Financial Liberalization and Fixed Capital Formation in Nigeria: A Reassessment

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ABSTRACT

This study reassesses the impact of financial liberalization on gross fixed capital formation (GCF) in Nigeria. Drawing on the theoretical underpinnings of the McKinnon-Shaw hypothesis, which posits that financial repression hinders economic growth, financial liberalization has been a key reform in developing economies like Nigeria. The study examines the influence of five dimensions of financial liberalization—interest rate liberalization, exchange rate liberalization, capital account openness, capital market capitalization, and private sector credit—on GCF using an expost facto research design and secondary data from the Central Bank of Nigeria and World Development Indicators. Employing the Autoregressive Distributed Lag (ARDL) model, the findings indicate that lending interest rate and capital account openness have a positive and significant effect on GCF in the long run, while the exchange rate exhibits a negative but insignificant effect. Market capitalization and private sector credit show a positive but statistically insignificant impact on GCF. However, the financial liberalization variables collectively demonstrate a significant joint effect on gross fixed capital formation. The study concludes that while certain aspects of financial liberalization positively influence fixed capital formation in Nigeria, the overall impact is varied, suggesting the need for carefully calibrated policies. The findings provide insights for policymakers aiming to stimulate investment, manage inflation, and contribute to sustainable fixed capital formation within a liberalized financial environment.

Keywords: Financial Liberalization, Gross Fixed Capital Formation, Nigeria, ARDL Model, Capital Account Openness

Introduction

Financial liberalization—the dismantling of government restrictions on interest rates, capital flows, and banking sector entry—has been a cornerstone of economic reform in developing economies since the late 20th century (Pradhan et al., 2017). Grounded in the McKinnon-Shaw hypothesis, proponents argue that liberalization fosters efficiency, mobilizes

savings, and channels resources toward productive investments, thereby stimulating economic growth (McKinnon, 1973; Shaw, 1973). Nigeria, like many emerging markets, embraced this paradigm, transitioning from a repressed financial system to a market-driven one through policies such as interest rate deregulation, exchange rate flexibility, and capital account openness (CBN, 2017; IMF, 2016). However, the outcomes have been mixed, with debates persisting about its efficacy in fostering sustainable development, particularly in fixed capital formation—a critical determinant of long-term economic capacity.

The relationship between financial liberalization and **gross fixed capital formation (GCF)**—the net increase in physical assets such as infrastructure, machinery, and technology—remains underexplored, despite GCF's pivotal role in economic development (World Bank, 2018). This study examines how five key dimensions of financial liberalization influence GCF in Nigeria: **(1) interest rate liberalization**, which aims to reduce distortions in borrowing costs but may introduce volatility (Fry, 1997); **(2) exchange rate liberalization**, which can attract foreign investment but also exacerbate currency instability (Okafor, 2018, Temuhale & Achugbu, 2018); **(3) capital account openness (COP)**, which facilitates cross-border capital flows but risks speculative surges (Claessens & Schmukler, 2007); **(4) capital market capitalization (CMC)**, a proxy for financial sector depth and investor confidence (Levine, 2005); and **(5) private sector credit (PSC)**, which reflects access to financing for productive investments (Demirgüç-Kunt & Klapper, 2013).

Despite theoretical optimism, empirical evidence on financial liberalization's impact remains contentious. While studies like Ikeora et al. (2016) highlight its potential to spur investment, others document crises and inequality (Enwobi et al., 2017). In Nigeria, where liberalization was expected to catalyze fixed capital formation, macroeconomic volatility persists—marked by erratic interest rates, currency fluctuations, and uneven access to credit (CBN, 2017). Critics note that market imperfections, such as information asymmetries and speculative capital flows, undermine GCF (Stiglitz in Okafor, 2018). Moreover, the speed and sequencing of reforms—whether gradual or abrupt—may determine outcomes (IMF, 2016). This study thus interrogates: *How do financial liberalization policies shape fixed capital formation in Nigeria, and what regulatory lessons can be drawn for similar economies?* By addressing this gap, the paper contributes to policy debates on balancing liberalization with stability to foster sustainable investment.

The remainder of this paper is structured as follows: **Section 2** reviews the theoretical and empirical literature on financial liberalization and GCF;

Section 3 outlines the methodology, including data sources and model specification; **Section 4** presents the empirical results and discussion; and **Section 5** concludes with policy implications and recommendations.

Conceptual, Theoretical, and Empirical literature Review

Conceptual Review

Economic Development Economic development is a comprehensive concept that extends beyond economic growth to encompass broader improvements in the quality of life. It emphasizes the need for inclusive, sustainable, and people-centered development strategies. Development comprises the entirety of changes through which an entire social system evolves to meet the diverse basic needs and desires of individuals and social groups within that system. It signifies a departure from a widely perceived unsatisfactory condition of life toward a situation or state considered materially and spiritually better (Okereke, 2015). Development has also been conceptualized as a multidimensional process that includes significant changes in social structure, popular attitudes, and national institutions Todaro & Smith, (2006). It also involves the acceleration of economic growth, the reduction of inequality, and the eradication of poverty. Thus, development is intricately tied to the structural relationships within which growth occurs.

Schumpeter (1934) defines development as spontaneous and discontinuous changes in the channels of flow, disturbing the equilibrium, forever altering and displacing the previously existing state of equilibrium. In simpler terms, development involves change that incorporates dynamic processes of innovation. Rostow (1960) defined economic development as a series of sequential stages through which societies pass, starting from traditional societies and progressing to modern, industrialized economies. His model suggested that development is a process of evolving through distinct stages, each characterized by specific economic features and behaviors. The United Nations Development Programme (UNDP) Human Development Report 2020 emphasizes that economic development should expand choices and opportunities, improve quality of life, and focus on a people-centered approach to development (UNDP, 2020).

In "The Idea of Justice" (2009), Amartya Sen discusses how development should be evaluated based on the freedoms and capabilities it enables individuals to have, stressing the enhancement of wellbeing through opportunities, choices, and valued lives (Sen, 2009). This researcher emphasized the importance of enhancing people's well-being by providing them with opportunities, choices, and the ability to lead lives they value.

Sen's definition underscores the human-centric nature of development. Economic development, on the other hand, is a process of structural transformation accompanied by continuous technological innovation and industrial upgrading. This process aims to increase labor productivity and brings about improvements in infrastructure and institutions, thereby reducing transaction costs. It is a comprehensive process through which a nation enhances the economic, political, and social well-being of its people (OECD, 2021).

Economic development is associated with an increase in output along with improvements in the social and political welfare of a country's citizens. It can be described as the enhancement of community well-being through job creation, business growth, income growth, and improvements to the broader social and natural environment that fortify the economy. This process entails the transformation of low-income national economies into modern industrial economies, involving both quantitative and qualitative improvements across all facets of an economy. Moreover, it entails organizing the economy in a way that productive employment is widespread among the working-age population, rather than being confined to a privileged minority.

Economic development also implies greater participation of broad-based groups in making decisions about the economic and other directions that enhance their welfare. Overall, economic development is viewed as a long-term increase in economic real income, involving an increase in per capita income, employment, a reduction in income inequalities, and an increase in the standard of living. The incorporation of variables such as the Human Development Index, unemployment, capital formation, per capita income, and economic growth in this research provides a holistic understanding of the multifaceted nature of economic development.

Gross Capital Formation Capital formation refers to the proposition of present income saved and invested in order to augment future output and income. It usually results from acquisition of new factory along with machinery, equipment and all productive capital goods (Nweke, Odo and Anoke, 2017). It is the main key to economic growth and development, it creates productive efficiency for future production. Adjose and Onyedokun (2018) opined that capital formation is analogous to an increase in the physical capital stock of a nation with investment in social and economic infrastructure. Gross capital formation is a component of the expenditure on Gross Domestic Production and thus shows something about how much of the value added in the economy is invested rather than consumed. It can be classified into Gross Private Domestic Investment and Gross Public Domestic Investment. The gross public includes investment by governments and or public enterprise. Gross Domestic investment is equivalent to gross

fixed capital formation plus net charges in the level of inventories (Jhngan, 2006). Gross Capital Formation consists of fixed assets of the economy plus net charges in the level of inventories.

Fixed assets include land improvement, plants, machinery and equipment purchases and constructions of roads, railways and the like, including schools, offices, hospitals, private residential dwellings, commercial and industrial buildings. Net acquisition of valuables is also considered capital formation. Most economies depend on investment especially developing ones to resolve several economic problems, crises and challenges. According to Adegbite and Owualla (2007) less developed countries in Africa, such as Nigeria, are introducing various economic policies that will attract as well as keep hold of the private investor. This is due to the fact that investment in certain sectors of the economy can rapidly transform the numerous economic challenges these countries are facing as a nation. Investment, both private and public, comes with a lot of benefits such as job creation, increase in per capita income, reduction in the level of poverty, increase in standard of living, increase in Gross Domestic Product, etc, (Adjose and Onyedokun, 2018).

Financial Liberalization and Gross Capital Formation

The relationship between financial liberalization and gross capital formation (GCF) is rooted in the theoretical foundations of financial repression and liberalization, as articulated by McKinnon (1973) and Shaw (1973). These scholars posited that government-imposed restrictions on financial markets—such as interest rate ceilings, credit controls, and barriers to capital mobility—distort savings, investment, and capital allocation, thereby stifling economic growth. Financial liberalization, by contrast, seeks to remove these distortions, enabling market-driven interest rates, efficient credit allocation, and integration with global capital markets. This framework examines how five key dimensions of financial liberalization—interest rates (INR), exchange rates (EXR), capital account openness (COP), capital market capitalization (CMC), and private sector credit (PSC)—influence GCF in Nigeria.

Interest Rates (INR) and GCF

Interest rate liberalization, a core tenet of financial liberalization, shifts from administratively fixed rates to market-determined rates (Fry, 1997). Theoretically, higher real interest rates incentivize savings, which banks can then channel toward productive investments (McKinnon, 1973). However, excessive volatility in interest rates—a common outcome of liberalization—can deter long-term investment by increasing uncertainty for borrowers

(Misati & Nyamongo, 2011). In Nigeria, for instance, erratic lending rates have often discouraged private sector investment in fixed assets like infrastructure and machinery, undermining GCF (CBN, 2017).

Exchange Rates (EXR) and GCF

Exchange rate liberalization replaces fixed or heavily managed regimes with flexible systems, allowing rates to reflect market forces (Okafor, 2018). A stable and competitive exchange rate can attract foreign direct investment (FDI) and lower the cost of imported capital goods, boosting GCF. However, liberalization-induced volatility—such as Nigeria's 2016 currency crisis—can disrupt investment planning, especially for sectors reliant on imported inputs (IMF, 2016). The net effect on GCF thus depends on whether liberalization enhances stability or exacerbates uncertainty.

Capital Account Openness (COP) and GCF

Capital account openness removes restrictions on cross-border capital flows, facilitating FDI and portfolio investment (Obstfeld & Rogoff, 1996). In Nigeria, gradual COP reforms since the 1990s have increased foreign capital inflows, which can supplement domestic savings and fund largescale projects (World Bank, 2018). However, excessive reliance on volatile "hot money" (shortterm portfolio flows) can lead to sudden reversals during crises, destabilizing GCF (Claessens & Schmukler, 2007).

Capital Market Capitalization (CMC) and GCF

A deep and liquid capital market, measured by CMC, provides firms with access to long-term financing for fixed investments (Levine, 2005). Nigeria's stock market expansion postliberalization has enabled firms to raise equity for capital expenditure (Akpan, 2013). Yet, challenges like low liquidity and weak corporate governance limit its impact on GCF (NSE, 2010).

Private Sector Credit (PSC) and GCF PSC, measured as credit-to-GDP, reflects the banking sector's ability to finance private investment (Demirgüç-Kunt & Klapper, 2013). Liberalization aims to expand credit access, but in Nigeria, high borrowing costs and uneven distribution often constrain GCF, particularly for SMEs (Nkwede, 2015).

Theoretical Review: Financial Liberalization and Gross Capital Formation

The study of financial liberalization and its impact on gross capital formation (GCF) is anchored in two pivotal theories: the McKinnon-Shaw Theory of Financial Liberalization and the Finance Driven Growth

Hypothesis by Schumpeter. These theories provide a robust framework for understanding how financial sector reforms influence capital accumulation and long-term economic development. The foundational work of McKinnon (1973) and Shaw (1973) posits that financial repression—characterized by government-imposed interest rate ceilings, credit controls, and barriers to capital mobility—distorts savings and investment, stifling economic growth. Financial liberalization, by contrast, removes these distortions through interest rate deregulation, allowing market-determined rates which incentivizes savings, which banks can channel toward productive investments (Fry, 1997). It also involves capital account openness, facilitating cross-border capital flows that attract foreign direct investment (FDI) and supplement domestic savings (Obstfeld & Rogoff, 1996), and private sector credit expansion, where improved access to financing enables firms to invest in fixed assets like infrastructure and machinery (Demirgüç-Kunt & Klapper, 2013). The theory argues that liberalization enhances GCF by mobilizing savings, as higher real interest rates encourage households to save, increasing the pool of loanable funds for investment (McKinnon, 1973). Furthermore, it improves capital allocation, as market-driven interest rates ensure credit flows to the most productive sectors (Shaw, 1973), and reduces capital costs, as deregulation lowers borrowing costs for businesses, spurring fixed capital expenditure (Banam, 2010). While the theory predicts positive outcomes, empirical evidence from Nigeria shows mixed results due to critiques and contextual challenges such as interest rate volatility, where erratic rates deter longterm investment planning (Misati & Nyamongo, 2011), and speculative capital flows, where rapid capital account liberalization can trigger instability (Claessens & Schmukler, 2007).

Chumpeter (1911) emphasizes the catalytic role of financial intermediaries in economic development. His main propositions include financial deepening, where developed financial markets facilitate innovation and entrepreneurship by providing risk capital, and efficient intermediation, where banks and capital markets allocate resources to high-return projects, boosting GCF. Schumpeter's hypothesis aligns with financial liberalization by highlighting capital market development, where expanded stock markets (proxied by capital market capitalization, CMC) enable firms to raise equity for fixed investments (Levine, 2005), and credit accessibility, where private sector credit (PSC) fuels business expansion and capital expenditure (Nkwede, 2015). While these theoretical links suggest positive outcomes, empirical support from studies in Nigeria note that financial liberalization has deepened capital markets and improved credit access, but gaps persist in translating these gains into sustained GCF due to weak institutions (Aigbokhan, 2017).

Empirical Review

Financial Liberalization and Gross Capital Formation

Munir, Awan, and Hussain (2010) conducted a study in Pakistan to investigate the relationship among investment, savings, real interest rate on bank deposits, and bank credit to the private sector. They also assessed the impact of financial liberalization on key macroeconomic variables for the period 1973 to 2007, utilizing Co-integration tests and the Error Correction Method with annual time series data. Financial liberalization was represented by a dummy variable, taking the value 1 for liberalization years (1990–2007) and zero for non-liberalization years (1973–1989). The study's findings indicated that financial liberalization did not have a positive impact on private credit and private investment due to negative interest rates in certain years attributed to a high inflationary environment in Pakistan. The researchers recommended further deregulation of interest rates to mobilize savings for promoting capital formation and fostering economic growth. While the evidence suggested that financial liberalization did not make a significant impact, the results strongly supported the Mckinnon-Shaw hypothesis.

Rayyanu (2015) investigated the impact of financial liberalization on the economic growth of Nigeria spanning the years 1981 to 2012. The model utilized real GDP in Naira as the dependent variable to gauge economic growth. Financial liberalization was represented by a composite measure that included financial liberalization, exports and imports of goods and services (% of GDP). Additionally, control variables encompassed external debt stock to GDP, government expenditure to GDP, and investment, measured by gross fixed capital formation to GDP. The analysis employed secondary data and applied the Auto-Regressive Distributed Lag (ARDL) methodology. The study's results indicated the presence of both long-term and short-term relationships between financial liberalization and real output.

Orji et al. (2015) examined the impact of financial liberalization on economic growth in Nigeria spanning from 1981 to 2012. Proxies for financial liberalization included the real exchange rate, real lending interest rate, private investment as a ratio of GDP, and a financial liberalization index. Gross domestic product served as a proxy for economic growth. Time series data were collected and analyzed using ordinary least squares and cointegration analysis. The findings of the study indicated that both financial liberalization and private investment had a significant positive influence on economic growth in Nigeria. However, the real lending rate demonstrated a negative relationship with economic growth in Nigeria during the period under review.

3. Methodology

3.1 Research Design

Expost facto research design was used. This involves the use of secondary data.

3.2 Nature and Sources of data

The data for this research work were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Development Indicators (WDI).

3.3 Model Specification The selected statistical model is based on the assumed influence of independent variables on dependent variables. The mode examines the impact of financial liberalization on Gross capital formation. The key variables considered are:

Financial liberalization (independent variable)-proxied by:

Interest Rates (INR), Exchange Rates (EXR), Capital Account Openness (COP), Capital Market Capitalization (CMC), and access to financial services represented in the study by the ratio of private sector credit (PSC) to the GDP. **Economic Development (dependent variable) is proxied by Gross fixed capital formation.**

The model is adopted from Mwanga and Sanday (2013). The model is GDPP = f (FLIB, RSV, GEXP, DOCR) Where: GDPPC = gross domestic product per capita growth rate, flip= financial liberalization index , reserve = ratio of external reserve to short term debt, gexp = ratio of government expenditure to gross domestic product, DOCR = ratio of domestic credit to the private sector to gross domestic product.

The was modified to GCF = f(INR, EXR, COP, CMC, PSC) ----------1

Where GCF = Gross capital formation

In applying ARDL approach, the equation in the model is presented as:

$$\Delta GFCF_t = \beta_0 + \sum_{t=1}^{q} \beta_1 \Delta GFC_{t-1} + \sum_{t=1}^{q} \beta_2 \Delta LIR_{t-1} + \sum_{t=1}^{q} \beta_3 \Delta EXR_{t-1} + \sum_{t=1}^{q} \beta_4 \Delta KAOPEN_{t-1} + \sum_{t=1}^{q} \beta_5 \Delta MCP_{t-1} + \sum_{t=1}^{q} \beta_6 \Delta PSC_{t-1} \quad \text{---------- 2}$$

$\beta 0$- $\beta 5$ are coefficients of the independent variables and is the error term representing the unobserved factors that influence the dependent variable, Δ is the difference operator, α is the speed of adjustment parameter from short run to a long run equilibrium, and *ECT* is the residuals derived from the

estimation of the model given in Equation.

3.4 Method of Data analysis

ARDL model estimation was used.

4.1 Analysis

4.1.1 Trend Analysis of Gross Capital Formation

Gross capital formation decreased from 54.95% in 1986 to 43.64% in 1988 before decreasing continuously to close in 2022 with the minimum value of the entire period of 14.82% of the GDP.

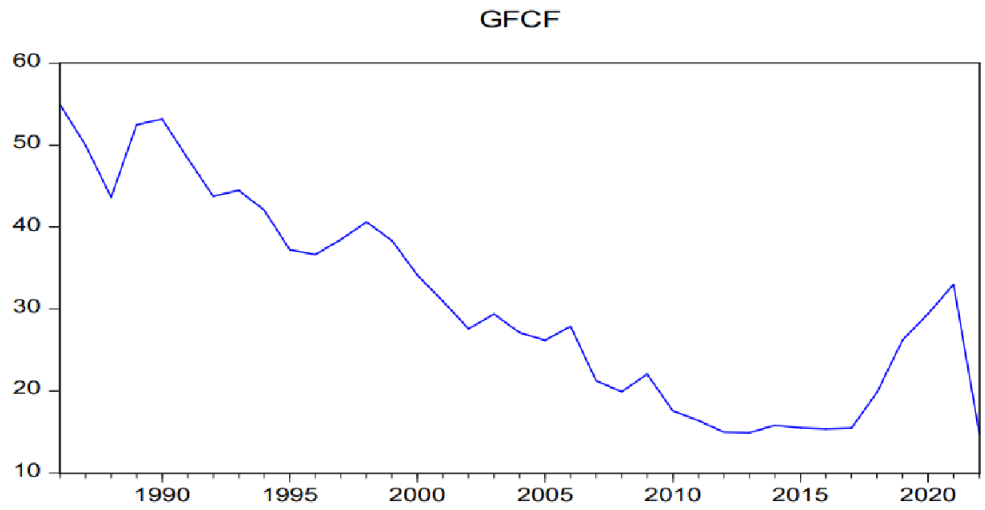

Figure 4.1: Trend in Gross Capital Formation as a %GDP in Nigeria 1986 – 2022
Source: Compilation by the Researcher using Eviews10.0

4.1.2 Unit Root Tests Result

GFCF = f(INR, EXR, COP, CMC, PSC)

As stated earlier, following standard procedure, each time series data within the model underwent a unit root test to evaluate its stationarity. Unit roots are characteristic of certain time series data, and overlooking this assessment may yield unreliable analysis results. Data stationarity is achieved when it exhibits a consistent mean trend and behaves predictably. The results of the unit root test are summarized in Table 4.1.

Table 4.1 Summary of Augmented Dickey Fuller Unit Root

Variable	TEST CONDUCTED	Mackinonnon Critical Value at 5% probability level	Level Test Stat	Mackinonnon Critical Value at 5% probability level	1st Difference Test Stat	Order of Integration
GFCF	ADF	-2.945842	-1.949219	-2.948404	-6.309106	I(1)
LIR	ADF	-2.945842	-3.924601			I(0)
EXR	ADF	-2.945842	2.375022	-2.948404	-4.046518	I(1)
KAOPEN	ADF	-2.945842	-1.649242	-2.948404	-5.744563	I(1)
MCAP	ADF	-2.945842	-1.618239	-2.948404	-6.731008	I(1)
PSC	ADF	-2.951125	-0.684054	-2.951125	-5.478663	I(1)

Source: Computation by the researcher (2024)

The outcomes of the Augmented Dickey-Fuller tests indicate that Gross Fixed Capital Formation (GFCF), Exchange Rate (EXR), Capital Account Openness (KAOPEN), Market Capitalization (MCAP), and Private Sector Credit (PSC) display stationarity at the fi difference (I(1)), whereas the lending interest rate (LIR) is stationary at level (I(0)). This suggests that these variables exhibit stationarity at the designated integration order and with a significance level of 5%.

Result of Normality test

In order to ensure the data's suitability for analysis, we assessed its normal distribution. Weemployed the Jarque-Bera Normality test, which requires a series to display a bell-shapedhistogram to be considered normally distributed. The results of this test are illustrated in Figure4.2, where it's evident that the data distribution conforms to the expected bell shape. The null hypothesis for the Jarque-Bera test states that the data adhere to a normal distribution at a 0.05 significance level. In Figure 4.2, the Jarque-Bera Statistics' p-value is observed to be 0.747661, exceeding the 0.05 threshold. Therefore, we refrain from rejecting the null hypothesis, confirming that the data for Model II follows a normal distribution.

Consequently, insights derived from analyzing the model can be used for inference purposes.

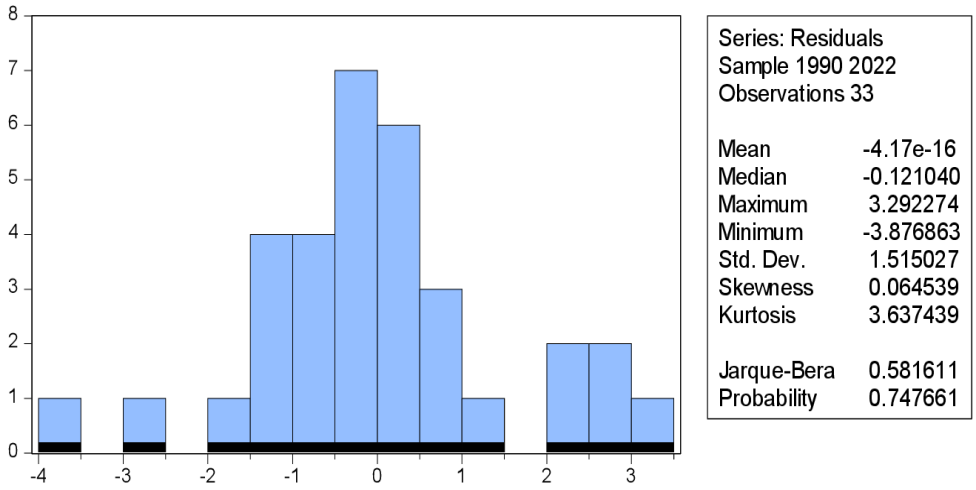

Figure 4.2 **Jarque – Bera Normality Test for Model II**

Source: Computation by the researcher (2024)

4.1.3 Serial Correlation Test

The result of serial correlation test for model I is presented in table 4.4

Table 4.2 Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.975278	Prob. F(2,7)	0.2088
Obs*R-squared	11.90518	Prob. Chi-Square(2)	0.0026

Source: Computation by the Researcher (2024)

The null hypothesis of no serial correlation is accepted judging from the value of probability of the F-statistic which is 0.000<0.05 level of significance. Therefore, the Breusch-Godfrey Serial Correlation LM Test indicates that the residuals may be serially correlated and other robust test should be carried out.

4.1.4 ARDL Co-integration Test and Model Estimation

The unit root tests unveiled a diverse range of integration orders, encompassing both I(0) and I(1), making the Johansen Co-integration test and Engle-Granger Co-integration test unsuitable for application. These tests are tailored specifically for first-order integration data. Instead, the Autoregressive Distributed Lags (ARDL) bound testing technique, pioneered by Pesaran and Shin (1999) along with Pesaran et al. (2001), was

utilized to explore the potential presence of a longterm relationship between the dependent and independent variables within the series. Pesaran and Pesaran (1996a) and Pesaran et al. (2001) underscore the resilience of the ARDL bound testing and estimation approach, highlighting its adaptability to both I(0) and I(1) variables, its appropriateness for small sample data, and its capacity to provide unbiased estimations for longterm relationships and parameters.

As stated in the analysis of Model I, in the ARDL bound test, Pesaran and Pesaran (1996a) and Pesaran et al. (2001) furnish two sets of critical values: one for lower bound I(0) values, assuming all variables exhibit I(0), and another for upper bound I(1) values, assuming all variables demonstrate I(1). Should the F-statistic from the test surpass the lower bound values, it suggests no co-integration. Conversely, if the F-statistic exceeds the upper bound values, it signifies cointegration, implying a long-term equilibrium relationship between the human development index and the independent variables. If the F-statistic lies between the lower and upper bounds, the result remains inconclusive. As per standard procedure, the Akaike Information Criterion (AIC) or an appropriate criterion is employed to ascertain the optimal lag length. In this instance, AIC was utilized for lag length selection, and the chosen model is delineated in Table 4.10. Subsequently, the bound test findings are presented in Table 4.10.

Table 4.3 Selected ARDL Model **(2, 3, 4, 3, 2, 4)**

Dependent Variable: GFCF

Method: ARDL

Date: 02/22/24 Time: 08:50

Sample (adjusted): 1989 2022

Included observations: 34 after adjustments

Maximum dependent lags: 2 (Automatic selection)

Model selection method: Akaike info criterion (AIC)
Dynamic regressors (3 lags, automatic): LIR EXR KAOPEN MCP PSC
Fixed regressors: C
Number of models evalulated: 2048
Selected Model: ARDL(2, 3, 0, 2, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GFCF(-1)	0.934422	0.282689	3.305474	0.0035
GFCF(-2)	-0.792813	0.313158	-2.531668	0.0198
LIR	-0.895229	0.633789	-1.412504	0.1732
LIR(-1)	0.945396	0.807671	1.170522	0.2555
LIR(-2)	2.046425	0.772956	2.647532	0.0154
LIR(-3)	1.645878	0.908208	1.812226	0.0850
EXR	-0.011645	0.012870	-0.904780	0.3764
KAOPEN	7.382909	7.761911	0.951171	0.3529
KAOPEN(-1)	16.86922	6.229126	2.708121	0.0135
KAOPEN(-2)	9.201172	5.730919	1.605532	0.1241
MCP	-0.253160	0.163104	-1.552143	0.1363
PSC	0.507583	0.382202	1.328050	0.1991
PSC(-1)	-0.550281	0.406101	-1.355035	0.1905
C	46.36717	11.66651	3.974382	0.0007

R-squared	0.933753	Mean dependent var	29.15500
Adjusted R-squared	0.890692	S.D. dependent var	11.72674
S.E. of regression	3.877063	Akaike info criterion	5.840934
Sum squared resid	300.6323	Schwarz criterion	6.469435
Log likelihood	-85.29588	Hannan-Quinn criter.	6.055271
F-statistic	21.68461	Durbin-Watson stat	1.972132
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection

Source: Computation by the researcher (2024)

After the appropriate model was selected, the ARDL bound test were conducted according to procedure. The result is presented in Tabe 4.1.

Table 4.4 ARDL Bounds Test

ARDL Bounds Test
Date: 02/05/24 Time: 09:31
Sample: 1988 2022
Included observations: 35
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	6.341805	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Computation by the Researcher (2024)

In the bound test, it is observed from Table 4.4 that the F-statistic of 6.341805surpasses the upper bound value of 3.79 at a 5% significance level. This indicates the presence of a long-term equilibrium relationship between the dependent variable, gross fixed capital formation, which represents economic development, and the independent variables: lending interest rate, exchange rate, capital account openness, market capitalization, and private sector credit, all of which signify financial liberalization. However, despite the existence of a long-term relationship between the dependent and independent variables, there is an error in the short term due to some variables being stationary only at I(0). To ascertain the speed of correction of this error for the attainment of equilibrium in the long run, the ARDL error correction regression is utilized. The ARDL ECM is represented by r.

4.1.5 Regression Analysis

$$\Delta GFCF_t = \beta_0 + \sum_{t=1}^{q} \beta_1 \Delta LIR_{t-1} + \sum_{t=1}^{q} \beta_2 \Delta EXR_{t-1} + \sum_{t=1}^{q} \beta_3 \Delta KAOPEN_{t-1} + \sum_{t=1}^{q} \beta_4 \Delta MCAP_{t-1} + \sum_{t=1}^{q} \beta_5 \Delta PSC_{t-1} \quad \text{---------- 1}$$

Since a long run relationship exists, equation 1 is reparametized and presented as the cointegrating error correction model as stated in equation 2.

$$\Delta GFCF_t = \beta_0 + \sum_{t=1}^{q} \beta_1 \Delta LIR_{t-1} + \sum_{t=1}^{q} \beta_2 \Delta EXR_{t-1} + \sum_{t=1}^{q} \beta_3 \Delta KAOPEN_{t-1} + \sum_{t=1}^{q} \beta_4 \Delta MCAP_{t-1} + \sum_{t=1}^{q} \beta_5 \Delta PSC_{t-1} + \alpha ECT_{t-1} + \mu \quad \text{----------2}$$

Where a ECT is the error correction term as the model transitions from short run perturbations to a long run equilibrium.

Table 4.5 ARDL Cointegrating And Long Run Form Model II

ARDL Cointegrating And Long Run Form

Dependent Variable: GFCF

Selected Model: ARDL(2, 3, 4, 3, 2, 4)

Date: 02/22/24 Time: 09:02

Sample: 1986 2022

Included observations: 33

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFCF(-1))	0.344381	0.322824	1.066777	0.3139
D(LIR)	-2.837474	0.724764	-3.915033	0.0035
D(LIR(-1))	-2.142428	0.857885	-2.497338	0.0340
D(LIR(-2))	-4.477186	1.060423	-4.222074	0.0022
D(EXR)	-0.023961	0.048284	-0.496259	0.6316
D(EXR(-1))	-0.048440	0.060320	-0.803058	0.4426
D(EXR(-2))	0.079460	0.056831	1.398180	0.1956
D(EXR(-3))	-0.111713	0.050383	-2.217283	0.0538
D(KAOPEN)	47.506191	10.932118	4.345562	0.0019
D(KAOPEN(-1))	-34.268579	8.101656	-4.229824	0.0022
D(KAOPEN(-2))	9.989605	3.633609	2.749224	0.0225
D(MCP)	-0.139688	0.161382	-0.865568	0.4092
D(MCP(-1))	-0.552882	0.307132	-1.800142	0.1054
D(PSC)	-0.913770	0.645859	-1.414813	0.1908
D(PSC(-1))	-0.449015	0.498056	-0.901536	0.3908
D(PSC(-2))	0.077542	0.435671	0.177984	0.8627
D(PSC(-3))	-1.260768	0.419738	-3.003705	0.0149
CointEq(-1)	-0.952695	0.181101	-5.260577	0.0005

Cointeq = GFCF - (9.4313*LIR -0.0308*EXR + 93.9170*KAOPEN + 0.7727

*MCP + 0.4817*PSC + 73.8177)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIR	9.431305	1.892879	4.982518	0.0008
EXR	-0.030848	0.027177	-1.135083	0.2857
KAOPEN	93.917024	21.533195	4.361500	0.0018
MCP	0.772677	0.556391	1.388729	0.1983
PSC	0.481730	0.497514	0.968274	0.3582
C	73.817659	9.873288	7.476502	0.0000

Source: Computation by the researcher (2024)

Discussion of Results

The values of the coefficient of lending interest rate in the short run and long run of -0.895229 (Table 4.10) and 9.431305 (Table 4.5) with their corresponding probabilities equal to .1732 and 0.0008 respectively. This shows that the lending interest rate had a negative but insignificant effect in the short run and a positive and significant effect in the long run on gross fix capital formation. The result shows that for every unit increase in the lending interest rate, the gross fix capital will increase by 9.43 units on the long run.

Secondly, the exchange rate has a negative but statistically insignificant effect on gross fixed capital formation both in the short run and in the long run. The values of their coefficients and Pvalues in the short run and in the long run are -0.011645,-0.030848 and 0.3764, 0.2857 respectively. A one-unit increase in the exchange rate is associated with a decrease of 0.030848 units in gross fixed capital formation. However, this coefficient is not statistically significant at conventional levels ($p = 0.2857 > 0.05$. It implies that depreciation of the currency might lead to a decrease in the Gross Fix Capital formation.

The coefficient of Capital account openness of 93.917024 and it's probability of 0.0018 indicates that an increase in capital account openness leads to an increase in gross fixed capital formation, holding other factors constant. This suggests that relaxing trade and export barrier as well as inflow of capital into the economy plays a significant role in promoting economic activity and investment. As revealed in Table 4.7 it shows that for each unit increase in capital account openness, gross fixed capital formation

is expected to increase by 93 units. This coefficient is statistically significant at the 0.05 level, as the p-value is 0.05. This finding is inconsistent with the literature discussed by Munir, Awan, and Hussain (2010), who found that financial liberalization did not have a positive impact on private credit and private investment due to negative interest rates in certain years in Pakistan.

In Table 4.5, the coefficient of market capitalization in the long run of 0.772677 is positive but not statistically significant, with a p-value = 0.1983 > 0.05. This suggests that there is no strong evidence to support the hypothesis that market capitalization has a significant impact on the gross fixed capital formation.

For each unit increase in market capitalization, gross fixed capital formation is expected to increase by approximately 0.772677unit, but again, this coefficient is not statistically significant at conventional levels as P =0.1983> 0.05.

The coefficient of private sector credit as a ratio of GDP (PSC) in the long run is positive but not statistically significant, with a p-value greater than 0.05. This suggests that there is no strong evidence to support the hypothesis that private sector credit has a significant impact on the gross fixed capital formation in the long run.

In table 4.5, CointEq(-1) is the equivalence of the error correction term (ECT). The value of CointEq(-1) = -0.952695 has the right sign and equally shows that about 95% of the errors that occurred in the short run are corrected in each period before equilibrium is attained in the long run. This implied that equilibrium would be attained early in the second period.

Extract from Table 4.3

R-squared	0.933753	Mean dependent var	29.15500
Adjusted R-squared	0.890692	S.D. dependent var	11.72674
S.E. of regression	3.877063	Akaike info criterion	5.840934
Sum squared resid	300.6323	Schwarz criterion	6.469435
Log likelihood	-85.29588	Hannan-Quinn criter.	6.055271
F-statistic	21.68461	Durbin-Watson stat	1.972132
Prob(F-statistic)	0.000000		

The extract from the selected model (Table 4.10) below showed that adjusted R-squared is 0.933753 implying that about 93% of changes in gross fixed capital formation result from the financial liberalization variables under study. The F-statistic tests the overall significance of the

regression model. It compares the explained variance by the model to the unexplained variance. The associated p-value (Prob(F-statistic)) indicates whether the model is statistically significant. In this case, the p-value is 0.00000, which is less than the conventional threshold of 0.05, suggesting that the model is statistically significant at the 5% level. The Durbin-Watson statistic tests for the presence of autocorrelation in the residuals. Values between 1.5 and 2.5 generally indicate that there is no significant autocorrelation. Here, the value is approximately 1.972132, suggesting that there is no significant autocorrelation present in the residuals.

Conclusion

This study revealed that both the lending interest rate and capital account openness demonstrated a positive and significant effect on gross fixed capital formation in the long run. Conversely, the exchange rate was found to have a negative but statistically insignificant effect on GCF. Similarly, market capitalization and private sector credit, while showing a positive influence, did not have a statistically significant impact on gross fixed capital formation individually. However, the analysis showed that collectively, the examined financial liberalization variables exert a significant joint effect on gross fixed capital formation in Nigeria. Given the significant positive impact of lending rates and capital account openness on GCF, policymakers should consider adopting a flexible monetary policy framework that is responsive to the evolving macroeconomic environment. Such a framework can be instrumental in stimulating investment, effectively managing inflation, and ultimately contributing to increased Gross Fixed Capital Formation. The study contributed to knowledge by identifying key drivers of economic outcomes through the analysis of specific financial liberalization measures. The findings can assist policymakers in prioritizing interventions aimed at fostering inclusive growth, enhancing investment levels, and addressing unemployment challenges in Nigeria. For future research, exploring the sector-specific effects of financial liberalization on various industries, such as manufacturing, services, agriculture, and technology, could provide a more detailed understanding of the subject.

References

Aigbokhan, B. E. (2017). *Growth, inequality, and poverty in Nigeria* (ERSA Working Paper No. 702). Economic Research Southern Africa. https://www.econrsa.org

Ali, S., & Amjad, M. (2022). *Financial liberalization, institutional quality and economic growth nexus: Panel analysis of African countries (1996–2021)* (MPRA Paper No. 112233). Munich Personal RePEc

Archive. https://mpra.ub.uni-muenchen.de

Banam, K. C. (2010). Impact of financial liberalization on economic growth in Iran: An empirical investigation. *Middle Eastern Finance and Economics, 7*, 6-37.

Boyd, J. H., & De Nicolo, G. (2003). *The trade-off between financial stability and economic growth: An empirical investigation* (IMF Working Paper No. 03/133). International Monetary Fund. https://www.imf.org

Carbó-Valverde, S., & Sánchez, L. P. (2013). Financial stability and economic growth. In J. F. de Guevara & D. T. Llewellyn (Eds.), *The crisis and beyond: New challenges and opportunities for financial markets and institutions* (pp. 45-68). Palgrave Macmillan.

Central Bank of Nigeria. (2017). *Statistical bulletin*. https://www.cbn.gov.ng Claessens, S., & Schmukler, S. L. (2007). International financial liberalization and the developing countries: An update. *World Bank Economic Review, 21*(3), 415-436. https://doi.org/10.1093/wber/lhm015

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation across countries and over time. *Brookings Papers on Economic Activity, 2013*(1), 402-467. https://doi.org/10.1353/eca.2013.0002

Enwobi, M. B., Mlambo, K., & Ansongu, S. (2017). Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa. *Research in International Business and Finance, 45*, 1-15. https://doi.org/10.1016/j.ribaf.2017.07.143

Fry, M. J. (1997). Emancipating the female elephant: Financial liberalization and economic growth in Asia. *Asian Development Review, 15*(1), 1-32.

Ikeora, J. J., Igbodika, M. N., & Jessie, I. C. (2016). Financial liberalization and economic growth in Nigeria (1987-2013). *IOSR Journal of Humanities and Social Science, 21*(8), 123-132. https://doi.org/10.9790/0837-210808123132

International Monetary Fund. (2016). *Nigeria: Selected issues* (IMF Country Report No. 16/85). https://www.imf.org

Levine, R. (2005). Finance and growth: Theory and evidence. In P. Aghion & S. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1, pp. 865-

934). Elsevier.

Li, R., & Rajan, R. S. (2008). Financial liberalization, financial crises, and income inequality: An empirical investigation. *Journal of Economic Inequality, 6*(4), 345-362. https://doi.org/10.1007/s10888-008-9078-z

Mathieson, D. J. (1980). Financial liberalization and stabilization policy in a developing economy. *Journal of Development Economics, 7*(3-4), 359-395. https://doi.org/10.1016/0304-3878(80)90006-4

McKinnon, R. I. (1973). *Money and capital in economic development*. Brookings Institution. Misati, R., & Nyamongo, E. M. (2012). Financial liberalization, financial fragility and economic growth in Sub-Saharan Africa. *Journal of Financial Stability, 8*(3), 150-160. https://doi.org/10.1016/j.jfs.2011.12.001

Munir, R., Awan, R. U., & Hussain, Z. (2010). Investment, savings interest rate and bank credit to the private sector nexus in Pakistan. *International Journal of Marketing Studies, 2*(1), 140-146. https://doi.org/10.5539/ijms. v2n1p140

Mwanga, J., & Sanday, A. (2013). The effect of financial sector liberalization on economic growth: Evidence from Uganda. *International Journal of Economics and Management Sciences, 2*(9), 58-79.

Nkwede, F. E. (2015). Financial deepening and economic growth in Nigeria. *International Journal of Development and Economic Sustainability, 3*(3), 1-14.

Obstfeld, M., & Rogoff, K. (1996). *Foundations of international macroeconomics*. MIT Press.

Okafor, C. N. (2018). *Financial liberalization and economic development in Nigeria* [Unpublished M.SC. dissertation]. Chukwuemeka Odumegwu Ojukwu University.

Orji, A., Anthony-Orji, O. I., & Mba, P. N. (2015). Financial liberalization and output growth in Nigeria: Empirical evidence from credit channel. *International Journal of Economics and Financial Issues, 5*(1), 297-311.

Pesaran, M. H., & Pesaran, B. (1996). *Working with Microfit 4.0: Windows version*. Oxford University Press.

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed-lag

modelling approach to cointegration analysis. In S. Strom (Ed.), *Econometrics and economic theory in the 20th century: The Ragnar Frisch centennial symposium* (pp. 371-413). Cambridge University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289-326. https://doi.org/10.1002/jae.616

Pradhan, R. P., Arvin, M. B., Bahmani, S., Hall, J. H., & Norman, N. R. (2017). Finance and growth: Evidence from the ARF countries. *The Quarterly Review of Economics and Finance, 66*, 136-148. https://doi.org/10.1016/j.qref.2017.01.009

Schumpeter, J. A. (1911). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. Harvard University Press.

Shaw, E. S. (1973). *Financial deepening in economic development*. Oxford University Press.

Temuhale, J., & Achugbu, A. A. (2019). Effects of macroeconomic variables on stock market returns in Nigeria (1986-2016). *IOSR Journal of Economics and Finance, 10*(1), 51-63. https://doi.org/10.9790/5933-1001045163

UK Parliament. (1986). *Financial Services Act 1986* (c. 60). https://www.legislation.gov.uk

U.S. Congress. (1980). *Depository Institutions Deregulation and Monetary Control Act of 1980* (Public Law 96-221). https://www.congress.gov

U.S. Congress. (1982). *Garn-St. Germain Depository Institutions Act of 1982* (Public Law 97-320). https://www.congress.gov

World Bank. (2018). *World development indicators*. https://databank.world bank.org

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