THE EFFECTS OF FINANCIAL INCLUSION ON EXTERNAL DEBT IN AFRICA

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Abstract
This study investigates the effect of financial inclusion on external debt in Nigeria, South Africa, Kenya, and Egypt, using annual time series data from 1990 to 2020. The data was sourced from the World Bank. The variables used in the study are market capitalization of listed domestic companies as a percentage of GDP, external debt stock, current account balance as a percentage of GDP, broad money (M3) as a percentage of GDP, and gross fixed capital formation as a percentage of GDP. The unit root test for stationarity was done using Augmented Dickey Fuller unit root test. The result of the unit root test informed the choice of Long Run Form and Bounds test, and Johansen Cointegration techniques for investigating long run relationships. The result showed the presence of a long run relationship between financial inclusion and external debt for Nigeria, South Africa, Kenya, and Egypt. The result also showed a positive relationship between financial inclusion and external debt. This is because a strong financial system will increase access to external debt because of good credit ratings. Granger causality results showed unidirectional causality from financial inclusion to external debt for only Nigeria and South Africa. More success in economic development can be achieved by focusing on financial inclusion strategies in Africa which would translate into numerous outcomes which include increasing domestic resources and increasing access to external debt with market competitive interest rates.

Keywords: External Debt, Financial Inclusion, Capital Market, Economic Development.

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1. Introduction

Resource mobilization refers to all the activities the government engages in to secure resources for positioning the economy on the path to sustainable development (Seltzer, 2014). Domestic resource mobilization is associated with faster economic growth, economic self-reliance, and increased social justice (Raipuria, 1991). Domestic resource mobilization provides countries with the needed resources to fund their own developmental needs without heavy reliance on external financing (USAID, 2019). Beyond the traditional tax system for resource mobilization, other forms of formal domestic resource mobilization often grouped under financial inclusion have evolved. Financial inclusion extends to banking services, insurance, pensions, and securities (Babajide, Adegboye, & Omankhanlen, 2015).

Financial inclusion is defined as the obtainability and ease of access to basic formal financial services for all members of the population (Ozili, 2020). Financial inclusion means that individuals and businesses have access to useful and affordable formal financial services that meet their needs responsibly and sustainably (Ozili, 2021). Financial inclusion is a process where financial services are conveyed through intermediaries, primarily existent in the non-government sector, to avail all and sundry who might need them. Precisely, it refers to a financial system that is accessible to the largest possible section of the population in an economy (Kama & Adigun, 2013).

The understanding of financial inclusion usually points towards individuals and households; however, the inclusion of firms is as important for the economy as the inclusion of households and individuals. The financial inclusion of firms is not so different from that of individuals because the products and services to be used are usually the same, however, it is the process and results that differ. For example, banking and insurance services are the same for individuals and firms and as offers, savings, credit and indemnity. However, the participation of firms and individuals in terms of pension is different because the role of the firm is limited to remittance while the individual enjoys the benefit. As for the capital market, inclusion for the individual would mean the purchase of securities for investment purposes while inclusion for the firm and government usually means raising capital through issuing of debt and equity instruments.

Despite progress in financial inclusion as a means of resource mobilization for African countries, external debt as a source of financing fiscal deficits has risen rapidly in recent years (Coulibaly, 2019). Significant improvements were experienced in the banking sector in Nigeria.
as a result of the recapitalization policy by the Central Bank of Nigeria in 2007 (Kenn-Ndubuisi and Henry, 2015). The Pension sector in Nigeria has also witnessed a significant increase in the volume of pensions since the enactment of the Pension Reform Act of 2014 (as amended) (Uwakwe and Louis, 2020). Policy-based reforms that significantly improved financial inclusion in South Africa, Egypt, and Kenya were also experienced in the years 2014, 2004, and 2010, respectively (Zandi and Aby, 2018; Nisreen, 2020; Heyer and King, 2015). Financial inclusion must be considered a determinant factor in understanding external debt because external debt is oftentimes incurred to address fiscal deficits in the economy, while financial inclusion works to facilitate the mobilization of financial resources from surplus units of the economy towards deficit units. From this perspective, the relationship between financial inclusion and external debt in general becomes evident.

This study aims to determine how financial inclusion in the selected African economies affect the external debt of such countries. Other objectives include finding how financial inclusion can enable more efficient resource mobilization and the role financial inclusion should play in the external debt management strategies of the selected countries.

Financial inclusion has taken a pole position in academic and policy discussions worldwide. The vast literature on financial inclusion and the recurrence of financial inclusion strategies in both domestic and international policies is indicative of the impact it has on economic activities (Sahay, Čihák, and N’Diaye, 2015; Bigirimana and Hongyi, 2018). Also, there is a large number of studies that investigate the determinants of financial inclusion, and the impact of financial inclusion on macroeconomic outcomes such as economic growth, financial and economic stability (Sahay, Čihák, and N’Diaye, 2015). However, studies on the relationship between financial inclusion and specific macroeconomic variables such as external debt is scarce or even non-existent. Recently, external debt has become a prominent variable in African economies, and this is because of many factors;

i. Domestic resources are no longer sufficient to meet the public expenditure requirements of an exploding population faced with Malthusian challenges exacerbated by climate change.

ii. Paucity of domestic resources because of inefficient allocation and corruption.

iii. An unprecedented access to the international financial system, and as a result a variety of foreign credit facilities due to globalization and the continuous integration of economies.
This study will bridge the knowledge gap by studying specifically how financial inclusion affects external debt in the selected countries which are Nigeria, South Africa, Kenya, and Egypt. The choice of the countries is informed by the need to produce balanced research that will reflect all of Africa, therefore the largest economies from each region by GDP are selected, except the Central African region. Secondly, the variables and structure of the selected economies are identical to that of other countries in their respective regions, this will make our estimates accurate and permit us to generalize our findings to the whole of Africa.

The next section of this research reviews the theoretical framework for financial inclusion and some past studies in the field of financial inclusion and its effect on macroeconomic variables. Subsequent sections will address the methodology used to achieve the research objectives, sources of data, analysis of data, discussion of findings, policy implications, conclusion, and recommendations.

2. Literature Review

2.1 Theoretical Framework

Schumpeterian financial development theory states that technological innovation can be stimulated by the activities of financial intermediaries which are mobilizing savings, managing risk, and facilitating transactions (King and Levine, 1993; Bittencourt, 2012). Technological innovation on the other hand stimulates economic growth and development. Studies by King and Levine (1993) provide empirical evidence in support of the Schumpeterian financial development theory. The financial system responsible for financial intermediation and resource mobilization has evolved to include pension administrators, insurance stakeholders, and the stock market.

Solow-Swan growth theory is a model of long run economic growth embedded in the Neoclassical economic theory. The theory suggests that economic growth is experienced as a result of a dynamic interaction between capital, labor, and technological innovation (Ramanayake, 2019). According to the theory, technological change is needed to sustain long-run economic growth in per capita income (Eriksson, 2013). Another aspect of the Solow-Swan growth theory is that an increase in savings raises the capital stock and this raises the full-employment national income, leading to economic growth (Kumar, 2018). The Schumpeterian
financial development theory and the Solow Swan growth theory can be used to explain the effects of financial inclusion on economic growth through the capital accumulation channel.

2.2 Literature Review

Financial inclusion can affect external debt levels through the economic growth channel. Financial inclusion increases capital accumulation through the financial intermediation function of financial institutions, pension operators, insurance companies, and the stock market. An increase in domestic resource mobilization makes more resources available for firms and the government to borrow, which is expected to reduce reliance on external debt. There have been several empirical studies that explain the relationship between financial inclusion and economic growth (Babajide, Adegboye, & Omankhanlen, 2015).

The relationship between financial inclusion and economic growth was examined using panel data for 55 Organization of Islamic Cooperation (OIC) countries (Kim, Yu, and Hassan, 2018). Estimations were done using the dynamic panel method, panel VAR, IRFs, and panel Granger causality test methods (Kim, Yu, and Hassan, 2018). The result suggested that financial inclusion has positive effects on economic growth in OIC countries, and there was bidirectional causality between financial inclusion and economic growth (Kim, Yu, and Hassan, 2018). Financial inclusion indicators used in the study are bank branches, life insurance, number of ATMs, number of deposit accounts, and borrowers (Kim, Yu, and Hassan, 2018).

Gul, Usman, and Majeed (2018) evaluated the impact of financial inclusion on economic growth using a panel data set for 185 countries from 1996 to 2015. The variables used in the study to measure financial inclusion are bank accounts, bank branches, auto teller machines, and life insurance premium, while GDP per capita growth was used to measure economic growth (Gul, Usman, and Majeed, 2018). Analysis using the fixed-effect model based on the Hausman test showed a positive relationship between financial inclusion and economic growth for the countries studied (Gul, Usman, and Majeed, 2018). The econometric results from the two-stage least squares method revealed that financial inclusion has a positive impact on economic growth (Gul, Usman, and Majeed, 2018).

The relationship between the financial sector and economic growth in Egypt from 1980 to 2016 was investigated by (Mahmoud, Khaled, and Ahmed, 2019). Critical financial indicators such as the financial market access index, and access to and efficiency of banking services were used as proxies to measure financial development (Mahmoud, Khaled, and Ahmed, 2019). The
findings revealed that there was a relationship between financial market access and real GDP per capita, while access to and efficiency of banking services is not associated with real GDP per capita (Mahmoud, Khaled, and Ahmed, 2019). The researchers recommended that further development of the capital market will promote sustainability of economic growth, while a stronger focus should be directed to improving banking services in Egypt (Mahmoud, Khaled, and Ahmed, 2019).

Ruiz (2018) carried out more robust research on the impact of financial development on economic growth under the presence of institutional investors such as insurance companies, mutual funds, and pension funds as a percentage of GDP for 116 economies. The period of study covered 1991 to 2014 and the economies were analyzed using the dynamic panel threshold technique (Ruiz, 2018). The findings revealed that countries above the finance threshold experienced more economic growth, while countries below the finance threshold experienced less economic growth (Ruiz, 2018).

Bist (2018) carried out research similar to Ruiz (2018) using panel data from 1995 to 2014 for 16 low-income African countries. The findings revealed a long run cointegrating relationship between financial development and economic growth for the 16 low-income African countries (Bist, 2018). Unlike the study of Ruiz (2018), the variable to measure financial development in the study was the flow of credit to the private sector. Data collected was analyzed using fully modified and dynamic OLS methods (Bist, 2018).

Economic growth according to Mutize and Nkhalamba (2020) is a strong determinant of sovereign bond ratings which determines the ability of countries to access sovereign bonds. Low credit ratings from rating agencies increase the cost of bonds to very high levels and discourage governments from accessing the bond market (Mutize and Nkhalamba, 2020). On the other hand, high credit ratings reduce the cost of bonds and encourage governments to access external debts. Thus, as countries develop better financial inclusion structures and attain higher growth levels, they have better access to external debt because of high credit ratings from credit rating agencies.

This study intends to investigate the effect of financial inclusion on external debt levels in Africa from 1990 to 2020. Empirical studies that investigate the effect of financial inclusion on external debt levels in Africa are non-existent and this is the gap this research intends to fill. Some other studies on financial inclusion focus on banking (Lenka and Sharma, 2017; Sethi
and Acharya, 2018; Kumar and Dahiya, 2020), but this study will assess financial inclusion from a broader viewpoint by considering banking and capital markets. Other financial inclusion components such as pension and insurance were not considered in the study because financial institutions and the capital market are the generic channels of financial intermediation. Other channels of financial inclusion such as pension and insurance are largely channeled through the banks and the capital market. In most cases, pension funds and insurance funds are invested in government securities which are first made available in the capital market (Vittas, 1996).

3. Methodology

The study will make use of secondary data on market capitalisation of listed domestic companies as a percentage of GDP, broad money supply as a percentage of GDP, external debt stock, current account as a percentage of GDP, and gross fixed capital formation as a percentage of GDP for Nigeria, South Africa, Kenya, and Egypt.

The research is designed to use time-series data from 1990 to 2020. To determine the stationarity of the respective variables, a unit root test will be carried out which will then condition the choice of the best econometric technique to use in achieving the pre-discussed objectives (Shrestha and Bhatta, 2018).

The capital market variable used for this study is the annual market capitalisation of listed domestic companies as a percentage of GDP for the individual countries. This variable reflects the depth and viability of the capital markets because it calculates the total value of all the securities available in the market listed by the domestic companies (Fernando, 2022). The data is sourced from the World Bank for all the countries.

Broad money supply as a percentage of GDP (M3), shall be used as a proxy for banking. This is because all the banking efforts such as mobile money systems, branch creation, credit facilitation etc, are geared toward ensuring allocative efficiency in the money supply. Therefore the variable, broad money reflects the result of all banking activities in the financial system (Liberto, 2020). The data is sourced from the World Bank for all the countries.

External debt stock data sourced from World Bank shall be used to measure the external debt of the different countries. Current account as a percentage of GDP data sourced from The World Bank shall be used to measure the current account balance for the different countries. The current account balance will ascertain the fiscal space of the economy and the overall
monetary security. Gross fixed capital formation as a percentage of GDP data sourced from World Bank shall be used to measure gross fixed capital formation. Gross fixed capital formation will show the prospects for generating more funds. This means they are like guarantees for debt because they can be used to source revenue for financing debt.

3.1 Model specification

The model in simple form, is specified as:

\[ \text{EXTD} = \text{AMC} + \text{M3} + \text{CA} + \text{GFCF} + U \]

The econometric equation is stated below in log form because of differences in standard units of the variables.

\[ \log(\text{EXTD}) = B_0 + B_1 \log(\text{AMC}) + B_2 \log(\text{M3}) + B_3 \log(\text{CA}) + B_4 \log(\text{GFCF}) + U \]

The parameters are:

- \( \log(\text{EXTD}) \) – log of external debt stock.
- \( \log(\text{AMC}) \) – log of market capitalization of listed domestic companies as a percentage of GDP.
- \( \log(\text{M3}) \) – log of broad money supply as a percentage of GDP.
- \( \log(\text{CA}) \) – log of current account as a percentage of GDP.
- \( \log(\text{GFCF}) \) – log of gross fixed capital formation as a percentage of GDP.

\( B_0 \) is the intercept, \( B_1 \) to \( B_4 \) represent coefficients of the regressors and \( U \) is the error term. A priori expectation is that all variables are expected to have negative signs.

4. Findings and Discussion of Results

4.1 Unit root test

Time series data mostly have stationarity problems (Shrestha and Bhatta, 2018). In this research, the stationarity of the data will be determined using the Augmented Dickey-Fuller unit root test method (Shrestha and Bhatta, 2018). The variable is non-stationary when the p-value is greater than 0.05 (Shrestha and Bhatta, 2018). The unit root test in table 1 shows that
all the variables for Nigeria, Kenya, and Egypt have a mixed order of integration. The unit root test result for Nigeria, Kenya, and Egypt permits the use of Long Run Form and Bounds Test within the ARDL framework for finding cointegration between the variables.

Table 1: Unit root test result

<table>
<thead>
<tr>
<th>Variables</th>
<th>Nigeria p-value Level</th>
<th>Nigeria First Differenc p-value</th>
<th>South Africa p-value Level</th>
<th>South Africa First Differenc p-value</th>
<th>Kenya p-value Level</th>
<th>Kenya First Differenc p-value</th>
<th>Egypt p-value Level</th>
<th>Egypt First Differenc p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTD</td>
<td>0.869</td>
<td>0.059</td>
<td>0.951</td>
<td>0.0015</td>
<td>1.000</td>
<td>0.9993</td>
<td>1.000</td>
<td>0.9808</td>
</tr>
<tr>
<td>AMC</td>
<td>0.049</td>
<td>0.003</td>
<td>0.900</td>
<td>0.0000</td>
<td>0.615</td>
<td>0.615</td>
<td>0.041</td>
<td>0.3363</td>
</tr>
<tr>
<td>M3</td>
<td>0.724</td>
<td>0.0018</td>
<td>0.932</td>
<td>0.0354</td>
<td>0.021</td>
<td>0.021</td>
<td>0.091</td>
<td>0.0026</td>
</tr>
<tr>
<td>CA</td>
<td>0.123</td>
<td>0.0004</td>
<td>0.212</td>
<td>0.0162</td>
<td>0.082</td>
<td>0.082</td>
<td>0.444</td>
<td>0.001</td>
</tr>
<tr>
<td>GFCF</td>
<td>0.355</td>
<td>0.0159</td>
<td>0.171</td>
<td>0.0136</td>
<td>0.137</td>
<td>0.137</td>
<td>0.369</td>
<td>0.0045</td>
</tr>
</tbody>
</table>

Source: Eviews 12 output.

In the case of South Africa, we observe that stationarity at first difference for all the variables (Table 1). The result for South Africa, therefore, permits us to employ the Johansen cointegration test to achieve the objective of finding the long run relationship between the variables (Shrestha and Bhatta, 2018).

4.2 Long run cointegration test

An Autoregressive Distributed Lag (ARDL) model can be applied to both non-stationary time series and time series with mixed order of integration, I(0) and I(1) (Shrestha and Bhatta, 2018). The most appropriate method to check for long run cointegration based on the unit root test result for Nigeria, Kenya, and Egypt is the long run form and bounds test within the ARDL framework. Following the Akaike Information Criterion (AIC), the optimal lag length used for the analysis is one. The decision criteria is that there is long run cointegration if the F-statistic is above the I(1) bound at the 5% level of significance (Pesaran, Shin, and Smith, 2001).
The effects of financial inclusion on external debt in Africa

Table 2: Long run form and bounds test result

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Nigeria</th>
<th>Kenya</th>
<th>Egypt</th>
<th>Significance</th>
<th>I(0)</th>
<th>I(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-Statistic</td>
<td>7.1911</td>
<td>15.7213</td>
<td>14.967</td>
<td>10%</td>
<td>2.2</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td>2.56</td>
<td>3.49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.50%</td>
<td>2.88</td>
<td>3.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1%</td>
<td>3.29</td>
<td>4.37</td>
</tr>
</tbody>
</table>

Source: Eviews 12 output.

From table 2 above, we deduce a long run relationship exists between the variables. This is determined using the F-value which is seen to be greater than the values in the upper bound at all significance levels (Akram, 2017). Therefore, we reject the null hypothesis and adopt the alternative to conclude the existence of a long run relationship between the variables. Subsequently, we shall use the Error Correction Model to ascertain the impact of the financial inclusion variables on external debt.

Table 3: Johansen cointegration test result - South Africa

<table>
<thead>
<tr>
<th>Hypothesized no. of CE(s)</th>
<th>Trace statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.</th>
<th>Hypothesized no. of CE(s)</th>
<th>Max-Eigen Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>69.8188</td>
<td>0.004</td>
<td></td>
<td>None*</td>
<td>38.613</td>
<td>33.8768</td>
<td>0.012</td>
</tr>
<tr>
<td>At most 1</td>
<td>42.5759</td>
<td>0.143</td>
<td></td>
<td>At most 1</td>
<td>19.383</td>
<td>27.5843</td>
<td>0.385</td>
</tr>
<tr>
<td>At most 2</td>
<td>23.1919</td>
<td>0.236</td>
<td></td>
<td>At most 2</td>
<td>9.2745</td>
<td>21.1316</td>
<td>0.809</td>
</tr>
<tr>
<td>At most 3</td>
<td>13.9174</td>
<td>0.085</td>
<td></td>
<td>At most 3</td>
<td>8.5381</td>
<td>14.2646</td>
<td>0.326</td>
</tr>
<tr>
<td>At most 4*</td>
<td>5.37923</td>
<td>0.020</td>
<td></td>
<td>At most 4*</td>
<td>5.3792</td>
<td>3.84146</td>
<td>0.020</td>
</tr>
</tbody>
</table>

Source: Eviews 12 output.

From the table 3 above, we see that there are 3 cointegrating vectors between the Trace test and the Max-Eigen test, therefore we can conclude the existence of a long run relationship between the financial inclusion variable and external debt in the case of South Africa.
4.3 Impact analysis

The outcome of the ARDL Long Run Form and Bounds test and the Johansen cointegration test has enabled us to establish a long run relationship in the countries. However, to make the research robust, comprehensive, and theoretically conclusive, we must investigate the impact of the variables or the nature of the relationship.

The models chosen for the impact analysis will also be informed by the outcome of the unit root test as well as the findings of the long run models. Subsequently, in the case of Nigeria, Kenya, and Egypt where the results of the unit root test show that all the variables are stationary at different levels and also an affirmative result from the ARDL Long Run Form and Bounds test, we shall use the Error Correction Model. In the case of South Africa where the stationarity of the variables is concluded at first difference and the long run relationship is determined using the Johansen cointegration technique, we shall employ the Ordinary Least Squares regression technique.

The ARDL error correction regression showing the effect of financial inclusion variables on external debt is in Table 4 below.

**Table 4: ARDL Error Correction Regression for Nigeria, Kenya, and Egypt**

<table>
<thead>
<tr>
<th>Variable</th>
<th>NIGERIA</th>
<th></th>
<th>KENYA</th>
<th></th>
<th></th>
<th>EGYPT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>P-value</td>
<td>Coefficient</td>
<td>P-value</td>
<td>Coefficient</td>
<td>P-value</td>
<td></td>
</tr>
<tr>
<td>CointEq(-1)*</td>
<td>0.08781</td>
<td>0.0000</td>
<td>0.124311</td>
<td>0.000</td>
<td>0.146323</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>0</td>
<td>0</td>
<td>-19115966</td>
<td>0.000</td>
<td>-1.52E+09</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>GFCF</td>
<td>0</td>
<td>0</td>
<td>-38536048</td>
<td>0.000</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>R Squared</td>
<td>0.680488</td>
<td></td>
<td>0.855591</td>
<td></td>
<td>0.852306</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R Squared</td>
<td>0.680488</td>
<td></td>
<td>0.838602</td>
<td></td>
<td>0.840945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin Watson Stat</td>
<td>2.00432</td>
<td></td>
<td>2.584811</td>
<td></td>
<td>2.542999</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Eviews 12 Output.

From table 4, we see that an increase in financial inclusion will increase external debt by 8%, holding other factors constant. The result is significant, and the coefficient of determination implies that 68% of changes in external debt are explained by the financial inclusion variables included in the model.

From table 4, we observe that an increase in financial inclusion will raise external debt by 12.4% in Kenya, *ceteris-paribus*. However, gross fixed capital formation and current accounts
are seen to impact external debt negatively. The result is statistically significant, and the model is considered fit as 85% of the changes in external debt are explained by changes in the financial inclusion variables.

In the case of Egypt, we see that 1% increase in financial inclusion will result to a 14% increase in external debt in Egypt, other factors remaining unchanged. Also, the variable current account is seen to have a detrimental impact on the external debt stock of Egypt. The results are statistically significant and the R-squared proves that 85.2% of the change in debt stock is determined by the independent variables.

The effect of financial inclusion on external debt for South Africa is analyzed using Ordinary Least Squares and the result is in Table 5.

**Table 5: Ordinary Least Squares Regression result**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC</td>
<td>4.06E+08</td>
<td>0.0168</td>
</tr>
<tr>
<td>M3</td>
<td>3.24E+09</td>
<td>0.0091</td>
</tr>
<tr>
<td>CA</td>
<td>-8.02E+09</td>
<td>0.1555</td>
</tr>
<tr>
<td>GFCF</td>
<td>-1.15E+09</td>
<td>0.0783</td>
</tr>
<tr>
<td>R Squared</td>
<td></td>
<td>0.762582</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
<td></td>
<td>0.719414</td>
</tr>
<tr>
<td>Durbin Watson</td>
<td></td>
<td>0.566191</td>
</tr>
</tbody>
</table>

**Source:** Eviews 12 output.

From the results above the main financial inclusion variables - broad money supply (M3) and the annual market capitalisation are seen to impact external debt positively and significantly. This could be indicative of the positive effect of a strong financial system on the credit rating of a country. Favourable credit ratings reduces the cost of bonds, increases access to external debts, and encourages governments to borrow externally (Mutize and Nkhalamba, 2020). The other variables - gross fixed capital formation and current account are seen to have an adverse relationship with external debt. The coefficients of the negative variables are not acceptable due to their statistical insignificance. Furthermore, the coefficient of variation implies that gross fixed capital formation, broad money supply, current account, and annual market
capitalisation jointly account for 76% of the changes in external debt stock in South Africa. However, the Durbin-Watson statistic value of 0.56 is indicative of positive autocorrelation between the variables.

4.4 Causality test

Examining causality between variables in a time series is best done with Granger causality method (Stephanie, 2016). The Granger causality result for the model is in table 4.

Table 4: Granger Causality test

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>NIGERIA P-value</th>
<th>SOUTH AFRICA P-value</th>
<th>KENYA P-value</th>
<th>EGYPT P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC does not Granger Cause EXTD</td>
<td>0.4719</td>
<td>0.5099</td>
<td>0.7913</td>
<td>0.3029</td>
</tr>
<tr>
<td>EXTD does not Granger Cause AMC</td>
<td>0.5279</td>
<td>0.0072</td>
<td>0.8027</td>
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<td>0.6247</td>
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<td>EXTD does not Granger Cause M3</td>
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</table>

Source: Eviews 12 output.

In the case of Nigeria we reject the null hypothesis that current account does not Granger cause external debt and accept the alternative that current account is a causal factor to external debt. Also, external debt is seen to cause gross fixed capital formation. Finally, we reject the null hypothesis that broad money supply (M3) does not granger cause external debt stock. All the relationships recorded for Nigeria are Uni-directional.
In the case of South Africa we reject the hypotheses that external debt does not granger cause annual market capitalisation, broad money supply (M3) does not granger cause external debt, current account does not granger cause annual market capitalisation, current account does not granger cause gross fixed capital formation and finally gross fixed capital does not granger cause broad money supply (M3). Furthermore, all the relationships are Uni-directional.

In the case of Kenya, current account is seen to granger cause annual market capitalization in a uni-directional relationship, no other causal relationship is recorded between any other set of variables.

In the case of Egypt, we reject the null hypotheses that gross fixed capital formation does not granger cause external debt, annual market capitalization does not granger cause gross fixed capital formation and broad money supply (M3) does not granger cause gross fixed capital formation. All the relationships highlighted are uni-directional in nature.

5. Conclusion and Recommendations

The study sought to determine the relationship between financial inclusion and some selected countries in Africa. The countries were chosen to represent every sub region of the continent, however this effort was frustrated by the unavailability of suitable and adequate data in all the countries from Central Africa region. The principal independent variables chosen for this study Broad money supply (M3), and market capitalisation of listed domestic domestic companies (AMC) were selected to reflect the banking sector as well as the capital market. Broad money supply is considered the most suitable banking variable with regards financial inclusion because it reflects the results of all financial inclusion efforts in the financial institutions, considering the fact that the primary objective of financial institutions is to facilitate the movement of money as well as other financial assets through all sectors and all units of the economy. Furthermore, other variables of financial inclusion such as credit, access, payment systems etc. are more suitable for studies focused on specific micro-economic units such as the individual, household or the firm, while broad money is more suitable for macroeconomic analysis as it is an aggregate measure of the success of all inclusion policies.

The additional variables namely current account and gross fixed capital formation were selected due to their pertinence in the determination of all fiscal matters in an economy.
Together, they show the current revenue as well as the potential revenue, which makes them major determinants of revenue mobilization.

The study utilized the ADF unit root test to test for stationarity. The stages of stationarity of the individual variables determined the econometric techniques used to evaluate the preset objectives of the study. Subsequently, the Long Run Form and Bounds test within the ARDL framework and Error Correction Model were used to analyze the data from Nigeria, Kenya and Egypt while the Johansen cointegration and Ordinary Least Squares regression techniques were used to analyze data from South Africa. Finally, the Granger causality test was used to check the existence and direction of causality among the variables (Stephanie, 2016).

The outcome of the Long Run Form and Bounds test and the Johansen cointegration allowed us to conclude a long run relationship between the variables in all the countries. The outcomes of the Error Correction Model and Ordinary Least Squares regression models showed a general positive impact among the variables except for the case of gross fixed capital formation and current account in South Africa and Kenya. Current account is also seen to have a negative impact in the case of Egypt. This finding is theoretically plausible because external debt in most cases is necessitated by fiscal deficits that may translate to budget imbalance, therefore increase in gross fixed capital formation will mean an expansion of taxable items and activities. The economy and the revenue sourced therein will reflect in current account balance which may be used to bridge fiscal deficits that usually necessitate external debt. A possible reason why this is not observed in the case of Nigeria is because of the inefficiency of revenue mobilization through tax which is reflected in the tax to GDP ratio which is currently around 8% (OECD, 2021).

The general consensus of all the econometric techniques employed in this study is that financial inclusion has a long run relationship with external debt stock. The granger causality test showed that there was no bi-directional relationship between any two variables in all of the countries.

More successes can be gotten from improving financial inclusion than increasing the tax base for developing countries, this is because of the informal nature of the economy in Africa. Africa has the highest informal sector in the world (around 40%) and they contribute significantly to the GDP (Leandro, Andrew, and Mehmet, 2017).

External resources such as debt and aid flows will not be enough to meet financing needs of African countries to achieve SDG targets by 2030 (Kararach, Besada, and Shaw, 2015).
Financial inclusion has been identified to be an enabler for 7 of the 17 SDGs (World Bank, 2022). Thus, there is a strong need to increase the drive for domestic resource mobilization through financial inclusion, to generate domestic resources to finance Africa’s developmental needs.

In the case of Nigeria, the issue of financial inclusion is not about access, because of the proliferation of rural banking initiatives and the fusion of fin-tech in the financial system. The focus should be financial literacy so that the population left out of the financial system can fully understand the importance of becoming part of the financial system.

REFERENCES


