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Financial Inclusion and Real Gross Domestic Investment in Nigeria

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Abstract

One of the biggest challenges facing financial inclusion is that more than half of Nigerian adults don't have access to financial services such as automatic teller machines (ATMs), bank and other enablers that can promote investment in Nigeria. This study investigated the impact of financial inclusion on domestic investment in Nigeria from 1985 to 2020. The variables used in this study are gross fixed capital formation, proxy for domestic as the dependent variable and ATM, number of depositors, foreign direct investment and private sector credit as explanatory variables. The data for this study were sourced from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics. This study was anchored on the theoretical frameworks of financial liberalization and the accelerator principle of investment. The method of data analysis employed is the ordinary least square regression and Granger causality approaches. The findings reveal that there existed unidirectional causality between gross fixed capital formation and automatic teller machine; a unidirectional causality between private sector credit and gross fixed capital formation; a bidirectional causality existed between foreign direct investment and gross fixed capital formation and that automatic teller machine, domestic saving, foreign direct investment and broad money supply impacted positively but insignificantly on gross fixed capital formation, while both private sector credit and remittance was found to impact negatively on gross fixed capital formation. This study, therefore, recommended among others that the policymakers can promote gross fixed capital formation by initiating expansionary fiscal measures and contractionary monetary policy measures that promote investment and most importantly, strategies that can scale up remittances inflows into the economy for investment purposes through the encouragement of the financial inclusion indicator.

Keywords: *Automated teller machine, Granger causality, number of depositors, private sector credit, real gross domestic investment, Nigeria*

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Background to the Study

Investment is one of the components of aggregate demand and thus plays a critical role in the determination of equilibrium income. Recall that in a closed economy, aggregate demand is obtained as the sum of the consumption expenditure of households, the investment spending of business firms and government expenditure (Iyoha, 2004). By investment, we mean real gross domestic capital formation. This is investment in its aggregate form from the point of view of the society. Thus, investment in this form refers not to financial investment, i.e., purchases of existing securities.

The importance of investment can be examined from various dimensions following the submission of Iyoha (2004) to include; first, investment is a key component of aggregate demand and gross national product. Investment is positively related to aggregate demand and to the equilibrium level of income. Also, recall the multiplier doctrine of modern income analysis; an increase in investment results in a multiplied increase in income; second, investment is important because fluctuations in investment expenditures are highly correlated with fluctuations in gross national product (GNP), known as business cycles. Third, since investment expands productive capacity, it is a major explanation of and contributory factor to long-run growth of the economy.

In sum, investment depends critically on dynamic and relatively unpredictable elements of growth in the economic system and even on elements outside the economic system-scientific, technological, and political; on intangibles like confidence and expectation; and also, on policy-fiscal, monetary and legislative policies. Investment is financed from savings (domestic or foreign). In 2018 down to 2022, Nigeria's investment in terms of gross domestic product (GDP) declined ostensibly from 18.7% to 12.6%. Comparatively, Nigeria's investment rate lags the average of 23.3% recorded for sub-Saharan African Countries, and 28% for the BRICKs (Brazil, Russia, China and South Africa) (PWC, 2017). In this study our measure of real gross domestic investment is the gross fixed capital formation.

Financial inclusion has no universally accepted definition. However, it is an intervention strategy that targets to overcome the market inefficiencies that prevent the financial system from providing financial services to the economically active poor and vulnerable groups Belonwu, Aina & Fofah, 2020). The concept has continued to gain attention since the late 1990s as it plays a fundamental role in aiding investment for economic growth and development. The importance of financial inclusion stems from the fact that increased access to finance generates a spectrum of economic activities, which, in turn, creates employment, increases income and reduces poverty (Kakwani & Pernia, 2000; Chhikara & Kodan, 2011). Investment and growth are stimulated as more people are included in the financial system, thereby providing access to a broad range of financial services which includes savings, credit-insurance and pension services at an affordable cost and tailored towards meeting individual purposes. It presupposes that the citizenry has access to and can use a range of suitable financial products and services which must be provided in a well-structured and organized environment from the submission of Demirguc-Kunt, Klapper, and Singer (2017). Its process basically starts with a customer having a deposit or transaction account at a depository

financial institution or mobile money service provider for the purpose of making or receiving payments or saving purpose (Belonwe, Aina & Fofah, 2020). The National Financial Inclusion Strategy (NFIS), a collaboration of the Central Bank of Nigeria and financial institution stakeholders in 2012, launched the NFIS, aimed at reducing financial exclusion from 46.3% in 2010 to 20.0% in 2020, and with the purpose of promoting financial inclusion rate to 80% in 2020. The strategy aims at increasing access to finance with a view of promoting economic growth and increasing adult access to payment services from 21.6% to 70.0%; access to pensions services from 5.0% to 40.0% and insurance from 1.0% to 40.0% (CBN, 2015). In order to promote the success of financial inclusion through the strategy, the Central Bank of Nigeria (CBN), also introduced mobile money, agent banking and cashless policy, to deepen financial inclusion in Nigeria. These strategies aimed at promoting investment for economic growth, employment generation and wealth creation.

The broad objective of this study is to examine the impact of the financial inclusion on gross fixed capital formation in Nigeria. Specially, this study seeks to:

i) Investigate the impact of automated teller machine, depositors with deposit money banks and private sector credit on gross fixed capital formation in Nigeria.
ii) Determine the impact of foreign direct investment, broad money supply and remittance on gross fixed capital formation in Nigeria.
iii) Analyze the direction of causality between automated teller machine, depositors with deposit money banks, credit to the private sector and gross fixed capital formation.

The relevance of this study is in three-folds: Theoretical, empirically and policy relevance. Theoretically, this study used the Mckinnon theory of financial liberalization that promotes financial inclusion and the accelerator principle of investment. The anchor of this study on these economic theories reinforces their applicability in applied economic research.

Empirically, the inclusion of foreign direct investment, remittance and broad money supply is an addition to the study. This study used the three major measures of financial inclusion-automated teller machine, domestic savings and credit to the private sector to measure financial inclusion. An empirical attempt to establish the link between financial inclusion and gross fixed capital formation is a value addition; this was done using Granger causality approach. In terms of policy, this study and the policy recommendations would serve as blue-prints for economic agents namely Government/policy makers, households/individuals investors and firms/businesses. For the Government, it would serve as input document for formulating public policy on investment for inclusion. For the Central Bank, government agency for financial inclusion, it would serve as measure for evaluating the efficacy and efficiency of financial inclusion policy in Nigeria. The household or individual investors would benefit from this study as it would give the necessary exposition on domestic investment and funding/policy option on domestic investment. For businesses and firms, it would afford them the investment opportunity to make adequate investment decisions.

The scope of this study covers the impact of financial inclusion on gross fixed capital formation in Nigeria for the period 1986 to 2021. This paper is divided into five sections-

section one is the introduction. Section two is the empirical literature review while three id the methodology and section four is result presentation, analysis and discussion of finding. Section presents the conclusion and policy recommendation.

Empirical Literature Review

Kama and Adigun (2013), examined the issues and challenges of financial inclusion in Nigeria using descriptive statistics. The study showed that, though financial inclusion may have become a general phenomenon, its nature, forms and challenges differ among jurisdictions and as such cannot be addressed by a single product, or one size fit all approach. The study recommended a systematic approach that aligns responsibility and institutions among all stakeholders in the financial inclusion process to guarantee sustainability. The study is narrative and focused only on financial inclusion. This study is empirical and uses different measures of financial inclusion on gross fixed capital formation.

Nwankwo and Nwankwo (2014) investigated the sustainability of financial inclusion on rural dwellers in Nigeria. The study adopted descriptive approach and content analysis. The study observed that the sustainability of financial inclusion to rural dwellers in Nigeria remains the mainstream for economic growth in any country. The study recommended that the correlation between Deposit Money Banks (DMBs), Microfinance Banks (MFBs) and communication services providers should be promoted for enhanced intermediation of financial service; also rural dwellers should be educated on the importance of banking as it would facilitate the success of CBN financial inclusion policy. The study lacks empirical content on financial inclusion and therefore, the policy recommendation has no basis for policy making. This study bridges this gap by focusing on the relationship between financial inclusion and investment, not only the rural dwellers but the entire investors of the macroeconomy.

Nkwede (2015), traced the impact of financial inclusion on economic growth in Nigeria for the period 1981 to 2013 using extrapolated time series data. The methodology of Ordinary Least Squares (OLS) was used. The result showed that financial inclusion has significant negative impact on the growth of Nigeria economy over the years. The study is on investment and not growth relationship with financial inclusion.

Obafemi, Oburota & Amoke (2016), examined the relationship between financial deepening and investment in Nigeria. Using time series secondary data spanning from 1970 to 2013, the study adopted the Gregory-Hansen Endogenous structural break methodology and the supply-leading hypothesis in building the model. The study also employed the unit root test, co- integration test and Granger causality test. It discovered a unidirectional causality, running from financial deepening to investment. It also found that the financial deepening has a statistically significant impact on domestic investment. The study is on financial deepening and not on financial inclusion.

Omojolaibi and Popogbe (2017), examined the impact of financial inclusion and governance on economic growth. The variables used are investment in infrastructure, per capita income and income inequality. The study used the generalized method of moment (GMM) estimation

technique. The study showed that financial inclusion and governance indices and commercial bank deposit significantly increase per capita GDP; and financial inclusion has the tendency to bridge the gap between the rich and the poor and reduce the prevalence of poverty in the country. The study recommended that more measures should be taken to address financial exclusion of low-income groups from financial services if income inequality will be reduced and per capita GDP increased. Although the study is related, however, the major focus of the current study is on investment using the three major indices of financial inclusion.

Wakdok (2018), examined the impact of financial inclusion on economic growth in Nigeria using an econometric analysis. The finance-growth theory was adopted as the theoretical framework. The data extracted from secondary sources for econometric analysis covered the period between 1990 and 2014 while the error correction model was used to test the hypotheses. Based on empirical analysis, the study concluded that financial inclusion has a positive and significant impact on Economic Growth in Nigeria through financial deepening variables which are influenced by financial inclusion variables such as broad money, credit to private sector, loan deposit of the rural area and liquidity ratio of deposit money banks. The study focused on financial inclusion and economic growth, the current study focused on financial inclusion and investment from 1986 to 2021.

Omojolaibi & Popogbe (2018), examines the relationship between financial inclusion and investment in Nigeria. Annual time series data was obtained from the CBN statistical bulletin and for the period 1981- 2015. The study makes use of the autoregressive distributed lag (ARDL) bound co-integration test and error correction model. The outcomes of the study show that not all the three criteria for financial inclusion (availability, accessibility and affordability) guarantee investment in the Nigerian economy.

Vo and Vo (2019), provides a more comprehensive insight about the important link between financial inclusion and economic growth in emerging markets. First, a multidimensional index of financial inclusion is constructed from various indicators so that we can comprehensively measure a level of financial inclusion across countries at the international level. Second, based on this newly developed index, the panel econometric technique is utilized to estimate the impact of financial inclusion on economic growth. Finding supported a positive relationship between financial inclusion and economic growth. A stronger relationship between financial inclusion and economic growth is found for countries with low income and a relatively lower degree of financial inclusion. The study focused on financial inclusion-economic growth nexus. Our study focused on financial inclusion-investment nexus.

Enueshike, & Okpebru (2020), examined the effects of financial inclusion on economic growth in Nigeria from 2000 to 2018. Archival data sourced from Central Bank of Nigeria Statistical Bulletin was used for the estimation of the variables. The dependent variable of financial inclusion proxied by contribution of financial institutions to gross domestic product (GDP) was regressed on the explanatory variable of loan to small and medium enterprises (LSME), rural bank deposit (RBD) and control variable of inflation (INF). The ex-post factor

research design was adopted for the study and diagnostic tests of unit roots and co-integration were conducted which show that the variables co-integration were mixed and show a long term relationship respectively. The statistical estimation of the explained and explanatory variables was done using auto-regressive distributed lagged modeling approach. Findings from Wald tests indicate that loan to small and medium enterprise (LSME), rural bank deposit (RBD) and inflation (INF) have significant effect on economic growth in Nigeria. The study focused on the relationship between financial inclusion and economic growth, the current study focused on financial inclusion and investment.

Nsiah, Yusif, Tweneboah, Agyei, & Baidoo, (2021) investigated the threshold effect of financial inclusion on poverty reduction in sub-Saharan Africa (SSA). An annual dataset spanning 2010 to 2017 was used. The Hansen's estimation and Differenced generalized method of moments (GMM) methods were used to estimate the threshold level of financial inclusion that will reduce poverty and factors that influence financial inclusion respectively. Results showed that beyond a threshold level of 0.365, financial inclusion would lead to poverty reduction with money supply being positively significant towards poverty reduction in SSA. Results also indicated that domestic credit to the private sector positively affects financial inclusion. The study was on the relationship between financial inclusion and poverty in SSA countries while our study is on financial inclusion and investment.

A good number of empirical studies were reviewed- country-specific and cross-country studies. Some of the studies reviewed include Kama and Adigun (2013); Nwankwo and Nwankwo(2014); Omojolaibi (2017); Chauvet and Jacolin(2017); Obafemi *et al.*,(2016); Nkwede(2015); Nsiah *et al.*(2021); Al-Smadi(2018); Enueshike and Okpebru (2020); Okonkwo and Nwanna (2021), Wakdok (2018); Vo and Vo(2019); Ozali (2021c); Zulfiqar *et al*(2016); Jimoh *et al,*(2019); Babajide *et al.*,(2015); Muritala and Fasanya (2013); Mbutor and Uba 2013); Onaolapo (2015); Williams *et al.*(2017). Omojolaibi and Popogbe (2018); Chima *et al*.(2021).

From the empirical literature reviewed, some conclusions can be made. First, studies on financial inclusion and domestic investment are both country-specific and cross country. Two, different techniques have been used in studying the subject matter- error correction model, probit, descriptive statistics, autoregressive distributed lag approach (ARDL), generalized method of moment, and Granger causality approaches. Again, different variables have also been used including ATMs, branch network, POS, bank deposit, and money supply. From these studies reviewed, different empirical results were established on the relationship between financial inclusion and domestic investment. Majority of these recorded positive relationship (Jimoh et al. 2019; Nsiah et al., 2021; Okonkwo & Novanna, 2021). On causality, Obafemi et al., 2016, showed a unidirectional causality between financial deepening and domestic investment, however, financial deepening is not the same as financial inclusion. Moreover, from the reviewed empirical studies, foreign direct investment, remittance and broad money supply were completely ignored by previous researchers. The inclusion of these variables in the discussion of the relationship between financial inclusion and domestic investment is an addition to the extant knowledge.

The inclusion of these variables is an empirical justification for this present study.
Most reasonably, for financial inclusion to impact on economic growth, it must pass through some channels; however, most previous studies as shown in the summary of empirical literature reviewed undermined these channels and focus only on the impact of financial inclusion on economic growth. The argument of this study is that financial inclusion through its transmission mechanisms- accessibility to financial services, availability and affordability has the potential of promoting domestic investment. This is a justification for this study. Moreover, with the exception of Omojolaibi and Popogbe (2018), this study followed the recommendations of International Monetary Fund Financial Inclusion Survey (2004) and Sarma (2018) on the included indicators of financial inclusion. Most previous studies have examined the relationship without considering these three major characteristics. This study examined these characteristics in addition to other complementing variables on domestic investment in the Nigerian economy.

Methodology

Theoretical Framework

The financial repression theory postulated by McKinnon-Shaw (1973), posits that financial deregulation in a financially repressed economy would enhance higher saving, increase credit supply, encourage investment and hence help in the financial development of the economy. This is because, according to McKinnon's framework (1973), investment in a typical developing economy like the Nigerian economy is generally self-financed, hence given its lumpy nature; investment cannot occur unless sufficient savings is accumulated in the form of bank deposits and lowered interest rates. Also, Shaw (1973) postulated that financial intermediaries encourage investment and raise output through borrowing and lending.

Investment is limited as a result of low saving mobilization and the underlying assumption of the complementary hypothesis of McKinnon-Shaw model is that financial inclusion promotes financial liberalization via the channels of domestic savings, interest rate and private sector credit. As such, savings is responsive to interest rate and as such, higher savings rate following an increased interest rate would repress the investment or real sector. Therefore, the theoretical frameworks for this study are the financial liberalization hypothesis and the accelerator principle of investment. This follows the linkage between the financial sector including financial inclusion and investment promotion.

Model Specification

Following the financial liberalization hypothesis espoused at the preceding section and adopting the models of Obafemi *et al.,* (2016) and Obiekwe (2020), with modification, the model we want to estimate for the relationship between financial inclusion and gross fixed capital formation (domestic investment) is as follows:

$$GFCF = (ATM, NUMDEP, FDI, M2/GDP, PSC, REMFLO,) \quad (1)$$

Where GFCF is gross fixed capital formation, ATM is automated teller machine, NUMDEP is number of depositors of the commercial banks, FDI is foreign direct investment, M2/GDP

is broad money supply, PSC is private sector credit and REMFLO is remittances. The inclusion of these variables is in line with the measures of financial inclusion and domestic investment. Equation (3.1) can be re-specified mathematically and econometrically in line with the stochastic assumptions as follows:

$$GFCF = \beta_0 + \beta_1 ATM + \beta_2 NUMDEP + \beta_3 FDI + \beta_4 PSC + \beta_5 REMFLO + Ui \quad (2)$$

Equation (3.2) can further be re-specified to account for the proportionality and linearity of the model by introducing their natural logarithms since the values are in nominal forms as follows:

$$LnGFCF = \beta_0 + \beta_1 LnATM + \beta_2 LnNUMDEP + \beta_3 LnFDI + \beta_4 LnPSC + \beta_5 LnREMFLO + Ui \quad (3).$$

Description of Variables and Justification of the Model

Gross Fixed Capital Formation (GFCF): This is the dependent/decision variable. It is measured as a percentage of gross domestic products (GDP). This study used gross fixed capital formation as a proxy for domestic as it comprises private and public investment. Sana, Fakhar, Majid and Sadia (2016) used gross domestic capital formation to capture domestic investment. This is the justification for its inclusion as the dependent variable.

Automatic Teller Machine (ATM): This is the major explanatory variable in the model of this study. ATM represents our financial inclusion in the model. It is measured as number of automated teller machine per 100,000 adults. Ajide *et al.,* (2020) used ATM-both physical financial inclusion and information communication technology (ICT) financial inclusion in a similar study. Thathsarani *et al.,* (2021) used ATM among the other indicators in deriving an index for financial inclusion. It is hypothesized that ATM will impact positives on domestic investment.

Number of Depositors of Deposit Money Banks (NUMDEP): This refers to the number of depositors with the deposit money bank per thousand adults. This is another indicator of financial inclusion. The G20 Financial Inclusion Indicator categorized number of depositors per 1000 adults or number of deposits account per 1000 adults under formally banked adults. We therefore hypothesized a positive relationship between number of depositors per 1000 and domestic investment, proxy by gross fixed capital formation for Nigeria.

Foreign Direct Investment (FDI): Previous empirical studies have shown the relationship between foreign direct investment and domestic investment Kobilwo and Kurbonov (2021) concluded that Uzbiskistan's domestic investment has a greater impact on growth than FDI. Furthermore, Ndikumana and Sher (2008) posited that a key channel of the impact of FDI on development is through its effects on domestic factor market, especially domestic investment and employment. We assumed a positive relationship between foreign direct investment and domestic investment for Nigeria following theoretical and empirical assumptions.

Broad Money Supply (M2/GDP): This is a monetary aggregate and broad money supply to GDP. Broad money supply is an independent explanatory variable in the model. It facilitates credit to the private sector and encourages the growth rates of private investment (Tobias & Manbo, 2012). It is expected that controlled broad money supply will promote domestic investment while preventing inflationary pressures.

Private Sector Credit (PSC): There are various previous empirical studies that examined the relationship between private sector credit and domestic investment. Bank credit is the most important factor investment financing among private enterprises in developing countries including Nigeria. The volume of and access to bank credit available for private sector borrowers have direct influence on private investment activity. The availability of bank credit for private investment and access to available bank credit by private sector operators in Nigeria had been greatly constrained by credit to the government and high interest rate prevalence during market-based monetary regime and this crowd out domestic investment (Ekpo, 2016; Okorie & Chikwendu, 2019).

Remittances (REMFLO): Empirical evidence have shown the justification of remittance as an explanatory variable influencing domestic investment. Dash (2020) concluded that remittances increase domestic investment in the short-run as well as in the long-run for South Asia while Massey and Arrado (1998) concluded that remittances from the U.S accounted for 21 percent of start-up capital of the new business formation in Mexico. Furthermore, Lartey (2011) found that there was not only a positive impact of remittances on economic growth in this region but also a positive interaction effect between remittances and financial depth of growth and investment. We therefore, hypothesized a positive relationship between remittances and domestic investment.

Estimation Technique and Procedure

This paper adopted the multiple regression technique, and the Granger causality approaches in empirically evaluating the relationship between financial inclusion and domestic investment. Prelimary analysis of descriptive statistics, correlation matrix, co-integration test were also carried to enhance the reliability of the estimates. Post estimation examinations (diagnostic and model stability tests) were also conducted. The OLS is the workhorse of every econometric approach. The reliability examination of linearity, model stability, normality and heteroscedasticity in line with the assumptions of OLS was also carried out to ensure reliable estimates for policy inference. The Granger causality test is frequently used in the intertemporal flow of effects between two variables X (financial inclusion) and Y (domestic investment). Y is said to "Granger cause" X if information about the history of Y improves ones's ability to predict the behaviour of X. A simple form of the Granger-causal modeling, which involves two co-integrated and stationary times series {X,Y}, can be causally linked by specifying the following bivariate vector autoregression model.

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \ldots + a_k X_{t-p} + \beta_1 Y_{t-1} + \ldots B_p Y_{t-p} + C + \mu_t \qquad (3.4)$$

Where C is a constant and μ_t is the error term. Following Geweke *et al.,* (1982) procedure, the procedure involves regressing Y (i.e., domestic investment) on the past, present and future

values of X (financial inclusion), and on the future value of Y; and then testing the leads of X. Table 1 presents the summary of the data set.

Table 1: Summary of Relevant Data

Variables	Description/Measurement	Source (s)
GFCF	Proxy for domestic investment. Gross fixed capital formation (measured in percentage of GDP	Central Bank of Nigeria Statistical Bulletin (CBN, 2020)
ATM	Automated teller machine, measure of financial inclusion. Measured per 1000 subscribers	CBN (2020), NBS (2021)
NUMDEP	Number of depositors with commercial banks. Measured by 1000 adults.	CBN (2021)
M2/GDP	Broad money supply. Measured by the velocity of money in circulation	CBN (2021)
PSC	Private sector credit, percentage of GDP.	CBN (2021)
REMFLO	Remittances inflow. Measured in USD	CBN (2020), WDI (2020) NCC, 2020

Note: NBS = National Bureau of Statistics (2020); WDI = World Bank Development Indicator (2021), CBN= Central Bank of Nigeria and NCC= Nigerian Communication Commission.
Source: Researchers' Compilation (2022).

Results, Analysis and Discussion of Findings

Result Presentation and Analyses

The result of the descriptive statistic is presented in Table 1

Table 2: Summary of Descriptive Statistics

	Variables				Variables		
Statistics	**ATM**	**DOC SAV**	**FDI**	**GFCF**	**M_2/GDP**	**PRIV CR**	**REM**
Mean	703.2021	23.12628	1.565491	1.730000	2120000	13.29283	2040000
Median	652.0200	22.66729	1.50573	6440000	2050000	12.9653	2060000
Maximum	1310.290	33.15711	2.96338	5,530,000	6690000	19.62560	17420000
Minimum	296.1700	15.84586	0.688855	1,240,000	3860000	10.24658	2430000
Std. Devia	301.8308	5.156630	0.704420	2030000	1010000	2.793577	2010000
Skewness	0.517376	0.533941	0.406040	1.572369	0.254574	1.218398	0.422826
Kurtosis	2.377910	2.532743	2.147244	4.310389	1.869910	3.564759	2.669441
Jarque Bera	0.850334	0.792575	0.808889	6.770455	0.896195	3.649876	0.480898
Probability	0.653661	0.672818	0.667347	0.033870	3.64976	0.480898	0.786275
Sum	9854.630	323.7679	21.91667	1020000	2960000	186.0997	2860000
Sum Sq.Dv	1184.324	345.6809	6.450690	5380000	1330000	101.4530	5260000

Source: Researchers" computation using EVIEW 10
Note: P-Value = 0.05 (5% significance level)

Table 2 presents the descriptive (summary) statistics of the variables. From the table, it was shown that the mean/average value for ATM subscription is quite high at 703, implying that financial inclusion via ATM card holding in on the high side. The range for financial inclusion

in Nigeria ranges between 14.220 for ATM and 350,000 for domestic investment, also depicting high values for financial inclusion in Nigeria, while the range for domestic saving is 15.212. This is in line with CBN (2012) that financial inclusion increases aimed at increasing access to a broad range of financial services such as payments, savings, remittances, insurance, pension and credit at affordable cost. Table 3 presents the correlation matrix.

Table 3: Correlation Matrix Test Result

	GFCF	**ATM**	**NUMDEP**	**FDI**	**M_2/GDP**	**PSC**	**REMFLO**
GFCF	1.0000	0.752839	-0.103811	-0.380215	0.701536	-0.32204	0.073810
ATM	0.752839	1.000000	-0.480105	-0.709224	0986137	-0.516045	0.37649
DSAVINGS	-0.103811	-0.480105	1.000000	0.694609	-0.551911	0.226652	-0.330214
FDI	-0.380215	-0.709224	0.694609	1.000000	-0.781059	0.413651	-0.2662205
M_2	0.7015	0.986137	-0.551911	-0.781059	1.000000	-0.518002	0.436360
PRECREDIT	-0.322014	-0.516045	0.226652	0.413601	-0.5180	1.000000	-0.53810
REM	0.073810	0.376497	-0.330214	-0.26600	0.4399	-0.53800	1.000000

Source: Authors' computation using EVIEW 10.0 software

Note: GFCF = Gross Fixed Capital Formation; ATM = Automatic teller machine; NUMDEP = Number of Depositors; FDI = Foreign Direct Investment; M_2/GDP = Broad Money Supply; PCRE = Private Sector Credit; REMFLO = Remittance.

The stationarity test present the unit root test and it was carried out to ascertain the stationary levels of the variables and this is followed by the co-integration tests. Both tests are to avoid spurious regression results and to enhance the policy inferences. Table 4 presents the stationarity/unit root test.

Table 4: Unit Root Test Results

Augmented Dickeq-Fuller (ADF)			
Variable	**Level**	**First Difference**	**I(d)**
GFCF	-0.123459	-5.109530	I(1)
ATM	-1.45678	-4.026792	I(1)
NUMDEP	-0.45678	-4.576199	I(1)
FDI	-1.56432	-10.17706	I(1)
M_2/GDP	-0.12359	-6.966705	I(1)
PSC	-2.56740	-4.088133	I(1)
REMFLO	-3.680012	-	I(0)

Source: Authors' computation using E-View 10.0
Note: Significance level could be 1% (***), 5% (**), 10% (*); -4.273277; -3.557759; -3.212361

In interpreting the stationarity test results, the value of t-statistics must be greater than a specified significant level either at the 1%, 5% or 10% levels respectively (in absolute terms). The probability value must be significantly very close to zero. From the result presented in Table 4, all the variables included in the model are integrated of order one, I (0) except remittance, since the ADF values are greater than the critical values, making it appropriate for

the application estimation techniques. This paper further conducted a co-integration test for the series to confirm long-run convergence of the variables and found co-integrating relationships among the variables making it possible for further econometric interrogation of the relationship among the variables. The co-integration examination was investigated using the conventional co-integration approach of the Johansen approach and following the mixed unit root test results. The results are presented in Table 5a and 5b.

Table 5a: Co-integration Test Result

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized No of CE(S)	**Eigen-value**	**Trace Statistic**	**0.05 Critical Values**	**Prob ****
None *	0.714849	123.8356	95.75366	0.0002
At Most 1*	0.683900	81.17455	69.81889	0.0047
At Most 2	0.461383	42.01689	47.85613	0.1583
At Most 3	0.256024	20.97937	29.79707	0.3589
At Most 4	0.217662	10.92401	15.49471	0.2162
At Most 5	0.073022	2.578076	3.841466	0.1084

Trace test indicates 2 cointegraing eqn (s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level.
** MacKinnon-Haugh-Micholis (1999) p-values
Source: Authors' computation using E-View 10.0 software

Table 5b: Co-integration Test Results

Unrestricted Cointegration Rank Test (Maximum Eigenvalues)				
Hypothesized No of CE(S)	**Eigenvalue**	**Max.Eigen Statistic**	**0.05 Critical Values**	**Prob ****
None *	0.714849	42.66103	40.07757	0.0250
At Most 1*	0.683900	39.15767	33.87687	0.0107
At Most 2	0.461383	21.03752	27.58434	0.2740
At Most 3	0.25602	10.05536	21.13162	0.7395
At Most 4	0.217662	8.345931	14.26460	0.3446
At Most 5	0.073022	2.578076	3.841466	0.1084

Max-eigenvalue test indicates 2 cointegrating equ(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
** MacKinnon-Haugh-Micholis (1999) P-values
Source: Authors' computation using E-View 10.0 software

Table 5a and 5b showed the co-integration results. It is evident from the results, that there are 2 co-integrating vectors for the trace statistics and max-eigen statistics. This implies that there is a long-run relationship between financial inclusion and domestic investment in Nigeria. As shown in the literature, giving access to the hundreds of millions of the excluded would provide the possibilities for the creation of a large depository of savings, investible funds, investment and wealth creation in the long-run. Furthermore, in the immediate to the long-term, when low-income earners are given access to financial services, accumulation of capital

will occur and ultimately lead to rise in investment because low-income earners contribute a larger share of the population in developing countries (Omojolaibi & Popogbe, 2018).

The next result presented is the Granger causality test results. The causality does not imply causation, but to test whether the variables in the model Granger-causes each other or not. The result is presented in the appendix, where the rejection of the null hypothesis (Ho) implies the presence of causality between the variables at the 5 percent level of significance. Table 6 presents the Granger causality result.

Table 6: Granger Causality

Pairwise Granger Causality Tests
Date: 06/05/22 Time: 14:25
Sample: 1986 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
NUMDEP does not Granger Cause ATM	12	0.51496	0.6185
ATM does not Granger Cause NUMDEP		0.03570	0.9651
FDI does not Granger Cause ATM	12	0.24102	0.7921
ATM does not Granger Cause FDI		1.82662	0.2300
GFCF does not Granger Cause ATM	12	0.06937	0.9336
ATM does not Granger Cause GFCF		17.9153	0.0018
M2/GDP does not Granger Cause ATM	12	0.32312	0.7341
ATM does not Granger Cause M2/GDP		0.03401	0.9667
PSC does not Granger Cause ATM	12	0.30879	0.7438
ATM does not Granger Cause PSC		3.26370	0.0997
REMFLO does not Granger Cause ATM	12	0.10265	0.9038
ATM does not Granger Cause REMFLO		2.94012	0.1183
FDI does not Granger Cause NUMDEP	34	0.99605	0.3816
NUMDEP does not Granger Cause FDI		1.61416	0.2164
GFCF does not Granger Cause NUMDEP	34	1.47467	0.2455
NUMDEP does not Granger Cause GFCF		3.27462	0.0522
M2 does not Granger Cause NUMDEP	34	0.76861	0.4729
NUMDEP does not Granger Cause M2		0.41937	0.6614
PSC does not Granger Cause NUMDEP	34	1.66286	0.2072
NUMDEP does not Granger Cause PSC		0.74559	0.4833
REMFLO does not Granger Cause NUMDEP	34	5.28643	0.0110
NUMDEP does not Granger Cause REMFLO		1.82158	0.1798
GFCF does not Granger Cause FDI	34	2.89632	0.0713
FDI does not Granger Cause GFCF		0.78325	0.4663
M2 does not Granger Cause FDI	34	1.88113	0.1705
FDI does not Granger Cause M2		0.25994	0.7729
PSC does not Granger Cause FDI	34	0.47960	0.6239
FDI does not Granger Cause PSC		0.62297	0.5434
REMFLO does not Granger Cause FDI	34	2.07925	0.1433
FDI does not Granger Cause REMFLO		0.08128	0.9221
M2 does not Granger Cause GFCF	34	6.96579	0.0034
GFCF does not Granger Cause M2		4.80788	0.0157
PSC does not Granger Cause GFCF	34	1.30029	0.2879
GFCF does not Granger Cause PSC		5.16143	0.0121
REMFLO does not Granger Cause GFCF	34	6.58792	0.0044
GFCF does not Granger Cause REMFLO		1.42354	0.2572
PSC does not Granger Cause M2	34	0.88861	0.4221
M2 does not Granger Cause PSC		1.84397	0.1763
REMFLO does not Granger Cause M2	34	6.08681	0.0062
M2 does not Granger Cause REMFLO		0.66799	0.5205
REMFLO does not Granger Cause PSC	34	8.23868	0.0015
PSC does not Granger Cause REMFLO		1.42235	0.2575

Source: Researchers' Computation using EView 10

From the result, the relationship between domestic investment and ATM was rejected at the 0.05 percent significance level. This implies the acceptance of the alternate hypothesis and therefore causal relationship between domestic investment and automated teller machine. The acceptance of the alternate hypothesis for both variables implies bidirectional causality. So in effect, there is bidirectional causality between ATM and domestic investment. The result is in line with the position of the CBN (2012). The result also showed bidirectional causality between foreign direct investment and ATM and between ATM and foreign direct investment. Foreign direct investment has been considered an important channel for the transfer of technology (ATM) to emerging markets (Liu &Wang (2003). From the result also, there exist unidirectional causality between broad money supply and ATM; bidirectional causality between domestic credit and ATM and bidirectional causality between remittance and ATM.

The result of the causality test as shown is instructive as it indicates strong causality in the model with bidirectional causality between broad money supply and ATM; between domestic credit and ATM, and between remittances and ATM. This implies that the past values of these variables have a predictive/forecasting ability in determining the present value of financial inclusion on domestic investment in Nigeria. Table 6 presents the estimation results.

Table 7: Presents the regression results

Dependent Variable: GFCF
Method: Least Squares
Date: 06/08/22 Time: 20:59
Sample (adjusted): 2007 2021
Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.71E+10	8.85E+10	0.532738	0.6107
ATM	43.996276	1.42E+08	0.310684	0.7651
NUMDEP	8.96E+08	1.21E+09	2.43526	0.0326
FDI	6.51E+09	1.58E+10	0.412428	0.6924
M2/GDP	0.000915	0.004903	-2.186633	0.0052
PSC	2.25E+08	2.17E+09	-2.103474	0.0125
REMFLO	-2.564538	3.564474	-0.719472	0.4952

R-squared	0.92520	Mean dependent var	7.30E+10
Adjusted R-squared	0.90866	S.D. dependent var	2.03E+10
S.E. of regression	1.54E+10	Akaike info criterion	50.05563
Sum squared resid	1.65E+21	Schwarz criterion	50.37516
Log likelihood	-343.3894	Hannan-Quinn criter.	50.02605
F-statistic	2.627620	Durbin-Watson stat	2.529581
Prob(F-statistic)	0.002898		

Source: Researchers' Computation Using EView 10

These results show the estimating relationship between the decision variable (dependent-domestic investment) and the determinants-automatic teller machine, domestic savings, foreign direct investment, broad money supply, private sector credit, and remittance. We can

make predictions from the results. The coefficient of the automated teller machine at 43.996276 penetration level is positive, although insignificant at a probability value greater than the 0.05 level of significance. A viable financial system is guaranteed in the face of increased saving mobilization for investment and this drive has promoted financial sector reforms to enhance financial inclusion. This result corroborates the findings of Obafemi *et al.,* (2016) on the significant and statistical relationship between financial reforms proxy by deepening and domestic investment in Nigeria within the period 1970 to 2013.

The coefficient of number of depositors with deposit money banks is positive, and significant at the 5% level of significance. This result is in line with the theoretical postulations in line with the G2O Financial Indicators Strategy. Ozili (2023), posited that a high monetary policy rate has a significant impact on financial inclusion through a reduction in the number of depositors in the commercial banks while a decrease in interest rate leads to increase in the number of depositors in commercial banks.

Foreign Direct Investment coefficient is positive, although insignificant at the 5 percent level. The result showed the positive relationship between foreign direct investment and domestic investment as theorized. From the result, 1 percent change in foreign direct investment brings about 65 percent increase in domestic investment. The economic preference for foreign capital is based on the underlying assumption that foreign capital inflow helps to augment domestic investment capital gap, improves productivity and enhances competition, as well as managerial and technological spillovers in the host country (Olise *et al.*, 2013). The authors established a negative relationship between the two variables. On a comparative basis, Osabuohien *et al.,* (2017) concluded that both domestic investment and foreign direct investment has significant effect on Nigeria's economic performance, and that the influence of the former (domestic investment) was observed to be far greater than the latter (FDI) with marked difference both in terms of the level of significance and size. The reason for the insignificant relationship between foreign direct investment and domestic is due to the speculative nature of FDI inflow into Nigeria.

The coefficient of broad money supply is positive and significant at the 5 percent level. From the result the impact of real money stock in Nigeria in relation to domestic investment is positive and significant at 0.0009. The Central Bank of Nigeria (CBN) uses its monetary policy tools to influence the market interest rates, and money supply to stabilize the economy. It is assumed that the CBN has only two monetary policy tools for its two monetary policy targets: the monetary policy rates (MPR), which it uses to influence the market interest rates, and the open market operations, which it uses to directly alter the money supply. Moreover, only the CBN can significantly change the money supply using its open market operations. It is expected that reducing the market interest rates, increasing the money supply, or both will stimulate aggregate demand and investment (Ezeibekwe, 2020). The author revealed that the impact of money supply target on investment does not depend on the level of the inflation rate.

The coefficient of private sector credit is positive and significant. As such, a percentage decline in private sector credit will reduce investment (domestic) by 2 levels. Direct bank credit,

according to Ojo (1992), has been in use in developing economies, particularly where the financial system is underdeveloped. This underdevelopment has affected the private sector greatly. The argument has been that the private sector can only make desired contribution especially to investment, if there are sustainable improvement in the areas of volume of transaction/businesses, operational efficiency and increase in number of investors (Onudugo et al., 2014).

The coefficient of remittance is also negatively related to gross fixed capital formation within the reviewing period. It is negative, it's insignificant. A percentage decline in remittance reduces investment by 2 percent. This result is supported by the findings of Tung (2018) for Asia-Pacific region, where the author also identified empirically, the negative relationship between remittance and domestic investment.

In most developing countries, remittances are the second target financial inflows after foreign direct investment. Recently, many studies have shown that remittances promote economic growth in the long-run (Kratou & Gazdar, 2016); help to reduce poverty (Imai *et al.,* 2014); contributes to expansion of the financial sector which promotes investment (Chowdhury, 2011) and increase the efficiency of the banking system, which leads to a better credit environment for domestic firm's (Cooray, 2012) and increase the competitiveness of an economy (Inoue & Hamori, 2016) or improve financial connection between the host country and recipient country (Beine *et al.,* 2012). However, remittances, were also found to have some negative effects on the economy of the recipient countries, such as inequality (Acosta *et al.,* 2008), increase corruption level (Berdiev et al., 2013); rise of the inflation rate (Narayan et al., 2011), or the negative impact of remittances on public spending on education and health-public moral hazard problem (Ebeke, 2012). Noteworthy is the infrequent determination of the relationship in the literature and inconsistent or even contradictory results.

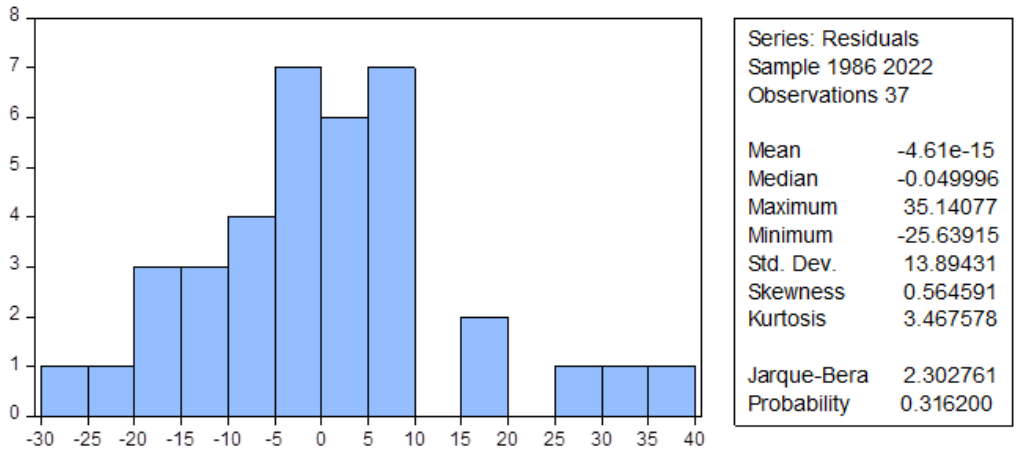
Two diagnostic tests and 2 stability tests were carried out in the model to ensure its reliability and model stability for policy inference. This is the model normality test and heteroscedasticity, the cumulative sum (CUSUM) and cumulative sum of squared residuals (CUSUM sq). The results are presented in Table 8

Table 8: Diagnostic Tests

	T-Stats	**P-Value**
Normality Tests	0.771125	0.680068
Heteroscedasticity	0.4987215	0.7929

Note: Significance level based on 1%, 5% and 10% levels, respectively
Source: Researchers' computation using EView 10

Figure 1: Model normality test result

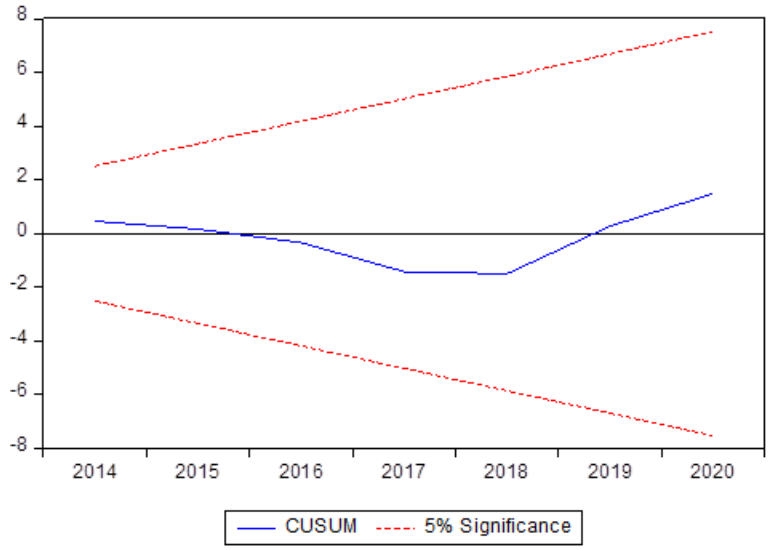


Source: Researchers' Plot Using EView10

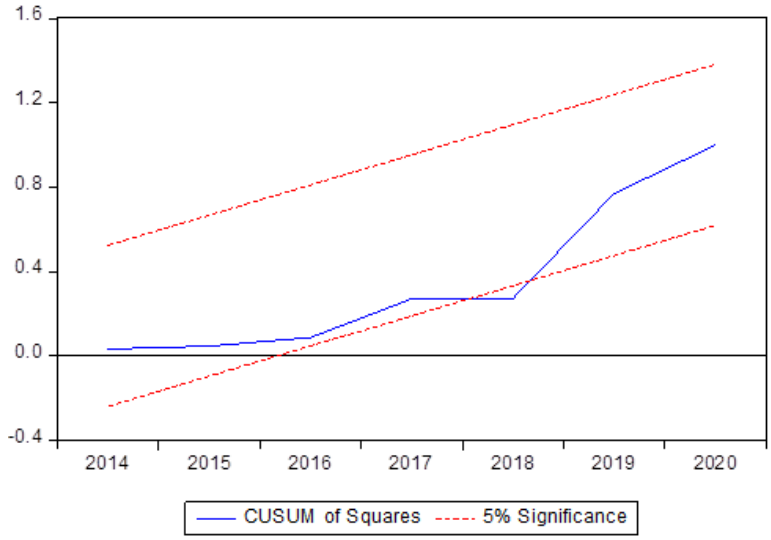
The diagnostic tests reveal that the coefficients are statistically significant. The normality test showed that the regression residual is normally distributed since the p-value is greater than 0.5. Moreover, the heteroscedasticity result showed that we cannot reject the null hypothesis of heteroscedasticity against the alternate of homoscedasticity. The diagnostic tests therefore show that the specifications of the models are well stated and normally distributed with zero mean and constant variance. The models are thus robust and reliable for further analysis-policy inference.

The stability of the model was evaluated using the recursive residuals and cumulative sum (CUSUM) and cumulative sum of squares (CUSUM SUM) within the 5% critical bound (represented by two straight lines whose equations are detailed by Brown et al., 1975). As shown in figure 1 and 2, neither the recursive residuals nor Cusum of squares plots cross the 5 percent critical lines, therefore, we can safely conclude that the estimated parameters for the short-run dynamics and the long-run of financial inclusion/domestic investment function are relatively stable, suggesting also that the model is fairly well specified and robust for policy analysis.

Figure 2: CUSUM and CUSUM Tests Results



Source: Authors' plot using EVIEW 10 software



Discussion of Findings

The broad objective of this study is to examine the impact of financial inclusion on domestic investment in Nigeria (1986 to 2021). Specifically, this study is to: (i) investigate the impact of automated teller machine, number of depositors with deposit money banks and credit to the private sector on gross fixed capital formation; (ii) evaluate the impact of foreign direct investment, broad money supply and remittance on gross fixed capital formation in Nigeria and iii) analyze the causal relationship between automated teller machine, number of depositors and credit to the private sector and gross fixed capital formation.

The preliminary results of the descriptive statistics; the correlation matrix and the unit root tests showed that the results were the data characteristics were normally distributed for policy inference; the correlation matrix showed that the variables were appropriately correlated and there is the presence of stationarity and long-run relationship among the variables. Specifically, from the Granger causality, it was shown that there's a unidirectional causality running from gross fixed capital formation (ATM). This implies that infrastructure is essential for financial inclusion. The great concern is that the largely inefficient e-channels services of most of the deposit money banks. The various e-channels and applications such as ATM, POS and mobile banking platforms that are supposed to facilitate electronic transactions have remained deficient in most areas. ATM card requests by customers stay untreated for weeks and months, while most subscribers to internet and mobile banking platforms complain of poor services. This challenge manifest itself generally in the inadequate financial infrastructure especially in the rural areas where the bulk of the financially excluded are found and this inadequate financial infrastructure therefore limits options for accessing financial services. (Ukama & Adigun, 2013).

From the Granger causality, it was shown that there's a unidirectional causality running from private sector credit to domestic investment, implying that availability of credit is important for investment climate promotion. In the last monetary policy committee meeting of May 23 and 24, 2022, the Central Bank of Nigeria retained the monetary policy rate (MPR) at 13.0 percent. A monetary policy rate of 13.0 and corresponding bank interest of 25 percent upwards discourages borrowing for investment. Again, high saving rate encourages savings which means more loandable funds for investment. As such the directional flow of interest rate via the bank credit transmission mechanisms has a linkage to the investment drive of the economy. This relationship calls for regular examination of the impact of interest rate on investment in Nigeria.

The causality between remittance and domestic investment is insignificant at the 0.05 significance level. In Nigeria, within the reviewing period, remittance does not lead to domestic investment. In 2018, a total of $25.08 billion was remitted by Nigerians in diaspora (PriceWaterCoopers, 2019). This represents about 14 percent increase from 1017 and 83% of the federal governments in 2018. This was about $3 billion higher than the World Bank's previous estimates and placed Nigeria as the highest remittance recipient in Africa and fifth highest globally, behind the likes of India, China, Philippines and Mexico (Izuchukwu *et al.,* 2019). The COVID-19 pandemic seriously affected the inflow of remittance following the lockdown containment measures. As the news of the virus continued to emerge globally, governments across nations issued lockdown directives and imposed travels restrictions which impacted economic activities, triggering key consequences including reduction of inflows of foreign remittances and freezing portfolio flows from developing countries (Karunakar & Sakara, 2020).

Nigeria dominates remittances inflow into sub-Saharan African countries given the country's large diaspora. Following COVID-19 pandemic, Nigeria's remittance inflows declined by 28 percent (US$6.6 billion) to US$17.2 billion in 2020 from US$23.8 billion recorded in 2019. In

2020Q1, remittances inflow fell by 24 percent to US$ 4.2 billion from US$5.6 billion recorded in the corresponding period of the previous year. By first quarter (Q1) of 2021, official data revealed a jump in Diaspora remittances value by 15.5% to US$9.2 billion driven by efforts by the CBN to channel inflow through the domestic banking system by leveraging the Naira4dollar scheme In first quarter 2021, the value of Diaspora remittances was significantly higher than the FDI inflow, demonstrating the resilient nature of migrant remittance and the pandemic. With the rising trade deficit in crude oil price in the wake of the COVID-19 pandemic, the Diaspora remittances could have been used by the authorities to support the foreign reserves and stabilize the exchange rate (PWC, 2022). Consequently, the cost of remittances flowing into Nigeria, which is about 8.9 percent of US$2000, is still relatively high compared to such countries as India (5.4%), Ghana (7.4%) and Eygpt(4.9%) As a result, the Nigerian authority can scale up its remittances inflows by encouraging the use of digital technologies in the entire remittance value chain. This will help to stimulate competition and reduce transaction cost, formalize the informal remittances and streamline the long waiting time between when money is sent and when it is received by the recipient. This will also involve reviewing the existing regulatory structure that inhabits the use of available technology to ease transaction initiation, processing and disbursement.

There exists bidirectional causality between foreign direct investment and domestic investment. The effect of domestic investment on FDI is via the cost reducing and heighten competition hypothesis. Private domestic investment could encourage or discourage FDI flows in an economy. Total investment at the Nigerian Stock Exchange decreased from N297.3 billion in June 2019 to N113.5 billion in July 2019, representing a significant 61.8% decline from the amount invested in June (NSE, 2019). Both domestic and foreign portfolio investment declined during the month, with largest fall accounted for by domestic investment from N200.5 billion in June to just about N55.7 billion in July (72.2% decline in one month). While the foreign invested by may continue to stay away from factors of insecurity, infrastructure decay and unfavourable domestic climate, the domestic investors are equally facing the same challenges (CSEA, 2019). There is bidirectional Granger causality between domestic investment and foreign direct investment. This implies that any policy that promotes foreign direct investment will automatically promote domestic investment.

The co-integration results which helps to determine degree of sensitivity between financial inclusion and domestic investment show that from the trace statistic at the accepted 0.05 level of significance, there are two co-integrating equations. Again, from the max-eigen statistic, there are 2 co-integrating equations. As a result, the co-integrating rank ® is 2. This implies that, for although all the time series are individually non-stationary, i.e., they have stochastic trends, their linear combination is stationary. This suggests that the null hypothesis of no long-run relationship can be rejected and therefore it can be concluded that there is a long-run association between financial inclusion and domestic investment. This also implies that there are some degrees of sensitivity between the associated variables to the influence of individual data for policy.

From the regression results, ATM, domestic savings, foreign direct investments and real money stock impacted positively on financial inclusive, although insignificantly. This implies that these variables are determinants of financial. The result also revealed that private sector credit was found to negatively and insignificantly impact on financial inclusion. Firms and households in Nigeria continue to face barriers in accessing financial services caused by increase in interest rate of bank credit. This negative result is a clear manifestation of barriers to private sector credit in Nigeria. Given that financial inclusion is multi-dimensional, involving both participation barriers and financial frictions that constrain credit availability, policy implications to foster financial inclusion becomes expedient in the Nigerian economy.

Remittances from the regression result were found to impact positively and significantly with gross fixed capital formation. This indirectly influences financial inclusion as remittances are among the most important transactions for populations with limited access to formal banking services. The negative results of remittance impact on financial inclusion means that the three main incentives associated with the positive relationship between remittances and financial inclusion in missing in Nigeria-demand channel, supply channel and policy channel.

Policy Implication of Findings

The policy implications of the estimated model and results are summarized as follows:

i. There is a unidirectional causality running from domestic investment to ATM and a unidirectional causality running from private sector credit to domestic investment. This has implications for economic policy.
ii. It was revealed that remittance inflow has no significant impact on domestic investment.
iii. Bidirectional causality exists between foreign investment and domestic investment. This implies, macroeconomic adjustment aimed at promoting either of the variable will impact on the other meaningfully.
iv. From the regression result, ATM, number of depositors, foreign direct investment and broad money supply impacted positively but significantly on domestic investment. The insignificant of these explanatory variables should be a priority for policy action(s).
v. Both private sector credit and remittance was found to impact negatively on domestic investment. Therefore, policy measures to foster private sector credit and remittance inflow in the immediate to the long-term are necessary.

Conclusion and Policy Recommendation

Conclusion

The conclusion to this paper is made in relation to the specific objectives of this study. Objective 1 is to investigate the impact of automated teller machine, number of depositors of the deposit money banks and private sector credit. From the regression result presented in the preceding section, it was suggested that automated teller machines, number of depositors and private sector credit had positive and significant result in line with the theoretical expectations. The positive result of these variables could be attributed to the banking sector reforms in the Nigerian economy.

Objective 2 is to determine the impact of foreign direct investment, broad money supply and remittance on domestic investment. Again, from the results presented in the regression analysis, foreign direct investment and broad money supply had a positive and significant relationship with domestic investment. This followed implemented monetary and fiscal policy measures within the reviewing periods. The structural reforms and the government policy of attracting investors with concessional conditions that promotes the ease of doing business in Nigeria in addition to government investment grants and provisions accounted for the result.

The third objective is to analyze the direction of causality between automated teller machine, number of depositors of the deposit money banks and private sector credit showed that there is a unidirectional causality between domestic investment and financial inclusion proxy by automated teller machine. It also showed that there is a unidirectional causality between private sector credit and domestic investment. This implies that there is causal relationship between domestic investment and financial inclusion. This paper has contributed to the literature on financial inclusion and domestic investment in the following five ways:

i. This study empirically investigated the impact of financial inclusion on domestic investment in Nigeria. A contribution to the few empirical studies in Nigeria.
ii. Unlike previous studies, this study uses the most recent data set on financial inclusion variables and indicators in estimating the relationship between these variables and domestic investment proxy by gross fixed capital formation.
iii. We offer policy suggestions in light of the evidence that would help Nigerian policy makers to effectively tackle the problems of financial inclusion and challenges to domestic investment promotion in Nigeria.
iv. Theoretically, the Mckinnon –Shaw hypothesis of financial liberalization and the investment accelerator principle was utilized in this study, thereby demonstrating the applicability of these theories to public policy.

Policy Recommendations

The policy recommendations of this study are based on the objectives of this study as follows:

i. Economic policies to promote financial infrastructure needs to urgently provided by the Governments and deposit money bank management especially in the Nigerian rural area and population.
ii. The Government through the Central Bank needs to monitor and evaluate the interest rate mechanism on investment. The interest rate and the bank credit needs adjustment to promote domestic investment. The current lending rate in Nigeria needs to the lowered to promote investment.
iii. Since there is bidirectional causality between foreign and domestic investment, the Government needs to promote the investment climate by the provision of infrastructure, easy of doing business and business registration and tax relief measures. This will also promote the attraction of foreign direct investment in Nigeria.
iv. Initiation of policies that will promote bank credit to the private is needful. This can be done through free collateral bank credit and guaranteed concession to borrower for productive and investment purposes.

v. On the basis of these study findings, we also suggest that the government should have some appropriate policies-monetary and fiscal regarding remittance inflows to the private sector for promoting investment.

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