Forum for Economic and Financial Studies 2024, 2(2), 1133.
https://doi.org/10.24294/fefs.v2i2.1133

Article

Globalization and capital formation in Nigeria

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CITATION

Uzoechina BI, Okafor PC, Ezenwobi NF, et al. Globalization and capital formation in Nigeria. Forum for Economic and Financial Studies. 2024; 2(2): 1133. https://doi.org/10.24294/fefs.v2i2.1133

ARTICLE INFO

Received: 28 February 2024
Accepted: 12 April 2024
Available online: 8 May 2024

Abstract: No country can achieve sustained economic growth without substantial investments in capital formation. Nigeria is rich in natural resources but due to inadequate capital and technology, these resources have not been fully tapped and maximized. This study seeks to provide another gate way to unlocking the dearth of capital formation for development by specifically investigating the impact of financial and trade globalization on capital formation in Nigeria within the period 1990–2022. Autoregressive distributed lag (ARDL) technique was adopted for data analysis. The findings of this study indicate that while trade globalization has negative effect on capital formation in both the long run and short run respectively, financial globalization exerts negative effect on capital formation in the long run but a positive effect in the short run. Nevertheless, Financial and trade globalization exert detrimental effect on capital formation in the long run. A major policy recommendation is that Nigeria should play a key role in the African Continental Free Trade Area in order to boost her trade and financial competitiveness within Africa and so be able to lunch herself into the global space, and thus tap the potential benefits of trade and financial globalization.

Keywords: trade; trade globalization; economic growth; financial globalization; foreign direct investment; capital stock

1. Introduction

According to Chibuzor and Eleh [1], capital formation refers to addition to physical capital stock of a nation. It finds expression in acquisition of machinery, equipment, new factory and all productive capital goods. Capital formation plays a leading role in development process as well as economic growth. It has always been seen as potential growth-enhancing player. Capital formation also determines the national capacity to produce, which in turn, affects economic growth. Sarkar [2] opined that capital formation deficiency is adjudged to be a significant obstacle to sustainable economic growth as sustained economic development cannot take place without substantial investment in capital formation.

Nigeria has been on the decline with respect to capital formation compared to some of her neighbours and this is not helpful in achieving Sustainable Development Goals by the year 2030, which is already less than a decade. **Figures 1** and **2** highlight the trend in capital formation for Nigeria and compare it with one of the smallest country in African called Seychelles.

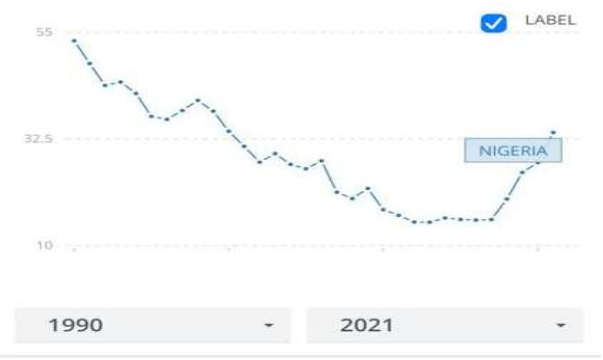

Figure 1. Nigeria's capital formation (% of GDP).
Source: CBN Statistical Bulletin (2022).

Figure 2. Seychelles' capital formation (% of GDP).
Source: CBN Statistical Bulletin (2022).

Figure 1 illustrates downward sloping capital formation for Nigeria from 1990 to 2022 while **Figure 2** represents an upward sloping capital formation for Seychelles, despite occasional fluctuations. When compared, it could be seen that Nigeria will definitely struggle in terms of sustainable economic growth.

According to Mankiw [3], in his "Ten Principles of Economics", he opined that trade makes everyone better off. Trade is seen as a necessary engine of growth. It enables effective and efficient allocation of resources within countries and facilitates the spread of growth from one country to another. Therefore, globalization has become an integral part of the modern world, transforming economies and societies on a global scale. It encompasses the increasing interconnectedness of countries through trade investment and information flows. According to Jhingan [4], globalization is viewed as the fusion of nation states, markets, and technologies together in a way that interaction amongst them becomes easier, faster, deeper and cheaper. One crucial aspect of globalization is its impact on capital formation, which refers to the accumulation of financial resources for investment purposes [5]. Globalization entails interconnectedness and interdependence made possible by trade and technology. It also connotes liberalization of economic activities. According to Bhandari and Heshmati [6], globalization can be categorized into three, which are economic globalization, political globalization and cultural globalization. This study lays emphasis on economic globalization which focuses on flow of capital, technology, labour, goods and services across borders. It is sub-divided into financial and trade globalization [7]. Economic globalization is concerned with the coordination of

financial exchange and integration of international financial markets. Free trade agreements such as the North American Free trade agreement, Trans-pacific partnership and African Continental Free Trade Area agreement are examples of economic globalization.

This study was propelled by the constant dwindling of capital formation in Nigeria leading to decline in economic fortunes and living standards of her citizens. The manufacturing sector lags behind greatly as a result of lack of capital formation. Nigeria is rich in natural resources but due to inadequate capital and technology, these resources have not been optimally tapped. Despite the abundant natural and human resources, unemployment rate is still high as it stood at 37.7% and poverty rate stood at 63% in 2022 [8]. According to NBS [8], while Nigeria's budget for recurrent expenditure was 9.23 trillion naira and the budget for capital expenditure was 3.85 trillion in 2021, the deficit was reported to be 5.196 trillion. It is obvious that the recurrent expenditure outpaces by a distant margin, the capital expenditure and its implications on capital formation are enormous. Other advanced countries allocate more to capital expenditure than recurrent expenditure. It is clear that budgeting alone may not solve the capital needs of Nigeria. There is, therefore, the need to discover other complementary measures through which capital formation could be boosted in order to facilitate quick industrialization of Nigeria and thus reduce the level of unemployment and poverty ravaging the nation, while meeting the SDG goals by the year 2030.

A search in literature shows that there have been empirical studies on factors that influence or determine capital formation in Nigeria. Some of those works are Olukemi [9], Akujuobi et al. [10] and Olaosebikan et al. [11] who investigated the impact of foreign direct investment, public expenditure and capital market performance respectively on capital formation in Nigeria. These empirical works reviewed and many others ignored the impact of globalization on capital formation, which the present study considers very important in the debate on the factors that could have great impact on capital formation. Since, the world has become a global village and Nigeria is a player, it is, therefore, important to investigate the impact of globalization on capital formation in Nigeria in order to fill the knowledge gap that exists in literature and provide a paradigm shift or dependence on budgetary allocations for capital projects. Consequently, this research investigates the impact of trade and financial globalization on capital formation with a view to determining if respite for capital formation could come from globalization.

2. Literature review

2.1. Theoretical literature review

The World Bank [12] asserts that capital formation comprises fixed assets together with net change in inventories. According to Ogunjobi et al. [13], countries require capital goods in order to replace the older ones. The study further opined that countries that do not replace capital goods that experience depreciation experience decline in productive activities. However, savings and investment are necessary conditions for accumulation of additional capital goods. Therefore, countries with high savings rate are capable of accumulating funds to produce capital goods faster and a

government that runs a surplus budget can invest the surplus in capital goods. The accumulation of capital goods gives rise to more investments that produce more goods and services, thus, boosting income and stimulating demand.

2.1.1. The classical theory of capital formation

The classical theory of capital formation, also known as the classical theory of savings and investment is very relevant to this study. Propounded by classical economists such as Adam Smith (1776), David Ricardo (1817) and John Stuart Mill (1848), classical theory opines that accumulation of capital is essential for economic growth, and saving is the key driver of capital formation. The theory suggests that people save a portion of their income, which is then used to fund investment projects. Investment, in turn, leads to the creation of new capital goods, which increase the economy's productive capacity. According to the classical theory, savings provide the funds for investment, and investment creates the demand for capital goods and stimulates economic activity. This, in turn, leads to increased output, income, and further savings. Classical economists also emphasized the role of market forces in allocating savings and investments efficiently and this is where globalization comes into play in enhancing this allocation of savings and investments. The classical economists argued that in a free-market economy (globalised economy), interest rates would adjust to balance the supply of savings with the demand for investment funds. When savings are abundant, interest rates would be low, encouraging increased investment. Conversely, when savings are scarce, interest rates would rise, discouraging investment and promoting savings.

It's important to note that the classical theory of capital formation has been subject to criticism. Other economic theories, such as Keynesian economics, has provided alternative perspectives on savings, investment, and the role of government in influencing capital formation. Nonetheless, the classical theory laid the foundation for understanding the importance of savings, investment, and capital accumulation in economic growth.

2.1.2. Dual gap theory

In the globalized world, no economy thrives in autarky as some trade relations with the rest of the world are necessary, although some countries benefit more from trade relations than others. Higher benefits from trade are made possible due to advancements in technology/capital formation, which propels production in large scale including the production of capital goods. This higher gains from trade are skewed in favour of developed countries, in most cases, relative to developing countries, thus, breeding the exchange rate and savings gaps constraint. Chenery and Strout [14] propounded the dual gap theory to economic development and posit that savings gap and foreign exchange gap constitute impediments to the target growth rate and concluded that foreign capital is necessary for growth, thus, emphasizing the role of globalization in capital formation.

2.2. Empirical literature review

It is to be noted that there is dearth of empirical works on the impact of globalization on capital formation in Nigeria and elsewhere. This is the vacuum in literature this present study seeks to close and thus extend the frontiers of knowledge

on the factors that determine capital formation, especially in Nigeria. The findings of this study and the associated recommendations will be invaluable to governments of other countries and future researchers on how to enhance capacity for capital accumulation. The present review of literature, therefore, concentrated on other determinants of capital formation from previous empirical studies and the critique of these empirical literature reviewed is that they ignored the place of globalization in the quest for capital formation.

2.2.1. FDI and capital formation

With respect to relevant studies conducted for Nigeria, Ogieya and Aigbovo [15] investigated the impact of foreign direct investment, foreign portfolio investment, external debt, trade openness and exchange rate on gross fixed capital formation for Nigeria, Kenya and South Africa. Findings indicate that FDI exerts significant and negative impact on capital formation for Nigeria and South Africa only while it is positive and not significant for Kenya. Exchange rate and foreign portfolio investment exert negative and significant impact on capital formation for Nigeria and South Africa but have no significant impact on capital formation in Kenya. On the other hand, trade openness has a significant but negative impact on capital formation for both Nigeria and Kenya while it is not significant for Kenya. This result on trade openness suggests that trade globalization could not favourable for enhancing capital formation in Nigeria. Further results show that external debt exhibited a positive and significant impact on capital formation in both Nigeria and Kenya but not significant for South Africa. Olukemi [9] extending the work of Uremadu [16] examined the link between foreign direct investment (FDI) and capital formation in Nigeria within the period, 1981–2020. The estimation approach used was the ARDL method. Results showed that FDI has positive and significant impact on capital formation in Nigeria, thus, confirming the study by Alassia et al. [17] but contradicting the findings of Ogieya and Aigbovo [15]. The study suggests the need for government to continue her attraction of foreign direct investment as it stimulates capital formation channel towards enhancing output growth. Alessia et al. [17] found that FDI exerts positive and significant influence on domestic capital formation in developing economies from an industry-level perspective using IV-GMM method. Ameer, Sohag, Xu and Halwan [18] investigated the impact of outbound foreign direct investment (OFDI) on domestic capital formation using a cross-sectional-autoregressive-distributed lag (CS-ARDL) approach to analyze panel data for the period 1996–2017. The empirical findings suggests that OFDI augments private capital formation for developing countries, however, OFDI has a negative association with public capital formation in the established economies while institutional quality (IQ) has a positive relationship. The study, therefore, suggested that OFDI should be improved in developed countries. Mbaluku [19] examined the relationship between foreign direct investment (FDI) and Gross fixed capital formation (GFCF) using OLS as analytical technique. The study suggested that there is a positive relationship between FDI and GFCF. Therefore, FDI acts as a stimulant of economic growth through complementing domestic investment in Kenya.

2.2.2. External debt and capital formation

Muhammad et al. [20] employed the Autoregressive Distributed Lag Technique to investigate the impact of external debt on capital formation in Nigeria for the period 1980 to 2013. Findings indicate that external debt had negative and significant impact on capital formation in Nigeria while savings had bi-directional causal relationship with capital formation, thus making it important in determining capital formation in Nigeria. This result contradicted the findings of Ogieya and Aigbovo [15] who found that external debt exerted positive and significant impact on capital formation in Nigeria. The present study deviates from this to beam its light on globalization, which has received less attention in Nigeria with respect to its impact on capital formation. If Nigeria plays its role well in the globalized market, its rising external debt could be reduced and so boost capital formation. Extending this study for sub-Saharan Africa, Muhammad et al. [20] also investigated the impact of external debt for sub-Saharan Africa and found that it has negative impact on capital formation, which forces a slow down on economic development for sub-Saharan Africa. Ogieya and Aigbovo [15] investigated the impact of external debt on capital formation for Nigeria, Kenya and South Africa. Findings indicate that external debt exhibited a positive and significant impact on capital formation in both Nigeria and Kenya but not significant for South Africa.

2.2.3. Public expenditure and capital formation

In a bid to confirm the study by Kanu and Ozurumba [21], Akujuobi et al. [10] examined the relationship between public expenditure and capital formation in Nigeria within the period, 1981–2018. Adopting ordinary least square technique (OLS), the study found that a significant positive relationship exists between public expenditure and capital formation in Nigeria. Based on the findings, while Kanu and Ozurumba [21] advocated that the government of Nigeria should cut down on her recurrent expenditure in favor of an increased capital expenditure, the study by Akujuobi et al. [10] concluded that public expenditure positively contributed to capital formation in Nigeria and recommend that proper monitoring should be placed on public expenditure administration. We add that budgetary allocation to capital expenditure in Nigeria has proved to be inadequate as could be seen in the decades of deficit financing of the capital budget. There is need to go beyond budgetary allocations to finding an enduring alternative.

2.2.4. Banks, credit and savings on capital formation

Ojimadu et al. [22] investigated the impact of bank credit on capital formation in Nigeria between the years, 1980 and 2014 using ARDL and found a positive but non-significant impact of bank credit on capital formation in Nigeria. Olaosebikan et al. [11] investigated how capital market performance impacts on capital formation in Nigeria. The study adopted autoregressive distributed lag (ARDL) technique. Results indicate that the impact of capital market performance on capital formation is statistically significant. On the other hand, Ila and Radhika [23] examined the impact of savings on capital formation in India using panel data. The study suggests that saving has a significant and positive effect on capital formation. The study concluded that promoting digitization in the financial sector, developing the bond-currency derivatives, improved regulation of the banking sector and a unified financial sector

regulation should be implemented. Employing OLS in data analysis, Omankhanlen [24] investigated the role of banks in capital formation and economic growth. The study found that commercial banks deposit liabilities is elastic to gross fixed capital formation and there is a positive relationship between the variables. The study recommended that monetary authorities should effectively manage banks' maximum lending.

2.2.5. Import/Export and capital formation

Rajni [25] examined the linkages between export, import and capital formation in India using co-integration and Granger causality tests. The results indicate a uni-directional causality between import, export and capital formation flowing from import, export to capital formation. This study is one that is closer to the present study because it gave attention to an aspect of globalization which is trade. Ozuzu and Ewubare [26] extending the study by Udude et al. [27] also investigated the impact of export earnings on capital formation in Nigeria. Data analysis was done using OLS technique. From the findings, the study concluded that oil export earnings had a negative effect on capital formation in the long run and thus, recommends that the federal government should engage in diversification of the Nigerian economy to accommodate agriculture and mining of minerals. Ogieya and Aigbovo [15] investigated the impact of trade openness and exchange rate on gross fixed capital formation for Nigeria, Kenya and South Africa. Findings indicate that exchange rate exerts negative and significant impact on capital formation for Nigeria and South Africa but have no significant impact on capital formation in Kenya. On the other hand, trade openness has a significant but negative impact on capital formation for both Nigeria and Kenya while it is not significant for Kenya. This result on trade openness indicates that trade globalization may not favourable for enhancing capital formation in Nigeria.

From the foregoing, the studies reviewed from various developing countries and elsewhere including Nigeria, Kenya, India and China identified the following as determinants of capital formation: capital market performance, foreign direct investment (FDI), public expenditure, export earnings, bank credit, institutional quality (IQ), savings, import, export, exchange rate, trade openness, external debt and commercial banks deposit liabilities. These studies failed or ignored to consider the impact of globalization on capital formation. Ozuzu and Ewubare [26], posit that it has been agreed that globalization 'is no longer a policy option but a fact to which policy makers must adapt'. Therefore, a study of its impact on capital formation is necessary in order to optimally tap the full benefits of globalization. The hypotheses to test revolve around the significance of the impact of financial and trade globalization on capital formation in Nigeria.

3. Research methodology

3.1. Data and variable descriptions

Data sources, nature and measurement are described in **Table 1** below.

Table 1. Data sources and measurement.

Variables	Measurement	Unit of measurement	Source of data	Justification for the proxy
Capital Formation (CF)	Gross fixed capital formation	% of GDP	WDI	It directly measures the net increase in physical assets and is in line with the work of Kanu and Ozurumba [21].
Financial Globalization (FGL)	Sum of stock of assets and liabilities of FDI	% of GDP	WDI	It captures both the inflow and outflow of capital across borders.
Trade Globalization (TGL)	Exports and imports of goods	% of GDP	WDI	It reflects the movement of tangible goods across borders.
Foreign Direct Investment (FDI)	Net inflow	% of GDP	WDI	It provides a clear indication of the extent to which a country is attracting foreign investments compared to its outward investment activities.
Savings (S)	Gross savings	% of GDP	WDI	It encompasses all savings within an economy without accounting for any deductions such as depreciation.
Human Capital (HC)	Human capital index	Index	WDI	It provides a comprehensive measure of the knowledge, skills and health that individuals accumulate throughout their lives.
Trade openness (TO)	Trade to GDP ratio	% of GDP	WDI	It provides a measure of the importance of international trade relative to the size of an economy.
Exchange rate (EXR)	Currency pair' s spot exchange rate	Currency ratio	CBN	It reflects the current market value at which one currency can be exchanged for another currency.
Import (I)		Monetary value		It represents the value of a country's exports and imports over a specific period.
Export (EX)		Monetary value		It represents the value of a country's exports over a specific period.

Source: Authors' compilation, 2024.

3.2. Definition of variables and justification

1) Gross fixed capital formation: Gross fixed capital formation encompasses gross private domestic investment and gross public domestic investment. It is measured as a percentage of GDP. Its inclusion in the model is justified as it is the primary variable of interest and also, it is considered the most appropriate proxy for capital formation because it directly measures the net increase in physical assets such as machinery, building, equipment and infrastructure. This is in line with the work of Kanu and Ozurumba [21], which also used GFCF as a proxy for capital formation.

2) Financial globalization: Financial globalization refers to the increasing integration of financial markets around the world. It includes things like the free flow of capital and the increasing importance of international financial institutions. Financial globalization has led to increased volatility in financial markets, as well as increased risk and opportunities for investors. It has also increased the interdependence of economies around the world. This variable is measured by foreign direct investment as a percentage of GDP. By including financial globalization, we can assess the flow of capital into Nigeria.

3) Trade globalization: Trade globalization refers to the increasing integration of countries through international trade. It includes the expansion of trade in goods and

services, as well as the increased integration of production and supply chains across countries. It is more specifically defined as the expansion of the volume of trade, the number of countries involved in trade and the range of products and services being traded. It can be measured as sum of trade as a percentage of GDP. By including trade globalization as an independent variable, we can explore how open Nigeria is to foreign trade and how it influences capital formation.

4) Savings rate: Savings rate is the percentage of disposable income that is not spent on consumption. It is the amount of income that is saved, rather than consumed. Savings rate is important because it affects the supply of money available for investment. When people save more, there is more money available to be lent out for investment. This can boost economic growth. Conversely, when people save less, there is less money available for investment. This can slow economic growth. This can be measured as gross savings as a percentage of GDP and it is justified because the part of income not consumed is either saved or invested and according to the Classical theory of capital formation, capital is formed through savings and investment.

5) Human capital: Human capital represents the skills, knowledge, and experience that a person has and can use to produce economic value. This includes things like formal education, on-the-job training, and years of work experience. Human capital is important because it determines a person's productivity and how much they can contribute to an economy. Using human capital index to proxy human capital we show how it influences capital formation and it is justified theoretically according to the Keynesian theory of capital formation. Keynesian economists argue that investments is not limited to physical capital but also extends to human capital and this investment in human capital leads to increased productivity.

6) Trade openness: Trade openness refers to how easily countries allow goods and services to flow across their borders by trading with each other. It involves policies and practices that reduce barriers to international trade, such as tariffs and quotas. This can be measured by the trade-to-GDP ratio.

7) Foreign direct investment: Foreign direct investment (FDI) is when a company or individual from one country invests in an enterprise in another country. This can take the form of acquiring a controlling stake in a company, setting up a new branch or subsidiary, or engaging in a joint venture. FDI can be an important source of capital for developing countries and can help to create jobs and boost the local economy. It can be measured as net inflow as a percentage of GDP and it can be used to assess the level of inflow of investment into Nigeria.

8) Exchange rate: It represents the rate at which one currency can be exchanged for another or converted into another currency. Exchange rates are essential for international trade and finance because it determines the relative value of different currencies, which impacts the cost of goods and services traded between countries. The most common proxy for exchange rate is the currency pair's spot exchange rate which represents the current market value of one currency relative to another currency.

9) Export: This refers to the act of selling goods or services produced within one country to buyers located in another country. When a country exports goods and services, it generates revenue from international trade. Countries often specialize in producing goods or services in which they have a comparative advantage, meaning they can produce more efficiently or at a lower cost than other countries. This can be

measured using a country's trade balance which is the difference between the value of exports and the value of imports.

10) Import: This refers to goods and services that are purchased by a country from foreign producers or sellers and brought into the country's border for consumption, resale or use in production. When a country imports goods or services, it acquires products that may not be available domestically or that can be obtained at a lower cost or higher quality from abroad. This can also be measured using a country's trade balance which is the difference between the value of exports and the value of imports.

3.3. Research model

The model formulated for the purpose of investigating the impact of trade and financial globalization on capital formation in Nigeria was curled from the work of Olowe [28] which incorporated the use of ARDL in estimating the nexus between foreign direct investment and capital formation. Olowe [28] modeled gross fixed capital formation as a function of FDI, GDP, interest rate, inflation rate and government expenditure. But in the present study, we modified the model by Olowe [28] by introducing two dimensions of globalization, which are financial globalization and trade globalization and also included savings rate and other control variables. Based on the theoretical framework of the study, the model for this study is specified as follows:

$$GFCF = f(FGL, TGL, FDI, Sav, HCI, EXR, TOP, EP, IMP \quad (1)$$

where: GFCF = Gross Fixed Capital Formation; FGL = Financial Globalization; TGL = Trade Globalization; FDI = Foreign Direct Investment; SAV = Savings; HCI = Human Capital Index; EXR = Exchange Rate; TOP = Trade Openness; EP = Export; IMP = Import.

The econometric transformation of Equation (1) is stated below:

$$GFCF = \beta$$

$$GFCF = \delta_0 + \delta_1 FGL + \delta_2 TGL + \delta_3 \text{FDI} + \delta_4 \text{Sav} + \delta_5 HCI + \delta_6 EXR + \delta_7 TOP + \delta_8 EP + \delta_9 IMP + \mu \quad (2)$$

where: δ_0 = Constant term (i.e. the intercept); $\delta_1 - \delta_9$ = Parameters to be estimated; μ = Stochastic, disturbance or error term.

This study employed the Autoregressive Distributed Lag (ARDL) technique in estimating the results of this study. This study adopted ARDL, which has several benefits. According to Pesaran et al. [29], ARDL could be applied to series that are either integrated of order one or zero or mutually. It does not produce spurious result as a consequence of serial correlation or endogeneity issues. Following Tahir and Hayat [30], Equation (2) is converted into the short run ARDL framework:

$$\begin{aligned} Ln\text{GFCF}_t = {} & \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{GFCF}_{t-i} + \sum i = 0\ n2 \propto_{2i} Ln\text{FGL}_{t-i} + \sum i = 0\ n3 \propto_{3i} Ln\text{TGL}_{t-i} + \sum i = 0\ n4 \propto_{4i} \\ & Ln\text{FDI}_{t-i} + \sum i = 0\ n5 \propto_{5i} Ln\text{SAV}_{t-i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t-i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}_{t-i} + \sum i = 0\ n8 \propto_{8i} \\ & Ln\text{TOP}_{t-i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t-i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t-i} + \beta_1 Ln\text{GFCF}_{t-i} + \beta_2 Ln\text{FGL}_{t-i} + \beta_3 Ln\text{TGL}_{t-i} + \\ & \beta_4 Ln\text{FDI}_{t-i} + \beta_5 Ln\text{S}_{t-i} + \beta_6 Ln\text{HCI}_{t-1} + \beta_7 Ln\text{EXR}_{t-1} + \beta_8 Ln\text{TOP}_{t-i} + \beta_9 Ln\text{EP}_{t-i} + \beta_{10} Ln\text{IMP}_{t-i} + \epsilon t \end{aligned} \quad (3)$$

$$\begin{aligned} Ln\text{FGL}_t = {} & \propto_0 + \sum i{=}1\ n1 \propto_{1i} Ln\text{FGL}_{t-i} + \sum i = 0\ n2 \propto_{2i} Ln\text{GFCF}_{t-i} + \sum i = 0\ n3 \propto_{3i} Ln\text{TGL}_{t-i} + \sum i = 0\ n4 \propto_{4i} \\ & Ln\text{FDI}_{t-i} + \sum i = 0\ n5 \propto_{5i} Ln\text{S}_{t-i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t-i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}t\text{-}i + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t-i} + \\ & \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t-i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t-i} + \beta_1 Ln\text{FGL}_{t-i} + \beta_2 Ln\text{GFCF}_{t-i} + \beta_3 Ln\text{TGL}_{t-i} + \beta_4 Ln\text{FDI}_{t-i} + \\ & \beta_5 Ln\text{S}_{t-i} + \beta_6 Ln\text{HCI}_{t-i} + \beta_7 Ln\text{EXR}_{t-i} + \beta_8 Ln\text{TOP}_{t-i} + \beta_9 Ln\text{EP}_{t-i} + \beta_{10} Ln\text{IMP}_{t-i} + \epsilon t \end{aligned} \quad (4)$$

$$Ln\text{TGL}_t = \propto_0 + \sum i = 1\ n1\ \propto_{1i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n2\ \propto_{2i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{FDI}t\text{-}i + \sum i = 0\ n5\ \propto_{5i} Ln\text{S}t\text{-}i + \sum i = 0\ n6\ \propto_{6i} Ln\text{HCI}t\text{-}i + \sum i = 0\ n7\ \propto_{7i} Ln\text{EXR}t\text{-}i + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{TGL}_{t\text{-}i} + \beta_2 Ln\text{FGL}_{t\text{-}i} + \beta_3 Ln\text{GFCF}_{t\text{-}i} + \beta_4 Ln\text{FDI}_{t\text{-}i} + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (5)$$

$$Ln\text{FDI}_t = \propto_0 + \sum i = 1\ n1\ \propto_{1i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{FDI}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}t\text{-}1 + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (6)$$

$$Ln\text{S}_t = \propto_0 + \sum i = 1\ n1\ \propto_{1i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8\ \propto 8i\ Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{S}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (7)$$

$$Ln\text{HCI}_t = \propto_0 + \sum i = 1\ n1\ \propto_{1i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{HCI}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (8)$$

$$Ln\text{EXR}_t = \propto_0 + \sum i = 1\ n1\ \propto_{1i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{EXR}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{HCI}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (9)$$

$$Ln\text{TOP}_t = \propto_0 + \sum i = 1\ n_1\ \propto_{1i} Ln\text{TOP}t\text{-}i + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i}\ \beta_1 Ln\text{TOP}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}1} + \beta 4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{HCI}_{t\text{-}1} + \beta_8 Ln\text{EXR}_{t\text{-}1} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (10)$$

$$Ln\text{EP}_t = \propto_0 + \sum i = 1\ n_1\ \propto_{1i} Ln\text{EP}t\text{-}i + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{IMP}_{t\text{-}i}\ \beta_1 Ln\text{EP}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}1} + \beta 4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{HCI}_{t\text{-}1} + \beta_8 Ln\text{EXR}_{t\text{-}1} + \beta_9 Ln\text{TOP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \epsilon t \quad (11)$$

$$Ln\text{IMP}_t = \propto_0 + \sum i = 1\ n_1\ \propto_{1i} Ln\text{IMP}t\text{-}i + \sum i = 0\ n2\ \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3\ \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4\ \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5\ \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6\ \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7\ \propto_{7i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n8\ \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9\ \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10\ \propto_{10i} Ln\text{EXR}_{t\text{-}i}\ \beta_1 Ln\text{IMP}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}1} + \beta 4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{SAV}_{t\text{-}i} + \beta_7 Ln\text{HCI}_{t\text{-}1} + \beta_8 Ln\text{EXR}_{t\text{-}1} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{TOP}_{t\text{-}i} + \epsilon t \quad (12)$$

Equations (3)–(12) are the ARDL transformations of Equation (2). The parameters ($\propto_0$–$\propto_{10}$) measure short-run relationship and (β_1–β_{10}) capture long-run relationships among variables. Equations (3)–(12) were estimated through the ARDL framework.

To test for the stationarity of the time series data, the Phillip-Perron (PP) unit root test, was utilized. This test helps determine if the variables under consideration are stationary in order to avoid spurious regression. The short run coefficients results were obtained using the error correction model, which aims at reconciling the long run behavior of co-integrated variables with their short run response.

4. Discussion of research results

4.1. Descriptive statistics

The descriptive statistics helps us to better understand the internal properties of a time series data. It helps us to know if our data is normally distributed and it also helps us check for outliers within our dataset. This shows the measures of central tendency, mean, median, measures of dispersion, and so on. The summary of the descriptive statistics is shown in **Table 2** below.

Table 2. Summary of descriptive statistics.

	GFCF	FGL	TGL	FDI	SAV	HCI	EXR	TOP	EP	IMP
Mean	11,828.68	51.79	32.31	1.59	33.19	0.62	147.39	0.33	10.26	10.07
Median	6997.62	51.00	34.30	1.45	31.95	0.63	129.35	0.37	10.10	10.01
Maximum	65,227.13	61.80	46.50	5.79	59.02	0.73	450.67	0.53	11.25	11.24
Minimum	262.77	42.90	19.70	0.18	15.84	0.42	8.04	0.09	9.45	9.32
Std. Dev.	16,109.74	5.19	6.35	1.19	11.75	0.08	118.45	0.13	0.48	0.51
Skewness	2.10	0.17	−0.64	1.88	0.48	−0.60	0.89	−0.57	0.48	0.43
Kurtosis	6.73	2.31	3.20	6.99	2.31	2.94	3.12	2.18	2.22	2.28
Jarque-Bera	43.61	0.83	2.37	41.54	1.96	2.02	4.459	2.72	2.13	1.72
Probability	0.00	0.66	0.30	0.00	0.37	0.36	0.11	0.25	0.34	0.42
Sum	390,346.5	1709.20	1066.50	52.66	1095.37	20.59	4863.90	11.07	338.63	332.42
Sum Sq. Dev.	0.003	864.37	1292.19	45.59	4423.17	0.21	449,039.2	0.56	7.62	8.35
Observations	33	33	33	33	33	33	33	33	33	33

Source: Researcher's computation, 2024 using E-views 10.

From **Table 2**, the mean shows the average value of the different time series variables under study. It is observed that the mean value of the dataset lies between the minimum and maximum values of each of the variables with GFCF having the greatest mean value of 11,828.68. The results show that Capital Formation over the period of study stood at 11.828 bn obtaining a maximum value of 65,227.13 bn and a minimum of 262.77 bn. The mean value of Financial Globalization stood at 51.79% with maximum value at 61.80% and minimum value at 42.90%. The mean for Trade Globalization is 32.31%, while its maximum and minimum values are 46.50% and 19.7% respectively. The mean for Savings is 33.2% and it is higher than that of FDI at 1.59% while that of Human Capital index is the least at 0.63%. The mean for Exchange rate is 147.39%, while that of Trade Openness is 0.33%. The mean value of Exports is 10.26% while that of Imports is 10.07%. Furthermore, it is also observed that Gross Fixed Capital Formation (GFCF) and Foreign Direct Investment (FDI) are positively skewed, implying higher values than their sample mean values. Financial Globalization (FGL), Savings rate (S), Exchange rate (EXR), Exports (EP) and Imports (IMP) are normally skewed while Trade globalization (TGL), Trade Openness (TOP) and Human Capital Index (HCI) are negatively skewed. Kurtosis measures the shape of the distribution of a variable. From **Table 2**, Trade Globalization (TGL), Human Capital Index (HCI) and Exchange rate (ER) values are approximately 3 and

it mirrors a mesokurtic distribution, implying that the data is normally distributed. Gross Fixed Capital Formation (GFCF) and Foreign Direct Investment (FDI) mirror a leptokurtic or positive kurtosis suggesting that the distribution is a peaked curve, having more higher values than the sample mean while Financial Globalization (FGL), Trade Openness (TOP), Savings (S), Exports (EP) and Imports (IMP) mirror a platykurtic or negative kurtosis, showing that the distribution possesses a flat curve, having a more lower value than the sample mean.

The Jarque-bera statistics measures the difference between the skewness and kurtosis of the series with those from the normal distribution. The probability of the Jarque-bera statistics is greater than the significance level of 0.05, and it shows that the data is normally distributed.

The correlation coefficient is a statistical measure that calculates the strength of the relationship between the relative movements of two variables and also measures the level of co-linearity amongst variables. The correlation matrix is presented and summarized in the **Table 3**. The coefficients of the correlation matrix are below 0.8 and indicate the absence of multi-colinearity amongst variables. It is also observed that financial globalization, trade globalization, foreign direct investment, savings rate have negative correlation with gross fixed capital formation while human capital index, exchange rate, trade openness, export and import all have positive association with gross fixed capital formation in Nigeria.

Table 3. Summary of correlation matrix.

	GFCF	**FGL**	**TGL**	**FDI**	**SAV**	**HCI**	**EXR**	**TOP**	**EP**	**IMP**
GFCF	1	−0.563	−0.595	−0.472	−0.748	0.343	0.946	0.805	0.836	0.792
FGL	−0.563	1	0.733	0.682	0.367	−0.053	−0.366	−0.229	−0.579	−0.612
TGL	−0.590	0.733	1	0.792	0.350	0.057	−0.473	−0.358	−0.755	−0.765
FDI	−0.472	0.682	0.792	1	0.438	−0.154	−0.326	−0.288	−0.588	−0.591
SAV	−0.748	0.367	0.350	0.438	1	−0.573	−0.731	−0.550	−0.613	−0.574
HCI	0.343	−0.053	0.057	−0.154	−0.573	1	0.396	0.428	0.202	0.205
EXR	0.746	−0.366	−0.473	−0.326	−0.731	0.396	1	0.828	0.753	0.720
TOP	0.705	−0.229	−0.358	−0.288	−0.550	0.428	0.828	1	0.691	0.658
EP	0.736	−0.579	−0.755	−0.588	−0.613	0.202	0.753	0.691	1	0.864
IMP	0.792	−0.612	−0.765	−0.591	−0.574	0.205	0.720	0.658	0.864	1

Source: Researchers computation, 2024, using E-views 10.

4.2. Unit root test for stationarity test

The result of the unit root test is presented in **Table 4** below. The result shows that the variables have mixed order of integration. Only FDI and Exchange rate are stationary at levels while the rest of the variables are integrated at first difference. This makes the application of ARDL possible.

Having ascertained the stationarity of the variables of the model, it becomes pertinent to determine if some set of non-stationary time series variable possess a long-run relationship and tend to move together over time or not. The test for long-run relationship helps to identify the degree of sensitivity between two or more variables. To achieve this, the ARDL bounds testing approach was used to ascertain if there is a

long-run relationship among the variables under study. The result of the bound testing approach is shown in **Table 5**.

Table 4. Summary of ADF unit root test results.

Variable	Phillip Perron Statistic	Critical Value	Level of Significance	Order of integration
GFCF	−3.774077	−3.562882	5%	1(1)
FGL	−7.95737	−2.641672	1%	1(1)
TGL	−7.036223	−2.641672	1%	1(1)
FDI	−2.285705	−1.951687	5%	1(0)
Sav	−7.783376	−2.641672	1%	1(1)
HCI	−5.124326	−2.641672	1%	1(1)
EXR	−3.431065	−2.760411	5%	1(0)
TOP	−8.457948	−2.641672	1%	1(1)
EP	−6.459273	−2.641672	1%	1(1)
IMP	−4.292692	−2.641672	1%	1(1)

Source: Researchers computation, 2024 using E-views 10.

4.3. Co-integration test

The result of the cointegration test is presented in **Table 5** below.

Table 5. ARDL F-Bound test results.

***F*-Bounds test**		**Null Hypothesis: No levels relationship**		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	2582.642	10%	1.88	2.99
K	9	5%	2.14	3.3
		2.5%	2.37	3.6
		1%	2.65	3.97

Source: Researchers computation, 2024 using E-views 10.

From the **Table 5**, the value of the F-statistic which shows the joint significance of the lagged level variables is 2582.64 and is greater than the upper bond 1(1) at 5% level of significance. We therefore reject the null hypothesis and conclude that a long-run relationship exists between the dependent variable and the independent variables under study.

4.4. Long run and short run impact of globalization on capital formation

4.4.1. Long run estimates

Since we have established that there is a long-run relationship amongst the variables under study, the ARDL long run form will be used to estimate the coefficients of the regression model. The estimated long-run coefficients of the model are summarized in **Table 6** below.

Table 6. Long Run ARDL coefficients.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
FGL	−3.168739	0.351652	−9.011	0.0704
TGL	−4.923703	0.355368	−13.8552	0.0459
FDI	1.15684	0.104801	11.0385	0.0575
SAV	1.117968	0.028106	39.7765	0.0160
HCI	6.223492	1.150554	5.409126	0.1164
EXR	1.036178	0.078867	13.13831	0.0484
TOP	−0.729942	0.052519	−13.8986	0.0457
EP	10.015237	0.405947	24.67128	0.0258
IMP	−15.10246	0.660597	−22.8618	0.0278
C	43.607095	0.535668	81.40701	0.0078
Adjusted R-Square = 089; Durbin Watson = 2.07;				

Source: Researchers computation, 2024 using E-views 10.

Table 6 above presents the estimated long run coefficients of the model of the study. The result indicates that Financial Globalization (FGL), Trade Globalization (TGL), Foreign Direct Investment (FDI), Savings (S), Exchange rate (EXR), Trade Openness (TO), Export (EP), and Import (IMP) are statistically significant, although FGL is only significant at 10% level of significance. Human Capital (HCI) is not statistically significant. Furthermore, the long-run partial coefficient of financial globalization (FGL) is −3.169 implying that a unit increase in Financial Globalization (FGL), on average, will lead to 3.169 units decrease in Nigeria's capital formation in the long run. This means that financial globalization exerts a negative effect on capital formation in the long run. The long-run partial coefficient of trade globalization (TGL) is −4.924 implying that a unit increase in trade globalization (TGL), on average, will lead to 4.924 units decrease in Nigeria's capital formation in the long run. This means that trade globalization exerts a negative effect on capital formation in the long run. The long-run partial coefficient of foreign direct investment (FDI) is 1.15684 which implies that a unit increase in foreign direct investment (FDI), on average, will lead to 1.16 units increase in Nigeria's capital formation in the long run. This means that foreign direct investment exerts a positive effect on capital formation in the long run. The long-run partial coefficient of savings (Sav) is 1.1180 implying that a unit increase in savings rate (Sav), on the average, will lead to 1.1 units increase in Nigeria's capital formation in the long run. This means that savings rate exerts a positive effect on capital formation in the long run. The long-run partial coefficient of human capital index is 6.2235 implying that a unit increase in human capital (HCI), on the average, will lead to 6.22 units increase in Nigeria's capital formation in the long run. This means that human capital index exerts a positive effect on capital formation in the long run. The long-run partial coefficient of exchange rate (EXR) is 1.0361 implying that a unit increase in exchange rate (EXR) will lead to 1.04 units increase in capital formation in the long run. This means that exchange rate exerts a positive effect on capital formation in the long run. The long run partial coefficient of Trade openness (TOP) is −0.7299 implying that a unit increase in trade openness (TOP) will lead to 0.73 unit decrease in capital formation in the long run. This means that trade openness

exerts a negative effect on capital formation in the long run. The long run partial coefficient of exports (EP) is 10.0152 implying that a unit increase in exports (EP) will lead to 10.02 units increase in capital formation in the long run. This means that export exerts a positive effect on capital formation in the long run. The long run partial coefficient of imports (IMP) is −15.102 implying that a unit increase in imports (IMP) will lead to 15.10 units decrease in capital formation in the long run. This means that imports exerts a negative effect on capital formation in the long run.

The implications of these findings are discussed in the section for discussion of findings.

4.4.2. Short run estimates

Since cointegration is confirmed, we examine the short run dynamics using the error correction model (ECM). This helps to verify the speed of adjustment of our short run model with its long run counterpart. So, our ECM is specified as follows:

$$Ln\text{GFCF}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{SAV}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{GFCF}_{t\text{-}i} + \beta_2 Ln\text{FGL}_{t\text{-}i} + \beta_3 Ln\text{TGL}_{t\text{-}i} + \beta_4 Ln\text{FDI}_{t\text{-}i} + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}1} + \beta_7 Ln\text{EXR}_{t\text{-}1} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_1 ECT_{t\text{-}1} + \epsilon t \quad (13)$$

$$Ln\text{FGL}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}t\text{-}i + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{FGL}_{t\text{-}i} + \beta_2 Ln\text{GFCF}_{t\text{-}i} + \beta_3 Ln\text{TGL}_{t\text{-}i} + \beta_4 Ln\text{FDI}_{t\text{-}i} + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_2 ECT_{t\text{-}1} + \epsilon t \quad (14)$$

$$Ln\text{TGL}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{FDI}t\text{-}i + \sum i = 0\ n5 \propto_{5i} Ln\text{S}t\text{-}i + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}t\text{-}i + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}t\text{-}i + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{TGL}_{t\text{-}i} + \beta_2 Ln\text{FGL}_{t\text{-}i} + \beta_3 Ln\text{GFCF}_{t\text{-}i} + \beta_4 Ln\text{FDI}_{t\text{-}i} + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_3 ECT_{t\text{-}1} + \epsilon t \quad (15)$$

$$Ln\text{FDI}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{FDI}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}t\text{-}1 + \beta_5 Ln\text{S}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_4 ECT_{t\text{-}1} + \epsilon t \quad (16)$$

$$Ln\text{S}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8 \propto 8i\ Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{S}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{HCI}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_5 ECT_{t\text{-}1} + \epsilon t \quad (17)$$

$$Ln\text{HCI}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{HCI}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{EXR}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_6 ECT_{t\text{-}1} + \epsilon t \quad (18)$$

$$Ln\text{EXR}_t = \propto_0 + \sum i = 1\ n1 \propto_{1i} Ln\text{EXR}_{t\text{-}i} + \sum i = 0\ n2 \propto_{2i} Ln\text{TGL}_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} Ln\text{FGL}_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} Ln\text{GFCF}_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} Ln\text{FDI}_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} Ln\text{S}_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} Ln\text{HCI}_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} Ln\text{TOP}_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} Ln\text{EP}_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} Ln\text{IMP}_{t\text{-}i} + \beta_1 Ln\text{EXR}_{t\text{-}i} + \beta_2 Ln\text{TGL}_{t\text{-}i} + \beta_3 Ln\text{FGL}_{t\text{-}i} + \beta_4 Ln\text{GFCF}_{t\text{-}i} + \beta_5 Ln\text{FDI}_{t\text{-}i} + \beta_6 Ln\text{S}_{t\text{-}i} + \beta_7 Ln\text{HCI}_{t\text{-}i} + \beta_8 Ln\text{TOP}_{t\text{-}i} + \beta_9 Ln\text{EP}_{t\text{-}i} + \beta_{10} Ln\text{IMP}_{t\text{-}i} + \partial_7 ECT_{t\text{-}1} + \epsilon t \quad (19)$$

$$LnTOP_t = \propto_0 + \sum i = 1\ n_1 \propto_{1i} LnTOPt\text{-}i + \sum i = 0\ n2 \propto_{2i} LnTGL_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} LnFGL_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} LnGFCF_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} LnFDI_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} LnS_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} LnHCI_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} LnTOP_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} LnEP_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} LnIMP_{t\text{-}i}\ \beta_1 LnTOP_{t\text{-}i} + \beta_2 LnTGL_{t\text{-}i} + \beta_3 LnFGL_{t\text{-}1} + \beta 4 LnGFCF_{t\text{-}i} + \beta_5 LnFDI_{t\text{-}i} + \beta_6 LnS_{t\text{-}i} + \beta_7 LnHCI_{t\text{-}1} + \beta_8 LnEXR_{t\text{-}1} + \beta_9 LnEP_{t\text{-}i} + \beta_{10} LnIMP_{t\text{-}i} + \partial_8 ECT_{t\text{-}1} + \epsilon t \quad (20)$$

$$LnEP_t = \propto_0 + \sum i = 1\ n_1 \propto_{1i} LnEPt\text{-}i + \sum i = 0\ n2 \propto_{2i} LnTGL_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} LnFGL_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} LnGFCF_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} LnFDI_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} LnS_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} LnHCI_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} LnTOP_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} LnEXR_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} LnIMP_{t\text{-}i}\ \beta_1 LnEP_{t\text{-}i} + \beta_2 LnTGL_{t\text{-}i} + \beta_3 LnFGL_{t\text{-}1} + \beta 4 LnGFCF_{t\text{-}i} + \beta_5 LnFDI_{t\text{-}i} + \beta_6 LnS_{t\text{-}i} + \beta_7 LnHCI_{t\text{-}1} + \beta_8 LnEXR_{t\text{-}1} + \beta_9 LnTOP_{t\text{-}i} + \beta_{10} LnIMP_{t\text{-}i} + \partial_9 ECT_{t\text{-}1} + \epsilon t \quad (21)$$

$$LnIMP_t = \propto_0 + \sum i = 1\ n_1 \propto_{1i} LnIMPt\text{-}i + \sum i = 0\ n2 \propto_{2i} LnTGL_{t\text{-}i} + \sum i = 0\ n3 \propto_{3i} LnFGL_{t\text{-}i} + \sum i = 0\ n4 \propto_{4i} LnGFCF_{t\text{-}i} + \sum i = 0\ n5 \propto_{5i} LnFDI_{t\text{-}i} + \sum i = 0\ n6 \propto_{6i} LnS_{t\text{-}i} + \sum i = 0\ n7 \propto_{7i} LnHCI_{t\text{-}i} + \sum i = 0\ n8 \propto_{8i} LnTOP_{t\text{-}i} + \sum i = 0\ n9 \propto_{9i} LnEP_{t\text{-}i} + \sum i = 0\ n10 \propto_{10i} LnEXR_{t\text{-}i}\ \beta_1 LnIMP_{t\text{-}i} + \beta_2 LnTGL_{t\text{-}i} + \beta_3 LnFGL_{t\text{-}1} + \beta 4 LnGFCF_{t\text{-}i} + \beta_5 LnFDI_{t\text{-}i} + \beta_6 LnSAV_{t\text{-}i} + \beta_7 LnHCI_{t\text{-}1} + \beta_8 LnEXR_{t\text{-}1} + \beta_9 LnEP_{t\text{-}i} + \beta_{10} LnTOP_{t\text{-}i} + \partial_{10} ECT_{t\text{-}1} + \epsilon t \quad (22)$$

The error correction term, which shows the speed of adjustment from one period to another is expected to have a negative sign, assume values between 0 and 1 and also be significant at the 5% level in order to show a strong convergence process to the long-run equilibrium. The result of the ECM specification is reported in **Table 7**.

Table 7. Summary of short run ARDL estimate (error correction model).

Variables	Coefficient	Std. Error	*t*-Statistic	Prob.
D(GFCF(-1))	−0.817196	0.013764	−59.3726	0.0107
D(FGL)	1.253995	0.027495	45.60893	0.014
D(TGL)	−1.558217	0.023488	−66.3416	0.0096
D(FDI)	−0.0379	0.002046	−18.5197	0.0343
D(SAV)	0.549621	0.012184	45.10949	0.0141
D(HCI)	0.884177	0.018204	48.56951	0.0131
D(EXR)	0.09124	0.007014	13.00871	0.0488
D(TOP)	−0.317016	0.009081	−34.9098	0.0182
D(EP)	5.77467	0.165028	34.99198	0.0182
D(IMP)	−5.276793	0.217472	−24.2642	0.0262
CointEq(−1)	−0.346143	0.028458	−12.1634	0.0522
Cointeq = GFCF − (−3.1687*FGL − 4.9237*TGL + 1.1568*FDI + 1.1180*SAV + 6.2235*HCI + 1.0362*EXR − 0.7299*TOP + 10.0152*EP − 15.1025*IMP + 43.6071)				

R-squared = 0.787552; Durbin-Watson stat = 2.43638; Adjusted R-squared 0.650086.

Source: Researchers computation, 2024 using E-views 10.

From the **Table 7**, it is observed that financial globalization (FGL), Savings rate (S), Human capital (HCI), Exchange rate (EXR), Exports (EP) and Import (IMP) all conform to their a priori theoretical expectations in the short run with their coefficients as 1.253, 0.549, 0.884, 0.091, 5.775 and −5.276 respectively, while trade globalization (TGL), foreign direct investment (FDI), and Trade Openness (TO) do not conform to their a priori theoretical expectation with coefficients of −1.558, −0.04 and −0.317 respectively. Thus, a unit increase in financial globalization, savings rate, human capital index, exchange rate and exports, on average, leads to an increase in capital formation in Nigeria by 1.25, 0.55, 0.88, 0.09 and 5.77 units respectively. On the other

hand, a unit increase in trade globalization, foreign direct investment, trade openness and imports, on average, will lead to a 1.56, 0.04, 0.32 and 5.28 units decrease respectively in capital formation in Nigeria in the short run. Results further indicate that the error correction term satisfies the a priori expectation as it assumed a value between 0 and -1, which is correctly signed. Its coefficient is −0.346143 suggesting that the speed of adjustment from the short run back to the long run if there is disequilibrium in the model is about 35%.

4.5. Discussion of findings

The study set out to investigate the effect of globalization on capital formation in Nigeria during the period 1990–2022. The specific objectives in line with the general objective are to determine the impact of financial globalization and trade globalization on capital formation.

The results gotten from the study showed that in the short run, financial globalization has had a positive effect on capital formation while in the long run, it had a negative effect on capital formation and both effects were seen to be statistically significant. This indicates that financial globalization has contributed positively to capital formation in the short run but negatively in the long run. Thus, financial globalization conforms to the a priori expectation in the short run but does not conform in the long run. In the short run, financial globalization has a positive effect on capital formation primarily because it facilitates easier access to external sources of funding and investment. When countries open up their financial market to global flows of capital, they can attract foreign investment, loans and portfolio investments more readily. While in the long run, financial globalization had a negative effect on capital formation because Nigeria is an import-dependent country and therefore, globalization allows other countries to be able to dump their goods in Nigeria leading to increased import and reduced market for domestic competitors. Also, financial globalization has led to increased capital flight, where domestic capital is moved abroad in search of better returns and safety due to perceived risks and uncertainties here in Nigeria and this drains the country of the much-needed investment capital.

The study also discovered that in the short run, trade globalization had a negative and significant effect in both the short run and long run. This indicates that trade globalization has contributed negatively to capital formation in both the long run and short run and this could be attributed to the fact that increased competition from cheaper imports can lead to lower profit margins for domestic producers thus reducing their ability to reinvest profit into capital formation. Also, in a fiercely competitive global market, businesses may prioritize short term profitability over long term investments in capital infrastructure and innovation which are crucial for sustained economic growth.

The study discovered that in the short run FDI had a negative and statistically significant effect on capital formation while in the long run, FDI had a positive and statistically significant effect on capital formation. FDI can have a negative short term impact due to various factors such as disruptions to local industries, job displacements and potential exploitation of natural resources and labor. In the short run, sudden influxes of foreign capital may disrupt local markets, leading to temporary dislocation

of domestic businesses and workers. However, in the long run, FDI tends to have a positive effect by fostering economic growth, technology transfer and skill development. As foreign firms establish a presence in host countries, they bring with them advanced technologies and managerial expertise which can improve productivity and competitiveness in domestic industries. This result conforms to the findings of Olukemi [9] and Uremadu [16] in the long run but not in the short run.

In line with the work of Ila and Radhika [23], the study discovered that in both the short run and long run, savings rate had a positive and statistically significant effect on capital formation. This affirms the classical theory of capital formation which asserts that savings is the key driver of capital formation. In the short run, a higher savings rate directly increases the pool of funds available for investment. This immediate injection of funds into the economy stimulates capital formation leading to increased productivity, job creation and economic growth. Also, in the long run, a sustained high savings rate enables continuous investment in capital-intensive projects and innovation. Therefore, a higher savings rate fosters capital formation both in the short run by providing immediate funds for investing and in the long run by enabling sustained investment in productivity-enhanced endeavors.

The study discovered that human capital had a positive effect in both the long run and short run but the effect was seen to be insignificant in the long run. In the short run, investments in human capital such as education and training programs directly enhance the productivity and efficiency of workers. These investments result in improvements in skills and knowledge, allowing individuals to utilize existing capital more effectively. However, in the long run, while human capital remains crucial, its impact on capital formation may appear relatively insignificant compared to other factors such as technological advancements and institutional reforms. Over time, the initial gains from investments in human capital may reach a point of diminishing returns. This means that as the workforce becomes more educated and skilled, the additional benefits derived from further investments in human capital may not be as substantial. Also, technological progress and changes in the structure of the economy may shift the focus towards capital-intensive industries, where the role of physical capital becomes more prominent.

The study discovered that trade openness had a negative and significant effect in both the long run and short run. This indicates that trade openness has contributed negatively to capital formation in both the long run and short run. In the short run, increased trade openness can lead to heightened competition from foreign imports, which may erode the profitability of domestic industries. This can result in reduced revenues and cash flows for businesses, limiting their ability to invest in capital infrastructure. In the long run, trade openness can also pose challenges to capital formation by exposing domestic industries to volatile global markets and external shocks. Fluctuations in exchange rate, changes in trade policies and shifts in global demand can all disrupt investment plans and deter businesses from committing to long term capital projects. This result aligns with the study by Ogieya and Aigbovo [15] who also found that trade openness exerts negative and significant impact on gross fixed capital formation for Nigeria.

The study discovered that exchange rate had a positive and significant effect on capital formation in both the long run and short run. In the short run, a depreciation of

the domestic currency can boost capital formation by making exports more competitive in international markets. This influx of foreign exchange can provide businesses with the resources needed to invest in capital assets such as machinery, technology, and infrastructure, thereby enhancing productivity and competitiveness. Also, in the long run, a stable and predictable exchange rate can foster investor confidence and facilitate long-term planning and investment. A stable currency reduces uncertainty and volatility, which encourages both domestic and foreign investors to commit to long-term capital projects. This result failed to confirm the study by Ogieya and Aigbovo [15] who found that exchange rate exerts negative and significant impact on capital formation for Nigeria.

The study also discovered that exports had a positive and significant effect on capital formation in both the long run and short run. This indicates that exports have contributed positively to capital formation in both the long run and short run. In the short term, increased exports generate immediate revenue streams for domestic producers, leading to higher profits and cash flows. This influx of funds provides businesses with the resources needed to invest in capital assets such as machinery, technology, and infrastructure, thus enhancing productivity and competitiveness. Also, the expansion of export-oriented industries often stimulates demand for labor, creating job opportunities and boosting incomes, which in turn can further support investment in capital formation. In the long run, sustained export growth contributes to economic stability and resilience by diversifying revenue sources and reducing dependence on domestic markets. Moreover, exposure to international markets encourages innovation and technological advancement as firms strive to meet evolving global demand and maintain competitiveness. It is also important to note that exports not only drive immediate capital accumulation but also lay the foundation for long-term economic development and prosperity through continuous investment in capital assets and innovation.

Lastly, the study discovered that imports had a negative and significant effect on capital formation in both the long run and short run. The implication of this is that imports have contributed negatively to capital formation in both the long run and short run. In the short run, increased imports can lead to heightened competition for domestic producers, which may result in reduced revenues and profitability. This can constrain businesses' ability to invest in capital assets such as machinery, equipment, and research and development, as they face financial pressures to remain competitive in the face of cheaper imported goods. Also, in the short term, a surge in imports may also lead to job displacement and reduced wages in certain industries, further limiting household savings and investment potential. In the long run, reliance on imports can weaken domestic industries and hinder their capacity to develop and innovate. Over time, a consistent trade deficit resulting from heavy reliance on imports may erode the manufacturing base and reduce the incentives for domestic investment in capital-intensive sectors.

5. Conclusions and policy recommendations

5.1. Conclusion

The study examined the impact of globalization on capital formation. The specific objectives of the study were to determine the effect of trade globalization and financial globalization on capital formation. All the data used are secondary data and were obtained from the World Bank Development Indicator (WDI and Central Bank of Nigeria). Some empirical literatures were reviewed to gain more insights on the subject matter and relevant theoretical literature was also reviewed to gain more insight upon which this study was built.

The study found that financial globalization and trade globalization were significant determinants of capital formation in Nigeria at 5% and 10% level of significance. We therefore conclude that both trade globalization and financial globalization do not have a positive effect on capital formation in the long run. Trade globalization can lead to increased competition from foreign imports which will lead to reduced profitability for domestic industries, limiting their ability to reinvest profits into capital assets such as machinery, technology and infrastructure. While financial globalization on the other hand has the tendency to erode domestic investment or lead to capital flight in developing countries like Nigeria. There is, therefore the need for Nigeria to make her presence felt in the global stage by harnessing the full benefits that globalization offers in order to boost capital formation in Nigeria.

5.2. Policy recommendations

A major policy recommendation is that Nigeria should play a key role in the African Continental Free Trade Area in order to boost her trade and financial competitiveness within Africa and so be able to lunch herself into the global space, and thus tap the potential benefits of trade and financial globalization.

Given that trade globalization has a negative effect on capital formation, the government should provide targeted subsidies or incentives for businesses to invest in capital assets such as machinery, technology and research and development. These incentives could help offset the competitive pressures from foreign imports and stimulate domestic capital formation. Furthermore, the government could prioritize infrastructure development and innovation initiatives to enhance the competitiveness of domestic industries and attract investments.

Given that financial globalization has a negative effect in capital formation in the long run, the government should encourage the development of domestic financial institutions that can provide stable and reliable sources of financing for businesses thus, reducing the reliance on volatile international financial markets. The government should also consider implementing targeted capital controls to manage the flow of funds in and out of the country.

Author contributions: Introduction and formal analysis, BIU; conceptualisation, resource and data curation, PCO; writing—review and editing, NFE; software and methodology, GAE; conceptualization, CMO; formal analysis, writing—original draft

preparation, NJE. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

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