no Multicollinearity in the model.

3.7. Cumulative Cum (CUSUM) and Cumulative Sum Squared (CUSUM-Sq) Test

The CUSUM (cumulative sum) and CUSUM-sq (CUSUM squared) tests are used to test the constancy of the coefficients in a model. Both tests are always in charts and both charts are time-weighted control charts that display the cumulative sums (CUSUMs) of the deviations of each exogenous variable from the endogenous variable.

The rule of thumb states that the wavy line must be in-between the other two lines and must not at any point shootout between the two lines. The result of both tests is in the appendix section (appendices 2 and 3) and both point to the fact that there is no deviation of the exogenous variables from the endogenous variable.

Conclusion

This study examined how financial deregulation can be utilized as a factor to drive economic development in Nigeria. Literatures relating to both financial deregulation and economic development were examined. Economic development was made a function of lending rate (used to capture financial deregulation) and investment growth (captured by gross fixed capital formation). Data pertaining to the three variables was analyzed using the Auto-regressive Distributive Lag (ARDL) econometric technique, and the data span a period of 46 years from 1979 to 2016.

From the results obtained, both financial deregulation and investment growth have a long-term but negative significant impact on economic development.

Recommendations

In view of the above findings that financial deregulation (LER) and investment growth (GFCF) have a negative and long-run impact on economic development (GDP_PC), the following recommendations are made:

- The deregulation process needs to be introduced gradually into the financial system. The sequence of the introduction of the policy was poor in Nigeria. For example, before allowing free entry into the financial system, there ought to have been the introduction of indirect monetary instruments first, then next would be the overhauling of the financial system's regulatory framework, then next would be a gradual relaxation of entry rules into the financial system, and finally would be the removal of interest rate ceilings. In Nigeria's case, the removal of interest and exchange rates ceilings came first, this then depreciated the cost of imported materials, and the high interest rates drove manufacturers out of the financial markets, and speculators then had a field day;

- Government should look into the issue of infrastructure as a method of reducing production cost and increasing production investment. Low cost of production brings low price output and this causes a decrease in general price levels which boosts economic development;
- The government should encourage strong credit support to the private sector to increase investment. This can be done by reviewing credit policies so as to reduce bureaucracy that obstruct access to credit, and also stressing the supervision of the loan portfolio of financial institutions;
- Different financial products and services that would increase and ensure efficient allocation of credit to the private sector and deepen the financial system should be encouraged as this would boost domestic investment.

Acknowledgement

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APPENDICES

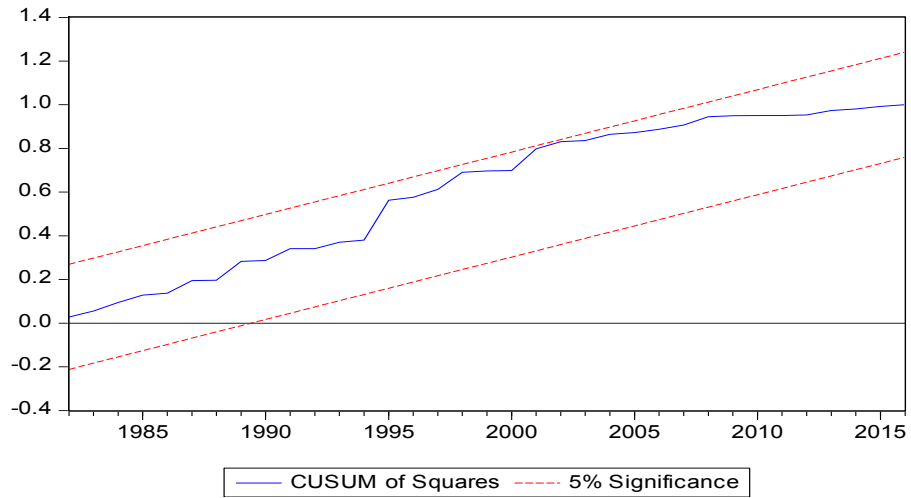### Appendix 1

Dependent Variable: LGDP_PC				
Method: ARDL				
Date: 08/10/17 Time: 15:59				
Sample (adjusted): 1971 2016				
Included observations: 46 after adjustments				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): LER LGFCF				
Fixed regressors: C				
Number of models evaluated: 100				
Selected Model: ARDL(1, 0, 0)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGDP_PC(-1)	1.988460	0.014879	66.43330	0.0000
LER	4.018515	0.005355	3.457872	0.0013
LGFCF	-6.005315	0.005500	-2.966312	0.3394
C	0.076095	0.096056	0.792196	0.4327
R-squared	0.996863	Mean dependent var		9.120668
Adjusted R-squared	0.996639	S.D. dependent var		2.672524
S.E. of regression	0.154927	Akaike info criterion		-0.808784
Sum squared resid	1.008099	Schwarz criterion		-0.649772
Log likelihood	22.60204	Hannan-Quinn criter.		-0.749218
F-statistic	4449.549	Durbin-Watson stat		2.178492
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection				

Appendix 2. CUSUM Test
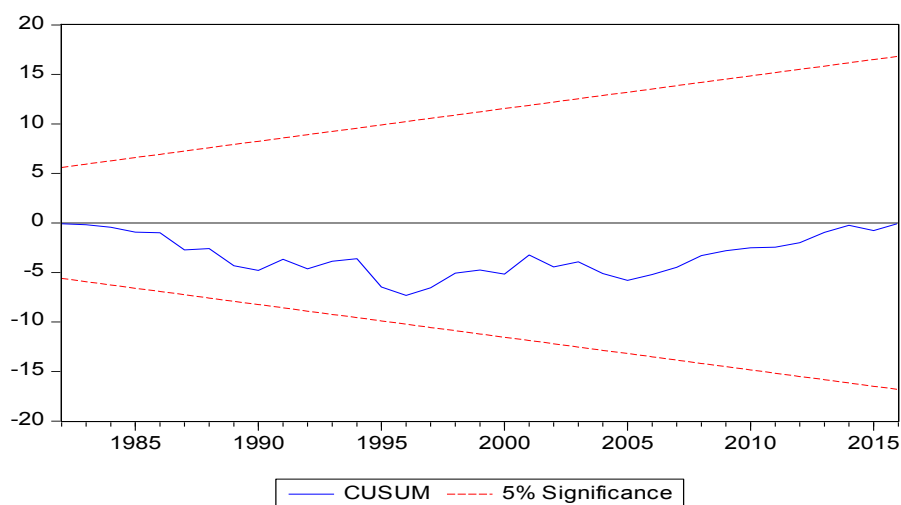
Source: Author's computation using Eviews 9 (2017)

Appendix 3. CUSUM of Square Test

Source: Author's computation using Eviews 9 (2017)