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ARTICLE

EFFECTS OF REMITTANCES ON ECONOMIC GROWTH IN NIGERIA

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Abstract

The study examines the effect of Remittances on economic growth in Nigeria. The study investigates remittances in Nigeria for a forty-year period and see how it's effect on economic growth in Nigeria. Remittances in Nigeria witnessed an upward trend in recent decades and have been driven by increased poverty and more need to support families back home by immigrant family members working abroad. This study is unique because it captures Nigeria, which has the highest remittances in Africa, it provides updated data and examines why remittances have not been driving economic growth in Nigeria. Furthermore, we use time series data with real GDP growth rate as the dependent variable and seven explanatory variables (per capita GDP, gross fixed capita formation, inflation, lending interest rate, personal remittances, real effective exchange rate and real GDP). The variables of per capita GDP, gross fixed capital formation, inflation and real GDP were statistically significant while the remaining three variables were not statistically significant in the effect of remittances on economic growth. From empirical findings, this study recommends trade liberalization, increase in capital formation and investment by public and private sectors to attract investment and strengthening of financial system regulation by monetary authorities.

***Keywords**: Personal remittances; Real GDP; Economic growth; Per capita GDP.*

INTRODUCTION

International remittances involve money and goods that are transmitted to households by migrant workers who work outside their home countries (Adam, 2007). Remittance is important given the increasing proportion of migrant workers from developing countries who move to developed economies in search of green pastures. International remittances have been relied on following the decline in official development assistance and increase in uncertainty associated with foreign capital (Mallick & Mahallick, 2015). Report from Global Development Finance (World Bank, 2014) posit that international remittance is the second most important source of external funding for developing countries, next to foreign direct investment. Ratha (2011) asserted that the value of remittances stood at $93million in 2003, rose to $300million in 2012. The World bank estimates show that in

2017, official recorded remittances of low- and middle-income countries stood at $466 billion, which corresponds to 8.5% increase compared to the 2016 figure of $429 billion (Yoshino & Otsuku, 2020).

Further, remittances appear to have become an important source of income for households in developing countries, its rising value, its role in promoting economic performance and improving living conditions of host countries have largely contributed to its prominence. Migrant remittances are driven largely by international migration, technological advancement, financial competitiveness, and the fall in the cost of sending funds from one part of the world to another (Acosta et al., 2006). Adam (2006) posits that since 2000, remittances to developing countries have increased on an annual average of 15 percent. Research show that improvement in reporting and increase in share of remittances transmitted formally tend to lead to an increase in migrant remittance flows globally. Albeit remittances may appear less important or second to FDI, they are larger in value and more stable than FDI and portfolio investment (Zouhaier, 2019; Gupta et al., 2007).

Remittances have become an important source of foreign financing for developing countries. Theoretical studies such as Odishika et al, 2022 assert than remittances impact economies through its effects on growth and development. Studies show that remittances impact human capital development and assuage poverty (Chami et al., 2005). Remittance inflow to Nigeria has remained high, the inflows of finances are largely used as sources of improved livelihood, welfare, and finance of local businesses. Although Nigeria is the highest receiver of remittances in Sub-Saharan Africa (SSA) and eight largest in the world according to World Bank Group (2022), the nation still has a high considerable poverty rate.

Poverty is a global phenomenon that affects all nations, continents, and people differently. Sub-Saharan African countries, Latin (South) America and Asia countries experience the highest levels of poverty and hence low level of socioeconomic development, high level of violence, unrest, and low standard of living (Alfa, Otaida, & Audu, 2014). Based on the World Bank Human development report of 2018, Nigeria was ranked 157 out of 189 countries; the score was below the SSA average. The rate of poverty in Nigeria has witnessed a steady rise despite rich human and natural resources. Even though Nigeria is the largest oil producer in Africa, the country has failed to translate the resource wealth to good living state (Ikem, 2018; Okwuosa & Uroko, 2019). Nigeria Multidimensional Poverty Index (MPI) Report (2022) assert that 63 percent of the Nigerian people (133 million) live in multidimensional poverty. “Over half of the population who are multidimensionally poor work with dung, wood, or charcoal, rather than cleaner energy. High deprivations are also apparent in sanitation, time for

healthcare, food insecurity and housing. Multidimensional poverty is higher in rural areas where 72 percent of people are poor compared to 42 percent of people in urban areas" MPI (2022). In a bid to address the poverty, successive Nigerian governments have designed several anti-poverty programs, but these programs have not yielded significant improvement in Nigeria's Human Development Index (Federikumo et al., 2018).

Motivation of the Study

Studies show marked significant disparities in global remittances flow (Adams, 2006; Kelbore, 2005). Since 1980s, there has been a surge in remittances flow to countries in Latin America, the Caribbean and East Asia and Pacific regions and this surge has been higher than the average for developing countries (Adams, 2006). In 2016, the top three recipients of remittances are India, China and Philippines which accounted for more than one third of remittances sent to developing countries. From the list of top ten recipients, only one (Nigeria) is in Sub Saharan Africa, while three of the countries are in South Asia (Bangladesh, India and Pakistan) Iseghohi, (2021).

Theories such as altruism, self-interest portfolio management e.tc have motivated remittances flow and driven by the need to cater for the welfare of relatives back in their home countries and communities. Johnson and Whitelaw (1974) state that altruism is a major consideration for the flow of remittances to any country. This position was buttressed by Lucas and Stark (1985) who assert that the motives for remitting money is pure altruism and care for those left behind in their home countries.

Copious theories of exchange rate especially the ones that relate to remittance have explained the motive for remittance. One of such theories is Pareto theory which opines that improving exchanges between the migrant and the household based on the services of the household members perform on behalf of the migrant. The agents (household) determine the outcome and divisions of gains based on their relative bargaining powers and their external options which is found somewhere between the market price for such services and the opportunity cost of the recipient (Rapoport & Docquier, 2006). Based on this theory, non-negatively constraint is binding, and the last unit of remittances sent by migrant to the household (recipient) is not equivalent to the agent marginal utilities of consumption, but it compensates for the services performed by the household.

Assessment of the role of remittances have been of keen interest for policy makers and economic development experts in recent decades for the economic development of Africa and other developing countries. The rise in interest rate stems from the important source of development finance in developing countries since 1980s. Given the dwindling official development assistance and inadequate capital flows, remittances are now relied upon

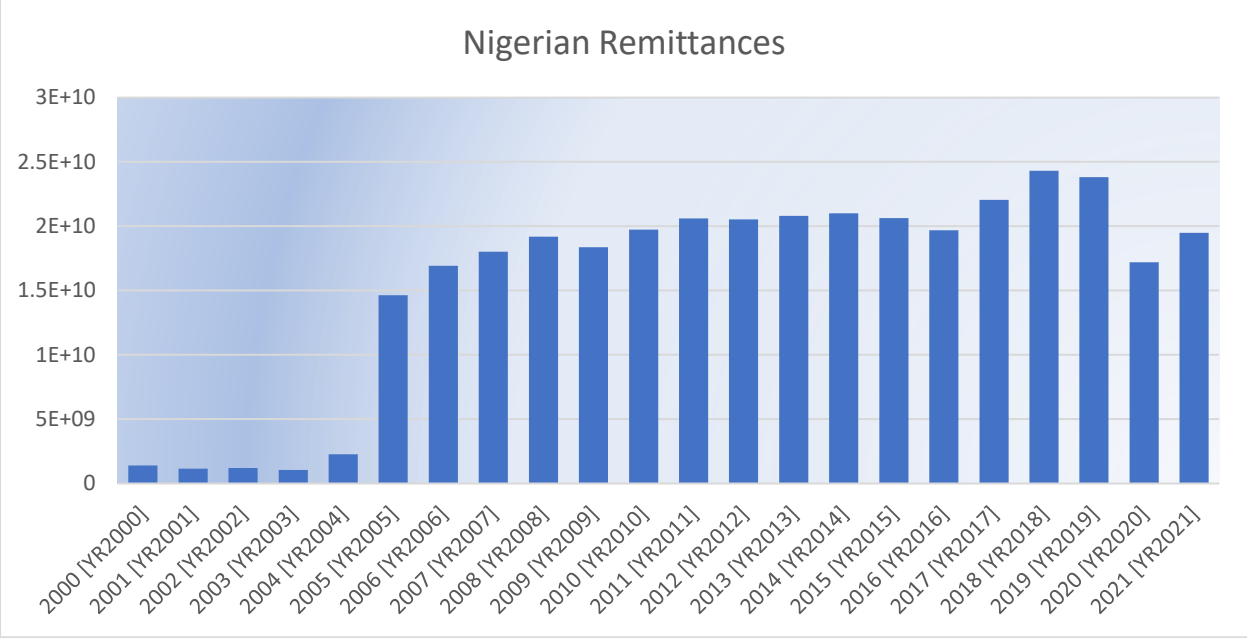
by many developing countries including Nigeria to complement scarce domestic resources they experience. This enables remittances promote socio-economic prospects for developing countries.

Contributions of the Study

Over the years, Nigeria and developing countries have witnessed migration of their citizens to advanced countries of the world in search of greener pastures. From reports studied, we see that Nigeria contributes significantly to the upward trend of remittances within the sub-Saharan Africa and this has resulted in the continuous increase in the inflow of remittances to the developing countries as well. Although the increasing remittances inflow and their propensity of closing domestic savings-investment gap still exist, there is a little attention paid to the macroeconomic determinants of remittances for Nigeria and Sub-Saharan Africa.

Further, improved immigration between the developed and developing countries have resulted in persistent increase in the flow of remittances to developing nations. The technological advancement, improved communication technology and international transfer of payment among individuals at low cost have contributed to increasing remittances. (Meyer & Shera, 2017). Olayungbo and Quadri (2019) assert that remittances constitute a significant source of savings and capital for investments in health, education, and entrepreneurship, by that enhances productivity and employment. Hence, this leads to economic growth and poverty reduction. Remittances can increase financial sector growth given as some of the remittances are converted and deposited with banks, hence providing funds for lending to the private sector which then promotes economic growth (Bashir, 2020).

In recent decades, researchers have shown keen interest in investigating the impact of remittances on various dimensions of development in the recipient countries. The data and activities of the World Bank and International Monetary Fund are key institutions that arouse this curiosity of investigating the impact of remittances on development outcomes, especially poverty reduction. These two institutions assert that if remittances are effectively utilized, they can be a driving factor in the development and stimulation of economic growth in host countries (Zouhaier, 2019). Also, studies show that countries can effectively harness the positive externalities inherent in migrants' remittances and this will cut down poverty. The potential pathways to achieve this with remittances include human capital development, financial sector development and economic growth (Zouhaier, 2019; Anyanwu & Erhijiakpor, 2010).



Source: World Development Indicator.

Hypothesis

Null Hypothesis: H_0: Remittances have no effect on Economic growth.

Alternative Hypothesis: H_A: Remittances have effect on Economic growth.

Research Problem

Nigeria is the leading recipient of remittances in Africa, and this implies that more Nigerians are resident outside the country compared to other countries in Africa. The lack of sufficient opportunities and prevailing underemployment and unemployment in Nigeria have resulted in mass exodus of skilled and trained professionals and manpower to other nations in search of better life and greener pastures. The brain drain has been high, and this has led to increase in remittances inflow into the Nigerian economy. Despite the huge remittances received by Nigeria, the problem of poverty, unemployment and inequality persists (Adeagbo & Ayansola, 2014).

Some studies show no impact of remittances on economic growth while other studies show some impact of remittances on economic growth. Researchers such as Barajas et al (2009) show that remittances have no impact on economic growth. On the contrary, Ari (2020) posits that remittances can affect economic growth, geography and economic situation of different countries through multiple channels. Oluyungbo and Quadri (2019) opine that the impact of remittances depends on a country's socioeconomic condition and economic growth manifests itself in ways that are complex and country specific.

Moreover, the devaluation of the Naira (Nigerian currency) driven by external shocks especially crash in oil price at the international market led to increased production cost and rise in price of most items in the market, hence making foreign remittances effective in stimulating standard of living in Nigeria (Adejumo & Ikhide, 2019). Meng and Nazir (2019) observe that foreign remittances increase exchange rate, decrease competitiveness of export in emerging economies resulting in adverse effect on exports by the exchange rate especially among middle income group.

The research questions are:

1) Despite the increasing role remittances play in economic growth, their relationship with growth in Nigeria and Sub-Saharan Africa has not been adequately studied. There seems to be inconclusive research fundings on the impact of remittances inflows on economic growth in less developed countries including Nigeria. While some studies report positive relationships, others report negative relationships. Although there are some impacts of remittances on economic growth in Africa they do not lead to a consensus. What are the short -run and long run impacts of remittances on economic growth in Nigeria?
2) Consistent remittance inflows lessen macroeconomic shocks, output volatility, promote economic expansion and poverty reduction, impact economies through their effect on growth and development. Nigeria faces immense challenges including accelerating growth, reducing poverty, and meeting the Sustainable Development Goals. How does remittance inflow significantly affect the well-being of the people? Have remittances improved the life of the recipients?

LITERATURE REVIEW

Copious literature identifies various channels whereby remittances exert impact on economic growth. Remittances boost economic growth by increasing household income (Giuliano & Ruiz-Arranz, 2005). Increase in Income provides the opportunity to boost consumer spending, accumulation of assets, investment in SMEs and promotion of self-employment. Emigration and remittances contribute to human capital accumulation. A positive impact of emigration on growth exists in developed countries, given a higher ability to transfer knowledge and skills when the emigrants return to their home country or the sending or remittances in order to create new opportunities in the private sector. A negative impact of emigration stems from the brain drain and depending solely on remittances (Fayissa, 2014). Some studies analyze whether the level of remittances to GDP ratio and growth of remittances are related to a higher level of economic growth (Bashir, 2020).

Further, Hadeel (2012) investigated the positive and negative impact remittances on economic growth in some Middle East and North Africa (MENA) countries namely Algeria, Egypt, Jordan, Libya, Morocco, Oman, Syria, Lebanon and Tunisia for the period 2000 to 2010 in a panel data analysis. He discovered that all MENA countries enjoyed major increase in remittances inflow in the last two decades. He further stated that remittances represents more than 10 percent of each of the country's GDP and also realized that remittances have both positive and significant impact on economic growth for the countries examined.

Nahia (2015) investigated the empirical evidence of the effect of remittances on economic growth in Kenya between 1993 and 2014. He utilized Granger causality and auto regressive distributed lag model to ascertain the effect of remittances on economic growth in Kenya. He discovered a positive and significant effect of remittances on economic growth in Kenya. He discovered a positive and significant effect of remittances on economic growth and therefore concluded that economic growth in Kenya was largely driven by international remittances.

Okodua (2012) examined the effects of migrant workers remittances on output growth among Sub-Saharan African countries between 2000 and 2011 utilizing System General Methods of Moments (GMM). The study discovered a negative and statistically insignificant link between remittances and output growth across the sampled countries over the period. The reason ascribed to this was the inability to channel most remittances into productive ventures. The conclusion was that remittances may not be relied upon to promote growth of SSA region, and recommendation was to enact a policy measure that ensures the use of remittance inflows for productive sector activities in the economy

Moreover, studies by Imai et al (2014) investigated the effects of remittances on the growth rate of the GDP using annual panel data for 24 Asia and Pacific countries. The results show that remittances flows have been beneficial to economic growth. In addition, the volatility of capital flows tends to be harmful to economic growth, thus remittances contribute to better economic performance. Masron and Subramanian (2018) examined the implications of remittances on poverty in 44 developing countries for the 9-year period of 2006 -2014. The result revealed that the level of poverty appears to be lower in countries with a higher flow of remittances. The conclusion drawn from that study show that the resulting outcome may be due to the increase in household income of the poor by remittances.

"Bollard et al., (2009) examined relationship between education and remitting behaviour using micro-data surveys of immigrants from eleven major destination countries. The

study found a mixed pattern between education and likelihood to remit and a strong positive relationship between education and the amount remitted. They thereafter opined that a combination of these two scenarios gives an overall positive effect of education on the amount remitted" Iseghohi (2021). Therefore, the level of education of the migrants was revealed as a strong enabling factor in ability to provide remittances and reduce poverty.

Lucas and Stark (1985) use their neo-classical theory on migration to show the link between remittances and poverty and hence proposed reasons why migrant workers send money home. The reasons are pure altruism and self interest motives. Lucas and Stark (1985) further stated that the motivation behind money transfer lies in the migrant selflessness and desire to help families in their home countries for welfare and consumption habits. The motives are also driven by self interest especially money transfer to home for the purchase of assets and acquire property inheritance.

Theoretical Literature

Several literature and theories have explained the nexus between remittances and economic growth. The theories include development theory, the dependency theory, the two gaps theory e.t.c. The development theory of the mid-20th century assumed that developing countries can accelerate their development process through capital transfer, industrialization, and adoption of western values. The notion was that developing countries should abandon their culture, tradition and values and then embrace western culture, tradition and values and then embrace western culture because they are interested in development (Coetzee & Wood, 2001; Massey et al., 1993). These proponents posit that migration will result in the transfer of investment capital through remittances and then expose the traditional society to more liberal ideas that will bolster their development (De Hass, 2007 and 2010).

Also, the dependency theory of 1970s and 1980s holds that remittances create dependence from sending to receiving countries and receivers depend on senders (Binford, 2003). It asserts that migration depletes the human capacities of home communities/countries which subsequently leads to under development (De Hass, 2007). Preference to remittances give the impression that they encourage economic growth, but they rather lead to inequalities in areas where there is a large inflow of remittances. (Lipton, 1980) cited in Oluwafemi and Ayandibu 2014).

Moreover, Harod-Domar growth model posit that savings rate and capital-output ration determine full capacity growth of a closed economy. This position was extended to the two-gap theory and promoted by Chenery and Bruno (1962) and Chenery and Strout (1966) where they explained the introduction of foreign exchange shortage. The two-gap model accentuated the vital role of foreign transfers in determining the level of

investment in developing countries. This model asserts that development may be impeded by the existence of the savings and foreign exchange gaps in developing countries. Hence, these gaps can be filled by foreign savings represented as remittances inflows.

METHODOLOGY

Data and Methods

The study captures Nigeria as the area of study. Nigeria is a West African nation, largest country in Africa, highest population, and largest economy in Africa. Nigeria has a total geographical area of 923,768 square kilometers and population of about 220 million (NPC) as of 2022. Nigeria lies totally within the tropics along the Gulf of Guinea from the west coast of Africa. "Nigeria is bordered by Benin republic to the West, Niger state to the North, Cameroun to the East and the Atlantic Ocean. The terrain varies from coastal swamps and tropical forest in the south, to savannah and semi-desert in the North. The highest points are the Jos Plateau in the center (1,200-2000 meters above sea level) and the mountains along the eastern border. The river Niger, the third longest river in Africa reaches the sea through an extensive Delta of mangrove swamps" (Nigeria Country Report, 2012: 3).

Theoretical Model

Endogenous growth theory comes to bring the source of technical progress and a sustained productivity growth within the general equilibrium framework of neoclassical growth theory (Ogujiuba & Adeniyi, 2005)). Endogenous growth theory posits that economic growth is primarily the result of endogenous and not exogenous factors as held by neoclassical and Harod Domar growth models. Lucas (1988) asserts that investing in education leads to the production of human capital which is very crucial determinant of the development process. Additionally, Romer (1986) showed his dissatisfaction with the classical and neoclassical theories when he asserted that they were only making attempts to over simplify what is a complex process. This model suggests that developing countries such as Nigeria should engage in trade and encourage more capital inflow from other countries to enable them devise new knowledge in research and technology for economic growth.

The basic Neoclassical growth function can be represented as:

$$Y = AK^{\alpha}L^{\beta}$$

Where

Y = output/real GDP

A = Total factor productivity

K = Capital

L = Labour

While α and β represent the elasticity of output with respect to capital and labour.

Empirical Model

The study adopts some of the empirical works of Qayyum et al., (2010) Anderson et al., (2011), Okodua (2012) to ascertain the influence of foreign remittances of economic growth in Nigeria. We specify our growth model functionally as:

$$\ln GDPGT = f(rgdp, gdpc, gfcf, inf, Lir, Prt, ReR)$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu_t$$

The econometric specification of the long-run model is presented as :

$$Y_{grt} = \beta_0 + \beta_1 rgdp_t + \beta_2 gdpc_t + \beta_3 gfcf_t + \beta_4 Inf_t + \beta_5 Lir_t + \beta_6 Prt_t + \beta_7 ReR_t + \mu_t$$

Where

Ygrt =Growth rate of real GDP (proxy for economic growth of Nigeria)

Rgdp = real GDP

gdpc =per capital GDP

gfcf = gross fixed capital formation

Inf = Inflation

Prt = personal remittances received as a % of GDP

ReR = real effective exchange rate

μ = error term

The apriori expectations are $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 < 0$, $\beta_5 < 0$, $\beta_6 > 0$, $\beta_7 > 0$.

The expected positive sign on the coefficient of remittances is based on the belief that remittances supplement investment and the consumption expenditure in the recipient country (Nigeria),there by enhancing economic growth. Hence, remittances positively affect growth (Ochara, 2015).

Data

The study uses secondary data and was sourced from the World Bank database, the World Development Indicators. The period is long and extensive to enable us to

accommodate for loss of degree of freedom. The welfare of the economy is measured by the GDP per capita and its' remains a good measure of prosperity, consumption pattern and standard of living of any country. Increase in per capita income leads to increase in consumption, increase in economic and social choices which leads to higher economic growth trajectory.

Method of Analysis

The study uses time series data for the forty-year period 1980-2020. The time series data has propensity of identifying parameters in the occurrence using measurement error and have robustness to omitted variables and the efficiency of parameter estimates. The choice of this methodology stems from the need to investigate the long run and short run dynamic effects of remittance on the economic growth in Nigeria. The estimator gives room for heterogeneous dynamics by allowing the intercept, short-run coefficients and error variance which differ freely across groups, however this imposes a homogeneous long run relationship between the dependent variable (real GDP growth) and the seven explanatory variables.

The OLS regression, Unit root, and Error Correction Model (ECM) will be applied.

RESULTS AND DISCUSSION

Analysis and Interpretation of Result

SUMMARY STATISTICS

VARIABLE	OBSERVATION	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
GDP PER CAPITA	41	1890.17	456.01	1408.2	2,679.55
GROSS FIXED CAPITAL FORMATION	41	36.713	20.058	14.168	89.386
INFLATION	41	18.778	16.715	5.388	72.835
LENDING INTEREST RATE	41	17.371	4.927	8.431	31.650
LOG GDP GROWTH RATE	41	3.055	5.3877	-13.127	15.329
PERSONAL REMITTANCE	41	2.534	2.524	0.0048	8.338
REAL EXCHANGE RATE	41	151.54	117.722	49.744	536.885
REAL GDP	41	2.60E +11	1.40E + 11	1.15E +11	5.09E + 11

ORDINARY LEAST SQUARE (OLS) REGRESSION

VARIABLE	COEFFICIENT	PROBABILITY
GDP PER CAPITA	0.0150*** (0.00407)	0.0008
GROSS FIXED CAPITAL FORMATION	-0.3625*** (0.0575)	0.0000
INFLATION	-0.10241*** (0.0348)	0.0060
LENDING INTEREST RATE	0.16661 (0.1850)	0.3757
PERSONAL REMITTANCE RECEIVED	-0.6444 (0.3483)	0.0732
REAL EFFECTIVE EXCHANGE RATE	-0.00467 (0.0073)	0.5268
REAL GDP	-7.51E -11 (1.56E -11)	0.0000
OBSERVATION	41	
ADJUSTED R^2	0.6615	

*Robust standard errors clustered by country in parentheses** $p < 0.1$**, $p < 0.05$*** $p < 0.01$

Interpretation of Regression Result

Log GDP growth rate

The real growth rate of GDP in Nigeria tells us the measure of economic growth from one period to another while adjusted for inflation or deflation. This reveals the change in value of all goods and services produced by the economy of Nigeria while accounting for price fluctuations. The real GDP growth rate is the dependent variable a useful measure than the nominal GDP growth rate because it captures the effect of inflation on economic data. The Nigeria's real economic growth is important for government policy makers when making fiscal policy decisions, and these decisions can be applied to spur economic growth or control inflation. The real GDP growth rate is also useful for investors and businesses. An organization looking to expand into new markets can utilize GDP data to better understand and diversify growth opportunities in the countries, especially emerging markets.

GDP per capita

The per capita GDP coefficient of 0.0150 is statistically significant at 5% level and we reject the null hypothesis. There is a positive relationship with the real GDP growth rate. From the result, if the per capita GDP increases by one unit, then the real growth GDP increases by 0.0150 units while holding other variables constant. The per capita GDP informs us of the economic output per person. The per capita GDP tells us how prosperous a country is and based on their economic growth. GDP per capita also help analyze and monitor the productivity of a country (Nigeria) in comparison with others and how much

economic production value that can be attributed to each individual citizen. The Nigerian government can use the GDP per capita to understand how the economy is growing with its population on a national level and can provide insights into Nigeria's domestic population influence.

Gross fixed Capital Formation

The gross fixed capital formation has a coefficient of -0.3625 and it is statistically significant at 5% level, and we reject the null hypothesis. This shows a negative relationship with the real GDP growth rate. If the gross fixed capital formation increases by one unit, then the real GDP growth rate decreases by 0.362. The gross fixed capital formation tells us the total accumulation of capital goods such as equipment, tools, transportation assets etc. This is not in consonance with economic theory. Based on economic theory, the higher the capital formation of an economy, the faster the economy can grow its aggregate income.

Nigeria and other countries accumulate capital through generating savings and investment from household savings or based on government policy. The gross capital formation is defined as outlays on additions to fixed assets and net change in inventories as defined by the World Bank. Nigeria needs capital goods to replace the older ones especially when they are used to produce goods and services.

Inflation

Inflation has a coefficient of -0.1024 and it is statistically significant at 5% level, and we reject the null hypothesis. If inflation increases by one unit, then the real GDP growth rate will reduce by 0.1024 while holding other variables constant. Inflation tells us how much of a return an investment needs to be made to maintain a specific standard of living. The inflation number is important because it represents the rate at which the real value of an investment is eroded and the loss in purchasing or spending power over time. The inflation number informs investors how much a return on their investment is needed to make for them to maintain their standard. The negative relationship between inflation and real GDP growth is in consonance with economic theory. The lower value of inflation contributes to higher economic growth and causes individuals and businesses to hold fewer liquid assets. Government can contribute to low inflation by implementing wage and price control.

Lending Interest rate

The coefficient of Lending interest rate is 0.1661 and it is not statistically significant at 5% level, hence we fail to reject the null hypothesis. This means that when the lending interest

rate increases by one unit, then the real growth rate increases by 0.1661 while holding other variables constant. There is a positive relationship between the lending interest rate and real growth rate.

This is the amount of money a lender or financial institution receives for lending out money and the interest can also refer to the amount of ownership a stockholder has in a company. The interest lending rate is largely associated with mortgages, car loans, credit cards, savings accounts etc. and highly dependent on macroeconomic policy put forward by the Central bank of Nigeria. The lending interest rate explains the amount of interest a person must pay, and this is tied to their credit worthiness, the length of the loan, or nature of the loan. There is a positive relationship between the interest and risk because interest and interest rates are higher when there is greater risk especially as the lender faces a greater risk in the burrower not being able to make their payment.

Personal remittance rate

The coefficient of personal remittance is -0.6448 and not statistically significant at 5% level and we fail to reject the null hypothesis. This means that when the personal remittance increases by one unit or dollar, the growth rate of GDP reduces by 0.6448 while holding other variables constant. There is negative relationship between real GDP growth rate and personal remittance rate.

The personal remittance rate, which is usually given to relative and family members back in Nigeria, is important in the economies of developing countries because they play an important role in disaster relief, help to raise the standard of living for people with low income and combat global poverty. Remittances can help those recipients open bank accounts and help promote economic development.

Studies show that most recipients of remittances use the money for consumption and welfare. Very little is used for production or investment, and this does not drive economic growth. Therefore, the negative relationship between personal remittance rate and real GDP growth rate is in consonance with the economic reality of Nigeria.

Real Effective Exchange Rate

The coefficient of the real effective exchange rate is -0.004670 and it is not statistically significant at 5% level, hence we fail to reject the null hypothesis. This means that if the real effective exchange rate increases by one unit, then the real GDP growth rate reduces by 0.0046 while holding other variable constant, hence there is a negative relationship between the GDP growth rate and the real effective exchange rate.

Since real effective exchange rate (REER) is the weighted average of country's currency in relation to basket of other currencies. The weights are determined by comparing the relative trade balance of Nigeria's currency. An increase in Nigeria's REER shows that

exports are becoming more expensive and making imports cheaper. This leads to a loss in trade competitiveness and the international competitiveness of Nigeria when compared with its trade partners. The relationship between REER and real Economic growth is in consonance with economic theory. Generally, the REER is used by Economists to evaluate a country's (Nigeria) trade flow and analyze the impact that factors such as competition and technological changes are having on Nigeria's economy.

Real GDP

The coefficient of the real GDP is -7.51E-11 and it has a negative relationship with the real GDP growth rate. It is highly statistically significant at 5% level, and we reject the null hypothesis. The coefficient of -7.51E -11 means that if the real GDP increases by one unit or one dollar, then the real GDP growth rate decreases by 7.51E -11 while holding other variables constant.

The real GDP which measures the total economic output of a country adjusted for changes in price in the inflation – corrected GDP and expressed in base year prices. The real GDP represents a macroeconomic statistic which measures the value of the goods and services produced by an economy in a specific period, usually one year and then adjusted for price changes. Government agencies use real GDP as a criterion for analyzing economic growth and purchasing power overtime. GDP deflator is used to measure changes in prices for goods and services and the real GDP uses the nominal GDP and adjust it for price changes. The real GDP of Nigeria accounts for changes in prices levels and this provides a more accurate figure of economic growth. Also, the real GDP provides a better groundwork for assessing long term national economic performance than the nominal GDP.

EMPIRICAL TESTS

Augmented Dickey Fuller

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \delta_1 \Delta Y_{t-1} + \delta_2 \Delta Y_{t-1} + \delta_3 \Delta Y_{t-1} + \delta_4 \Delta Y_{t-1} + \delta_5 \Delta Y_{t-1} + \delta_6 \Delta Y_{t-1} + \delta_7 \Delta Y_{t-1} + \delta_p \Delta Y_{t-p} + \varepsilon_t$$

Null Hypothesis: $H_0 : \gamma = 0 \qquad \beta = 1$

Alternative Hypothesis: $H_A: \gamma < 0$

The preference for Augmented Dickey Fuller (ADF) from Economists stems from the impression that many of the cycles have lags. The result for the first difference of the Augmented Dickey Fuller is below

Null Hypothesis: H_0: There is unit root and variables are non-stationary.

Alternative Hypothesis: H_A: There is stationarity among the variables. No unit root.

Augmented Dickey Fuller	Coefficient	T - Statistics	Probability
DLNGDP GRT (-1)	-1.374742	-10.79943	0.0000
DGDP PER CAP (-1)	-0.720739	-4.999800	0.0000
D GROSS FCF (-1)	-1.007021	-6.332164	0.0000
D INFL (-1)	-0.924342	-5.681423	0.0000
D LENDING IR (-1)	-1.247665	-7.797716	0.000
D Personal remittance rate (-1)	-1.317465	-8.397386	0.0000
D Real EER (-1)	-0.677520	-4.374542	0.0001
D RGDP (-1)	-0.913968	-5.61860	0.0000

All the variables under ADF test were found not to be stationary at levels, hence tests on all variables were carried out at first-order difference to avoid spurious regression and confirm their stationarity.

With the first differencing, the unit root was removed, and the variables became stationary. Augmented Dickey Fuller made the variables stationary. The estimated ADF test statistics reject the null hypothesis at 1% and 5% significant levels when it is compared with corresponding critical values as tests show that there is stationarity of each variable at the same order of integration .

Vector Error Correction Model

VAR (1): $Y_t = \phi + \phi Y_{t-1} + \varepsilon_t$

VECM: $\Delta Y_t = \phi + \alpha\beta' Y_{t-1} + \varepsilon_t$

$$\Delta Y_t = \phi + \alpha\beta'_{11} Y_{t-1} + \alpha\beta'_{12} Y_{t-1} + \alpha\beta'_{13} Y_{t-1} + \alpha\beta'_{14} Y_{t-1} + \alpha\beta'_{15} Y_{t-1} + \alpha\beta'_{16} Y_{t-1} + \alpha\beta'_{17} Y_{t-1} + \varepsilon_t$$

Variable	Error Correction
DGDP per Cap (-1)	-0.827318 (1.17768) [-0.70250]
DGDP per Cap (-2)	1.387746 (1.15251) [1.20411]
D Gross FCF (-1)	0.394078 (0.39648) [0.99395]
D Gross FCF (-2)	0.253869 (0.40732) [0.62326]
D INFL (-1)	0.298722 (0.16884) [1.76923]

D INFL (-2)	0.217150 (0.19821) [1.09556]
D Lending Interest rate (-1)	-0.195406 (0.21891) [-0.89262]
D Lending interest rate (-2)	-0.510926 (0.24289) [-2.10355]
D LnGDP GRT (-1)	-0.555487 (0.36528) [-1.52071]
D Ln GDP GRT (-2)	0.062848 (0.31970) [0.19659]
D Personal remittance rate (-1)	-0.253660 (0.57062) [-0.44453]
D Personal remittance rate (-2)	0.121284 (0.31112) [0.38984]
D Real EER (-1)	0.558974 (0.18023) [3.10141]
D Real EER (-2)	0.100904 (0.21797) [0.46293]
D RGDP (-1)	2.632440 (1.32545) [1.98607]
D RGDP (-2)	-1.944957 (1.40546) [-1.38386]
R-squared	0.484194

From the broader table Gross FCF, inflation, lending interest rate, personal remittance rate and real GDP are statistically significant. Since Vector Error Correction model is a multivariate time series, it consists of differenced response variable on cointegrated VAR first difference model. The Vector Error Correction Model (VECM) establishes a short-term relationship between the variables that propel economic growth while correcting with the deviation from long-term co-movement of prices.

If the variable responds to disequilibrium between two economies, then the t-statistics ratio not significant at e_{t-1}. The VECM model is useful in analyzing cointegrated variables or cointegrating relationships and it provides a good mechanism to understand the long-run and short run behavior of the variables that influence economic growth in Nigeria.

In response to research question 1, the impact of remittances on economic growth in Nigeria between 1980 and 2021 employed OLS, Augmented Dicker Fuller approach and found a negative impact in personal remittances as a percentage of GDP, and there was no impact between remittances and economic growth in the long run and there was no bidirectional causality between remittances and growth in the short run. The result was not statistically significant, and we fail to reject the H_0 of no effect. The negative sign on the coefficient of remittances assumes that remittances do not supplement investment and enhance economic growth even though it supplements and promotes consumption.

Given that personal remittances as a percentage of GDP is negatively related to real economic growth, this implies that personal remittances negatively affect economic growth in the long run. This can be associated with adverse growth effect of brain drain emanating from emigration which constitute the basis for the remittances. This could also be attributed to undermining productivity and growth especially as the remittances is often spent on consumption than on productive investment. The negative effect could also be attributed to income inequality, reduction in labor supply and tendency to engage in voluntary unemployment.

In response to research question two on the macroeconomic shocks, we observe that real exchange rate was statistically insignificant at all levels and had negative relationship. The exchange rate negatively influences economic growth in the short run. There are multiple macroeconomic shocks experienced in Nigeria and increase in vulnerabilities. The result confirms the devaluation of naira and how it brought enormous hardship on the people of Nigeria especially through the increase in cost of production and prices of goods without a corresponding increase in aggregate demand in the economy (Urama, Edeh & Urama, 2019). The devaluation of naira precipitated a decrease in aggregate manufacturing index, reduction in average capacity utilization in industrial sectors remarkable deficit in terms of trade, decelerated growth, and increased poverty.

CONCLUSION

This paper contributes to the analysis of the effects of remittances on economic growth in Nigeria. The study incorporates the structure of financing, real GDP growth rate, personal remittances, regression results of variables, error correction method and its effect on economic growth in the 40-year- period. The regression result shows that some variables (GDP per capita, gross capital formation, inflation, real GDP) were significant

while some other variables (lending interest rate, personal remittances, and real effective exchange rate) were not significant in making a strong impact on economic growth.

Further, we observe a reduction in the exchange rate which has made foreign remittances impact the lives of the recipient especially in their consumption and welfare. While foreign remittances improve the performance of the Nigerian economy, but not growth, the exchange rate has been impaired and overvaluing of the naira can improve the situation of the naira. Migrant remittances positively affect economic growth in Nigeria in the short run but exert a negative effect in the long run. This can be caused by reduction in labor supply, brain drain effect, income inequality and the expense of remittances on consumption.

Based on these results, we propose the following recommendation:

1) The Nigerian government should provide incentive like tax exemption for Nigerians in diaspora to encourage them invest a certain portion of their foreign earned income in the industrial sector to promote an increase in capital investment which will boost economic growth.
2) Channeling remittances received by families into productive investment and less of consumption as this can promote economic growth.
3) Increase in capital formation and investment by public and private sectors because it will increase attractiveness of investment in the country.
4) Monetary authorities should strengthen their financial system regulation procedure which will promote deepening of the financial system and raise its level of development.
5) Adopt trade liberalization, utilize instruments of monetary policy to reduce the lending rate.

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APPENDIX

Dependent Variable: LNGDP_GRT
Method: Least Squares
Date: 05/05/23 Time: 15:26
Sample: 1980 2020
Included observations: 41

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.902970	7.303214	1.219048	0.2315
GDP_PER_CAP	0.015019	0.004078	3.682849	0.0008
GROSS_FCF	-0.362555	0.057508	-6.304470	0.0000
INFL	-0.102416	0.034844	-2.939303	0.0060
LENDING_IR	0.166145	0.185036	0.897903	0.3757
PERSONAL_REMIT_R	-0.644480	0.348306	-1.850326	0.0732
REAL_EER	-0.004670	0.007301	-0.639716	0.5268
RGDP	-7.51E-11	1.56E-11	-4.813969	0.0000

R-squared	0.720761	Mean dependent var	3.055069
Adjusted R-squared	0.661528	S.D. dependent var	5.387712
S.E. of regression	3.134481	Akaike info criterion	5.295984
Sum squared resid	324.2240	Schwarz criterion	5.630339
Log likelihood	-100.5677	Hannan-Quinn criter.	5.417737
F-statistic	12.16832	Durbin-Watson stat	1.781301
Prob(F-statistic)	0.000000		

Vector Error Correction Estimates
Date: 05/05/23 Time: 19:02
Sample (adjusted): 1983 2020
Included observations: 38 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDP_PER_CAP(-1)	1.000000
GROSS_FCF(-1)	-31.21854 (2.30090) [-13.5680]
INFL(-1)	6.089266 (1.07961) [5.64027]
LENDING_IR(-1)	-70.43752 (4.91527) [-14.3303]
LNGDP_GRT(-1)	-54.23787 (4.69737) [-11.5464]
PERSONAL_REMIT_R(-1)	-25.88639 (7.90434) [-3.27496]
REAL_EER(-1)	-3.441833 (0.18986) [-18.1281]
RGDP(-1)	-6.09E-09 (2.6E-10) [-23.5078]
C	2694.910

Error Correction:	D(GDP_PER_CAP)	D(GROSS_FCF)	D(INFL)	D(LENDING_IR)	D(LNGDP_GRT)	D(PERSONAL_REMIT_R)	D(REAL_EER)	D(RGDP)
CointEq1	-0.012126 (0.15058) [-0.08053]	0.019802 (0.00918) [2.15717]	-0.022660 (0.01337) [-1.69527]	0.005367 (0.00331) [1.62380]	0.004486 (0.00470) [0.95383]	-0.002430 (0.00250) [-0.97110]	0.149914 (0.06597) [2.27245]	-8316579. (4.2E+07) [-0.19758]
D(GDP_PER_CAP(-1))	-0.827318 (1.17768) [-0.70250]	0.178673 (0.07179) [2.48867]	-0.046285 (0.10454) [-0.44273]	-0.005777 (0.02585) [-0.22348]	-0.020347 (0.03679) [-0.55309]	-0.044420 (0.01957) [-2.26953]	-0.225904 (0.51597) [-0.43783]	-4.63E+08 (3.3E+08) [-1.40690]
D(GDP_PER_CAP(-2))	1.387746 (1.15251) [1.20411]	-0.148658 (0.07026) [-2.11584]	0.076324 (0.10231) [0.74601]	-0.005043 (0.02530) [-0.19934]	0.011949 (0.03600) [0.33190]	0.039715 (0.01915) [2.07347]	-0.363457 (0.50494) [-0.71981]	3.96E+08 (3.2E+08) [1.22781]
D(GROSS_FCF(-1))	3.187758 (6.50364)	0.394078 (0.39648)	-1.617725 (0.57733)	-0.191286 (0.14276)	-0.441947 (0.20316)	0.099564 (0.10809)	0.949056 (2.84937)	2.28E+09 (1.8E+09)

	[0.49015]	[0.99395]	[-2.80208]	[-1.33991]	[-2.17538]	[0.92115]	[0.33308]	[1.25405]
D(GROSS_FCF(-2))	-5.501680	0.253869	1.066772	-0.012404	-0.119166	-0.076450	7.636912	-1.33E+09
	(6.68151)	(0.40732)	(0.59312)	(0.14666)	(0.20871)	(0.11104)	(2.92730)	(1.9E+09)
	[-0.82342]	[0.62326]	[1.79858]	[-0.08458]	[-0.57095]	[-0.68847]	[2.60886]	[-0.71459]
D(INFL(-1))	-0.556502	0.076393	0.298722	-0.042809	-0.198979	0.022181	-0.569029	50344484
	(1.90202)	(0.11595)	(0.16884)	(0.04175)	(0.05941)	(0.03161)	(0.83331)	(5.3E+08)
	[-0.29259]	[0.65884]	[1.76923]	[-1.02535]	[-3.34899]	[0.70169]	[-0.68285]	[0.09469]
D(INFL(-2))	3.659807	-0.290746	0.217150	0.089910	0.001366	0.093642	-1.077349	9.07E+08
	(2.23282)	(0.13612)	(0.19821)	(0.04901)	(0.06975)	(0.03711)	(0.97824)	(6.2E+08)
	[1.63909]	[-2.13598]	[1.09556]	[1.83444]	[0.01958]	[2.52348]	[-1.10131]	[1.45332]
D(LENDING_IR(-1))	16.40589	-1.115638	-0.938079	-0.195406	0.742512	0.009078	4.510044	3.83E+09
	(9.97284)	(0.60797)	(0.88529)	(0.21891)	(0.31153)	(0.16574)	(4.36930)	(2.8E+09)
	[1.64506]	[-1.83502]	[-1.05963]	[-0.89262]	[2.38345]	[0.05477]	[1.03221]	[1.37288]
D(LENDING_IR(-2))	-17.80489	0.851187	-3.497952	-0.510926	-0.488972	-0.195016	-2.048966	-3.58E+09
	(11.0651)	(0.67456)	(0.98225)	(0.24289)	(0.34565)	(0.18389)	(4.84783)	(3.1E+09)
	[-1.60911]	[1.26185]	[-3.56116]	[-2.10355]	[-1.41466]	[-1.06048]	[-0.42266]	[-1.15777]
D(LNGDP_GRT(-1))	2.852175	0.342397	-0.552166	0.135130	-0.555487	0.255848	3.117616	3.26E+09
	(11.6936)	(0.71287)	(1.03804)	(0.25668)	(0.36528)	(0.19434)	(5.12319)	(3.3E+09)
	[0.24391]	[0.48031]	[-0.53193]	[0.52645]	[-1.52071]	[1.31649]	[0.60853]	[0.99755]
D(LNGDP_GRT(-2))	-0.443179	0.857927	-0.832190	0.178629	0.062848	-0.065985	5.499374	-2.87E+08
	(10.2344)	(0.62391)	(0.90851)	(0.22465)	(0.31970)	(0.17009)	(4.48388)	(2.9E+09)
	[-0.04330]	[1.37507]	[-0.91600]	[0.79514]	[0.19659]	[-0.38794]	[1.22648]	[-0.10015]
D(PERSONAL_REMIT_R(-1))	-34.22339	3.370970	-4.510177	-0.616401	-1.256793	-0.253660	3.835154	-5.90E+09
	(34.3346)	(2.09312)	(3.04789)	(0.75367)	(1.07253)	(0.57062)	(15.0427)	(9.6E+09)
	[-0.99676]	[1.61050]	[-1.47977]	[-0.81787]	[-1.17180]	[-0.44453]	[0.25495]	[-0.61485]
D(PERSONAL_REMIT_R(-2))	16.35108	-0.002058	-0.610108	-0.398811	-0.318900	0.121284	11.56427	3.12E+09
	(18.7200)	(1.14122)	(1.66179)	(0.41092)	(0.58477)	(0.31112)	(8.20162)	(5.2E+09)
	[0.87345]	[-0.00180]	[-0.36714]	[-0.97053]	[-0.54534]	[0.38984]	[1.41000]	[0.59655]
D(REAL_EER(-1))	0.275303	0.006070	-0.154040	-0.009701	0.020587	0.000113	0.558974	61365377
	(0.41138)	(0.02508)	(0.03652)	(0.00903)	(0.01285)	(0.00684)	(0.18023)	(1.1E+08)
	[0.66922]	[0.24202]	[-4.21817]	[-1.07428]	[1.60201]	[0.01656]	[3.10141]	[0.53362]
D(REAL_EER(-2))	-0.173099	0.038069	-0.045615	-0.007064	-0.016584	-0.005059	0.100904	-11315951
	(0.49750)	(0.03033)	(0.04416)	(0.01092)	(0.01554)	(0.00827)	(0.21797)	(1.4E+08)
	[-0.34794]	[1.25518]	[-1.03286]	[-0.64685]	[-1.06710]	[-0.61183]	[0.46293]	[-0.08137]
D(RGDP(-1))	6.66E-09	-8.18E-10	1.80E-10	1.35E-11	7.54E-11	1.67E-10	8.74E-11	2.632440
	(4.7E-09)	(2.9E-10)	(4.2E-10)	(1.0E-10)	(1.5E-10)	(7.9E-11)	(2.1E-09)	(1.32545)
	[1.40465]	[-2.83018]	[0.42812]	[0.12995]	[0.50937]	[2.11531]	[0.04207]	[1.98607]
D(RGDP(-2))	-7.97E-09	6.06E-10	-1.98E-10	-5.95E-12	-1.19E-10	-1.58E-10	1.65E-09	-1.944957
	(5.0E-09)	(3.1E-10)	(4.5E-10)	(1.1E-10)	(1.6E-10)	(8.4E-11)	(2.2E-09)	(1.40546)
	[-1.58479]	[1.97643]	[-0.44289]	[-0.05395]	[-0.75510]	[-1.89272]	[0.74787]	[-1.38386]
C	27.31792	-0.068414	0.086127	-0.025368	0.178608	0.303429	-1.035654	7.32E+09
	(27.0656)	(1.64999)	(2.40263)	(0.59411)	(0.84547)	(0.44981)	(11.8580)	(7.6E+09)
	[1.00932]	[-0.04146]	[0.03585]	[-0.04270]	[0.21125]	[0.67456]	[-0.08734]	[0.96710]

R-squared	0.484194	0.528583	0.677573	0.635169	0.618236	0.538491	0.635636	0.428202
Adj. R-squared	0.045758	0.127879	0.403510	0.325062	0.293736	0.146209	0.325927	-0.057826
Sum sq. resids	305629.2	1135.852	2408.416	147.2635	298.2309	84.41619	58665.22	2.39E+22
S.E. equation	123.6182	7.536087	10.97364	2.713517	3.861547	2.054461	54.15959	3.46E+10
F-statistic	1.104367	1.319136	2.472327	2.048227	1.905196	1.372713	2.052363	0.881023
Log likelihood	-224.7780	-118.4732	-132.7533	-79.65778	-93.06502	-69.08495	-193.4180	-963.8276
Akaike AIC	12.77779	7.182798	7.934384	5.139883	5.845527	4.583418	11.12726	51.67514
Schwarz SC	13.55349	7.958496	8.710083	5.915582	6.621226	5.359117	11.90296	52.45083
Mean dependent	18.96967	-1.557821	0.146007	0.108014	0.131819	0.104445	-5.513043	9.74E+09
S.D. dependent	126.5474	8.069703	14.20853	3.302940	4.594918	2.223423	65.96625	3.36E+10

Determinant resid covariance (dof adj.)	2.30E+30
Determinant resid covariance	1.36E+28
Log likelihood	-1662.122
Akaike information criterion	95.48012
Schwarz criterion	102.0305
Number of coefficients	152

Group unit root test: Summary
Series: GDP_PER_CAP, GROSS_FCF, INFL, LENDING_IR, LNGDP_GRT, PERSONAL_REMIT_R, REAL_EER, RGDP
Date: 05/05/23 Time: 19:14
Sample: 1980 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections
Null: Unit root (assumes common unit root process)			
Levin, Lin & Chu t*	-15.4948	0.0000	8
Null: Unit root (assumes individual unit root process)			
Im, Pesaran and Shin W-stat	-16.8269	0.0000	8
ADF - Fisher Chi-square	207.434	0.0000	8
PP - Fisher Chi-square	191.592	0.0000	8

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.