

The Impact of the Banking Sector and Stock Market on Economic Growth

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Abstract

This paper examines the impact of the financial system; the banking sector development and the stock market development on economic growth in 17 selected African countries from 1980-2017. The paper employs the panel auto-regressive distributed lag (ARDL) with the pooled mean group (PMG) estimator to explore the short and long-run relationship among the variables. The empirical findings reveal the existence of cointegration among the variables and show that stock market capitalization; a measure of the stock market development has a significant long-run relationship with economic growth and this supports the claims of (Arestis *et al.*, 2001) that stock market capitalization is statistically important and positively correlated with economic growth. FDI also has a significant long-run relationship with economic growth. Bank credit, an indicator of the banking sector development has a significant short-run relationship with economic growth. This study suggests that African countries should ameliorate the credit allocation process by privatizing national banks, tightening credit management, and increase competition in the banking sector. Measures should also be put in place to minimize excessive volatility in stock prices which would allow the stock markets in the African countries to stimulate economic growth.

Keywords: panel autoregressive distributed lag (ARDL), stock market development, banking sector development, pooled mean group (PMG), economic growth.

JEL Classification: G21, O16, C33, O47

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1. Introduction

The relationship between economic growth and the financial system, whose constituents are the stock markets and the banking sector, has generated significant deliberation for years (e.g. Beck and Levine, 2004; Goldsmith, 1969; Levine, 1991; Schumpeter, 1912). Although numerous studies are examining this relationship, there is no consensus on the effect of the financial system on economic growth.

Studies from (Beck and Levine, 2002) show inconsistent predictions about the impact of the financial system on growth and the separate effects of stock markets and banks on economic growth. While models from (Bencivenga *et al.*, 1995); (King and Levine, 1993a); (McKinnon, 1973); (Shaw, 1973) emphasize that a well-functioning financial sector promotes long-run growth, Studies of (Meier and Seers, 1984); (Joan Robinson, 1952) disagree about the role of the financial sector on economic growth and conclude that financial development does not impact growth. Models from (Allen and Gale, 2000) also highlight that markets mitigate the inefficient monopoly power exercised by banks and stress that markets encourage growth (Stiglitz, 1985) and (Bhide, 1993) accentuate that stock markets do not cause growth as banks do. Research from (Huybens and Smith, 1999) and (Demirguc-Kunt and Levine, 2001) also emphasize that it is not banks or markets, it is banks and markets; these different components of the financial system enhance the effects of information and transaction costs.

The economic performances of African countries have attracted considerable attention in recent years with terms such as ‘appalling’ used to describe the low rates of economic growth experienced in these countries from the 1980s to date. Thus, past studies do not offer a simple and satisfactory discussion to explain the influence of the financial system on economic growth, so these studies suffer from various limitations. Most previous literature over-relied on the financial development indicators giving the stock market proxies less attention, where these studies were undertaken, the results came out inconclusive, (Levine & Zervos, 1996); (Akinlo & Akinlo, 2009). Also, the majority of past studies mainly based their research on the relationship between financial development and economic growth, only a few studies captured the relationship of both the financial development and the stock market on economic growth. Very few empirical studies in Africa focused on the effect of the financial system; the banks and the stock market on economic growth using panel data. Most researchers overemphasized cross-sectional data and time series, which might have failed to adequately resolve country-specific issues (Ghirmay, 2004).

To address these constraints, this paper examines the impact of the banking sector development and the stock market development on economic growth using panel data from 17 African countries. This study contributes to literature by employing the panel ARDL model with the PMG estimator to explore the long and short-run relationship among the variables. The fact that few African countries are included in empirical studies using time-series and cross-section data, there is no concurrence in the findings. This may be because these countries have

different levels of financial and economic development. The PMG estimator is capable of integrating cross-sectional data and tolerating data heterogeneity. The empirical results reveal that bank credit has a significant short-run relationship with economic and stock market capitalization and FDI has a positive and significant relationship with economic growth.

This study is organized as follows. The second section provides an overview of the recent empirical investigation about the topic and other models developed by other researchers with their uses and shortcomings. Section three (3) discusses the data used in the empirical study as well as the econometric modeling. Section four (4) presents the empirical results and discussion and Section five (5) the concluding remarks.

2. Related Literature

In the finance-growth literature, the relationship between the financial sector and economic growth has gotten a lot of attention, and it's generally accepted that the banking sector is positively correlated with economic growth. However, there have been conflicting conclusions since most studies confirm the existence of a positive association between banking sector development and economic growth and other studies also found the connection between the banking sector's development and economic growth to be negative.

Previous literature that examines the relationship between the financial development (banking sector) and economic growth includes (King and Levine 1993a, b); (Levine, Loayza and Beck, 2000); (Khan and Senhadji, 2003); (Karbo and Adamu, 2011) and (Agbetsiafa, 2003). All these studies found a positive and important association between financial development and economic growth except (Arcand *et al.*, 2012); (Koetter and Wedow, 2010); Cecchetti and Kharroubi, 2012) who found a negative connection between financial development and economic growth.

(Khan and Senhadji, 2003) used cross-section data analysis for 159 countries from 1960 to 1999 to investigate the relationship between financial development and economic growth using the two-stage least squares process (2SLS). Financial development has a positive and statistically important impact on economic growth, according to the findings of their research.

To explore the connection between financial development and economic growth in Sierra Leone using data from 1970 to 2008, (Karbo and Adamu, 2011) used the principle of components approach to create an index for financial development and an autoregressive distributed Lag (ARDL) model. Financial development has a strong and statistically important effect on economic growth, according to their findings.

In eight Sub-Saharan African countries, (Agbetsiafa, 2003) analyzed the long-run equilibrium and causal connection between financial development and economic development. Their test results indicated the evidence of a long-run relationship between financial development and economic growth in all eight countries, using several indicators of financial development like the ratio of broad money to GDP, the ratio of bank deposit liabilities to GDP, the ratio of claims on the private sector to GDP, the share of private sector credits in domestic credit, and the ratio of domestic credit to GDP.

The long-run relationship between financial depth and economic growth was investigated by (Christopoulos and Tsianos, 2004). Applying the panel unit root tests and panel cointegration method, the empirical findings provide strong evidence that a single equilibrium relationship exists between financial depth, growth and the only cointegrating relationship implies one-way directional causality from financial depth to growth.

Kiran *et al.*, in 2009 applied the panel data analysis and the Fully Modified OLS (FMOLS) to find out the association between financial development and economic growth in ten developing countries from 1968 to 2007. The researchers used the ratios of liquid liabilities to GDP, bank credit relative to GDP and private sector credit as a share of GDP as proxies of financial development. The researchers found financial development has a positive and important influence on economic growth.

The findings of (Koetter and Wedow, 2010) who used a sample of 97 German economic planning regions to explore the relationship between the quality of financial development (banking sector) measured by cost efficiency and economic growth, contradict the conclusions drawn in recent literature that confirms the positive impact of financial development on economic growth. They argue that the quality of financial development leads to economic growth, while credit volume, a proxy for growth is unrelated. Their findings suggest that better credit is needed for economic development, but not necessarily more credit.

Although some researchers have found a connection between stock market growth and economic growth, others have claimed that stock markets are insignificant sources of economic growth. Although some economists have stressed the importance of capital markets in economic growth, empirical evidence on the relationship between stock market development and economic growth is minimal and inconclusive. Researches that have looked into the relationship between stock market development and economic growth include (Levine and Zervos, 1996); (Akinlo and Akinlo, 2009); (Bernard and Austin, 2011); (Ujunwa and Salami, 2010); (Nurudeen, 2009); (Van Nieuwerburgh *et al.*, 2006) among others.

Using stock market capitalization, the total value of stocks traded, and turnover ratio as indicators for stock market development, (Levine and Zervos, 1996) investigated the relationship between stock market development

and long-run economic growth in 41 countries. The findings indicated that stock market development is a good and positive predictor of long-term economic growth.

The long-term relationship between stock market development and economic development in Belgium was examined by (Van Nieuwerburgh et al., 2006). They found strong evidence that the development of the stock market contributed to economic growth in Belgium between the period 1873 and 1914.

Nurudeen, (2009) used an error correction method to see whether stock market development in Nigeria boosts economic growth. According to the econometric findings, stock market development, as calculated by market capitalization, spurs economic growth. Using the ARDL bounds test, (Akinlo and Akinlo, 2009) looked at the long-run relationship between stock market development and economic growth in 7 Sub-Saharan African countries. The study's findings showed that stock market growth has a major and long-term positive effect on economic growth.

When (Ujunwa and Salami, 2010) looked at the effect of stock market development on long-run economic growth in Nigeria, they discovered a positive relationship when the stock market size and turnover ratio were used as proxies. When stock market liquidity was used as a proxy for stock market development, they discovered evidence of a negative relationship between stock market development and economic growth. Using market capitalization and value traded ratios as indicators for stock market development, (Bernard and Austin, 2011) discovered a negative relationship between stock market development and economic growth in Nigeria.

Since research on the finance-growth relationship has received a lot of attention, more studies have been dedicated to banks, stock markets and economic growth in particular because work on growth through stock market development has been limited. (Atje and Jovanovic, 1993) conducted an empirical study that examines the effect of the stock market and bank development on subsequent economic growth in 40 countries from 1980 to 1988. They discover a significant influence of stock market growth on subsequent development, as measured by the value traded divided by GDP, but no such effect for bank credit.

Hondroyannis et al., (2005) analyzed the connection between the growth of the banking system and financial markets, as well as economic performance, in Greece from 1986 to 1999. The empirical findings show that, although their effects are limited, both bank and stock market development can foster economic growth in the long run.

Rousseau and Wachtel, (2000) show that growth in the banking sector and stock markets are explained by rapid growth by using panel techniques with annual data to evaluate the relationship between stock markets, banks and economic growth.

3. Data and Methodology

3.1 Data Sample and Sources

This study selected 17 African countries due to data constraints and uses annual panel data from 1980 to 2017 of some selected indicators from the world bank development indicator (WDI) and the Global Financial Development Database (GFDD). The variables of interest include real per capita GDP, a proxy for economic growth as the dependent variable, measures of the financial system; banking sector development (BSD) and stock market development (SMD) and a variable to measure the degree of financial openness of an economy as the explanatory variables. For banking system development, we used bank credit to bank deposit and liquid liabilities. In measuring stock market development, we used turnover ratio and stock market capitalization. The ratio of FDI (net inflows) as a percentage of GDP was used as a proxy for the degree of financial openness in this study.

3.2 Model Specification

To assess the relationship between banking sector development, stock market development and economic growth in a panel, and although several issues remain to be resolved as to whether there is a single estimator that is appropriate for all dynamic heterogeneous panel problems, the Pooled Mean Group (PMG) estimator developed by (Pesaran et al., 1999) was employed in this paper.

The PMG estimator was applied to detect the long and short-run relationship between the financial systems and economic growth and also to investigate the possibly heterogeneous dynamic issue across countries, the pertinent technique to be used in the analysis of dynamic panels is Autoregressive distributed lag ARDL (p, q) model in the error correction form. The basic assumptions of the PMG estimator are; the error terms are serially uncorrelated and are distributed independently of the regressors, the PMG estimator imposes homogeneity in the long-run coefficients and allows heterogeneity in the short-run coefficients and error variances.

The econometric model used in this study is presented below in equation (1) and (2) as (Pesaran et al., 1999) and (Blackburne & Frank, 2007); Suppose the generalized Autoregressive distributive lag (ARDL) (p, q, q... q) is estimated in a model,

$$Y_{it} = \sum_{j=1}^p \delta_{ij} Y_{i,t-j} + \sum_{j=0}^q \beta'_{ij} X_{i,t-j} + \eta_i + e_{it} \quad (1)$$

where Y_{it} denotes the dependent variables for group i and X_{ij} ($k \times 1$) is the vector explanatory variables for

group i , β'_{ij} are $(k \times 1)$ coefficient vectors, δ_{ij} represent the coefficients of the lagged dependent variables which are scalars, groups are denoted by $i = 1, 2, \dots, N$, time period by $t = 1, 2, \dots, T$, whereas η_i represents the fixed effects and e_{it} the error term. At time period, p denotes across groups and q denotes across groups and regressors used in this equation, similarly, time trends or other types of fixed regressors, such as seasonal dummies, can also be included in (1).

If the variables in (1) are differentiated at the first order I (1) and cointegrated, then the error term is differentiated at the zero-order I (0) process for all i . A major attribute of cointegrated variables is their responsiveness to any deviation from the long-run equilibrium. This attribute implies an error correction model in which the short-run cointegrations of the variables in the system are influenced by the deviation from equilibrium. Therefore, it is common to reparametrize equation (1) into the error correction equation;

$$\Delta Y_{it} = \theta_i [Y_{i,t-1} - \lambda'_i X_{it}] + \sum_{j=1}^{p-1} \delta^*_{ij} \Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \beta'^*_{ij} \Delta X_{i,t-j} + \eta_{it} + e_{it} \quad (2)$$

where $\Delta Y_{it} = Y_{it} - Y_{i,t-1}$, $\theta_i = -1(-\sum_{j=1}^p \delta_{ij})$ which is the group-specific speed of adjustment coefficient, $\lambda_i = \sum_{j=0}^q \beta_{ij} / (1 - \sum_k \lambda_{ik})$ denoting vector of long-run relationships, $\beta^*_{ij} = -\sum_{m=j+1}^p \beta_{im}$ where $j = 1, 2, \dots, p-1$ and $\delta^*_{ij} = -\sum_{m=j+1}^q \delta_{im}$ where $j = 1, 2, \dots, q-1$ representing the short-run coefficients and $[Y_{i,t-1} - \lambda'_i X_{it}] =$ the Error Correction Term. The parameter θ_i is the error-correcting speed of adjustment term. If $\theta_i = 0$, then there would be no evidence for a long-run relationship. Under the prior assumption that the variables have returned to long-run equilibrium, this parameter should be negatively significant. The vector θ'_i , which contains the long-run relationships between the variables is particularly important.

3.3 Econometric Methods

3.3.1 Cross-section Dependence Test

The test for cross-section dependence is essential in Panel ARDL because of the assumption of the PMG estimator that the error terms are serially uncorrelated and distributed independently of the regressors. Since the type of panel data employed in this study is $T > N$, this allows the accurate panel unit roots test to be chosen. If the panel data models have a short cross-section and a long time series dimension, the typical approach is to use seemingly unrelated regression equations (SURE) and then estimate it using Generalized Least Squares techniques (Zellner, 1962). For a null hypothesis of no cross-section dependence in residuals, we reject the null hypothesis if the P-value < 0.05 and accept otherwise.

3.3.2 Panel unit root Test

The variables were tested for stationarity before any analysis was performed. we used the first-generation test of the panel unit root of Im et al. (2003, IPS) in this study. These tests are less restrictive and solve Levin and Lin's serial correlation problem by assuming heterogeneity between units in a dynamic panel framework and the IPS statistic is based on averaging individual Augmented Dickey-Fuller (ADF) statistics.

3.3.3 Optimal lag length selection

This study applied the BIC selection criterion to evaluate the lag length with the maximum lag order because empirical work with dynamic panel models relies on the choice of lag order and since this study used annual panel data the number of lags is 1 or 2 lags in order not to lose degrees of freedom.

3.3.4 Panel cointegration tests

Once the panel unit root has been determined, the long-run equilibrium relationship between the variables is examined. For this purpose, we applied Pedroni and Kao's cointegration test because it is useful for several cross-sectional dimensions that are increasing and also enables heterogeneity in cross-sectional units (as opposed to simply pooling the data).

3.3.5 Deciding the estimator through the Hausman test

Following the (Pesaran et al., 1999) empirical technique, this study uses Equation (2) as the empirical model to obtain three estimates using the Pooled Mean Group, the Mean Group and the Dynamic Fixed Effect estimators. To differentiate between the PMG, MG, and DFE, we use the Hausman test to see whether there are any significant differences between them. While it is well recognized that PMG and MG are both consistent, PMG is more efficient when long-term homogeneity is presumed. As a result, we test the null hypothesis that the difference between PMG and MG is not significant, as well as the null hypothesis that the difference between PMG and DFE is not significant, to determine which estimator is the most appropriate.

3.3.6 Causality tests

This study inferred causality from the coefficients of the PMG model since causality can primarily be inferred from the coefficients of the variables, the Granger/Wald causality test and the pairwise Granger causality test.

Using the coefficients of the PMG model, the short-run causal effect was inferred from the short-run coefficients and the t-statistics of the regressors, Long-run causality was also inferred from the long-run coefficients and for joint causality, it was inferred from the ECT coefficient.

4. Empirical Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics with the main variables of this study is presented in Table I. There is a wide variation between the banking sector and stock market development across the sample. These statistics are generated to give an overall interpretation of the data used in the model.

4.2 Cross-sectional Dependency

The cross-section dependency results are shown in Table II. Using the Breusch-Pagan LM test, the result shown rejects the null hypothesis of no cross-section dependence in residuals and concludes the existence of cross-section dependence in the residuals of the study. Correcting the cross-section dependence makes the residuals or error variances differ across the groups in the dataset of the study, this validates one of the assumptions of the PMG estimator. The result of the correction of cross-section dependence is presented in Table III. The null hypothesis of no cross-section dependence is rejected because the p-value obtained shows the BP test is insignificant and is < 0.05 so we conclude there is no cross-section dependence and the error variances in the dataset are heterogeneous.

4.3 Panel unit root test

Table IV shows the results of the panel unit root tests using the Im, Pesaran & Shin (IPS) unit root test which assumes that the slopes are heterogeneous. The results indicate that all the variables in this study are stationary at level, $I(0)$ with constant and a lag at 1 percent significance level except liquid liabilities, an indicator of the banking sector and stock market capitalization, a measure of the stock market but these variables were stationary at $I(1)$ and also significant at 1% significance level.

4.4 Optimal lag selection

Choosing the appropriate lag length is relevant in this study, so we employed Stata's default information criterion to help choose the minimum lag length. We simply chose the most common lag for each variable across the 17 countries to represent the lags for the model. Table V shows the minimum optimal lag length for the model in this study.

4.5 Panel cointegration tests by Pedroni and Kao

The results of the co-integration tests of Pedroni and Kao are shown in Table VI and Table VII. The decision criteria being that if the p-value < 0.05 , we reject H_0 and accept H_a . Since all the three different tests under Pedroni jointly and significantly reject the null hypothesis of no cointegration at 1% level, we conclude that there is cointegration among the panels of all countries and for the study. Using the same decision criteria as Pedroni, all the tests under Kao jointly and significantly also reject the null hypothesis of no cointegration at 1% level so the deduction was, cointegration is present between the variables in this study.

4.6 Hausman tests

The results of the Hausman test distinguishes among the PMG, MG and DFE estimation methods and determines the best method suitable to achieve consistency and efficiency for the dataset in this study. The null hypothesis when comparing the PMG and MG estimators state that MG and PMG are not significantly different and the PMG is more efficient with the decision criteria saying if the p-value is > 0.05 , H_0 is not rejected and vice-versa. Table VIII shows the test results and the P-value of 0.8570 is > 0.05 , so we fail to reject the H_0 and conclude that the PMG estimator is more appropriate to use. When comparing the PMG and DFE estimators, the null hypothesis of no difference between the DFE and PMG estimator is also not rejected with the p-value of 0.7718 being > 0.05 , so we conclude that the PMG estimator is the most accurate estimator to be employed in this study.

4.7 Estimating the Panel ADRL model using Pooled Mean Group

Table IX shows the PMG estimation for this study and the results show that in the short run, a sustainable relationship exists between bank credit and economic growth in all the 17 countries selected in this study. Bank credit is positive and statistically significant at a 10% significance level; with a coefficient of 0.1447, a unit increase in bank credit to the private sector will increase economic growth to about 14.5%. The measures of the Stock market development; market capitalization and turnover ratio also have no contributory effect on growth in the short run. This may be because most of the markets in African countries were recently established and some are still small in size making them unattractive to foreign investors. Also, excessive stock-market impulse trading might be one of the reasons for no impact of the stock market indicators in the short run. FDI also has a positive

but insignificant impact on economic growth in the short run.

The long run analysis of the PMG estimator reveals that stock market capitalization which is a measure of the stock market has a positive and minor significant impact on real per capita GDP (Economic growth) at a 10% significance level. Having a positive coefficient of 0.0146, a 1% increase in market capitalization will increase economic growth by almost 2 percent. This result is consistent with the research of (Arestis *et al.*, 2001) which claims that stock market capitalization is statistically significant and positively correlated to economic growth. On the other hand, this study results impugn the models of (Stiglitz, 1985) and (Bhide, 1993) that the stock market does not provoke growth. The other measure of the stock market development, the turnover ratio has no impact on growth in the long run but is positively correlated to 0.0158% growth. FDI in the long run also has a positive impact on economic growth at a 1% significance level. It has a coefficient of 0.2758 inferring that a unit increase in the net inflows of foreign investors will increase economic growth by 28% significantly. This finding agrees with studies by (Liu *et al.*, 2002) that a long-term relationship exists between growth and FDI in a co-integration framework.

The measures of the banking sector, liquid liabilities and bank credit to the private sector have no long-run impact on economic growth but have a negative correlation with growth. Reasons for such results could be the outcome of numerous banking crises caused by a large proportion of non-performing loans (and thus unsustainable credit growth) in most of these countries. Also, due to the high level of risk, banks are not highly interested in lending to the production sector of the economy. This is consistent with the study by (Lucas, 1988) and (Adusei, 2012) that financial sector development plays a limited role in economic growth.

The error correction term provides evidence of a long-run cointegration between the variables in the panel. From the same table, the ECT is negative and statistically significant at a 1% significance level. With the coefficient of -0.9581(ECT), any deviation from the long-run equilibrium will be corrected at a 95.8 percent adjustment speed.

4.8 Causality Tests

We inferred causality from the coefficients of the regressors in Table IX and the results, market capitalization shows a long-run causal impact on economic growth at the 10% significance level, FDI also exhibits a long-run causal effect on economic growth at the 1% significance level. Bank credit reveals a short-run causal impact on economic growth at the 10% significance level and all the variables together have an effect on the dependent variable; economic growth at the 1% significance level in the long run.

4.7 Diagnostic Tests

We used diagnostic tests in this study to validate the model's robustness. The model passes all diagnostic tests for serial correlation, functional structure, normality, and heteroscedasticity, as shown in Table X.

5. Conclusion

This study aims to estimate the impact of the financial system, which includes the development of the banking sector, the development of stock markets and FDI on economic growth, using data in 17 selected African countries from 1980 to 2017.

The paper employs panel ARDL with the PMG estimator to explore the short and long-run relationship among the variables, the empirical findings revealed evidence of cointegration between the financial system variables, FDI and economic growth. It also demonstrates that stock market capitalization, which is a measure of stock market development, has a favorable and long-run relationship with economic growth. The results also show that FDI has a positive and important impact on growth in the long run. The measures of the banking sector development have no long-run impact on economic growth. Only bank credit, a measure of the banking sector, is positive and significant to economic growth in the short run. All other variables, such as the stock market measures, FDI, and the other banking sector measure have no short-run impact on economic growth. These results imply that in all 17 African countries, both the banking sector and the stock market contribute to economic growth, according to the expectation of this study.

For policy implications, some suggestions were made based on the findings. Unsurprisingly, improvement in the financial system's performance in the African region is critical to boosting economic growth. African countries should ameliorate the credit allocation process by privatizing national banks, tightening credit management, and increasing competition in the banking sector. This will increase the productivity of the banking sector, which has played an important role as a catalyst of growth (Levine, 1997). Monetary policymakers should set a threshold interest rate to help stabilize money supply in the economy, this is because this study finds no impact of money supply on economic growth in the long and short run. Multilateral lenders can act as catalysts in addressing the impediments to market growth and as partners in developing market infrastructure for African countries seeking to develop their domestic markets. Rather than looking at the size and duration these markets have been in existence, measures should be put in place to minimize excessive volatility in stock prices, allowing stock markets

on the African continent to stimulate economic growth.

A proper private sector development will stimulate economic growth through public-private sector collaborations, improving both the financial and non-financial infrastructure of the countries, creating an enabling investment environment for indigenous enterprises to flourish as well as the influx of foreign direct investment. Finally, it should be noted that neither the banking sector nor the stock market alone is likely to foster continued and sustainable economic growth in these emerging countries; rather, a combination of both sectors, as well as other macroeconomic indicators, will stimulate economic growth.

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APPENDIX

TABLES

Table I: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
Real per capita GDP	633	1.65	4.14	-18.491	18.066	-.51	6.343
Liq. liabilities	623	33.97	28.956	.026	450.395	5.319	70.329
Bank credit	628	77.901	33.214	8.043	234.549	1.143	5.757
Stock Mkt. cap.	393	35.894	52.756	.39	328.361	2.84	11.648
Stock turnover	388	10.087	16.76	.009	205.443	6.009	57.484
FDI	628	2.194	2.303	-6.898	10.912	1.255	5.032

Source: Author's Calculations

Table II: Residual Cross-Section Dependence Test

Test	Statistic	d.f.	Prob. Value
Breusch-Pagan LM	216.2127	136	0.0000 ***
Pesaran scaled LM	4.863607		0.0000 ***
Pesaran CD	5.134243		0.0000 ***

Note: *** represent 1% significance level;

d.f. represents degrees of freedom

Source: Author's calculations

Table III: Residual Cross-Section Dependence Test After Correction

Test	Statistic	d.f.	Prob. Value
Breusch-Pagan LM	79.59059	136	1.0000

Source: Author's calculations

Table IV: Unit Root Test – Im, Pesaran and Shin (IPS)

Variables	W-t- bar Stat.	P-value	Level	1 st Difference
Real pc GDP	-8.1843	0.000***	Stationary	NA
Liq. liabilities	0.64(-10.62) *	0.7383(0.000) *	Not Stationary	Stationary
Bank credit	-5.072	0.000***	Stationary	NA
Stk.-mt cap.	-1.50(-8.531) *	0.067(0.000) *	Not Stationary	Stationary
Turn over	-2.649	0.004 ***	Stationary	NA
FDI	-5.289	0.000***	Stationary	NA

Note: *= test statistic and p-value for 1st Difference

***= significance at 1% level

**= significance at 5% level

Source: Author's Calculations

Table V: Optimal Lag Selection

Variables	Lags
Real pc GDP	1
Liq. liabilities	0
Bank credit	0
Stk.-mt cap.	0
Turnover ratio	0
FDI	0

Source: Author's Calculation

Table VI: Pedroni's cointegration test

Pedroni		
	Test Statistic	P-value
Modified Phillips-Perron t	-5.6448	0.0000***
Phillips-Perron t	-13.7025	0.0000***
Augmented Dickey-Fuller t	-12.1766	0.0000***

Ho: No cointegration

Ha: All panels are cointegrated

***, **, * denotes 1%, 5%, 10% significance levels respectively

Source: Author's Calculations

Table VII: Kao's cointegration test

Kao		
	Test Statistic	P-value
Modified Dickey-Fuller t	-12.1886	0.0000***
Dickey-Fuller t	-9.6859	0.0000***
Augmented Dickey-Fuller t	-4.0073	0.0000***
Unadjusted modified Dickey-Fuller t	-15.8386	0.0000***
Unadjusted Dickey-Fuller t	-10.2867	0.0000***

Ho: No cointegration

Ha: All panels are cointegrated

***, **, * denotes 1%, 5%, 10% significance levels respectively

Source: Author's Calculations

Table VIII: Panel ARDL Estimation for the African Continent

	Pooled Mean Group		Mean Group		Dynamic Fixed Effects	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Long-run Coefficients						
Liq. liabilities	-.0204	.0132	-.0999	.1137	-.0104	.0136
Bank credit	-.0032	.0074	.0190	.0292	-.0042	.0157
Mkt. cap.	.0146*	.0078	.0628	.0533	-.0119	.0095
Turnover ratio	.0158	.0146	.0157	.1297	.0107	.0192
FDI	.2758***	.0807	.1783	.2299	.2816*	.1530
Error Corr. Term						
Error Corr. Term	-.9581***	.1221	-1.2970***	.1536	-.7740***	.0558
Short-run Coefficients						
D1. Liq. liabilities	.2286	.3308	-.1194	.2510	-.0004	.0081
D1. Bank deposits	.1447*	.0755	.0578	.0801	.0149	.0289
D1. Mkt. cap.	.0365	.0402	.0387	.0333	.0118	.0123
D1. Turnover ratio	-.0095	.0979	.0212	.1111	-.0048	.0147
D1. FDI	.0586	.1156	.0565	.1630	.0041	.1035
Constant	1.6390	.6847	3.5116	4.0123	1.8853	1.1729
Hausman Tests						
Hausman Tests			0.8570 ⁽ⁱ⁾ (1.94)		0.7718 ⁽ⁱⁱ⁾ (2.53)	
Observations	363		363		363	

Notes: ***, **, * denotes 1%, 5% and 10% significance level

⁽ⁱ⁾ H_0 : MG & PMG estimates are not significantly different. PMG is more efficient.

H_a : H_0 is not true

⁽ⁱⁱ⁾ H_0 : DFE & PMG estimates are not significantly different. PMG is more efficient

Estimations are done using the (xtpmg) in Stata. ECT- the speed of adjustment

Source: Author's estimation

Table IX: Panel ARDL Estimation for the Study

Pooled Mean Group Estimation			
	Coefficients	z-Statistic	P-value
Long-run Coefficients			
Liq. Liabilities	-.0204	-1.54	0.123
Bank credit	-.0032	-0.43	0.666
Mkt. cap	.0146	1.86	0.062*
Turnover ratio	.0158	1.08	0.280
FDI	.2758	3.42	0.001***
Error Correction Term	-.9581	-7.84	0.000***
Short-run Coefficients			
D1. Liq. Liabilities	.2286	0.69	0.490
D1. Bank credit	.1447	1.92	0.055*
D1. Mkt. cap	.0365	0.91	0.363
D1. Turnover ratio	-.0095	-0.10	0.923
D1. FDI	.0586	0.51	0.612
Constant	1.6390	2.39	0.017
Observations	363		

Notes: ***, **, * denotes 1%, 5% and 10% significance level. Results obtained done using Stata.

Source: Author's estimation using Stata 15.

Table X: Diagnostic Tests for the model

Tests	Test Statistics	Results/P-value
A: F-statistics	5.87	0.0000
B: Durbin-Watson	-	1.414231
C: Ramsey RESET	1.218365	0.2239
D: Breusch-Pagan heteroskedasticity test	79.59059	1.0000

A: F-statistics using F-test to verify the overall significance of the model

B: DW test for residual autocorrelation

C: Ramsey RESET test the presence of omitted variable biasedness

D: B-P test for heteroscedasticity in the residuals or error variances in the model

Source: Author's calculation