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Measuring the Dynamics of Financial Deepening and Economic Growth in Nigeria, 1981 - 2013: Using Engel-Granger Residual Based Approach

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Abstract: *The study examined the relationship between financial deepening and economic growth for the period 1981 to 2013 using empirical evidence from Nigeria. The Engel-Granger two-step cointegration procedures and Error Correction Model (ECM) were used as the method of estimation. The analyses of residuals of the OLS regression showed evidence in favour of cointegration between financial deepening and economic growth. Similarly, estimates from the error correction model provide evidence to show that financial deepening indicators and GDP series converge to a long-run equilibrium at a reasonably fast rate. The result points to the fact that the deepening of the financial system can engineer the Nigerian economy to greater growth.*

Key Words: *Economic Growth; Financial Deepening; Financial Development; Causal Relationship; Nigeria*

I. Introduction

The study of link between economic growth and level of financial development, that is, financial depth in an economy has grown in depth and dimension in recent years. Such works cover spectrum of empirical and theoretical; developed and developing countries; and country-specific and cross-country in an attempt to addressing three basic issues, namely: measurement of financial depth, identification of factors that influence financial deepening in an economic system, causal direction between finance and growth, and the superiority of a banking-based financial system over a market-based type etc (see, for example, King and Levine, 1993; Levine et al., 2000; Khan and Senhadji, 2000; Ndebbio, 2004; Mohan, 2006; Nzotta and Okereke, 2009; Barajas et al., 2013 etc). Evidently, findings present a unanimous support for a strong positive relationship between financial system development and the economic growth.

Financial market is made up of institutions, operators, financial instruments (assets and liabilities), rules and regulations that guide mobility of funds from surplus to scare ends of the economy. The depth or shallowness of the financial intermediation platform is expected to be of essence to any economy because financial deepening (FD) engenders economic growth through the demand and supply channels in the economic system, either as supply-leading or demand-following (Godlsmith, 1969; McKinnon, 1973; Shaw, 1973 and Robinson, 1952).

IMF (2012) citing Goyal et al. 2011 points out that FD is a multidimensional process whereby financial institutions and markets provide a range of services and instruments that allow for (i) efficient exchange of goods and services (e.g., payments services); (ii) effective savings and investment decisions, including at long maturities; and (iii) the financial sector can create a broad menu of assets for risk sharing purposes (hedging or diversification). In other words, it can be understood as a process of increasing the efficiency, depth (e.g., credit intermediation and market turnover), breadth (e.g., range of markets and instruments); and reach (e.g., access) of financial systems. The overall impact of FD is felt on macroeconomic policies, macro-financial stability, and then, on the general economic growth. That is, through the provision of wide range of accessible financial instruments and services, the effectiveness of macroeconomic policies are enhanced and the economic growth is also fostered (IMF, 2015). This suggests that the dividend for financial system deepening is growth. This benefit could extend to poverty reduction through inequality (re)balancing (for details, see: Singh and Huang, 2011).

According to IMF report, low income countries (LICs) are experiencing FD at a higher rate than their developed countries counterparts, however, the challenging issue remains - how accessible are these financial services to broad spectrum of the society. Many factors influence the FD of countries, namely: structural/institutional characteristics, policy inertia, and external or exogenous factors. Structural factors impact on the costs and risks for financial institutions, which undermines financial system development and these

include: high fixed costs in financial provision, low national income, high degree of informality, and low population density. Others include – low deposits mobilization, low level of financial literacy, high fees and documentation requirements etc. The policy factors that limit financial deepening and diversification in LICs range from 'macroeconomic instability, weak collateral regimes to regulatory restrictions'. The external factors provide the environmental platform on which financial system operates. They include such factors like available technology, socio-political condition, cultural influences etc. Notably, diversity among the LICs on these factors makes for no "one-size-fits-all" approach in solving the financial deepening challenges in the LICs.

There is no doubt on strong positive relationship between financial deepening-economic growth (herein referred to as FD-EG) nexus, but the method of estimation and efficient form of relationship is of importance to size and reliability of the relationship, therefore, this study addresses the question of reliability and robustness of method of estimation used by previous studies. It is also crucial to note that Nigerian financial market is unique. The uniqueness of her model stems from the duality (formal and informal) of the market, cultural restrictions on savings, lack of modern technology, and heavy reliance on cash economy (Abudu et al., 2004). This stirs the authors' motivation for the investigation.

The overall objective of this paper is to investigate the responsiveness of economic growth to financial deepening on short- and long-run, and the causal direction of their relationship in sub-Saharan African Country Nigeria, using data range 1981 – 2013 as obtained from the CBN Statistical bulletin. Emphasis is laid on method, measurement and robustness of the results. The study uses majorly, the Error Correction Model (ECM) estimation methods in data analysis as well as other allied methods of estimation.

This study is unique in three ways. To the best of the authors' knowledge, no prior study has investigated the causal direction between economic growth and financial deepening in Nigeria. The study uses descriptive, diagnostic and comparative statistical tests/models that no other study has used to validate or ensure the reliability of the results of the relationship. The span of data used in the study, from 1981 to 2013 contributes also to the uniqueness of the work, though, Aye (2015) used 55 years data range but with a different estimation approach.

The findings of this study are strategic to financial market regulators and policymakers, and the economists because of the interaction and the feedback effects of EG-FD nexus. Again, knowledge of the causal direction financial market development-economic relation in Nigeria will significantly contribute to the extant literature on economic development literature.

The remainder of this paper is arranged as follows: next section reviews relevant related literature. Section 3 presents data and specifies model used in the study, then, section 4 presents and discusses results while the last section concludes the paper.

II. Review Of Related Literature

There is a unanimous view among researchers that the works of Godsmith (1969), McKinnon (1973) and Shaw (1973) are first attempts to formalize financial intermediation hypothesis. Both McKinnon's complimentarity model and Shaw's debt intermediation hypothesis show that repressed financial markets result to disincentive to savings, which impacts negatively on capital accumulation, allocation, and investment and economic growth (see: Wurgler, 2000). This suggests that it is financial market that stirs growth. The alternate school of thought proposed by Robinson (1952) argues that economic growth causes financial development, which is seen as a passive response to other factors that cause differences in the economic growth of different economies. More recent cross-country empirical panel data works like Barajas et al. (2013) upheld the finance-growth theory of McKinnon-Shaw framework.

At African regional level, scholars have carried out cross-sectional studies on the financial and economic growth interactions. For example, Ndebbio (2004) investigated the impact of FD on the economic growth of 34 sub-Saharan Africa countries using OLS multiple regression technique for the period 1980 – 1989. The study uses degree of financial intermediation and growth rate of per capita real money balances as measures for financial depth and found a long-run relation with the economies of SSA countries in corroboration with the intermediation school. Similarly, Demetriades and James (2011) and Adusei (2013) among others empirically examined African countries in a view to finding the relation between financial intermediation and growth. Adusei used logarithm of real per capita GDP of 24 African countries as measure for growth on the measures of financial development, which includes: ratio of domestic credits to private sector to GDP, ratio of liquid liabilities to GDP, economic openness, size of government, human capital and capital formation as share of GDP. Adusei employed generalized method of moments (GMM) estimation technique and strong support of financial development to the economic growth of those countries, but economic openness negates growth. So, finance-growth nexus exists in Africa in support of Schumpeter's school of thought.

Using varying measures for FD, financial development variables, data range, and methods of estimations; a number of studies have been done on interaction between the Nigerian financial development and

economic growth. Such studies include Nzotta and Okereke, 2009; Iganniga, 2010; Okafor, 2011; Kehinde and Adejuwon, 2011; Onwumere et al., 2012; Balago, 214; Aye, 2015 and so on.

Nzotta and Okereke (2009) is one of the first country-specific studies that are indigenous in and to Nigeria. The study employed nine explanatory variables that measure the depth of finance over a 22 year periods (1986 – 2007). Using a two stages least square technique, the result shows a low financial deepening index, but strong significant support for FD is found for lending rates, financial savings ratio, cheque/GDP ratio, and deposit money banks/GDP.

Subsequent studies reveal that banking sector reforms have contributed to FD in Nigeria, especially the recent reforms, which in turn support growth. For instance, Okafor (2011) reports that Nigeria banking industry which drives the financial system witnessed five reforms between 1960 and 2010; and analysis shows that reforms have contributed to financial deepening in Nigeria. Iganiga (2010) empirically tested the impact of banking reforms in Nigeria on the financial sector development between 1987 and 2008 using classical least square and concludes that those reforms have significant impacted on the financial market vis-à-vis banking development. This finding is supported by the analytical survey of the five major banking reforms from 1960 to 2010 and FD in Nigeria by Okafor (2011). Though, Okafor highlighted that the 1986 - 1999 reform could not achieve a desirable level of deepening due to 'banking liberalization policy thrust of the period which led to a proliferation of under-weight banks' (p.106).

Onwumere et al. (2012) used multiple regression estimation approach in investigating the financial development on Nigerian economic growth. The study finds significant positive impact by only broad money velocity and market liquidity out of the five variables regressed, but the long run relationship was not explored.

Balago (2014) explores the link between financial sector development and the economic growth by regressing real GDP against market capitalization, banking sector credits and FDI as ratios to GDP. The author used OLS, Johansen Co-integration, and vector error correction model (VECM) techniques on 1990 – 2009 data to test for short and long-run relationship between economic growth and financial industry development. The results of the study show: (a) a bi-directional trend between real GDP and the explanatory variables; (b) a long-run relationship between economic growth and financial development; and (c) financial sector development granger causes economic growth in Nigerian positive short- and long-run relation between. Balago's finding supports the financial intermediation or supply-leading hypothesis. However, Aye (2015) faults the use of standard Granger causality test in investigating long-run relation in financial depth and economic growth, because standard co-integration approach does not account for structural break and variation in time in financial system development-growth relation. The author used Boostrap Rolling Window Approach on 1961 to 2012 data range and found that financial development measured by ratio of M2 to GDP and growth measured by real GDP per capita bi-directional relationship at varying periods of the study.

From the finance literature, it seems more recent works concentrate or rather support supply-leading model of McKinnon-Shaw in negation to demand-following hypothesis of Robinson (1952). This study follows the supply-leading hypothesis.

III. Data And Model Specification

Data: The data for the analyses is drawn from the Central Bank of Nigeria 2013 Statistical Bulletin covering the period between 1981 and 2013. By characteristics, the data is annualised time series and is secondary in nature. The research method is *ex post facto* in design as the focus is on an event that occurred before the researcher arrived. This is neither a laboratory nor experimental research and as such, the researcher cannot doctor the outcome of the analyses.

Before the basic method of estimation is applied in the analyses, standard and basic descriptive statistics would be applied on the datasets to confirm their basic characteristics.

Model Specification: The study adopts the Engle-Granger Two-Way Residual Based Approach to model the relationship between economic growth and financial deepening in Nigeria for the period under study.

The proxy used for economic growth is gross domestic product (GDP) while financial deepening is proxied by four key variables namely money supply (M2), credit to private sector (CPS), the ratio of money supply to gross domestic product (M2/GDP), the ratio of credit to private sector to gross domestic product (CPS/GDP).

The Engle-Granger method involves the following steps:

The first step involves determining whether the datasets contain unit roots in the individual level series and that they are integrated of the same order; that is, they require the same number of differencing to attain stationarity. Unit root tests are used to determine whether time series exhibit mean-reverting behaviour. If sets of time series, such as GDP and CPS, M2, CPS/GDP, M2/GDP are 1(1) variables, then cointegration techniques can be used to model their long-run relationship. Philip and Peron (1988) test is used to examine the order of integration of GDP, CPS, M2, CPS/GDP and M2/GDP and it is estimated thus:

$\Delta Y_t = \alpha_o + \beta_t + \alpha_1 Y_{t-1} + \Sigma\, \delta_1 \Delta Y_{t-1} \ldots\ \delta n \Delta Y_{t-n} + \varepsilon_t$ ……..…….…… (1)

The null hypothesis is that Y_t contains unit root, which implies that $\alpha_1 = 1$, against the alternative that the series does not contain unit root, which implies that $\alpha_1 < 1$. The Philip-Peron test is preferred because it incorporates an automatic correction to the ADF test procedure to allow for autocorrelated residuals (Brooks, 2008).

If the computed absolute value of the coefficient of α_1 is less than the PP critical tau values, reject the null hypothesis that $\alpha_1 = 1$, (in which case Y_t does not contain unit root) otherwise, accept the null hypothesis (in which case Y_t contains unit root).

Once the order of integration of the series are confirmed usually I(I), we estimate the long-run relationships, i.e., run regression on level series of the dataset following the Classical Linear Regression Model (CLRM) and save the regression residuals. The CLRM shall follow equation (2) as stated below:

$GDP = \beta_o + \beta_1 M2 + \beta_2 CPS + \beta_3 CPSGDP + \beta_4 M2GDP + U_t$..... (2)

In order for the GDP and CPS, M2, CPS/GDP and M2/GDP to be cointegrated, the estimated residual from the equation (2) should be stationary (i.e., $\mu t \sim 1(0)$).

The residual-based unit root test (using PP test) is used to examine whether the residuals from equation (2) are stationary. If they are stationary, then the series are cointegrated. If the residuals are not stationary, there is no cointegration.

Rejecting the null hypothesis of a unit root, therefore, is evidence in favour of cointegration (Engle and Granger, 1987; Lee, 1993). Residual-based test is estimated as follows:

$\Delta\mu_t = \alpha_1 \mu_{t-1} + \varepsilon_t$ …… (3)

Where, $\Delta\mu_t$ are the estimated first differenced residual, μ_{t-1} are the estimated lagged residuals, α_1 is the parameter of interest representing slope of the line, ε_t are errors obtained from the regression.

The second step involves estimating an Error Correction Mechanism (ECM) by ordinary least square (OLS). The ECM is based on the assumption that two or more time series exhibit an equilibrium relation that determines both short-run and long-run behaviour. It therefore models both short-run and long-run relations jointly.

According to the Granger representation theorem, for any set of I(I) variables, error correction and cointegration are equal representations. In other words, if a number of variables, such as GDP and CPS, M2, GDP/M2, GDP/CPS are cointegrated there will be ECM relating the variables. The ECM which is a differenced model is estimated thus:

$\Delta GDP = \alpha_o + \alpha_1 \Delta CPS + \alpha_2 \Delta CPSGDP + \alpha_3 \Delta M2 + \alpha_4 \Delta M2GDP + \alpha_5 \mu_{t-1}$ ……..…… (4)

Where, Δ denotes the first difference operator, α_1 to α_4 are the coefficients of the parameter estimates, α_5 is coefficient of the one period lagged value of the error term from the cointegrating regression in equation (2).

The α_1 to α_4 measure the short-term effect of the regressors on GDP while α_5, which is the error correction term, captures the rate at which GDP adjusts to the equilibrium state after shocks arising from the explanatory variables (CPS, M2, CPS/GDP, M2/GDP). The coefficient of α_5 should be negative and statistically significant for the series to converge to long-run equilibrium. Negative and statistically significant α_5 coefficient is regarded as a convincing evidence for the existence of cointegration as shown in the cointegrating regression (Engle and Granger, 1987). More so, the size of α_5 is an indication of the speed of adjustment towards equilibrium. Small coefficient of α_5, tending to -1, indicate that the speed of adjustment is fast; while larger values tending to 0, indicate that adjustment is slow. Yet, positive values would imply that the series diverge from the long-run equilibrium path.

IV. Data Analyses And Interpretation

4.1 Data Presentation

The datasets for the empirical analyses of this study is presented in Table 1.

Table 1: Gross Domestic Product and Financial Deepening Indicators

Years	CPS	CPSGDP	GDP	M2	M2GDP
1981	8.570050	9.085659	94.32502	14.47117	15.34181
1982	10.66834	10.56154	101.0112	15.78674	15.62870
1983	11.66804	10.60114	110.0640	17.68793	16.07058
1984	12.46293	10.71876	116.2722	20.10594	17.29213
1985	13.07034	9.711546	134.5856	22.29924	16.56882
1986	15.24745	11.32769	134.6033	23.80640	17.68634
1987	21.08299	10.91669	193.1262	27.57358	14.27749
1988	27.32642	10.37865	263.2945	38.35680	14.56802
1989	30.40322	7.953513	382.2615	45.90288	12.00824
1990	33.54770	7.097808	472.6487	52.85702	11.18315
1991	41.35246	7.578257	545.6724	75.40118	13.81803
1992	58.12295	6.640023	875.3425	111.1123	12.69358
1993	127.1177	11.66560	1089.680	165.3387	15.17315
1994	143.4242	10.24676	1399.703	230.2926	16.45296
1995	180.0048	6.191351	2907.358	289.0911	9.943428
1996	238.5966	5.917133	4032.300	345.8540	8.577088
1997	316.2071	7.548060	4189.250	413.2801	9.865254
1998	351.9562	8.822173	3989.450	488.1458	12.23592
1999	431.1684	9.214550	4679.212	628.9522	13.44141
2000	530.3733	7.900013	6713.575	878.4573	13.08479
2001	764.9615	11.09412	6895.198	1269.322	18.40878
2002	930.4939	11.93590	7795.758	1505.964	19.31773
2003	1096.536	11.06101	9913.518	1952.921	19.69958
2004	1421.664	12.45864	11411.07	2131.819	18.68203
2005	1838.390	12.58233	14610.88	2637.913	18.05444
2006	2290.618	12.33864	18564.59	3797.909	20.45781
2007	3668.658	17.75960	20657.32	5127.401	24.82123
2008	6920.499	28.48372	24296.33	8008.204	32.96055
2009	9110.859	36.74587	24794.24	9419.922	37.99238
2010	10157.02	18.73823	54204.80	11034.94	20.35787
2011	10660.07	16.85158	63258.58	12172.49	19.24243
2012	14649.28	20.57872	71186.53	13895.39	19.51969
2013	15778.31	19.66827	80222.13	15158.62	18.89581

Source: Central Bank of Nigeria Statistical Bulletin 2013

Where, CPS = Credit to Private Sector, M2 = Broad Money Supply, CPS/GDP = ratio of credit to private sector to gross Domestic Product and M2/GDP = ratio of money supply to the gross domestic product.

4.2 Descriptive Statistics

Table 2: Basic Descriptive Statistics of GDP and FDI Indicators

	GDP	M2	CPS	CPS/GDP	M2/GDP
Mean	13340.44	2788.412	2481.507	12.43556	17.10064
Median	4032.300	413.2801	316.2071	10.71876	16.45296
Maximum	80222.13	15158.62	15778.31	36.74587	37.99238
Minimum	94.32502	14.47117	8.570050	5.917133	8.577088
Std. Dev.	21813.58	4510.011	4456.863	6.508278	5.984361
Skewness	1.997994	1.637805	1.884044	2.122531	1.717082
Kurtosis	5.789470	4.258938	5.234896	7.782131	6.831536
Jarque-Bera	32.65496	16.93251	26.39072	56.22284	36.40197
Probability	0.000000	0.000210	0.000002	0.000000	0.000000
Sum	440234.7	92017.59	81889.72	410.3736	564.3212
Sum Sq Dev.	1.52E+10	6.51E+08	6.36E+08	1355.446	1146.002
Observations	33	33	33	33	33

Source: Eviews 7 Computation by the Authors

Table 2 contains the basic measures of central tendency, spread and variations calculated on the level series of the dataset. Of particular interest is the Jacque-Bera (JB) statistics which is a test for normality. It is a combined test of a skewness(S) of zero (0) and a kurtosis (K) of three (3), which are signs of a mesokurtic distribution. In this case, however, the JB statistics shows that the variables are positively skewed and leptokurtic. The assumption of normality is rejected by the JB statistics, as well as the K and S figures. This, however, does not affect the goodness of the data for the estimation in this study as the kurtosis of all the variables are above 3 and the skewness above zero which is consistent with the properties of most financial time series (Brooks, 2008).

4.3 Tests for Stationarity

Table 3: Unit Root Tests for all the Variables

Variables	Philip Peron Stat	Order of Integration	Probability Value
GDP	-3.913163	I(1)	0.0054<0.05
CPS	-3.026784	I(1)	0.0434<0.05
M2	-5.963872	I(1)	0.0079<0.05
CPS/GDP	-9.869019	I(1)	0.0000<0.05
M2/GDP	-5.541311	I(1)	0.0004<0.05

Table 2 shows the results of the Philip-Peron Unit Root Tests of all the variables. The results are found to be integrated of the same order. At first difference, the p-values are found to be less than 5% which is the level of significance, and the Philip-Peron statistics are found to be more negative than the critical values. This is a precondition for the Engle and Granger residual based approach for cointegration tests. Having confirmed that the variables are integrated of the same order, the next step will be to run a cointegrating regression using all the variables on level series.

4.4 Tests for Cointegration

Table 3: The Cointegrating Regression

Dependent Variable: GDP				
Method: Least Squares				
Date: 09/21/15 Time: 22:05				
Sample: 1981 2013				
Included observations: 33				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9167.239	1214.121	7.550518	0.0000
CPSGDP	-1326.614	217.7587	-6.092131	0.0000
CPS	1.145892	0.708757	1.616762	0.1171
M2	4.843355	0.669303	7.236418	0.0000
M2GDP	252.7154	204.2847	1.237074	0.2263
R-squared	0.995383	Mean dependent var		13340.44
Adj. R-squared	0.994723	S.D. dependent var		21813.58
S.E. of regression	1584.550	Akaike info criterion		17.71272
Sum squared resid	70302372	Schwarz criterion		17.93946
Log likelihood	-287.2598	Hannan-Quinn Cret		17.78901
F-statistic	1509.114	Durbin-Watson stat		1.313585
Prob (F-statistic)	0.000000			

Table 3 contains the regression of all the variables at levels having confirmed that they are integrated of the same order. The real test for a cointegrating relationship is based on the unit root test results of the residual of the regression in Table 3. The result is presented in table …..:

Table 4: Residual Based Unit Root Test ($\Delta\mu_t = \alpha\mu_{t-1} + \epsilon_t$)

Variables	Crit. Value 10%	Crit. Value 5%	Crit. Value 1%	Test statistic
Residuals(μ_t)	-2.617434	-2.957110	-3.653730	-3.871384** (0.0058)

Lag length on ADF chosen by Akaike Criterion. **indicates significance at 1% level of significance and * indicates significance at 5% level.

It is clear from the results that we cannot reject cointegration (i.e. long-run relation) between GDP and all the financial deepening indicators.

From the residual-based unit root test performed on the residuals and presented in Table 4, it can be seen that the test statistic is more negative than the 1% and 5% critical tau (τ) value. Since the computed τ value is less than the conventional critical tau values, we reject the null hypothesis of no cointegration in favour of the alternative. This result, therefore, indicates evidence of long-term relationship between GDP and financial deepening in Nigeria. The speed of this pre-shock adjustment will however depend on error correction mechanism.

4.4 Estimating the Error Correction Mechanism (ECM)

Table 5: Error Correction Model

Dependent Variable: D(GDP)
Method: Least Squares
Date: 09/21/15 Time: 22:28
Sample (adjusted): 1982 2013
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	205.3434	310.3393	0.661674	0.5140
D(CPSGDP)	-988.2276	208.4737	-4.740298	0.0001
D(CPS)	0.580836	0.710155	0.817900	0.4208
D(M2)	4.921372	0.844115	5.830212	0.0000
D(M2GDP)	-45.42917	203.3345	-0.223421	0.8250
ECT(-1)	-0.557470	0.185869	-2.999257	0.0059

R-squared	0.943307	Mean dependent var	2503.994
Adjd R-squared	0.932404	S.D. dependent var	5537.623
S.E. of regression	1439.736	Akaike info criterion	17.54967
Sum squared resid	53893867	Schwarz criterion	17.82449
Log likelihood	-274.7947	Hannan-Quinn criter.	17.64077
F-statistic	86.52179	Durbin-Watson stat	1.725426
Prob (F-statistic)	0.000000		

Table 5 presents the results of the ECM. The model of the ECM is of the form of equation 3 and the estimates of the short-run and long-run movements, as well as the error correction term, which proxies speed of adjustment, are provided in Table 5. The Table also shows useful long-run information. The equilibrium adjustment coefficient (-0.557470) enters with a correct sign (negative). This suggests that GDP and financial deepening series converge to long-run equilibrium; deviations from this equilibrium relation as a result of shocks will be corrected over time. It can also be observed that the coefficient of the ECT(-1) tends to 1, indicating that the speed of adjustment to equilibrium is fast. It follows that about 56% of the deviation from equilibrium path is corrected per annum. The ECM results, therefore, confirm the long-run relationship between GDP and financial deepening indicators observed from the residuals of equation 2.

V. Conclusion

This paper analyses the relationship between financial deepening and economic growth. The economic motivation being the desire to find out the extent to which the depth of the financial system impacts on economic growth. GDP was used as a proxy for economic growth. A review of empirical and theoretical basis for the work was done. The research methodology concentrated on the use of the Engel and Engle-Granger two steps cointegration method.

The analyses of residuals from our cointegrating regression indicate evidence of cointegration between financial deepening and economic growth. Similarly, estimates from the error correction model provide evidence to show that financial deepening indicators and GDP series converge to a long run cointegrating equilibrium at a reasonably fast rate. The ECM results also show that short-run changes in financial deepening have a positive and statistically significant impact on short-run changes in GDP.

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