Chapter One

Introduction

1.1 Background to the Study

Foreign resource inflows, such as remittances, aid, and direct investment, are crucial for covering infrastructure shortfalls and stimulating economic growth[1,2,3]. Remittances, for example, are monetary and in-kind transfers made by migrants to their respective home nations. Over the previous two decades, remittances have expanded significantly, exceeding official development assistance (ODA) and rising more regularly than foreign direct investment flows (FDI). Foreign money flows have piqued the interest of a wide range of stakeholders, since they have the potential to be a significant source of development funding. The importance of remittances in supporting families in poor countries was acknowledged, and a well-functioning banking system was regarded necessary to promote migrants' transfers through lower pricing and greater service availability. Remittances stimulate and encourage economic growth in developing countries by expanding investment capacity and relieving liquidity constraints[4]. Remittances help developing countries reduce poverty and flourish economically[5,6,7]. Remittances make a significant impact to a country's educational progress, health-care infrastructure expansion, and gender fairness, all of which contribute to a country's human development. As a result, these earnings aid the country's impoverished, improving individual and family income levels[8]. Workers' remittances are used to repay loans put out to fund healthcare, education, or the migration process, as well as for strategic goals[9].

However, with the COVID-19 situation and falling oil prices, many stakeholders have begun to review the potential and magnitude of remittance inflows to most poor countries. Remittances to Sub-Saharan Africa originally estimated to be US$46 billion in 2019, increasing to US$65 billion in 2021. Remittances have made a significant contribution to

Nigeria's GDP growth. It accounts for around 6.1 percentage of GDP and is seven times greater than capital flows. Official remittance inflows to Nigeria account for more than one-third of all remittances to SSA countries. Unfortunately, because informal transfers are not documented, these flows, estimated at $25.37 billion, are still lower than the actual amounts received. COVID19 as well as the collapse in global oil prices, may have major micro- and macroeconomic ramifications for remittances flows to Nigeria. Such that lower investments in the economy may translate further weakening of the various economic sectors and at large, domestic output. This will result in funding gaps for small businesses. Unlike remittances, encouraging foreign capital flows is a fundamental goal of all stakeholders worldwide, including Nigeria, where a lack of sufficient capital is a major hindrance to the country's economic growth and development.

These overwhelming importance of remittances have made Nigerian government and that of other developing economies to give more attention to the potentials embedded in attracting more remittances in their economies. Moreover, reduction in remittances, coupled with the fluctuations in global oil prices as a result of the COVID-19, will pose severe macroeconomic implications for Nigeria, with reduced investments in the economy directly affecting the infrastructural deficit in education, health and domestic production sector of the economy. This will create financing gaps for small businesses. As a result, previous Nigerian governments tried a variety of economic strategies to concentrate on bringing significant remittances into the country. For example, the 1986 launch of the Structural Adjustment Programme (SAP), whose major goal was multidimensional liberalisation, resulted in greater capital flows into Nigeria while also boosting its efficient allocation in the private sector. Furthermore, while it may appear logical to expect that remittances can increase knowledge spill-overs to host economies, this is not the case in Nigeria as domestic economic constraints may hinder a host country's capacity to profit from externalities.

The financial system has been widely acknowledged as playing a critical role in developing country economic growth through bringing together and facilitating the requisite financial capital for institutional change and a driver in the economic growth process. This assertion is traced to the work of some researchers findings[10,11]. Theoretically, financial inflows are expected to complement domestic fund. And to the neo-classical theory, such inflows of funds will enhance growth. Few studies have demonstrated that creating well-functioning banks (financial development) is anticipated to improve economic growth, and also that a well-functioning financial structures can encourage physical capital accumulation, increase economic productivity, and enhance long-term growth[13,14]. As a result, financial liberalization will minimize funding constraints proportionally by the availability of remittances inflow and foreign investors will demand improved corporate governance, promoting transparency and accountability while reducing adverse selection and moral hazard and boosting financial system performance[15]. By implication, a well-functioning financial system ensures the possible use of scarce capital or resources.

Likewise, some authors have laid credence to the argument that remittances inflows and its constituents influence growth in the economy through a range of mechanisms[16]. For instance, remittances may influence economic growth through the exchange rate. It is argued in the literature that if the diversification process is impeded by expensive informational barriers and a poor institutional environment, therefore, keeping the exchange rate closer to its equilibrium level is a necessary for open and developing countries[17]. As a result, loosening capital regulations may result in an increase in remittance inflows, leading to a loss of competitiveness. In addition, literature has demonstrated that macroeconomic factors such as inflation, real interest rate, sectoral growth, human capital, quality of institutions, and per capita income may hinder and promote remittances inflows-growth nexus[18,19,20,21].

The above discussion reveals that Nigeria government wants remittances to be an important source of financing. Notably over the years, the remittances flows to Nigeria have exhibited volatilities, suggesting the need to reversals of which exert enormous pressures on domestic market conditions.Hence, the need to boost remittance flow and support the financial sector and attract more remittance inflows. Recently, the Nigerian financial sector took decisive policy actions to modify the procedures for receiving diaspora remittances and attract more FDI inflows, with the overall intent of maximizing the process of transferring remittances as well as making the formal channels cheaper and more reliable for Nigerians in the diaspora. Furthermore, the utilization of remittance fee reimbursements has been crucial in enabling increased inflows of remittances to South Asian countries and strengthening their trade balance stance during the COVID-19 outbreak. For over the past three years, Bangladesh and Pakistan had adopted separate but similar initiatives to reduce the transaction cost of sending remittances through formal channels. Arising the fact that involvement of the financial sector has yield tremendous growth and the guideline of transferring remittances have been cheaper and more reliable. Thus, the level of financial sector development will have implications for remittance inflows to Nigeria given the commitments put in place. The question is whether interaction of the financial development with remittances flows into Nigeria region would be adequate to promote economic growth. On the other hand, if massive remittance inflows might severely impact the country's growth process, resulting in external shocks and inflationary pressures, among other things.

1.2 Statement of the Problem

For decades, remittances have been subject of debate in monetary and development arena throughout the world. It is used to fund critical development initiatives in poor and emerging nations for more than two decades. Following the COVID19 pandemic, the World Bank predicted that remittance flows to low- and middle-income countries (LMICs) in 2020 will be reduced by 19.7 percent to $445 billion. The research also forecasts a 23.1% drop in remittance flows throughout SSA, after remittances to LMICs hit a record $554 billion in 2019, exceeding foreign direct investments. Besides, a review of remittance inflows to Nigeria reveals that Nigeria for instance, has benefitted from remittances inflow but yet to be translated into required output growth. Given the country's tremendous natural resources, enough domestic funding required to generate and maintain prosperity has been viewed as a big phenomenon. It is noted that Nigerian government and citizenry will require massive infusions of external funds in form of remittances to address savings-investment gaps, infrastructure deficits and improve the household consumption expenditures. However, the country's reliance on remittances has grown in the last decade.

According to the literature, the influence of remittances on economic growth varies and is dependent on the financial status of the receiving nations[22]. In the literature, there has been much debate on how remittances stifle economic progress, but no consensus has been achieved. Several scholars have said that remittance inflows might supplement local savings, meaning that remittance inflows would boost economic growth in poor nations on the one hand. In contrast, two authors suggested that remittance inflows had a detrimental influence on economic growth[23,24]. Furthermore, the importance of financial development as a moderator in the remittance inflows-economic growth nexus has been examined, although not all financial development indicators have been employed[26,27,28]. This assumes that distinct sorts of remittance inflows have been explored individually in the literature, using different

methods to proxy financial progress[29,30]. As a result, the relationship between remittance inflows and economic growth cannot be generalized across nations since numerous economic policies pertaining to these relationships are cross-sectional and panel analyses specific[31,32].

However, defining the direction of causation is equally important when examining the link between financial inflows and financial development, in addition to the relationship between remittance inflows, financial development, and economic growth. This is because higher banking sector growth may result in larger remittance inflows. Furthermore, as a result of financial expansion, remittance inflows may lower transmission charges, leading to a rise in such inflows[1]. Few studies have investigated the causal relationship between remittance inflows and financial development at the regional level[33,34,35,36]. These studies produce contradictory results in terms of remittances, financial development, and economic growth. However, research in this area is limited in the context of country specific, and this study fills that need by investigating the relationship and direction of causation between financial development, remittance inflows, and economic growth. It is critical to emphasize that the lack of agreement in the research on the relationship between remittance inflows, financial development, and economic growth might be ascribed to the occurrence of a spill-over effect between the financial system and remittance inflows. Economic uncertainty and asymmetric knowledge can impede financial system activity and remittance inflows, which can either boost or stifle economic growth. The direction of causality argument is essential because the pursuit of sustainable economic growth, remittance inflows, and financial development have become critical problems in the line of activities to revitalize the Nigerian economy.

1.3 Research Questions

The study is guided by the following research questions:

i. How do remittance inflows impact financial development?

ii. What is the role of financial development in remittance inflows-economic growth nexus in Nigeria?

iii. What is the causal relationship among remittance inflows, financial development and economic growth in Nigeria?

1.4 Aim and Objectives of the Study

The aim of this study is to examine the effect of monetary policy on remittance and foreign direct investment in Nigeria. The specific objectives are:

i. To investigate the impact of remittances on financial development in Nigeria;

ii. To assess the role of financial development in remittance inflows-economic growth nexus in Nigeria; and

iii. To determine the causal relationship among remittance inflows, financial development and economic growth in Nigeria.

1.5 Research Hypotheses

The following null hypotheses were formulated and tested in this study. They are:

H_{01}: There is no significant relationship between remittances and financial development in Nigeria.

H_{02}: Financial development does not play a significant role in remittance inflows-economic growth nexus in Nigeria.

H_{03}: There is no significant causal relationship among remittance inflows, financial development and economic growth in Nigeria.

1.6 Significance of the Study

The outcome of this study is important to the government as it informs the authorities and policymakers on how to manage the money in the economy in order to realize specific economic goals and also providing the understanding on the nexus between remittance inflows, financial development, and economic growth in Nigeria. The study will also be beneficial to policies makers in the decision of which policy to make and the policy tools to be used. It is also significant to citizens of a country as it gives them knowledge on how to finance their domestic investment and for their general upkeep. This study is significant in that it intends to contribute to the existing body of knowledge, given the fact that is commonly said that the monetary policies are part of the governance rituals which is used to improve credit policies of banks, financial institutions, and the economy. Researchers who intend to work on similar variables will also find it useful in carrying out their study.

1.7 Scope of the Study

International monetary fund (IMF) classifies Nigeria as one of the forty five countries in sub-Saharan countries (SSA) due to her location in the south of the Saharan desert, and this study shall cover the years 1981 to 2020. The explanation for starting in the 1990s arises from the fact that the period saw a historic easing of global monetary conditions, resulting in a dramatic decline in interest rates and spreads in most developed countries. It also happened to coincide with a rapid rise in financial inflows, local credit, and capital-market valuations among the developing world, with a particular emphasis on the region due to its endowment in natural resources and the discovery of oil in the country. The time also coincided with a

period of major financial, economic, and structural changes and the introduction of economic liberalization programs. The period of review was also chosen due to the availability of data.

1.8 Plan of the Study

Consequent to the objectives stated above; this study shall be structured into five Chapters. Chapter one shall cover the background to the study, statement of the research problems, research questions, objectives of the research study, justification for the study, the study's scope, and the study's plan. The second chapter shall contain the conceptual, theoretical, and empirical reviews for the research study. The third chapter shall present the methodology, which encapsulates the theoretical framework, the model formulation, variables measurement, sources of data, and the method of analysis to be employed. The fourth chapter shall focus on the analysis of the results that emanate from the estimation of the model, while the last chapter shall contain the summary, conclusion as well as policy recommendations, contributions to knowledge and suggestions for further research.

Endnotes

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Chapter Two

Literature Review

The section presents the review of literature. The review was done under conceptual, theoretical and empirical review related to effect of monetary policy on remittance and foreign direct investment.

2.1 Conceptual Review

This sub-section looks at the salient concepts related to financial flows or private capital inflows and financial development so that a clearer understanding can be given of the research study and its uses.

2.1.1 Economic Growth

Economic growth refers to an increase in the market value of goods and services produced by an economy over period. It is typically expressed as a percentage increase in real gross domestic product. Economic growth is defined as an increase in potential output in economics. Economic growth reveals how a country's economy is progressing. Human capital, or a country's level of education or knowledge attainment, has a direct impact on it. Economic growth is a complex, long-term phenomenon that is hampered by factors such as population growth, inadequate infrastructure, inefficient resource utilization, institutional barriers to growth, and so on. Economic growth is measured by the increase in the aggregate market value of extra goods and services produced, as measured by estimates such as GDP. To catch up to a developed country, developing economy must not only grow, but grow faster than the developed country. Such accelerated growth is possible, but there are numerous country-specific factors that influence a country's ability to catch up to developed countries.

There are certain components which have a significant impact on a growth of the economy. Each country is distinct in terms of its demography, future technologies, government, income, and other factors. Although no two countries are alike, economic growth can be compared between them. The growth of productivity, which is the ratio of economic output to input, is one of the factors that influences economic growth (capital, labour, energy, materials, and services). As productivity rises, the cost of goods falls, resulting in a rise in per capita GDP. Lower prices lead to an increase in overall demand. Productivity growth is the engine that propels the economy forward. Another component of the economic growth is demographics. The employment-to-population ratio and the labour participation rate are both affected by demographic changes. The labour force participation rate is influenced by the population's age structure. Similarly, the rate at which people enter the labour force has an impact on economic growth. It refers to the total number of people employed in the labour force. When manufacturing increased, it resulted in a higher productivity rate, but it also resulted in lower labour force participation, lower prices, and fewer jobs. The impact of economic inequality has been outlined in literature. Wealth and income inequality have a negative impact on economic growth. High and long-term unemployment are the result of inequity. This has a negative impact on long-term growth. Over time, the business cycle refers to fluctuations in production, trade, and economic activity across the economy. The business cycle refers to the short-term fluctuations in economic growth. It is used by researchers to distinguish between short-run and long-run economic growth variations. The cycle is made up of output fluctuations that happen over years. The fluctuations in aggregate demand cause changes in the business cycle. The percentage rate of increase in real gross domestic product is used to measure long-run economic growth. The GDP is calculated using one of three methods:

- Product (output) approach: adds together the outputs of every class of enterprise to provide the total.

- Income approach: calculates the sum of all the producers' incomes.
- Expenditure approach: the value of the total product must be equal to the people's total expenditures.

2.1.2 Financial Sector Development

Financial sector development in developing and emerging countries is part of the development framework put in place to stimulate aggregate demand and redistribute income. Financial sector is the set of institutions, monetary instruments and markets. It also includes the legal and regulatory framework that permits transactions to be made through the extension of credit[1]. Fundamentally, financial sector development concerns overcoming "costs" incurred in the financial system. This process of reducing costs of acquiring information, enforcing contracts, and executing transactions results in the emergence of financial contracts, intermediaries, and markets. Different types and combinations of information, transaction, and enforcement costs in conjunction with different regulatory, legal and tax systems have motivated distinct forms of contracts, intermediaries and markets across countries in different times[2]. The five key functions of a financial system in a country are: information production ex ante about possible investments and capital allocation; monitoring investments and the exercise of corporate governance after providing financing; facilitation of the trading, diversification, and management of risk; mobilization and pooling of savings; and promoting the exchange of goods and services[3].

Financial sector development takes place when financial instruments, markets, and intermediaries work together to reduce the costs of information, enforcement and transactions[4]. A solid and well-functioning financial sector is a powerful engine behind economic growth. It generates local savings, which in turn lead to productive investments in local business. Furthermore, effective banks can channel international streams of private

remittances. The financial sector therefore provides the rudiments for income-growth and job creation. There are ample evidence suggesting that financial sector development plays a significant role in economic development. It promotes economic growth through capital accumulation and technological advancement by boosting savings rate, delivering information about investment, optimizing the allocation of capital, mobilizing and pooling savings, and facilitating and encouraging foreign capital inflows. Countries with better-developed financial systems tend to enjoy a sustained period of growth, and studies confirm the causal link between the two: financial development is not simply a result of economic growth; it is also the driver for growth[5]. Additionally, it reduces poverty and inequality by enabling and broadening access for the poor and vulnerable groups, facilitating risk management by reducing their vulnerability to shocks, and raising investment and productivity that generates higher income[6].

Financial sector development also assists the growth of small and medium-sized enterprises (SMEs) by giving them with access to finance. SMEs are typically labour-intensive and create more jobs than large firms, which contributes significantly to economic development in emerging economies. Additionally, financial sector development also entails establishing robust financial policies and regulatory framework. The absence of adequate financial sector policies could have disastrous outcome, as illustrated by the global financial crisis and recent COVID19 pandemic. Financial sector development has heavy implication on economic development-both when it functions and malfunctions. As a matter of fact, COVID19 has challenged researchers in financial sector policies and sparked debate on how best to achieve sustainable development goal[6]. Besides, many of the monetary institutions have come up several initiatives to strengthen financial systems and avoid financial crisis in the future. A good measurement of financial development is crucial in evaluating the progress of financial

sector development and understanding the corresponding impact on economic growth and poverty reduction.

However, in practice, it is difficult to measure financial development given the complexity and dimensions it encompasses. Empirical work done so far is usually based on standard quantitative indicators available for a longer time period for a broad range of countries. For instance, ratio of financial institutions' assets to GDP, ratio of liquid liabilities to GDP, and ratio of deposits to GDP. However, since the financial sector of a country comprises a variety of financial institutions, markets and products, these measures only serve as a rough estimate and do not fully capture all aspects of financial development. Literature identifies four sets of proxy variables characterizing a well-functioning financial system: financial depth, access, efficiency, and stability. These four dimensions are then broken down for two major components in the financial sector, namely the financial institutions and financial markets.

Table 2.1: Dimension of Financial development measures

Dimension	Financial Institutions	Financial Markets
Depth	• Private Sector Credit to GDP • Financial Institutions' asset to GDP • M2 to GDP • Deposits to GDP • Value added of the financial sector to GDP	• Stock market capitalization and outstanding domestic private debt securities to GDP • Public/global debt securities to GDP • Stock Market Capitalization to GDP • Stocks traded to GDP
Access	• Accounts 1000 adults (commercial banks) • Branches per 100,000 adults • % of people with a bank account • % of firms with line of credit (all firms) • % of firms with line of credit (small firms)	• % of market capitalization outside of top 10 largest companies • % of value traded outside of top 10 traded companies • Government bond yields (3month and 10yrs) • Ratio of domestic to total debt securities • Ratio of private to total debt securities • Ratio of new corporate bond issues to GDP
Efficiency	• Net interest margin • Lending-deposits spread • Non-interest income to total income • Overhead costs (% of total assets) • Profitability (return on assets, equity) • Boone indicator (or H-statistics)	• Turnover ratio for stock market • Price synchronicity (co-movement) • Private information trading • Price impact • Liquidity/transaction costs • Quoted bid-ask spread for government bonds • Settlement efficiency
Stability	• Z-score • Capital adequacy ratios • Asset quality ratios • Liquidity ratios	• Volatility (standard deviation / average) of stock price index • Skewness of the index • Vulnerability to earnings manipulation • Price/earnings ratio • Duration • Ratio of short-term to total bonds

Source: Researcher's Computation, 2022.

2.1.3 Remittances

Remittances are usually small-value non-debt-creating monetary transfers from income-earning migrants or benevolent organizations resident abroad sent to family members, other close associates, or non-governmental social welfare institutions resident in native or developing countries, directed at meeting a specific purpose. These flows are called migrant remittances if they strictly involve interpersonal transfers from an international migrant to his/her close relations resident in his/her native country. In other words, international migrant remittances exclude the transfer of funds from institutions to persons or social institutions in less privileged and vulnerable economic environments. This study is centered on migrant remittance flows as it directly relates emigration of labour, since labour is an important resource of which the Nigeria is well-known for its endowment and as a net exporter to the industrialized world. The motivation for a migrant to remit part of his/her earnings to his/her native country is, either directly or indirectly, influenced by the end-use of remittances. For instance, to thoroughly understand the motives behind migrant remittance inflows and the magnitude, regularity and volatility of these flows to Nigeria, it is essential to be acquainted with how remittances are used in the country.

Besides, a review of the extant literatures on the uses of remittances could offer some crucial insights into understanding the dynamics and trends in migrant remittance flows at the macro-level. Two authors identify altruism, exchange, strategic behaviour, co-insurance, inheritance, investment and mixed factors as motives behind migrant remittance flows at the microeconomic level[7]. This was after the debate on motivations to remit was triggered by another author, who acknowledged pure altruism, pure self-interest, and tempered altruism (or enlightened self-interest), as the microeconomic determinants of remittances using evidence from Botswana Altruistic motive of remittances is driven by the natural love and concern for improved living standards of the other family members and close associates left

behind by migrant. In this case, the migrant derives positive utility from sending funds home to improve upon the socio-economic welfare of the beneficiaries (often close relatives and friends) in home countries, knowing very well that these recipients are in less advantageous economic environment that is plagued with poverty and other forms of economic vulnerability. It is expected that a rise in migrant remittances, negative economic shock in home country, decrease in disposable income of recipients and migrant intention to return to home country will positively impact on remittance flows driven by altruism, whereas the number of international migrants in target household reduces remittances over time. Self-interest motive of remittances is driven essentially by the migrant's intent to return home after some time and hence the need to save at home in advance, and to earn respect among his/her family and close associates, and the aspiration to inherit a family property such as land, chieftaincy reign, and even sometimes to pull support for a political position. Regarding intention to return home in the future, the migrant can then use his/her family or any close associates as a trustworthy supervisor and well-informed agent who will monitor his/her own children and spouse left behind to undertake capital-intensive investment projects such as housing, commercial farming and other entrepreneurial initiatives.

Another two authorsargue that in a three generational setting, a migrant may be motivated to remit his/her parents as a demonstration to his/her children how he/she (the migrant) should also be taken care of at old age by his/her children. For this demonstrative effect to be successful under this circumstance, the migrant makes sure the transfers of funds (i.e. remittances) are visible to his/her children and, even in some cases, to his/her grandchildren[8]. The net earnings of the migrant and the intention to return home after some time rather than the negative economic shocks at home and the number of migrants in a household are expected to have a significant positive impact on remittances. Tempered altruism (or enlightened self-interest) is the mixed motive of remittances representing the less extreme

cases of pure altruism or self-interest. This motive of remittances is informed by an implicit contractual framework of mutual benefit from international migration, which involves that migrant and his/her family resident in his/her country of origin. The implicit contractual agreements would normally include co-insurance, loan repayment, exchange for services, and strategic behaviour. For instance, a household may agree to mobilize funds to finance the initial cost of a family to a country where the probability of job acquisition and earning higher wages is relatively high. The migrant is expected to remit part of his/her income to the household left behind to off-set the debt acquired in sponsoring his/her trip, and thereafter remittances are expected to continue to flow especially during periods of negative economic shocks. A migrant could also enter into an agreement with his/ her family to be sponsored abroad so that in return, he/she will pay the airfare of a certain number of economically active family members to travel abroad for greener pastures.

Besides this, both parties (the migrant and the household) might agree to invest the remittances received by the household in an agreed investment project that could be mutually beneficial to both parties. The investment project could serve as a hedge against uncertain future misfortunes such as ill-health and deportation of the migrant and negative shocks at home or in host country. Furthermore, in countries where extended family system and social ties are strong, migrants may be invariably compelled to remit home regularly as a compensation for the loss of his/her personal services to his/her family and community. It should be obvious from the foregoing that the uses of international migrant remittances at the microeconomic level could be many and varying over time. It is very likely that in most average homes, from whichever motive driving migrant remittances, consumption and loan repayment towards improved living standards would lead the uses of migrant remittances at the initial stages. Over time, the use of remittances in a typical household is expected to switch in favour of investment in education and entrepreneurial ventures. An author contends

that remittances are mostly used for consumption and for investment in land and property[9]. Likewise, two different studiesclaim that remittances are used primarily for consumption rather than for financing investment projects because of the barriers and inconveniences attached to investment[10,11]. Of all the consumption purposes of using migrant remittances, clearly driven by altruism, available evidence shows that food and other general living expenses constitute the largest proportion. The usage of remittances in human capital accumulation could take many forms viz. finance of schooling, vocation, and emigration. For instance, an author claims that 75% of Samoan migrants and 33% of Tongan migrants have had their airfares paid by a migrant family member[12]. An author reports that young families in Tonga save a portion of remittances received towards future use[13]. Studies from sub-Saharan Africa countries also contributed to debate. For example, two authors argue that besides consumption, remittances are used to finance development projects in migrant's home communities in Senegal[14]. Likewise, an author argues that the household members who fell ill during the year are the most significant reason why Malian migrants remit, and these remittances increase once a family member dies. Averagely, one death and one sick family member induce an increase in migrant remittances by 124%. Given the above scenarios, there are no clear-cut uses of migrant remittances across recipient families in the developing world, implying there is no universal answer to the question as to whether remittances are spent on 'productive' or 'unproductive' activities. However, since consumption remains the most important use of remittances in many remittance-receiving homes, as evidence shows, the microeconomic impact of remittances on welfare is obviously positive as far as household access to basic essential needs of life is concerned[15].

2.1.4 Foreign Direct Investment (FDI)

Foreign Direct Investment is the transfer of foreign capital in form of equity and other assets of international or multinational corporations. It may involve the joint ownership between the foreigners and the government of the domestic economy where the capital is invested and it is called the joint venture companies. World Bank reports that FDI denote the amount of share capital and earnings diversification and long and short-run capital as seen from the balance of payments[16]. The migration of foreign investors into a company's management is also a long-term influence that typically constitutes at least 10% or more of voting stock in a company operating in an economy other than the investor's. Hence, it can be estimated as either a stock or a flow. The FDI's stock consists of the accumulation of FDI over some time in an economy while the FDI's flow generates within a year, which could be inside or out for that particular year. However, two forms of foreign direct investment are available: the horizontal FDI/FDI market-seeking implies that multi-national enterprises are involved in partaking in various countries that manufacture homogenous goods and services. In addition, it can be done in several ways to enter a foreign market. As a result of purchasing an established international company known as Mergers & Acquisitions or Brownfield investments, the most important entry method in recent years has been FDI. Greenfield's investment prefers the host nation because it increases the receiving country's stock of capital.

At the same time, an author observed that mergers and acquisitions are mostly related by Multi-national Companies (MNC). Greenfield generally has higher costs than mergers and acquisitions when considering Greenfield's investment costs[17]. At least three factors of investment will decide the relative value of the various locations: the investment motive, forms of investment, and scale of investors. One of the main traditional FDI determinants, the scale of the national markets, has fallen due to globalization and economic integration. At the same time, cost divergence between sites, infrastructure quality, ease of operation and skill

availability have increased. The attraction to FDI by numerous developed and developing countries and transition economies such as India, China, Australia and Kazakhstan, still includes traditional determinants of economic, such as resources endowment and scale of manufactured products, with heavy responsibilities, shielded from foreign competition[18].

2.2 Theoretical Review

Various economic theories have been employed in the literature to model different economic situations and policy framework. With the intents of this research study hinges on economic analysis of impact of monetary policy on remittances and FDI in Nigeria, the study shall look at the perspectives of various theoretical views starting from neo-classical to eclectic theoretical viewpoint as they relate to subject. Solow's neoclassical growth model assumes that physical capital accumulation drives economic growth and is influenced by population growth. A surge in an economy's capital stock leads to a rise in demand, which increases the output growth rate. It says that domestic savings harm economic growth, while FDI positively affects growth by capital per worker. According to the neoclassical growth model, capital inflows are advantageous because they open up new avenues for capital accumulation and stimulate development in developed economies. When the marginal productivity of capital within a country's borders exceeds the marginal productivity of capital in capital-rich areas of the world, capital inflows enable the recipient country to spend and consume more than it generates. As a consequent, foreign capital would fund investment and boost economic growth, helping to surge living standards in developing countries while also growing household welfares to smooth out their consumption over time and achieve higher consumption levels. In addition, it aids developed countries in diversifying their portfolios internationally[19]. They also proposed another explanation for international capital flows, claiming that differences in capital accumulation levels lead to differences in capital returns and economic growth rates in different countries[20]. Studies from different authors also point

out that a developing country with low capital stock and, as a result, higher returns on capital and a higher economic growth rate is more likely to attract foreign funds (capital) from return-seeking international investors than a developed country with higher capital stock, lower returns on capital, and thus a lower economic growth rate. This is the basis for the forecast of downhill capital flows. More capital flows to a developing economy raise the capital stock, lower returns on capital resources, and increase economic growth[21].

Besides, neoclassical school of thought contents that, other factors, other than labour and capital, account for growth differences across countries, and these factors are described by the residual principle or total factor productivity. As a result, growth is measured outside the model, and the improved Solow model involves output variables like human resources, which do not have a rate of change. An augmented Solow model incorporates the accumulation of both human and physical resources[22]. As a result, foreign capital will influence the savings rate, which subsequently enhances economic growth. For example, in foreign direct investment, the implementation of new technology would mean that development would continue. Two-gap model by emphasizing that countries with a savings-to-investment gap should pursue foreign capital through external assistance or external private investment to close the investment-savings gap[23].

Furthermore, Ramsey-CassKoopmans (RCK) is a neoclassical theoretical model of economic growth developed by two studies[24,25]. The model assumes the same thing about the economy's production function as Solow's model. Unlike Solow's, however, the saving rate is not assumed to be exogenous. The model is based on multiple atomistic economic agents making intertemporal economic decisions that determine consumption and saving for each period. Given the assumptions, the model arrives at the same conclusion as Solow's, namely, that the technological growth rate is the only determinant of economic growth, though using a different analytical approach. Furthermore, under the Ricardian equivalence theory, changes

in permanent factors that impact consumption (such as the discount rate and government purchases) have a shift effect on the economy rather than a growth effect[26]. Another author suggests studying finite horizons in which a household's life is split into two eras. In the first year, wages are paid to households, and profits are spent on current consumption and investments. Households do not gain income in the second cycle, but first-period savings finance current spending. As a consequence, as in the Solow – Swan model, an economy enjoys long-term stability[27]. The neoclassical models conclude that the economy will ultimately achieve equilibrium and that convergence exists, implying that developing countries will develop bigger than developed countries. Similarly, according to the convergence theorem, countries vary only concerning their capital/labour ratio and have the same steady state. As a result, a lower per capita income economy will expand faster[28,29].

The endogenous growth school of thought contend that, in addition to physical capital and population development, technology or human capital is a critical component of economic growth[30,31,32]. The studies integrated capital externalities into Romer's neoclassical production process, distinguished through an upsurge in returns to scale for all production factors and persistent returns to scale for capital, laying the groundwork for endogenous development. However, in Romer's paradigm, the AK output function necessitates fulfilling certain requirements before the economy can grow. First, externalities must be significant; otherwise, the Cobb–Douglas output mechanism regulates economic growth. On the other hand, capital per income was described by Lucas as the value of the "scale effect." As a result, unlike Romer, Lucas was not forced to make any predictions about the stability of the labour market. Lucas suggested two industries and two types of capital in his endogenous growth model: physical capital, which is employed in the production process, and human capital, which influences both labour and physical capital productivity growth. Similarly, Lucas' study describes why countries with low human capital grow gradually in countries with ample

resources and endogenization of technological innovation is accomplished by a working research and development (R&D) sector that leads to economic growth. Based on endogenous growth theory, technological change will manifest itself in two folds. To begin, it can be shown by increasing the number of products used in the production process. Also, endogenous technical innovation manifests itself in the improvement of the quality of existing products.

In contrast, Romer suggested a model of economic growth in which technological development was the primary determinant of increased intermediate goods supply. According to his argument, the amount of human capital affects economic growth because countries with a large amount of human capital can grow much faster than countries with a small amount of human capital[33]. Thus, the most interesting endogenous growth models feature lies in its ability to describe anomalous international capital flows that intensify wealth inequalities between developed and developing countries. Lower levels of supplementary investment in human capital (education), infrastructure, and research and development weaken relatively high investment returns provided through emerging economies with limited capital-labour ratios. Endogenous growth models, in contrast to neoclassical growth theories, say that public policy should play a more active role in fostering economic growth by committing directly and indirectly in human capital development and facilitating international private business investment (such as FDI) in expertise sectors[34]. The endogenous growth model claimed, as did the Neo-classical growth model, that institutions assume an important role in economic growth and development. According to an author, poor and weak institutions in a country result in poor and weak macroeconomic policies. The link between institutions and economic performance has recently risen to the forefront as the most pressing issue. Greater economic growth necessitates increasingly refined and high-quality institutions, which necessitates even greater economic growth. Consequently, there tends to be feedback

causality between institutions and economic growth, and bidirectional nexus between institutions and economic growth is expected[35].

Keynesian viewpoints contend by proposing several variables, including interest rates, capital efficiency and long-term investment expectations, that influence the course, strength, and flexibility of financial capital flows. Loanable funds theory predicted equality between saving and investment through a variable interest rate, in comparison to pre-Keynes classical economic theory, which predicted equality between saving and investment through a fixed interest rate. Hence, the dynamic interest rate was the balancing factor in the stock market, taking investment funds in demand and supply to an equilibrium point. Also, when discussing the effect of the financial markets, Keynes observed that seasoned investors' positions had shifted significantly over time, becoming more speculative, but that an entrepreneur should be preoccupied with investment crafting demand and understanding the enterprise value chain of financial capital development rather than the agents being preoccupied with speculating what the market would look like. On the other hand, he thought that markets designed to encourage the speculative effect of investment flows are a risky growth strategy. The literature has defined the autonomous investment mechanism that distinguishes Keynes's growth theory from other approaches; however, the literature appears to be divided on what constitutes a Keynesian investment function, and several investment-led growth theories have been proposed. On the one hand, another author observed that maximum production capacity, flexible income shares, and a functional relationship between capital accumulation and profits rates described investment. On the other hand, another author argues that companies underutilize their productive potential and rely on mark-up processes to set prices. Profitability (as calculated by profit margins) and product demand are also important factors in capital accumulation (through the degree of capital utilization)[36].

Another important point made by Keynes was the importance of capital control. To preserve national autonomy for productive growth and employment, Keynes believed that speculative capital must be regulated. Furthermore, controls are discussed by Keynes as a means of dealing with capital flow boom and bust cycles, so that if the private sector's bull-bear attitude changes suddenly, a phenomenon known as the bandwagon effect, price stability necessitates regulation limiting capital flows into and out of the market to prevent bears from confiscating their positions too rapidly. As a result, capital controls are viewed as a new corrective mechanism that could be justified to foster growth and stability in developing countries. Aside from psychological stresses and expectations in a country's economic system, which Keynes, Shiller, and others have studied, another significant impediment to stable markets in developed and emerging market economies is the lack of well-established institutions. Humans impose economic structures to form economic relationships. They include formal rules such as constitutions, statutes, contracts, and business legislation, as well as informal rules such as social standards, principles, and customs[37].

2.3 Empirical Review

The literature on remittances and economic growth has stimulated various reactions with different empirical findings from developed, emerging and developing countries. This empirical literature focuses on the nexus between remittance inflows, financial development and economic growth. The summary of the empirical literature is provided in the Appendix I.

2.3.1 Evidence from Developed Countries

Dated to the empirical work of Lucas and Stark[38], who initiated the debate on the determinants of remittances, the motivation for providing empirical examination has lingered endless. The empirical research demonstrates that remittance inflows have a variety of macroeconomic consequences. For starters, because the funds primarily benefit low-income

families, they are anticipated to lessen economic disparities[39]. This effect is debatable, since other studies discovered that wealthier families, who are better equipped to bear the expenses of emigrating, gain more from remittances[40]. Second, remittances serve as a source of capital, promoting increased employment and economic growth in the recipient economies[41,42]. Third, remittances help to offset the current account deficit[43]. Besides, the influence of remittances on economic growth is proportional to the amount of money invested in productive activities. Studies from authors use a spatial error model to analyze US cross-border investments across 29 Chinese provinces[44]. They find that an increase of FDI flows towards one province has positive effects on FDI in nearby provinces. McCraken, Ramlogan-Dobson, and Stack investigated the importance of remittances in 27 Latin American and Caribbean countries as well as 18 industrialized countries using a microeconomic model of remittance incentive[45]. They discovered that remittances are driven by a combination of charitable and self-interest. Another two authors utilized ARDL and VECM to examine macroeconomic factors influencing remittances in Jordan from 1972 to 2009. According to the authors, host country macroeconomic variables, instead of home country macroeconomic factors, were the most relevant drivers, as were external rather than internal factors. During 1990 and 1991, two authors performed a comparative examination of remittance operations in Brazil, the United States, and Canada[46]. They stated that the majority of immigrants had similar views on socioeconomic indicators, which they ascribed to their experiences in their native countries. Immigrants who had just arrived, on the other hand, had diverse viewpoints on certain issues. An author examined newly collected data from 589 Turkish immigrant households in Berlin. The author reasoned that remittances were a combination of self-interest and tempered compassion[47].

2.3.2 Evidence from Emerging and developing Countries

The literature of the remittances and economic growth has evolved noticeably with mixed outcome over the years. The fact that resource flows can bring in their wake deleterious effects is quite well documented in the literature on the resource curse phenomenon. Indeed, evidence of Dutch disease effect of remittances has been discovered by several authors[48]. According to these authors, irrespective of the motive for remitting, remittances reduce labour supply while increasing the consumption of non-tradable goods. According to the authors, the increased demand for non-tradable leads to an increase in non-tradable goods prices and consequently a movement of labour away from the tradable sector culminating in the Dutch disease effect. Two authors provide a better understanding of the multifaceted effects of mass migration on the economies of emigration nations. The research analyzed the influence of remittances and other global capital flows on financial development from 1870 to 1913, when there was a lot of migration[49]. The findings revealed that migrant remittances were much more significant in stimulating the local financial sector than the other international capital flows during the study period. Likewise, Motelle investigate the impact of remittances on Lesotho's financial development. The dynamic relationship was observed using the Vector Error Correction Model (VECM) and the Co-Integration test. The findings revealed that remittances have a long-term impact on financial progress. Financial development caused remittances, according to the Granger causality test[50].

Authors like Adenutsi and Ahortorexplore the monetary factors underlying the changing levels of remittance inflows, and the implications of remittance inflows for monetary aggregates, interest rate, exchange rate, and the domestic price level in Ghana. The theoretical framework of the study was based on a modified variable-price Mundell-Fleming model. They estimated a five variable Vector Autoregressive (VAR) Model using quarterly data between 1983 and 2005. The estimated static long-run model revealed that monetary

aggregates, exchange rate and interest rate positively impact on remittance inflows while domestic price level negatively impact on remittance inflows. Monetary aggregates, exchange rate, interest rate and domestic price level impact on one another while remittances positively drive itself, monetary aggregates, exchange rate and interest rate. The impulse response functions of the study showed that remittance inflows respond to its own shocks but not to shocks emanating from monetary aggregates, exchange rate, interest rate, and the price level[51]. A theoretical framework to investigate the effects of remittances and financial market growth on economic growth was proposed by an author, and also their relationship. The framework was validated using a panel data analysis for Latin American and Caribbean countries from 1970 to 2002. According to the data, remittances aided economic growth in both regions[52]. Furthermore, two authors used a newly constructed cross-country dataset for remittances covering about 100 developing countries from 1975 to 2002 to examine the relationship between remittances and growth, as well as its interaction with financial development in the recipient country[53].

Remittances have been demonstrated to support growth in less developed countries by giving an alternate means of financing investment. For instance, some researchersinvestigate the aggregate impact of remittances on economic growth in 18 Latin American countries using a typical neoclassical growth paradigm and an imbalanced panel data set covering 1980 to 2005[54]. The study also looked at the influence of remittances on Latin American economic growth and development in relation to other external capital sources such as foreign aid and FDI. According to the findings, remittances have a positive and significant impact on the economies of Latin American countries with less developed financial systems by providing an alternative way of financing investment and assisting in the resolution of liquidity concerns.

Using data for the Philippines, another author developed and estimated a heterogeneous agent model to analyze the role of monetary policy in a small open economy subject to sizable remittance fluctuations. He tested whether remittances are countercyclical and serve as an insurance mechanism against macroeconomic shocks. When evaluating the welfare implications of alternative monetary rules, he considered both an anticipated large secular increase in the trend growth of remittances and random cyclical fluctuations around this trend. According to him, in a purely deterministic framework, a nominal fixed exchange rate regime avoids a rapid real appreciation and performs better for recipient households facing an increasing trend for remittances. He concluded that a flexible floating regime is preferred when unanticipated shocks driving the business cycle are also part of the picture[55].

Another number of authors demonstrate the impact of fiscal and the quantitative monetary policy on the domestic and Foreign Direct Investment in Jordan during the period (2000-2011), where the study used two models, the first model is to assess the impact of the fiscal and quantitative monetary policy on the domestic investment, the study found that there is a negative relationship between the re-discount rate and the domestic investment, but not statistically significant, while there is a positive relationship with a statistically significant between the mandatory cash reserve and domestic investment, due to the presence of excess cash reserves at banks in Jordan. The study also showed a negative relationship between taxes and domestic investment, and a positive relationship between governmental capital spending and the domestic investment, this means the political effectiveness of the fiscal impact is greater than the monetary policy effectiveness on the domestic investment[56]. The second sample demonstrates the impact of the fiscal policy and the quantitative monetary on FDI. The study showed that there a presence of a statistically significant negative relationship between the re-discount rate and FDI, while it showed a positive relationship between taxes and FDI, the reason is that the government grantsa tax exemption to encourage FDI. For the

period 1975 to 2010, a researcher investigates the causal relationship between remittances, financial development, and economic growth in Lesotho. As proxy for remittances, financial development, and economic growth, per capita remittances, real per capita, wide money supply, and real per capital gross domestic product are used. To test for co-integration among the variables, the Johansen process was used, and the Granger causality test was predicated on a vector error correction model (VECM). Remittances create economic growth without feedback, while financial development causes remittances without feedback, according to the findings[57].

However, the investigation on the nexus between remittances, foreign direct investment, foreign imports and economic growth in Pakistan using data over the period of 1977-2013 was documented by three authors[58]. The study findings reveal that external determinants such as foreign remittances, foreign direct investment, and foreign imports matter from a growth perspective. Foreign remittances and foreign direct investment have a significant positive role in the growth process of Pakistan economy. Furthermore, it is found that foreign imports have adversely influenced the economic growth of Pakistan. Another study argue that remittances encourage FDI by increasing domestic consumption, including goods and services produced by foreign firms. He found that remittances positively affect FDI flows from the US to Latin American and Caribbean countries[59]. However, the sign of the relationship depends on the income of the recipient country, with a negative effect in low-income countries and a positive effect in high-income countries. Two authors from Ghana examine the nexus between productivity growth and remittance at the macro level on Ghana covering the period 1975-2013. The findings reveal that remittance inflows remained positive and increased modestly over time while economic growth as measured by the growth in labour productivity per person has been fluctuating. The study further shows that foreign direct investment, official development assistance and international trade are positively related to productivity[60]. Some

researchers examine the effect of workers' remittances growth on economic growth in a panel of 36 African countries from 1980 to 2009. The findings of the study show that remittances emerge to be an important driver of economic growth for these African states during the observation period, and remittance volatility seems to have an adverse impact on African growth. The results indicate that remittances appear to be a supplement to financial development. Nevertheless, the role of financial development in stimulating economic growth seems to be under-utilised, at least in the countries under consideration[61].

The study by Comes, Bunduchi and Vasile on the impact of foreign direct investment (FDI) and remittances on economic Growth using panel data of seven countries from Central and Eastern Europe provide a significant result. The study findings reveal there are significant relationships between FDI, remittances and economic growth in the seven analysed countries. Besides, a positive impact of both FDI and remittances on GDP, but the influence of FDI is higher in the selected countries[62]. An author argues that remittance flows have some small but positive effects on FDI; however, the results vary by both region and country. Specifically, the positive relationship strongly holds in African countries and high remittance recipient countries but not for Asian and Latin American countries over the period 1980-2014. The results of the causality test suggests that the relationship is bidirectional. These results have important policy implications to developing countries. For example they suggest that policies aimed at increasing remittance inflows also attracts more FDI in somecountries and also that remittance inflows be viewed as being both a cause and a consequence ofFDI[63]. Recently, several authors investigate the impacts of remittance inflows, financial inclusion, and economic development and whether inward remittances may help to construct an inclusive financial system. The study employ generalized method of moments and a structural equation model to reveal that remittances and financial inclusions are engines of growth in countries of different income groups[64].

Fixed effects (FE) and system GMM estimators are used by three authors validate the authenticity of a nonlinear relationship between foreign aid (AID), foreign direct investment (FDI) and domestic investment (DI), and economic growth in 41 African countries between 1990 and 2016. Furthermore, the findings demonstrate that AID and FDI have a significant positive enhancing impact on the real economy. It is also demonstrated that FDI supplements DI, whereas the combined effect of AID and DI in catalyzing growth remains weak. Furthermore, the findings show that the symbiosis of AID–FDI–DI has a positive impact on economic growth, implying that AID and FDI enhance DI's potency in stimulating the economy[65]. Similarly, two authors from Nigeria use pooled mean group and mean group/ARDL methodologies to verify that remittances and financial development have a positive relationship with economic growth in 20 Sub-Saharan African countries in the short and long term between 2000 and 2015. The interactive term revealed that in the remittances-growth relationship, financial development served as a substitute. Finally, there were unidirectional causal relationships discovered between GDP and remittances, as well as between financial development and GDP. In the SSA countries, however, there was no correlation between remittances and financial development[66].

Bandura, Zivanomoyo, and Tsaurai show that remittances have a positive impact on economic growth but a negative impact on financial development in 14 Southern African Development Community (SADC) countries between 2006 and 2016[67]. The findings are noteworthy because previous research has found a link between remittances and economic development. Because bank financing is difficult to come by in SADC, the negative relationship between remittances and financial development implies that investment is primarily financed by remittance inflows. While study carried out by three authors focused onthe impact of financial sector development and remittances on Ghana's economic growth. The study employs macrodata to evaluate a dynamic heterogeneous Autoregressive

Distributed Lag (ARDL) model, demonstrating that financial booms are not generally growth-enhancing, that a certain level of financial development can drag down economic growth in the long run, and that the combined effect of financial development and remittances should concern policymakers[68].

A researcher on the other hand, used a panel data set from 1970 to 2010 to investigate the importance of remittances and financial development for 54 developing nations. The study calculated a financial sector development index and used it to measure the importance of finance as a remittance transmission route for economic growth. The index combines data from existing measurements that represent the financial sector's size, depth, and efficiency[69]. The Panel Generalized Method of Moments (GMM) analysis revealed that remittances have a negative impact on the economies of the countries studied. Two authors investigate the relation between financial development and growth in the West African Economic and Monetary Union from 1981 to 2010. The Generalized Moment Method (GMM) was also used to establish that financial development has a positive and statistically significant impact on economic growth. The bidirectional causation between supply and demand supports both views[70].

However, a researcher investigate the traceable causality between remittances and financial developments in some African countries by examining the relationship between remittances received and how they affect the availability of credit to the private sector, bank deposits intermediated by financial institutions, and money supply. From 1990 to 2011, panel data on remittances to 50 African poor nations were used. On the panel data, the study used fixed effects and random effect estimations, as well as the Vector Error Correction Model approach. The data generally revealed that remittances have a favorable and considerable impact on financial development[71]. Also, two authors investigate the impact of remittances on economic growth in a panel of 24 African nations spanning 1998 to 2011. The System Generalized

Method of Moments (SGMM) was utilized, and a synergy between financial development and remittances in economic growth was discovered, such that remittances were making a positive impact in nations with developed financial sectors[72]. A researcher studied the impacts of workers' remittances on economic growth in 33 top remittance receiving underdeveloped nations spanning 1979 to 2011, using several indicators of financial development. The study used the two-step generalized method of moments to estimate the fundamental neoclassical Solow growth model in a dynamic panel context (GMM). The study discovered that remittances significantly support economic growth in the selected nations after evaluating the normality of the data. Ultimately, the impact of financial development on the remittance-growth nexus was seen to be insignificant[73].

2.3.3 Evidence from Nigeria

The empirical investigation on role of financial development and/or monetary policy in enhancing remittances for economic growth has stimulated reaction from Nigeria over a decade[74,75,76,77]. For instance, an author evaluates the role of monetary policy in enhancing remittances for economic growth, using Nigeria as a case study. The vector autoregressive methodology was applied with two stage deductions. The findings of the study reveal that the monetary policy rate first impacts intervening variables – exchange rate, interest rate, inflation - which in turn impact remittance flows. The data set were tested for temporal properties, including unit roots and co-integration. Preliminary evidence showed that domestic economic prosperity increases remittances to Nigeria; while exchange rate depreciation depresses remittances[78]. An author studies the effect of inflation and exchange rate and the bidirectional influences between FDI and economic growth in Nigeria. The findings reveal that FDI follow economic growth occasioned by trade openness which saw the entry of some major companies especially the telecommunication companies, while Inflation has no effect on FDI. However exchange rate has effect on FDI[79].

The study on the impact of fiscal and monetary policies on the economic activity levels in Nigeria was conducted by other authors. The authors employ Augmented Dickey-Fuller and Johansen co-integration techniques to ascertain the status of the series and confirm whether there is long-run relationship between the FDI and the independent macroeconomic variables. Error correction coefficient was high, rightly signed and significant which reveals a long run relationship between the selected macroeconomic variables and FDI for the period of study. The explanatory variables included in the model showed statistical significant impact on FDI. The overall regression was significant as denoted by the probability of the F-statistic at 5% significant level. Using the same techniques, authorsexamine the relationship and causality that exist between remittance inflows and monetary aggregates variable such as interest rate, exchange rate, and the domestic price level in Nigeria using the Johansen co-integration and Granger causality techniques. The Johansen co-integration test indicated that long run relationship exist among the variables. The Granger causality test results revealed a unidirectional causality running from money supply (LM2) to remittances (LREM) only at lag one and not in the reverse. In other lags, there was no evidence of causality between the duos. The results also showed that, consistently from lag one to lag five, causality run from exchange rate (LEXR) to LREM and not in reverse direction. Unidirectional causality run from interest rate (INT) to LREM, occurring from lag one to lag four. There was no evidence of causality in any direction between inflation rate (INF) and LREM within these lags. The study also found that causality run from exchange rate (LEXR) to money supply (LM2) only at lags one and four and not in the reverse order[80].

Another recent study was conducted by some researchers to investigate the effects of FDI on Nigeria's real sector growth and how these inflows can help developing economies accomplish SDG goal-17.3, which calls for developing nations to mobilize additional funds from a multitude of sources. The authors used a robust GMM estimation technique that

avoided the endogeneity and autocorrelation issues that ordinary least square estimation has. According to the findings, labor quality has a positive and significant impact on RGDP, as predicted by theory. Furthermore, capital intensity was found to have a significant negative impact on RGDP in Nigeria[81]. Recently, some researchers investigate the effect of international inflow of capital on economic growth in Nigeria spanning from 1980 to 2019. The authors employed Ordinary Least Square and report that FDI has a negative relationship with economic growth and Remittances seem to have a positive effect on economic growth. The study, therefore, concluded that FDI does not stimulate desired growth while remittances promote growth in Nigeria[82]. Also, four authors look at the impact of migrant remittances and financial development on the Nigerian economy from 1986 to 2019. The study uses the Vector Error Correction Model (VECM) approach to show that the interaction between migrants' remittance and financial development index, as well as trade openness, are both directly connected to real-GDP, whereas migrants' remittance inflow is only indirectly associated. In addition, the financial development index showed an adverse link, but it was insignificant. As a result, the magnitude towards which migrant remittances impact Nigeria's economic growth is determined by the country's financial market's development[83].

2.4 Gap in the literature

Previous studies have mostly concerned with the relationship involving remittances and financial development, and how these two factors affect economic growth as well as other macroeconomic variables in developing nations, according to an examination of the empirical literature. However, empirical research on the effects of remittances on economic growth via financial development has received scant attention in Nigeria. Furthermore, prior research has not adequately examined the short- and long-term implications of remittances and financial development on economic growth in developing countries in general, and Nigeria in

particular. As a result, this study attempts to contribute to the existing literature by bridging this gap.

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Chapter Three

Methodology

3.1 Theoretical Framework

This study relies on the Endogenous growth theory framework proposed by Romer, where the financial market's activity cannot be ignored in today's economy and is closely linked to economic growth[1]. Thus, hypotheses ranging from neoclassical to endogenous growth have been widely debated in the literature, and each has been attributed to three factors: labour growth, capital growth, and technological progress growth (technology). Endogenous growth models have shown that certain economic behaviour, such as saving, can affect steady-state economic growth, allowing the growth rate to be self-sufficient. However, this model is theoretically sound for studying the growth of the financial sector and specific financial inflows as they relate to economic growth. According to a study by some authors, the model's innovation is focused on socioeconomic level promotion, which may encourage financial development and technological changes[2,3].

The importance of the AK model to the endogenous growth model gives an impetus on the advancement of technology, A, which is believed to raise the minimum and average product of capital, economic growth rate and saving rate[4]. As a result, any change in government policies causes a shift in technology (that is, parameter A is beyond a literal difference in the level of the production function). Therefore, this model (Endogenous Model) provides insight, encompassing and understanding the possible links between finance and economic growth. As a result, the model considers endogenous financial development factors, supporting the claim that economic level and capital accumulation affect financial development and economic growth. In light of the preceding point, the most basic endogenous growth model

(the AK model) is used to capture the impact of financial inflows, financial development and economic growth progress.

Thus, the study is anchored on AK model, which is viewed as a linear function of total capital stock:

$$Y_t = A_t K_t \tag{3.1}$$

$Y_t$reflects the aggregate production of the economy proxies as economic growth at time t, while $At$and $K_t$are the total factor productivity (TFP) and the capital stock, respectively. The model is modified to integrate the remittance inflows. Owing to the theoretical proposition that remittance inflows influence economic growth through total factor productivity (TFP), as denoted by A in equation (3.1). Similarly, a researcher treated $K_t$as two identical technologies that are reproducible (physical and human capital)[5]. Also, when it comes to a closed economy, equilibrium position in the capital market is arrived at when aggregate savings S_t equal aggregate investment I_t, classified by another author as the theoretical saving-investment disparity structure of the Harrod-Domar growth model. For developing countries, remittances inflows should be adopted to close the savings-investment gap, as structured[6]:

$$I_t = S_t \tag{3.2}$$

From equation (3.2), at the equilibrium point, savings can be channeled to investment through financial intermediaries operating in the financial sector under perfect financial market conditions. However, a financial market does not work perfectly due to asymmetric knowledge and transaction costs[7]. It is assumed that the cost borne by the intermediaries as commission fees to bankers and other securities markets agencies could be denoted as $(1 - \beta)$, and β is the part of savings channeled to investment and used for investment. Such that, $S_t = \beta S_t + (1 - \beta) S_t$ and equation (3.2) is re-specified as:

$$I_t = \beta S_t \tag{3.3}$$

However, equation (3.3) expresses capital market balance for a closed economy in which aggregate investment equals effective saving, the portion of aggregate saving that is not consumed in the financial intermediation process. In a closed economy, the implication is that domestic saving aggregate is viewed as a barrier to overall investment. In a country with limited capital, the capital cost, and thus the interest rate, would be high due to limited savings. Thus, taking the growth rate effect of equation (3.1) at time t, such that the growth rate is denoted as y that produces the growth rate steady-state and ignoring the time indices, the equation becomes

$$y = A\frac{K_{t+1}-K_t}{K_t} \tag{3.4}$$

Also, assuming that in a domestic environment, since population remains unchanging, only one product is made, consumed or invested; and if invested, the depreciation rate per period is θ (i.e., $I_t = K_{t+1} - K_t + \theta K_t$). Thus, $K_{t+1} - K_t$ stands for new investment and θK_t stands for the ratio of investment used to replace capital wears out. Hence, the aggregate investment in the economy is redefined as:

$$I_t = K_{t+1} - (1-\theta)K_t \tag{3.5}$$

By rewriting equation (3.5), such that K_{t+1} becomes the subject of the equation

$$K_{t+1} = I_t + (1-\theta)K_t \tag{3.6}$$

Substituting equation (3.6) into (3.4)

$$y = A\frac{I_t + (1-\theta)K_t - K_t}{K_t}$$

After simplification;

$$y = A\frac{I_t}{K_t} - \theta \tag{3.7}$$

Inserting equation (3.3) into equation (3.7), and produce the steady-state growth rate as

$y = A\beta\frac{S_t}{K_t} - \theta,$ for which $\frac{S_t}{K_t} = (\frac{S_t}{Y_t}/\frac{K_t}{Y_t})$ is the ratio of savings to capital-output that is replaced by s_t which is classified as the aggregate savings rate. Hence, we have

$$y = A\beta s_t - \theta \quad (3.8)$$

Equation (3.8) demonstrates that steady-state growth is dependent on marginal capital productivity A (A represents remittance inflows that encapsulate the total factor productivity from abundant economy to the remainder of other countries in the world, which comes in the form of investment). Also, β stands for channeled of saving through the financial intermediation activity into firms activity or production, and θ equal depreciation rate. The equation (3.8) above explains the interdependence of remittance inflows, financial sector development, and economic growth (y) in steady-state equilibrium, which can be boosted through financial progress, also increase β, s_t and A, especially for a country with the well developed financial system thus enhance higher growth of the economic rate. In view of the foregoing, the study argues that financial integration would result in more effective foreign resource distribution, with surplus funds flowing from where capital intensity is smaller to where it is bigger. However, all these inflows of funds would complement domestic saving, which will reduce the capital cost, increase investment, and subsequently economic growth. Furthermore, financial integration would improve investment efficiency by changing the investment mix (capital inflows) toward higher-returning ventures since both local and foreign investors will benefit from the higher return in the riskier project, but the risks will be distributed over a greater number of investors.

3.2 Model Specification

The baseline model follows the empirical specification of equation (3.8), which is further re-specified as:

$$Iny_{i,t} = a_0 + a_1 InA_t + a_2 InB_t + a_3 InS_t + \varepsilon_t \quad (3.9)$$

It is assumed that remittances inflows will result in rising returns to scale, whereas the neoclassical model emphasizes declining returns to marginal product in the long run[8]. Where A represents remittance inflows from citizens through to the rest of the world as a result of globalization and investment drive to fill funding gaps caused by research and growth, human capital, technical spillover effects. Thus, equation (3.9) is further re-specified as:

$$Iny_t = a_0 + a_1 Iny_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 InFD_t + \varepsilon_t \quad (3.10)$$

The lagged of *Iny*, which is the proxy for GDP, captures the convergence hypothesis. This suggests that wealthy countries develop more slowly than poorer countries.Hence, replacing y by GDP and incorporating this into equation (3.10) and re-specified as follows:

$$InGDP_t = a_0 + a_1 InGDP_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 InFD_i + \varepsilon_t (3.11)$$

Thus, institutional quality (INS) play major role in ensuring there is well enhanced financial system and suitable regulatory framework for remittance inflows. As a result, when all of the above is factored into equation (3.11), the equation becomes:

$$InGDP_t = a_0 + a_1 InGDP_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 InFD_t + a_6 INS_t + \varepsilon_t \ (3.12)$$

Model Equation 1: Relation between Remittance inflows and financial development in Nigeria.

In line with objective four that attempts to determine the nexus between remittance inflows and financial development in Nigeria. Taking after the trend from equation (3.12), re-specifies to model financial development as a function of remittances, and control variables as follows:

$$InFD_t = a_0 + a_1 InFD_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 InGDP_t + \varepsilon_t \quad (3.13)$$

All variables were defined as previously stated. The lagged of *InFD*, which is the proxy for financial development, captures the convergence hypothesis. Hence, incorporating INS by this into equation (3.13) and re-specified as follows:

$$InFD_t = a_0 + a_1 InFD_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 InGDP_t + a_6 InIN_t + \varepsilon_t (3.14)$$

As earlier stated, institutional quality (INS) play major role in ensuring there is well enhanced financial system and suitable regulatory framework for remittance inflows.

Model Equation 2: Interactive Role of Financial Development

In an attempt to investigate the interactive role played by financial development on remittance inflows and economic growth nexus in Nigeria, equation (3.12) is modified and becomes

$$InGDP_t = a_0 + a_1 InGDP_{t-1} + a_2 InREM_t + a_3 InGFC_t + a_4 InFDI_t + a_5 FD_t + a_6 (InREM_t * FD_t) + a_7 (InFDI_t * FD_t) + a_8 INS_t + \varepsilon_t \quad (3.15)$$

The Gross Domestic Product (GDP) lagged coefficient is predicted to be negative ($a_1 < 0$). Remittances may also affect, depending on how they are used ($a_2 \gtrless 0$). Some researchers support a positive relationship, while another authors reported the existence of a negative nexus. Furthermore, the coefficients of $a_3, a_4, a_5 > 0$ are predicted to be positive because

they are growth-enhancing[10]. Furthermore, In addition to the *a priori* expectations stated above, the coefficient of interaction between financial inflows and financial development is expected to be positive $(a_6, a_7 > 0)$[11].

Model Equation 3: Relation and Causality between Remittance inflows, financial development and economic growth in Nigeria.

In line with objective two that attempts to determine the nexus causality between remittance inflows, financial development and economic growth in Nigeria. Taking after the trend from equation (3.12), re-specifies as follows:

$$InGDP_t = a_0 + a_0 \sum_{k=1}^{K} InGDP_{t-k} + a_1 \sum_{k=1}^{K} InREM_{t-k} + a_2 \sum_{k=1}^{K} InGFC_{t-k} + a_3 \sum_{k=1}^{K} InFDI_{t-k} + a_4 \sum_{k=1}^{K} InFD_{t-k} + \varepsilon_t \quad (3.16)$$

$$InFD_t = \omega_0 + \omega_1 \sum_{k=1}^{K} InFD_{t-k} + \omega_2 \sum_{k=1}^{K} InREM_{t-k} + \omega_3 \sum_{k=1}^{K} InGFC_{t-k} + \omega_4 \sum_{k=1}^{K} InFDI_{i,t-k} + \omega_5 \sum_{k=1}^{K} InGDP_{t-k} + \varepsilon_{2,t} \quad (3.17)$$

where: the regressand and regressor are the considerations of two stationary variables for individual *i* in period *t*. The coefficients are allowed to differ between individuals but are believed to be time invariant while lag order K is presumed to be the same. Whereas, the method for assessing the existence of causality, is to look for substantial effects of regressor past values on regressand present value[12]. As a consequence, the null hypothesis is described as follows:

$H_0: a_{i1} = ... = a_{iK} = 0 \ for \ i = 1, ..., N$; and $H_0: \omega_{i1} = ... = \omega_{iK} = 0 \ for \ i = 1, ..., N$, this applies to the lack of causality.

3.3 Method of Data Analysis

The study will employ various econometric procedure to capture economic analysis of remittance inflows, financial development, and economic growth in Nigeria. First, a pre-estimation assessment shall be conducted using descriptive statistics that aid in describing and summarizing the data properties in a meaningful way and determining the extent to which the data are normally distributed[13]. To achieve objective one, descriptive statistics and graphical presentation of variables shall be employed to analyze the dimension and trends of remittances inflows, financial development and economic growth in Nigeria.

3.4 Data Description and Sources

The study will sourced secondary data from the International Monetary Fund (IMF) statistical database, International Country Risk Guide (ICRG) compiled by the Political Risk Services and the World Bank Development Indicators (WDI) of various issues spanning from 1981 to 2020.

Table 3.1: Data description

Variables	Symbol	Description	Sources
Economic Growth	GDP	Gross domestic product per capita	WDI
Foreign Direct Investment	FDI	FDI is calculated as a ratio of GDP	IMF and WDI
Remittances	REM	Remittances to GDP ratio	IMF and WDI
Gross Capital Formation	GFC	Gross capital formation to GDP ratio	OECD and World Bank
Institution	INS	1. Control of corruption 2. Government effectiveness 3. Political stability 4. Rule of Law 5. Regulatory Quality	The Worldwide Governance Indicators

The justification for including the variable are well motivated in the literature. It is noted the literature that GDP is used as a proxy for economic growth and is estimated as the ratio of GDP growth rates[13]. Likewise, several measures have been established in the literature to proxy for financial growth, but the current study limit to use of domestic credit to the private sector to gauge the development of the financial sector. Owing to the objective of the study, the stock of FDI will be used to gauge FDI, and is calculated as a ratio of GDP[14,15]. Though, remittance is one the crucial variable. Its inclusion of remittance has been documented by some authors[16,17,18].The institutional quality shall be measured by taking the average of these five indicators, which will then be expressed as the overall institutional index that follows some recent studies by the authors[19,20].

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Chapter Four

Results and Discussion of Findings

This chapter provides an in-depth description on the empirical results on nexus between financial development, remittance inflows and economic growth in Nigeria. The chapter is divided into sections. Section 4.1 presents pre-estimation results while 4.2 discusses the empirical results and trends analyzes of financial development, remittance, foreign direct investment, and economic growth in Nigeria; and also presents the discussion of findings.

4.1 Pre-estimation Results

4.1.1 Descriptive Statistics and Statistical Properties

This section addresses the empirical evidence on the relationship between financial development, remittances and economic growth in Nigeria. The descriptive statistics and statistical properties of the series under investigation are presented in Table 4.1. The table demonstrates that the mean of financial development (FD) is not distant from its maximum and minimum values. This demonstrates that the series has most likely not suffered as a result of the variability during the time period under consideration. Given that the probabilities of its skewness, all series are positively skewed except of remittance (REM) which demonstrated a negative skewness. Interestingly, on gross capital formation (GCF), the highest value is greater than the mean value, indicating that the series may fluctuate. The series is leptokurtic and favourably skewed. Foreign direct investment (FDI) is demonstrated to have a maximum value of around 2.9 percent of GDP, with a mean value of 1.6 percent. The series is favourably skewed with a leptokurtic kurtosis. The gross domestic product growth rate (GDPGR) series is demonstrated to have a maximum value that is not distant from the minimum value. GDPGR is demonstrated to have a maximum value of around

15.3%, with a mean value of 5.1%. The series features a positively skewed and normally distributed platykurtic kurtosis.

Likewise, remittance (REM) is reported to have a maximum value that is not distant from the minimum value suggesting that remittance inflows have been fluctuating but of no significance magnitude in Nigeria. The series is negatively skewed with a platykurtic kurtosis and is normally distributed. The index of institutional quality series (INS) is positively skewed, normally distributed, and possess platykurtic kurtosis. The correlation matrix is reported in Table 4.2 and explains the level and extent of the direction of the relationship among the variables.

Table 4.1: Descriptive Statistics

Measurement	FD	FDI	GCF	GDPGR	INS	REM
Mean	10.963	1.4669	24.649	5.1478	-0.836	3.9834
Median	10.426	1.5802	23.732	5.6128	-1.0840	4.3735
Maximum	19.626	2.9313	40.614	15.329	0.2572	8.3119
Minimum	6.1744	0.1952	14.904	-1.6168	-1.2651	0.5807
Std. Dev.	3.4593	0.7563	8.4980	3.4721	0.5547	2.3093
Skewness	0.9434	0.2114	0.4492	0.6451	1.3878	-0.0362
Kurtosis	3.3825	2.1163	1.9273	4.4903	3.0143	1.7599

Source: Author's computation (2022).

Table 4.2: Correlation Matrix

	FD	**FDI**	**GCF**	**GDPGR**	**INS**	**REM**
FD	1	0.257	-0.665	0.002	-0.284	0.548
FDI	0.257	1	0.003	0.564	-0.139	0.307
GCF	-0.666	0.003	1	-0.008	0.489	-0.632
GDPGR	0.002	0.564	-0.008	1	-0.284	-0.105
INS	-0.284	-0.139	0.489	-0.284	1	-0.385
REM	0.548	0.307	-0.632	-0.105	-0.386	1

Source: Author's computation (2022).

Table 4.3: Augmented Dickey-Fuller (ADF) and Phillip-Perron Unit root test Results

Unit Roots/ Variable (s)	ADF			PP		
	Level	1st Difference	Stationarity	Level	1st Difference	Stationarity
GDP_GR	-2.039	-3.864	I (1)	-2.058	-6.289	I (1)
FDI	-1.330	-7.288	I (1)	-1.575	-7.411	I (1)
REM	-2.095	-4.613	I (1)	-2.122	-4.605	I (1)
GCF	-1.372	-3.172	I (1)	-1.414	-3.172	I (1)
INS	-0.756	-14.29	I (1)	-4.483	-13.08	I (0)
FD	-2.786	-4.149	I (1)	-2.043	-3.227	I (1)

Note: "***", "**" and "*" indicate significance at 1%, 5% and 10% respectively
Source: Author's computation (2022).

Table 4.4: Analyses of remittances, financial development and economic growth (Average)

Year	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
GDP growth	1469.9	1388.5	1426.8	1364.5	1664.7	2080.5	2454.9	2374.8
FDI	0.385	1.528	2.945	1.145	1.937	2.255	1.263	0.441
Remittance	0.0132	0.0118	1.061	1.335	2.767	6.232	4.353	5.229
Financial Dept.	6.1534	6.0584	7.0059	7.4485	8.7543	14.7333	11.9114	12.1992

Source: Author's computation (2022).

However, the study employed Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) stationary tests to confirm whether the series are stationary or not. The results of the stationary test utilizing the ADF and PP tests are reported in Table 4.3. The results of the variables' stationarity tests are presented at both levels and first difference.

4.1.2. Trend analyzes on financial development, remittance inflows and economic growth in Nigeria

Literature contends that a well-developed financial development has the capacity to enhance economic growth due to its potential influence on capital accumulation, technological innovation, resource allocation and productivity growth. Hence, the theory of finance and growth focused on how finance impact on growth via resource allocation decision by performing specific functions such as mobilization of savings, provision of extant information, exerting corporate governance, allocation of capital and monitoring investments, and facilitating trading, diversification and management of risks[1].

In view of the above, the study carried out the trend analyses on remittances, financial development and economic growth dynamics in Nigeria. As illustrated in Table 4.4 and figure 4.1, the extent of financial development, gauged as the ratio of monetary sector credit to GDP, GDP per capita, FDI and remittance in Nigeria between the periods of 1981–1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005, 2006-2010, 2011-2015 and 2015-2020. The financial development indicator reveals a noticeable trend of consistency between the 1991 and 2010. Since the period 2010-2015, however, the degree of financial weakening consistently increased.

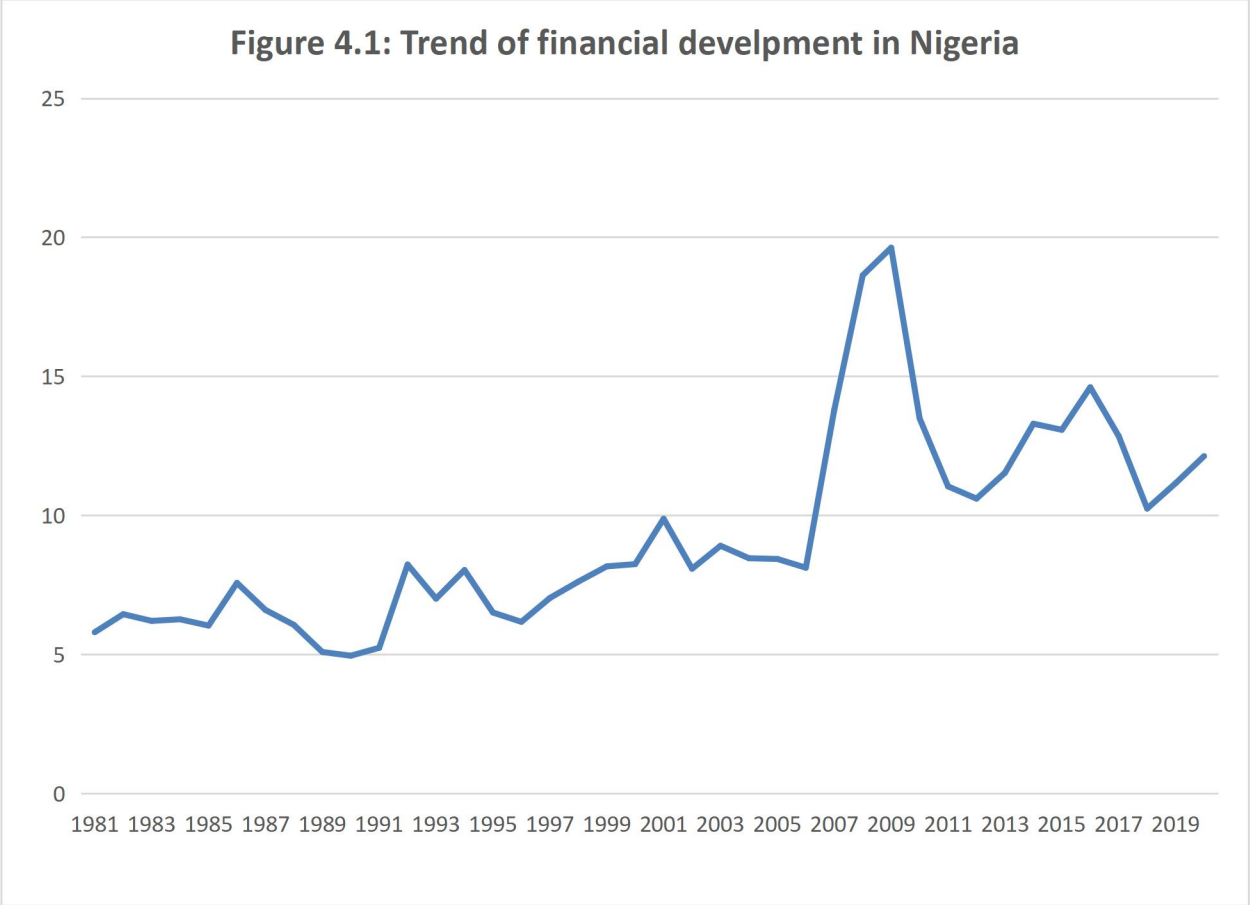


Figure 4.2 illustrated the trend analysis of ratio of remittances inflow to gross domestic product (GDP) in Nigeria. In year 2001, remittance stood at 1.58% and reduced in 2002 to 1.27% and also to 1.01% in 2003. In year 2004, it increased to 1.67% with another increase in year 2005 to 8.31% but a slight decrease in year 2006 to 7.17% and also in year 2007 and 2008 to 6.54% and 5.70% respectively. In year 2009, there was an increase to 6.29%, followed by a decrease in year 2010, 2011, 2012, 2013, and 2014 to 5.435%, 5.02%, 4.47%, 4.04%, and 3.66% respectively. A slight increase followed in the year 2015 to 4.28% and also in year 2016, 2017 and 2018 to 4.86%, 5.86%, and 6.12% respectively. Besides, remittance inflow averaged 5063.74 USD Million from 2008 until 2020, reaching an all-time high of 6270.24 USD Million in the fourth quarter of 2018 and a record low of 3373.09 USD Million in the second quarter of 2020.

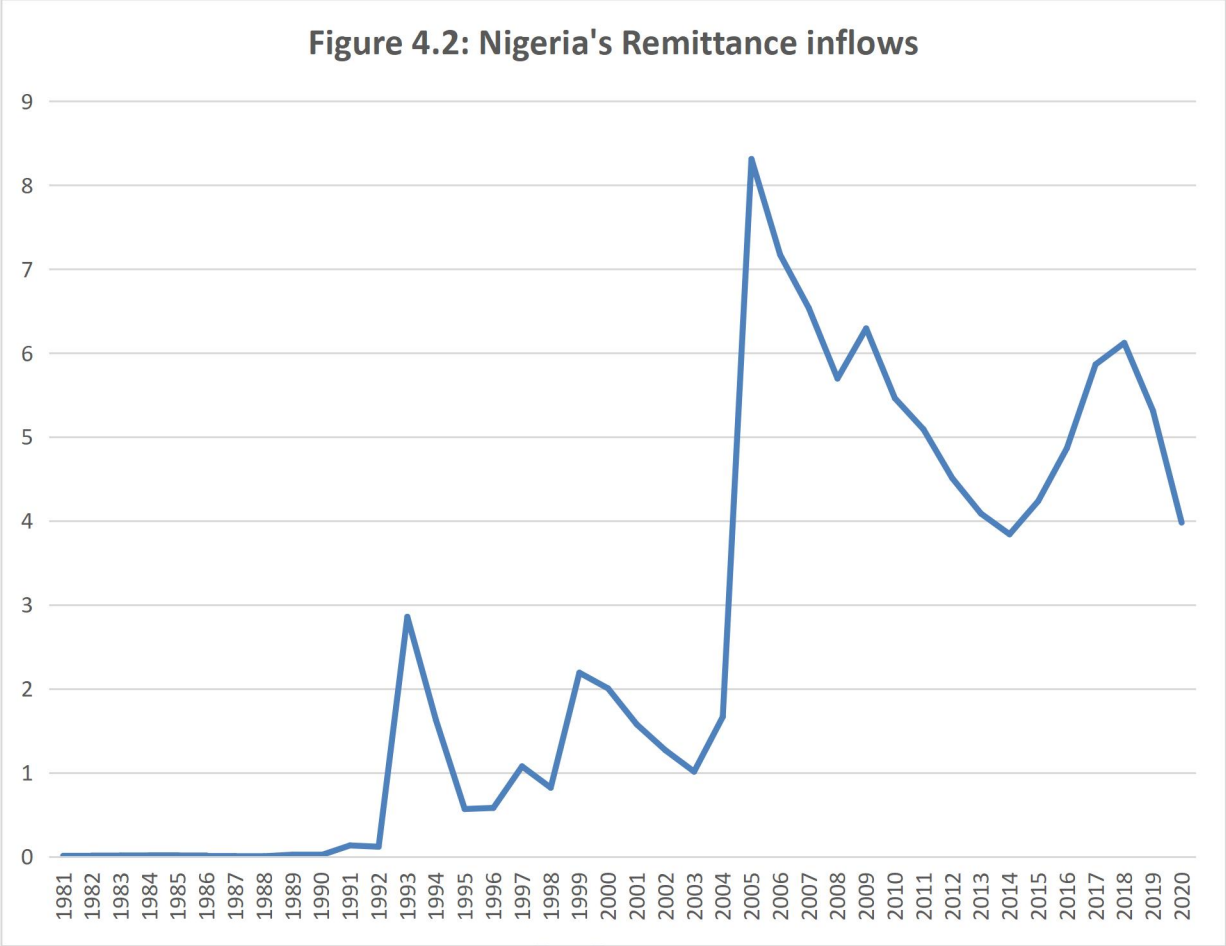
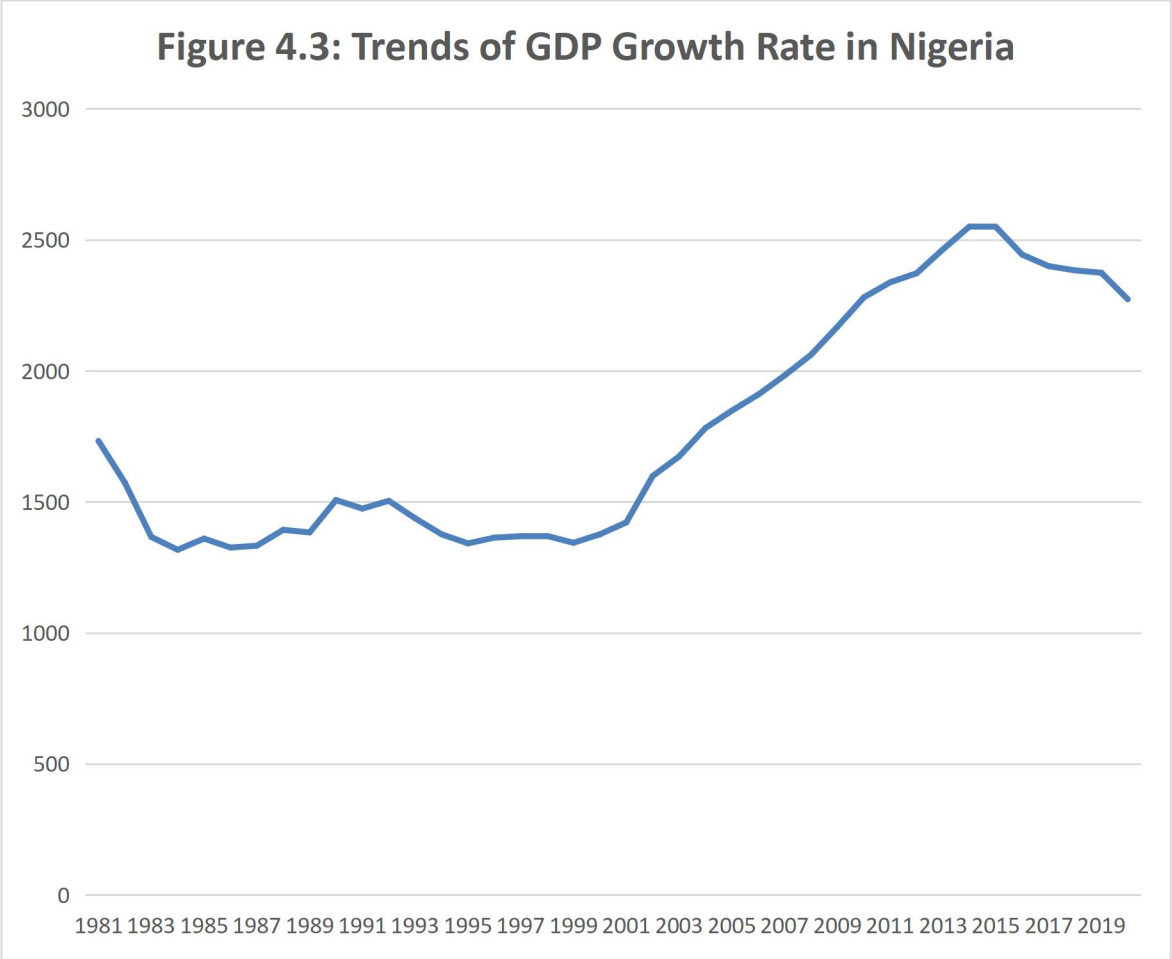


Figure 4.3 essentially addresses the trend of GDPGR. The trend demonstrated that in year 2001, the gross domestic product stood at 5.92% with a massive increase in year 2002 to 15.33%. In 2003, it reduced to 7.35% and increased to 9.25% in year 2004. There was a reduction to 6.44% in 2005, 6.06% in year 2006. There was a rise in year 2007, 2008, 2009 to 6.59%, 6.76%, and 8.04% respectively with a reduction to 8.01%, 5.31%, and 4.23% in year 2010, 2011, and 2012 respectively. There was an increase in year 2013 to 6.67% followed by a reduction to 6.31% in 2014, 2.65% in 2015, -1.62% in 2016, 0.81% in 2017.Year 2018 witnessed a slight increase to 1.98%.



4.2 Empirical Results

4.3.1 Relation between Remittance inflows and financial development in Nigeria.

In line with objective one that attempts to determine the nexus between remittance inflows and financial development in Nigeria. All variables were defined as previously stated. The lagged of *FD*, which is the proxy for financial development, captures the convergence hypothesis. Table 4.5 shows the results of the ARDL bound tests for demonstrating the short-run relationship among the variables using the Akaike Information Criterion (AIC) to automatically determine the lag duration. The crucial boundaries were chosen using Pesaran et al. values for the restricted intercept and no trend. F-statistics at k = 5 were used to test the hypothesis against the critical bound values at various significance levels. The F-statistic values are higher than the critical values at the upper bound levels, according to the findings of the ARDL bound test shown in Table 4.8. As a result, we reject the null hypothesis that no cointegration exists for the three models at the 1%, 5%, and 10% levels. As a result, no long-term relationship exists between 1996 and 2020. Based on the evidence of no long-run relationship between the estimated variables, we estimated short-run parameters, which are shown in Table 4.5.

Table 4.5: ARDL bounds test result for Cointegration

Dependent variable	**Functions**				***F*-statistics**	
Economic growth (GDPGR)					3.2920	
	10%		**5%**		**1%**	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
Critical bound values	2.26	3	2.62	3.79	3.41	4.68

Source: Author's computation (2022).

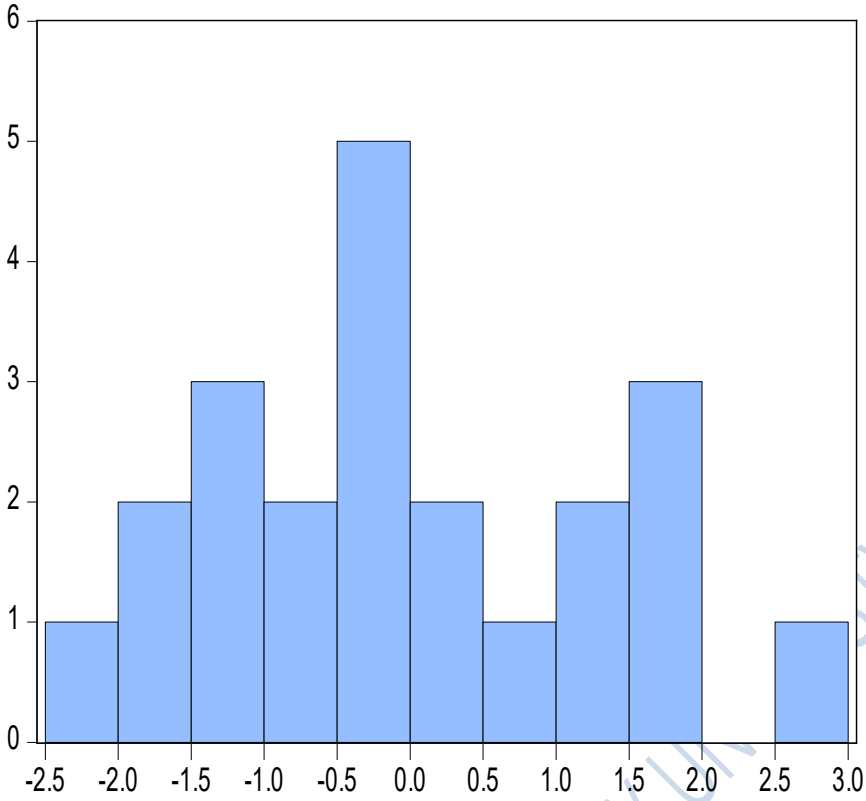
Table 4.6 offers the empirical outcomes of the nexus between remittance inflows and financial development in Nigeria. The short-run result shows that remittances negatively related to financial development in Nigeria. The findings reveal that a 1% increase in remittances decreases financial development by 6 percent. This effect is however not statistically significant given that the t-statistics of the coefficient of remittance inflows is greater than the 0.05 threshold for this study. This is with the *a priori* expectation that the coefficient of remittance inflows and financial development is expected to be either negative or positive. The findings also reveal that a positive FD lagged coefficient, though it is predicted to be negative. Our findings show that foreign direct investment (FDI) is positively related to financial development. All else held constant, the more financially integrated is Nigeria with the rest of the world, the higher the financial development. This effect is however not statistically significant given that the t-statistics of the coefficient of ratio of FDI to GDP is greater than the 0.05 threshold for this study. The finding opposes the finding of some authors who argued the nexus is negative[2,3]. Finally, the index of institution quality and economic growth is reported to be positively related. That is, the quality of institutions, the higher the financial development. This effect is statistically significant at the 0.05 level given that the t-statistics of the coefficient for index of institution is greater than the 0.05 level that was set for this study. However, the adjusted R2 of the model indicates that the model has a satisfactory fit, as the explanatory variables account approximately 82.6 percent of variance in financial development. Additionally, the probability value of F-statistics {F-statistic: 9.5320 (0.000212)} for the joint significance of the influence of the predictor factors on financial development demonstrate that their effects are jointly significant when the probability value of the F-statistics is less than the 0.05 threshold for this study.

Table 4.6: ARDL Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FD(-1)	0.970184	0.181657	5.340734	0.0001
FD(-2)	-0.684056	0.180182	-3.796476	0.0020
REM	-0.061513	0.260630	-0.236018	0.8168
GCF	-0.241627	0.080951	-2.984873	0.0098
FDI	1.377254	0.721254	1.909527	0.0769
GDPGR	-0.246990	0.154352	-1.600171	0.1319
INS	1.096589	0.918880	1.193398	0.2525
C	14.14404	3.696208	3.826636	0.0019

Source: Author's computation (2022).

Figure 4.4: Normality Test Result



Series: Residuals	
Sample 1998 2019	
Observations 22	
Mean	-1.24e-15
Median	-0.144166
Maximum	2.938856
Minimum	-2.065182
Std. Dev.	1.388323
Skewness	0.354506
Kurtosis	2.215499
Jarque-Bera	1.024961
Probability	0.599008

Furthermore, the F-statistics is greater than the 0.05 allowed for this investigation, according to the Breusch-Pagan-Godfrey Heteroskedasticity Test. As a result, the study concludes that the residual term of the model does not suffer from heteroscedasticity, and the result also affirms using the normality and Breusch-Godfrey Serial Correlation LM Tests.

4.2.2 Interactive Role of Financial Development in Remittance-Economic Growth Nexus

In an attempt to investigate the interactive role played by financial development on remittance inflows and economic growth nexus in Nigeria, the study conducted the ARDL bound test to see if there is a long-run link between them, as well as estimate both the short-run and long-run estimates of our parameters. Table 4.7 shows the results of the ARDL bound tests for demonstrating the short-run relationship among the variables using the Akaike Information Criterion (AIC) to automatically determine the lag duration. The crucial boundaries were chosen using Pesaran *et al*. values for the restricted intercept and no trend. F-statistics at k = 5 were used to test the hypothesis against the critical bound values at various significance levels. The F-statistic values are higher than the critical values at the upper bound levels, according to the findings of the ARDL bound test shown in Table 4.7. As a result, we reject the null hypothesis that no cointegration exists for the three models at the 1%, 5%, and 10% levels. As a result, no long-term relationship exists between 1996 and 2020. Based on the evidence of no long-run relationship between the estimated variables, we estimated short-run parameters, which are shown in Table 4.6.

Table 4.7: ARDL bounds test result for Cointegration

Dependent variable			**Functions**		***F*-statistics**	
Economic growth (GDPGR)					1.338675	
	10%		**5%**		**1%**	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
Critical bound values	2.26	3.3	2.62	3.79	3.41	4.68

Source: Author's computation (2022).

Table 4.8 presents the empirical results of the interactive role played by financial development on remittance inflows and economic growth nexus in Nigeria. The short-run result shows that the interaction of financial development and remittance positively impacts economic growth. This suggests that financial development contributory determinant of remittance inflow. This is in line with the *a priori* expectation that the coefficient of interaction between remittance inflows and financial development is expected to be positive. All else equal, a percentage increase in interaction between financial development and remittances will result in about 19.2 per cent of economic growth in Nigeria. This positive effect of interaction between financial development and remittance on economic growth is however not statistically significant at 5%. The findings also reveal that a positive GDPGR lagged coefficient, though it is predicted to be negative. Our findings show that remittance (REM) is negatively related to economic growth. All else held constant, the more financially integrated is Nigeria with the rest of the world, the lower the inequality. The output shows that economic growth declines by 21.2 for every 1 percent rise in remittance inflows. This relationship is however not statistically significant. This is in line with the *a priori* expectation that the remittances may also affect, depending on how they are used ($a_2 \gtrless 0$). Authors support a positive relationship, while another authors reported the existence of a negative nexus. The finding is tandem with the finding of authors who argued the nexus id negative[4,5,6].

Table 4.8: ARDL Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	0.587867	0.169473	3.468803	0.0029
FD	-1.122071	1.232871	-0.910128	0.3755
GCF	-0.010312	0.151876	-0.067897	0.9467
INS	-2.854039	1.297140	-2.200256	0.0419
REM	-2.122487	1.823892	-1.163713	0.2606
REM*FD	0.191643	0.199886	0.958764	0.3511
C	11.75508	14.94916	0.786337	0.4425

Source: Author's computation (2022).

The control variables also exert a negative effect on economic growth in Nigeria. Financial development is negatively related to economic growth. In essence, more credit to the private sector led to lower economic growth. This effect is however not statistically significant given that the t-statistics of the coefficient of ratio of credit to the private sector is greater than the 0.05 threshold for this study. The coefficient of gross capital formation is shown to be negatively related. That is, the higher the education, trainings and all form of labour supports, the lower the economic growth in Nigeria. This effect is also not statistically significant at the 0.05 level given that the t-statistics of the coefficient for GCF is greater than the 0.05 level that was set for this study. Finally, the index of institution quality and economic growth is reported to be negatively related. That is, the quality of institutions, the lower the economic growth. This effect is statistically significant at the 0.05 level given that the t-statistics of the coefficient for index of institution is greater than the 0.05 level that was set for this study. Furthermore, the coefficients of $a_3, a_4, a_5 > 0$ are predicted to be positive because they are growth-enhancing[7]. Besides, the findings demonstrate otherwise. However, the adjusted R2 of the model indicates that the model has a satisfactory fit, as the explanatory variables account approximately 58.7percent of variance in economic growth. Additionally, the probability value of F-statistics {F-statistic: 4.042724 (0.01064)} for the joint significance of the influence of the predictor factors on economic growth demonstrate that their effects are jointly significant when the probability value of the F-statistics is less than the 0.05 threshold for this study. Furthermore, the F-statistics is greater than the 0.05 allowed for this investigation, according to the Breusch-Pagan-Godfrey Heteroskedasticity Test. As a result, the study concludes that the residual term of the model does not suffer from heteroscedasticity, and the result also affirms using the normality and Breusch-Godfrey Serial Correlation LM Tests.

4.2.3 Direction of Causality between Remittance inflows, financial development and economic growth in Nigeria.

In line with objective three that attempts to determine the nexus causality between remittance inflows, financial development and economic growth in Nigeria. The results of the pairwise Granger Causality test are offered in Table 4.9. Table 4.9 reveals a unidirectional causality stemming from remittances inflows (Rem) to financial development (FD). A bidirectional causality stemming from foreign direct investment (FDI) to gross capital formation (GCF). Besides, there is neutrality with regards to causality stemming from remittances inflows to economic growth, FDI to economic growth, GCF to economic growth, and financial development to economic growth. This outcome is analogous and validates the findings of an author[8].

Table 4.9: Pairwise Granger Causality Tests

Null Hypothesis:	Causality	F-Statistic	Prob.
REM does not Granger Cause GDPGR	REM ≠ GDPGR	0.08228	0.9214
GDPGR does not Granger Cause REM		0.14347	0.8673
GCF does not Granger Cause GDPGR	GCF ≠ GDPGR	1.98453	0.1664
GDPGR does not Granger Cause GCF		1.6417	0.2214
FDI does not Granger Cause GDPGR	FDI ≠ GDPGR	2.59463	0.1039
GDPGR does not Granger Cause FDI		0.43578	0.6538
FD does not Granger Cause GDPGR	FD ≠ GDPGR	0.7347	0.4935
GDPGR does not Granger Cause FD		0.13257	0.8767
GCF does not Granger Cause REM	GCF ≠ GDPGR	0.75175	0.4858
REM does not Granger Cause GCF		1.06064	0.3669
FDI does not Granger Cause REM	FDI ≠ GDPGR	1.28475	0.3023
REM does not Granger Cause FDI		0.79859	0.4661
FD does not Granger Cause REM	REM→ FD	0.26722	0.7685
REM does not Granger Cause FD		16.206	9.00E-05
FDI does not Granger Cause GCF	FDI ↔ GCF	3.11606	0.0703
GCF does not Granger Cause FDI		4.33957	0.03
FD does not Granger Cause GCF	FD ≠ GCF	0.44885	0.6453
GCF does not Granger Cause FD		2.45379	0.1142
FD does not Granger Cause FDI	FD ≠ FDI	1.22467	0.3185
FDI does not Granger Cause FD		2.30564	0.13

Notes: Asterisk(s) *, **, *** represent(s) the rejection of the null hypothesis at 1% and 5% significance levels. The symbol → denotes unidirectional causality, ↔ denotes bidirectional causality and ≠ implies neutrality while ≠>impliesdoes not Granger cause.
Source: Author's computation (2022).

Endnotes

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Chapter Five

Conclusion

5.1 Summary

The influx of remittances to poor nations has fluctuated substantially in recent years as a result of the COVID19 epidemic and other stumbling blocks imposed by the recipient economy. Besides, the rising trend in remittance inflows has piqued academic researchers' interest and sparked a vast corpus of empirical research exploring their influence on many elements of macroeconomic variables. The study looks at the link between remittances, financial development, and economic growth in Nigeria from 1996 through 2020. Do remittances help recipient nations' financial development? Remittances, according to common wisdom, can encourage financial progress. In contrast to previous research, which focused on a narrow collection of nations and various approaches, and relied on the autoregressive distributed lag (ARDL) model and Granger causality techniques. The ARDL approach offers more flexible and efficient country-specific estimating features that take endogeneity into consideration. The majority of economic elements, on the other hand, were discovered to be stationary. The Augmented Dickey-Fuller Phillip-Perron test for stationary was used for these verifications. The World Bank development indicator statistics was utilized to collect data for each variable considered in this analysis.

The findings of the study reveal that in the short-run, financial development interact positively with remittance inflows to impact on economic growth. This suggests that financial development contributory determinant of remittance inflow. All else equal, a percentage increase in interaction between financial development and remittances will result in about 19.2 per cent of economic growth in Nigeria. This positive effect of interaction between financial development and remittance on economic growth is

however not statistically significant at 5%. The findings also reveal that a positive GDPGR lagged coefficient, though it is predicted to be negative. Our findings show that remittance (REM) is negatively related to economic growth. All else held constant, the more financially integrated is Nigeria with the rest of the world, the lower the inequality. In line with objective two that attempts to determine the nexus causality between remittance inflows, financial development and economic growth in Nigeria. The results of the pairwise Granger Causality test reveal a unidirectional causality stemming from remittances inflows (Rem) to financial development (FD). A bidirectional causality stemming from foreign direct investment (FDI) to gross capital formation (GCF). Besides, there is neutrality with regards to causality stemming from remittances inflows to economic growth, FDI to economic growth, GCF to economic growth, and financial development to economic growth. Moreover, in line with objective four that attempts to determine the nexus between remittance inflows and financial development in Nigeria, the results of the ARDL bound test no long-term relationship exists among the variables between 1996 and 2020. Whereas, the short-run result shows that remittances negatively related to financial development in Nigeria. The findings reveal that a 1% increase in remittances decreases financial development by 6 percent. Our findings show that foreign direct investment (FDI) is positively related to financial development. All else held constant, the more financially integrated is Nigeria with the rest of the world, the higher the financial development. Finally, the index of institution quality and economic growth is reported to be positively related.

5.2 Conclusion

This study investigates the relationship between remittances, financial development and economic growth of Nigeria over the period 1996–2020. Empirical evidence are based on Autoregressive distributed lag (ARDL) and Granger causality estimators. The results confirm the existence of a positive interactive role played by financial development on remittance inflows and economic growth nexus in Nigeria. It is shown that financial development complements remittances in stimulating the growth. The results indicate that the complementarity between financial development-remittances positively influences growth. Furthermore, the results suggest a unidirectional causality stemming from remittances inflows (Rem) to financial development (FD). A bidirectional causality stemming from foreign direct investment (FDI) to gross capital formation (GCF). Besides, there is neutrality with regards to causality stemming from remittances inflows to economic growth, FDI to economic growth, GCF to economic growth, and financial development to economic growth. The study concludes that a certain degree of financial development might stifle long-term economic progress, and the combined effect of financial development and remittances should be of concern to policymakers.

5.3 Recommendation

Given the study's conclusions that remittances are negatively contributing to Nigeria's economic growth, a significant policy consequence is that efforts to encourage remittances and those to improve the banking system should be undertaken concurrently. However, adequate monitoring of such accounts is required to guarantee that they are not used for or enable money laundering operations. The findings of this study indicate that remittances positively and significantly influence certain aspects of financial development.

However, these remittances do not increase credit to private agents. This finding may be explained by the fact that remittances in Nigeria, remittances are basically used for meeting basic needs such as consumption, education, clothing and housing. These uses of remittances are not finance development-promoting. In addition, there is evidence that remittance flows to Nigeria are underreported as formal financial sector is less developed in this region than in other developing countries. It is estimated that informal remittances could add at least 50 percent of the recorded remittances to developing countries[1]. An author also contends that informal remittances to Sub-Saharan Africa account about forty to sixty five percent of official flows. Lowering the transaction costs of remittances to African countries may help increase the flow of remittances through official channels and this may increase their contribution to financial development[2]. It is also important to bring remittance recipients into the formal financial sector and channel their savings into productive uses that can generate long-term benefits. This could be achieved by adopting credit facility programs by financial institutions. Further, the effect of financial development on remittance suggests that an over expansion of the financial sector could have negative consequences on remittances and growth thus care should be taken in order to avoid the adverse effect of over-expansion of the financial system.

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Appendix I:

Appraisal of Literature

S/n	Author(s)	Scope/Country/Methodology	Major findings/Results
1	Esteves R, Khoudour-casteras D (2011)	1870-1913	The findings revealed that migrant remittances were much more significant in stimulating the local financial sector than the other international capital flows during the study period.
2	Motelle, S. I (2011)	Lesotho's; Vector Error Correction Model (VECM) and the Co-Integration test.	The findings revealed that remittances have a long-term impact on financial progress. Financial development caused remittances, according to the Granger causality test.
3	Adenutsi, D. E., &Ahortor, C. R. K. (2009)	Ghana; Vector Autoregressive (VAR) Model using quarterly data between 1983(4) and 2005(4).	The estimated static long-run model revealed that monetary aggregates, exchange rate and interest rate positively impact on remittance inflows while domestic price level negatively impact on remittance inflows. The impulse response functions of the study showed that remittance inflows respond to its own shocks but not to shocks emanating

			from monetary aggregates, exchange rate, interest rate, and the price level.
4	Author	Panel data analysis 100 developing countries from 1975 to 2002:	An interaction with financial development in the recipient country.
5	Fayissa B, Nsiah C. (2010)	18 Latin American countries using a typical neoclassical growth paradigm and an imbalanced panel data set covering 1980 to 2005.	Remittances have a positive and significant impact on the economies of Latin American countries with less developed financial systems by providing an alternative way of financing investment and assisting in the resolution of liquidity concerns.
6	Mandelman, F., &Zlate, (2011)	Philippines; Heterogeneous agent model	The study confirms that flexible floating regime is preferred when unanticipated shocks driving the business cycle are also part of the picture.
7	Alaweh, Alfawwaz and Shawaqfeh (2015)	Jordan (2000-2011);	The study found that there is a negative relationship between the re-discount rate and the domestic investment, but not statistically significant, while there is a positive relationship with a statistically significant between the mandatory

			cash reserve and domestic investment, due to the presence of excess cash reserves at banks in Jordan. The study also showed a negative relationship between taxes and domestic investment, and a positive relationship between governmental capital spending and the domestic investment.
8	Sibindi, A. B. (2014)	1975 to 2010; Lesotho; Johansen and the Granger causality test; vector error correction model (VECM).	Remittances create economic growth without feedback, while financial development causes remittances without feedback, according to the findings.
9	Tahir, M.; Khan, I.; Shah, A. M. (2015)	Pakistan; 1977-2013	The study finding reveal that external determinants such as foreign remittances, foreign direct investment, and foreign imports matter from a growth perspective. Foreign remittances and foreign direct investment have a significant positive role in the growth process of Pakistan economy. Furthermore, it is found that foreign imports have adversely influenced the economic growth of

			Pakistan.
10	Feeny S, Iamsiraroj S, Mc Gillivray M. (2015)	US to Latin American and Caribbean countries.	Argue that remittances encourage FDI by increasing domestic consumption, including goods and services produced by foreign firms. He found that remittances positively affect FDI flows from the US to Latin American and Caribbean countries. However, the sign of the relationship depends on the income of the recipient country, with a negative effect in low-income countries and a positive effect in high-income countries.
11	Yazidu, U. and Haruna, I. (2017)	Ghana; 1975-2013.	The findings reveal that remittance inflows remained positive and increased modestly over time while economic growth as measured by the growth in labour productivity per person has been fluctuating. The study further show that foreign direct investment, official development assistance and international trade are positively related to productivity.

12	Nyamongo, Misati, and Kipyegon (2012)	Panel of 36 African countries from 1980 to 2009.	The findings of the study show that remittances emerge to be an important driver of economic growth for these African states during the observation period, and remittance volatility seems to have an adverse impact on African growth. The results indicate that remittances appear to be a supplement to financial development. Nevertheless, the role of financial development in stimulating economic growth seems to be under-utilised, at least in the countries under consideration.
13	Comes, C., Bunduchi, E. and Vasile, V. (2018)	Panel data of seven countries from Central and Eastern Europe	The study findings reveal there are significant relationships between FDI, remittances and economic growth in the seven analysed countries. Besides, a positive impact of both FDI and remittances on GDP, but the influence of FDI is higher in the selected countries.
14	Palamuleni, M. L. (2018)	African countries and high remittance recipient countries	The results of the causality test suggest that the relationship is

		but not for Asian and Latin American countries over the period 1980-2014.	bidirectional. These results have important policy implications to developing countries. For example they suggest that policies aimed at increasing remittance inflows also attracts more FDI in somecountries and also that remittance inflows be viewed as being both a cause and a consequence ofFDI.
15	Tu, C. A., Phi, N. T. M., Tuan, L. Q., Yoshino, N., Sarker, T. and F. Taghizadeh-Hesary (2019)	An inclusive financial system.	The study employ generalized method of moments and a structural equation model to reveal that remittances and financial inclusions are engines of growth in countries of different income groups.
16	Younsi M, Bechtini M, Khemili H. (2021)	Fixed effects (FE) and system GMM estimators; 41 African countries between 1990 and 2016.	The findings demonstrate that AID and FDI have a significant positive enhancing impact on the real economy. It is also demonstrated that FDI supplements DI, whereas the combined effect of AID and DI in catalyzing growth remains weak. Furthermore, the findings show that

			the symbiosis of AID–FDI–DI has a positive impact on economic growth, implying that AID and FDI enhance DI's potency in stimulating the economy.
17	Olayungbo, D. O. and Quadri, A.(2019)	20 Sub-Saharan African countries; 2000- 2015; Pooled mean group and mean group/ARDL methodologies	The interactive term revealed that in the remittances-growth relationship, financial development served as a substitute. Finally, there were unidirectional causal relationships discovered between GDP and remittances, as well as between financial development and GDP. In the SSA countries, however, there was no correlation between remittances and financial development.
18	*Bandura, W. N., Zivanomoyo, J. &Tsaurai, K (2019).*	*14 Southern African Development Community (SADC) countries between 2006 and 2016.*	*The findings show that remittances have a positive impact on economic growth but a negative impact on financial development in SADC, the negative relationship between remittances and financial development implies that investment is primarily financed by remittance inflows.*

19	Peprah, J. A., Ofori, I. K. &Asomani, A. N. (2019)	Ghana's economic growth. The study employs macrodata to evaluate a dynamic heterogeneous Autoregressive Distributed Lag (ARDL) model,	The study finding reveals that financial booms are not generally growth-enhancing, that a certain level of financial development can drag down economic growth in the long run, and that the combined effect of financial development and remittances should concern policymakers.
20	Sobiech, I. (2015)	A panel data set (1970-2010); 54 developing nations; Panel Generalized Method of Moments (GMM)	The study Panel Generalized Method of Moments (GMM) analysis revealed that remittances have a negative impact on the economies of the countries studied.
21	Kibet, K. S &Agbelenko F. A. (2015)	West African Economic and Monetary Union from 1981 to 2010. The Generalized Moment Method (GMM)	The findings established that financial development has a positive and statistically significant impact on economic growth. The bidirectional causation between supply and demand supports both views.
22	Karikari, N. K, Mensah S. & Harvey, S. K.(2016)	50 African countries; 1990 to 2011; fixed effects and random effect estimations; Vector Error Correction Model approach.	The data generally revealed that remittances have a favorable and considerable impact on financial development.

23	Gazdar, K and Kratou, H. (2012)	Panel of 24 African nations spanning 1998 to 2011. The System Generalized Method of Moments (SGMM)	The findings reported a synergy between financial development and remittances in economic growth, such that remittances were making a positive impact in nations with developed financial sectors.
24	Chowdhury M(2016)	33 top remittance receiving underdeveloped nations; 1979-2011: dynamic panel context (GMM).	The study discovered that remittances significantly support economic growth in the selected nations after evaluating the normality of the data. Ultimately, the impact of financial development on the remittance-growth nexus was seen to be insignificant.
25	Mbutor, O. M. (2010)	Nigeria; vector autoregressive methodology	The findings of the study reveal that the monetary policy rate first impacts intervening variables – exchange rate, interest rate, inflation - which in turn impact remittance flows. The data set were tested for temporal properties, including unit roots and co-integration. Preliminary evidence showed that domestic economic prosperity increases remittances to

			Nigeria; while exchange rate depreciation depresses remittances.
26	Omankhanlen, A. E. (2011)	Nigeria	The findings reveal that FDI follow economic growth occasioned by trade openness which saw the entry of some major companies especially the telecommunication companies, while Inflation has no effect on FDI. However exchange rate has effect on FDI.
27	Babaita, Abdulrasheed and Yusuf (2011)	Nigeria; Augmented Dickey-Fuller and Johansen co-integration techniques	Error correction coefficient was high, rightly signed and significant which reveals a long run relationship between the selected macroeconomic variables and FDI for the period of study. The explanatory variables included in the model showed statistical significant impact on FDI. The overall regression was significant as denoted by the probability of the F-statistic at 5% significant level.
28	Osigwe, A. C. &Madichie, C.	Nigeria using the Johansen co-integration and Granger causality techniques.	The Johansen co-integration test indicated that long run relationship exist among the variables. The

	V (2015)		Granger causality test results revealed a unidirectional causality running from money supply (LM2) to remittances (LREM) only at lag one and not in the reverse. The results also showed that, consistently from lag one to lag five, causality run from exchange rate (LEXR) to LREM and not in reverse direction. Unidirectional causality run from interest rate (INT) to LREM, occurring from lag one to lag four.
29	Giwa, B. A., George, Emmanuel O., Okodua, H. &Oluwasogo S. A. (2020)	robust GMM estimation technique	According to the findings, labor quality has a positive and significant impact on RGDP, as predicted by theory. Furthermore, capital intensity was found to have a significant negative impact on RGDP in Nigeria.
30	Adeleye, Ologunwa and Ogunjobi (2021)	Nigeria; 1980-2019; Ordinary Least Square	The findings reveal that FDI has a negative relationship with economic growth and Remittances seem to have a positive effect on economic growth. The study, therefore, concluded that FDI does not stimulate desired growth

			while remittances promote growth in Nigeria.
31	Falade, Aladejana, Okeowo&Oluwalana (2021)	Nigeria; 1986-2019; Vector Error Correction Model (VECM) approach	The study show that the interaction between migrants' remittance and financial development index, as well as trade openness, are both directly connected to real-GDP, whereas migrants' remittance inflow is only indirectly associated. In addition, the financial development index showed an adverse link, but it was insignificant.

Appendix II

Null Hypothesis: GDPGR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.039761	0.2691
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDPGR)

Method: Least Squares

Date: 10/09/21 Time: 06:01

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.386108	0.189291	-2.039761	0.0536
C	1.738014	1.167679	1.488435	0.1508
R-squared	0.159041	Mean dependent var		-0.249591

Adjusted R-squared	0.120816	S.D. dependent var	3.361590
S.E. of regression	3.151988	Akaike info criterion	5.213599
Sum squared resid	218.5706	Schwarz criterion	5.311770
Log likelihood	-60.56319	Hannan-Quinn criter.	5.239644
F-statistic	4.160623	Durbin-Watson stat	2.071222
Prob(F-statistic)	0.053561		

Null Hypothesis: D(GDPGR) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.863764	0.0085
Test critical values:	1% level	-3.788030	
	5% level	-3.012363	
	10% level	-2.646119	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDPGR,2)

Method: Least Squares

Date: 10/09/21 Time: 06:02

Sample (adjusted): 2000 2020

Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.802171	0.466429	-3.863764	0.0012
D(GDPGR(-1),2)	0.502770	0.375307	1.339624	0.1980
D(GDPGR(-2),2)	0.411354	0.228054	1.803758	0.0890
C	-0.189392	0.731583	-0.258880	0.7988

R-squared	0.713650	Mean dependent var	-0.095503
Adjusted R-squared	0.663118	S.D. dependent var	5.766586
S.E. of regression	3.347015	Akaike info criterion	5.423658
Sum squared resid	190.4426	Schwarz criterion	5.622615
Log likelihood	-52.94841	Hannan-Quinn criter.	5.466837
F-statistic	14.12266	Durbin-Watson stat	1.897310
Prob(F-statistic)	0.000072		

Null Hypothesis: GDPGR has a unit root

Exogenous: Constant

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*

Phillips-Perron test statistic		-2.058486	0.2619
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	9.107110
HAC corrected variance (Bartlett kernel)	9.255441

Phillips-Perron Test Equation

Dependent Variable: D(GDPGR)

Method: Least Squares

Date: 10/09/21 Time: 06:02

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.386108	0.189291	-2.039761	0.0536
C	1.738014	1.167679	1.488435	0.1508

R-squared	0.159041	Mean dependent var	-0.249591
Adjusted R-squared	0.120816	S.D. dependent var	3.361590
S.E. of regression	3.151988	Akaike info criterion	5.213599
Sum squared resid	218.5706	Schwarz criterion	5.311770
Log likelihood	-60.56319	Hannan-Quinn criter.	5.239644
F-statistic	4.160623	Durbin-Watson stat	2.071222
Prob(F-statistic)	0.053561		

Null Hypothesis: D(GDPGR) has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.289826	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	10.05613
HAC corrected variance (Bartlett kernel)	10.18417

Phillips-Perron Test Equation

Dependent Variable: D(GDPGR,2)

Method: Least Squares

Date: 10/09/21 Time: 06:03

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.335208	0.211935	-6.300089	0.0000
C	-0.234677	0.692242	-0.339010	0.7380

R-squared	0.653986	Mean dependent var	-0.119298

Adjusted R-squared	0.637509	S.D. dependent var	5.512150
S.E. of regression	3.318714	Akaike info criterion	5.319973
Sum squared resid	231.2911	Schwarz criterion	5.418711
Log likelihood	-59.17969	Hannan-Quinn criter.	5.344805
F-statistic	39.69112	Durbin-Watson stat	1.914956
Prob(F-statistic)	0.000003		

Null Hypothesis: FDI has a unit root

Exogenous: Constant

Lag Length: 4 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.330374	0.5932
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI)
Method: Least Squares
Date: 10/09/21 Time: 06:04
Sample (adjusted): 2001 2019

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.279624	0.210185	-1.330374	0.2063
D(FDI(-1))	-0.436403	0.279558	-1.561048	0.1425
D(FDI(-2))	0.159713	0.254630	0.627237	0.5414
D(FDI(-3))	0.580066	0.245539	2.362414	0.0344
D(FDI(-4))	0.540477	0.216388	2.497716	0.0267
C	0.366183	0.369758	0.990331	0.3401

R-squared	0.550520	Mean dependent var	-0.059334
Adjusted R-squared	0.377642	S.D. dependent var	0.594849
S.E. of regression	0.469274	Akaike info criterion	1.576830
Sum squared resid	2.862837	Schwarz criterion	1.875074
Log likelihood	-8.979885	Hannan-Quinn criter.	1.627305
F-statistic	3.184456	Durbin-Watson stat	1.946921
Prob(F-statistic)	0.042857		

Null Hypothesis: D(FDI) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.288029	0.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FDI,2)

Method: Least Squares

Date: 10/09/21 Time: 06:05

Sample (adjusted): 1998 2019

Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-1.460061	0.200337	-7.288029	0.0000
C	-0.032173	0.118959	-0.270454	0.7896

R-squared	0.726460	Mean dependent var	0.019748
Adjusted R-squared	0.712783	S.D. dependent var	1.039259
S.E. of regression	0.556966	Akaike info criterion	1.753884
Sum squared resid	6.204232	Schwarz criterion	1.853070
Log likelihood	-17.29273	Hannan-Quinn criter.	1.777250
F-statistic	53.11537	Durbin-Watson stat	2.125243
Prob(F-statistic)	0.000000		

Null Hypothesis: FDI has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.575460	0.4786
Test critical values:	1% level	-3.752946	

5% level	-2.998064
10% level	-2.638752

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.295736
HAC corrected variance (Bartlett kernel)	0.226268

Phillips-Perron Test Equation

Dependent Variable: D(FDI)

Method: Least Squares

Date: 10/09/21 Time: 06:06

Sample (adjusted): 1997 2019

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.292948	0.162885	-1.798497	0.0865
C	0.421749	0.272854	1.545692	0.1371

R-squared	0.133470	Mean dependent var	-0.020136
Adjusted R-squared	0.092207	S.D. dependent var	0.597328
S.E. of regression	0.569124	Akaike info criterion	1.793503
Sum squared resid	6.801935	Schwarz criterion	1.892242
Log likelihood	-18.62529	Hannan-Quinn criter.	1.818336
F-statistic	3.234592	Durbin-Watson stat	2.460260

Prob(F-statistic) 0.086490

Null Hypothesis: D(FDI) has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.410881	0.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.282011
HAC corrected variance (Bartlett kernel)	0.261325

Phillips-Perron Test Equation

Dependent Variable: D(FDI,2)

Method: Least Squares

Date: 10/09/21 Time: 06:07

Sample (adjusted): 1998 2019

Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-1.460061	0.200337	-7.288029	0.0000
C	-0.032173	0.118959	-0.270454	0.7896

R-squared	0.726460	Mean dependent var	0.019748
Adjusted R-squared	0.712783	S.D. dependent var	1.039259
S.E. of regression	0.556966	Akaike info criterion	1.753884
Sum squared resid	6.204232	Schwarz criterion	1.853070
Log likelihood	-17.29273	Hannan-Quinn criter.	1.777250
F-statistic	53.11537	Durbin-Watson stat	2.125243
Prob(F-statistic)	0.000000		

Null Hypothesis: GCF has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.372151	0.5785

Test critical values:	1% level	-3.737853
	5% level	-2.991878
	10% level	-2.635542

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GCF)

Method: Least Squares

Date: 10/09/21 Time: 06:14

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCF(-1)	-0.098190	0.071559	-1.372151	0.1838
C	2.119182	1.861620	1.138354	0.2672

R-squared	0.078835	Mean dependent var	-0.301112
Adjusted R-squared	0.036964	S.D. dependent var	2.971866
S.E. of regression	2.916423	Akaike info criterion	5.058248
Sum squared resid	187.1215	Schwarz criterion	5.156419
Log likelihood	-58.69898	Hannan-Quinn criter.	5.084293
F-statistic	1.882799	Durbin-Watson stat	1.300156
Prob(F-statistic)	0.183847		

Null Hypothesis: D(GCF) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.171539	0.0351
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GCF,2)

Method: Least Squares

Date: 10/09/21 Time: 06:15

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GCF(-1))	-0.684529	0.215835	-3.171539	0.0046
C	-0.240969	0.619445	-0.389007	0.7012

R-squared	0.323860	Mean dependent var	0.092655
Adjusted R-squared	0.291663	S.D. dependent var	3.478504
S.E. of regression	2.927605	Akaike info criterion	5.069188

Sum squared resid	179.9883	Schwarz criterion	5.167926
Log likelihood	-56.29566	Hannan-Quinn criter.	5.094020
F-statistic	10.05866	Durbin-Watson stat	2.001505
Prob(F-statistic)	0.004597		

Null Hypothesis: GCF has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.414483	0.5582
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	7.796731
HAC corrected variance (Bartlett kernel)	9.898182

Phillips-Perron Test Equation

Dependent Variable: D(GCF)

Method: Least Squares

Date: 10/09/21 Time: 06:16

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCF(-1)	-0.098190	0.071559	-1.372151	0.1838
C	2.119182	1.861620	1.138354	0.2672

R-squared	0.078835	Mean dependent var	-0.301112
Adjusted R-squared	0.036964	S.D. dependent var	2.971866
S.E. of regression	2.916423	Akaike info criterion	5.058248
Sum squared resid	187.1215	Schwarz criterion	5.156419
Log likelihood	-58.69898	Hannan-Quinn criter.	5.084293
F-statistic	1.882799	Durbin-Watson stat	1.300156
Prob(F-statistic)	0.183847		

Null Hypothesis: D(GCF) has a unit root

Exogenous: Constant

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.171539	0.0351
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	7.825577
HAC corrected variance (Bartlett kernel)	7.825577

Phillips-Perron Test Equation

Dependent Variable: D(GCF,2)

Method: Least Squares

Date: 10/09/21 Time: 06:16

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GCF(-1))	-0.684529	0.215835	-3.171539	0.0046
C	-0.240969	0.619445	-0.389007	0.7012

R-squared	0.323860	Mean dependent var	0.092655
Adjusted R-squared	0.291663	S.D. dependent var	3.478504
S.E. of regression	2.927605	Akaike info criterion	5.069188
Sum squared resid	179.9883	Schwarz criterion	5.167926
Log likelihood	-56.29566	Hannan-Quinn criter.	5.094020
F-statistic	10.05866	Durbin-Watson stat	2.001505
Prob(F-statistic)	0.004597		

Null Hypothesis: INS has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.756063	0.8118
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INS)

Method: Least Squares

Date: 10/09/21 Time: 05:56

Sample (adjusted): 1999 2020

Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INS(-1)	-0.246320	0.325793	-0.756063	0.4594
D(INS(-1))	-0.113228	0.363492	-0.311500	0.7590
D(INS(-2))	0.549269	0.282155	1.946692	0.0673
C	-0.142494	0.300860	-0.473623	0.6415

R-squared	0.669832	Mean dependent var	0.075523
Adjusted R-squared	0.614804	S.D. dependent var	0.768021
S.E. of regression	0.476666	Akaike info criterion	1.518964
Sum squared resid	4.089787	Schwarz criterion	1.717335
Log likelihood	-12.70860	Hannan-Quinn criter.	1.565694
F-statistic	12.17256	Durbin-Watson stat	1.885347
Prob(F-statistic)	0.000138		

Null Hypothesis: D(INS) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-14.29198	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INS,2)

Method: Least Squares

Date: 10/09/21 Time: 05:55

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INS(-1))	-1.757511	0.122972	-14.29198	0.0000
C	0.060157	0.102416	0.587381	0.5632

R-squared	0.906775	Mean dependent var	-0.041233
Adjusted R-squared	0.902335	S.D. dependent var	1.567899
S.E. of regression	0.489989	Akaike info criterion	1.494074
Sum squared resid	5.041878	Schwarz criterion	1.592813
Log likelihood	-15.18186	Hannan-Quinn criter.	1.518907
F-statistic	204.2608	Durbin-Watson stat	1.137957
Prob(F-statistic)	0.000000		

Null Hypothesis: INS has a unit root

Exogenous: Constant

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*

Phillips-Perron test statistic		-4.483137	0.0018
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.375099
HAC corrected variance (Bartlett kernel)	0.547150

Phillips-Perron Test Equation

Dependent Variable: D(INS)

Method: Least Squares

Date: 10/09/21 Time: 05:57

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INS(-1)	-0.997197	0.240433	-4.147503	0.0004
C	-0.758723	0.239695	-3.165362	0.0045

R-squared	0.438801	Mean dependent var	0.074956
Adjusted R-squared	0.413292	S.D. dependent var	0.835134
S.E. of regression	0.639687	Akaike info criterion	2.023979
Sum squared resid	9.002380	Schwarz criterion	2.122150

Log likelihood	-22.28775	Hannan-Quinn criter.	2.050024
F-statistic	17.20178	Durbin-Watson stat	1.580247
Prob(F-statistic)	0.000421		

Null Hypothesis: REM has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.095821	0.2478
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(REM)

Method: Least Squares

Date: 10/09/21 Time: 06:17

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM(-1)	-0.272893	0.130208	-2.095821	0.0478
C	1.228709	0.596383	2.060268	0.0514

R-squared	0.166429	Mean dependent var	0.141660
Adjusted R-squared	0.128539	S.D. dependent var	1.544772
S.E. of regression	1.442077	Akaike info criterion	3.649701
Sum squared resid	45.75088	Schwarz criterion	3.747872
Log likelihood	-41.79641	Hannan-Quinn criter.	3.675746
F-statistic	4.392464	Durbin-Watson stat	1.849621
Prob(F-statistic)	0.047823		

Null Hypothesis: D(REM) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.613336	0.0014
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(REM,2)

Method: Least Squares

Date: 10/09/21 Time: 06:18

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REM(-1))	-1.026610	0.222531	-4.613336	0.0002
C	0.131777	0.339682	0.387942	0.7020

R-squared	0.503345	Mean dependent var	-0.079458
Adjusted R-squared	0.479695	S.D. dependent var	2.237825
S.E. of regression	1.614192	Akaike info criterion	3.878487
Sum squared resid	54.71792	Schwarz criterion	3.977226
Log likelihood	-42.60260	Hannan-Quinn criter.	3.903320
F-statistic	21.28287	Durbin-Watson stat	1.958401
Prob(F-statistic)	0.000150		

Null Hypothesis: REM has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.121952	0.2383
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1.906287
HAC corrected variance (Bartlett kernel)	2.016989

Phillips-Perron Test Equation

Dependent Variable: D(REM)

Method: Least Squares

Date: 10/09/21 Time: 06:20

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM(-1)	-0.272893	0.130208	-2.095821	0.0478
C	1.228709	0.596383	2.060268	0.0514

R-squared	0.166429	Mean dependent var	0.141660
Adjusted R-squared	0.128539	S.D. dependent var	1.544772
S.E. of regression	1.442077	Akaike info criterion	3.649701
Sum squared resid	45.75088	Schwarz criterion	3.747872
Log likelihood	-41.79641	Hannan-Quinn criter.	3.675746
F-statistic	4.392464	Durbin-Watson stat	1.849621
Prob(F-statistic)	0.047823		

Null Hypothesis: D(INS) has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.08600	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.219212
HAC corrected variance (Bartlett kernel)	0.273977

Phillips-Perron Test Equation

Dependent Variable: D(INS,2)

Method: Least Squares

Date: 10/09/21 Time: 06:22

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INS(-1))	-1.757511	0.122972	-14.29198	0.0000
C	0.060157	0.102416	0.587381	0.5632

R-squared	0.906775	Mean dependent var	-0.041233
Adjusted R-squared	0.902335	S.D. dependent var	1.567899
S.E. of regression	0.489989	Akaike info criterion	1.494074
Sum squared resid	5.041878	Schwarz criterion	1.592813
Log likelihood	-15.18186	Hannan-Quinn criter.	1.518907
F-statistic	204.2608	Durbin-Watson stat	1.137957
Prob(F-statistic)	0.000000		

Null Hypothesis: FD has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.786043	0.0758
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FD)

Method: Least Squares

Date: 10/09/21 Time: 06:23

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD(-1)	-0.371708	0.133418	-2.786043	0.0114
D(FD(-1))	0.443152	0.189435	2.339329	0.0298
C	4.278046	1.538448	2.780754	0.0115

R-squared	0.341317	Mean dependent var	0.221794
Adjusted R-squared	0.275449	S.D. dependent var	2.381936
S.E. of regression	2.027517	Akaike info criterion	4.372609
Sum squared resid	82.21653	Schwarz criterion	4.520717
Log likelihood	-47.28500	Hannan-Quinn criter.	4.409857
F-statistic	5.181815	Durbin-Watson stat	1.854423
Prob(F-statistic)	0.015373		

Null Hypothesis: D(FD) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.149176	0.0046
Test critical values:	1% level	-3.788030	
	5% level	-3.012363	
	10% level	-2.646119	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FD,2)

Method: Least Squares

Date: 10/09/21 Time: 06:24

Sample (adjusted): 2000 2020

Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FD(-1))	-1.367225	0.329517	-4.149176	0.0007
D(FD(-1),2)	0.616649	0.248365	2.482837	0.0238
D(FD(-2),2)	0.421681	0.231970	1.817828	0.0868
C	0.310637	0.488315	0.636141	0.5332
R-squared	0.531296	Mean dependent var		0.020235

Adjusted R-squared	0.448584	S.D. dependent var	2.969589
S.E. of regression	2.205139	Akaike info criterion	4.589102
Sum squared resid	82.66487	Schwarz criterion	4.788058
Log likelihood	-44.18557	Hannan-Quinn criter.	4.632280
F-statistic	6.423417	Durbin-Watson stat	2.026452
Prob(F-statistic)	0.004168		

Null Hypothesis: FD has a unit root

Exogenous: Constant

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.042725	0.2679
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	4.385155
HAC corrected variance (Bartlett kernel)	4.385155

Phillips-Perron Test Equation

Dependent Variable: D(FD)

Method: Least Squares

Date: 10/09/21 Time: 06:25

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD(-1)	-0.269308	0.131838	-2.042725	0.0532
C	3.200535	1.512666	2.115824	0.0459

R-squared	0.159430	Mean dependent var	0.248225
Adjusted R-squared	0.121223	S.D. dependent var	2.333175
S.E. of regression	2.187191	Akaike info criterion	4.482769
Sum squared resid	105.2437	Schwarz criterion	4.580940
Log likelihood	-51.79323	Hannan-Quinn criter.	4.508814
F-statistic	4.172727	Durbin-Watson stat	1.312273
Prob(F-statistic)	0.053243		

Null Hypothesis: D(FD) has a unit root

Exogenous: Constant

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.227213	0.0313
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	

	10% level	-2.638752

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	4.961953
HAC corrected variance (Bartlett kernel)	3.498866

Phillips-Perron Test Equation

Dependent Variable: D(FD,2)

Method: Least Squares

Date: 10/09/21 Time: 06:25

Sample (adjusted): 1998 2020

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FD(-1))	-0.707093	0.208798	-3.386502	0.0028
C	0.158334	0.488190	0.324328	0.7489

R-squared	0.353217	Mean dependent var	0.005137
Adjusted R-squared	0.322418	S.D. dependent var	2.832042
S.E. of regression	2.331206	Akaike info criterion	4.613589
Sum squared resid	114.1249	Schwarz criterion	4.712328
Log likelihood	-51.05628	Hannan-Quinn criter.	4.638422
F-statistic	11.46840	Durbin-Watson stat	1.785752
Prob(F-statistic)	0.002785		

Dependent Variable: GDPGR

Method: ARDL

Date: 10/09/21 Time: 06:36

Sample (adjusted): 1997 2020

Included observations: 24 after adjustments

Maximum dependent lags: 1 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (1 lag, automatic): FD GCF INS REM

REM_FD

Fixed regressors: C

Number of models evalulated: 32

Selected Model: ARDL(1, 0, 0, 0, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	0.587867	0.169473	3.468803	0.0029
FD	-1.122071	1.232871	-0.910128	0.3755
GCF	-0.010312	0.151876	-0.067897	0.9467
INS	-2.854039	1.297140	-2.200256	0.0419
REM	-2.122487	1.823892	-1.163713	0.2606
REM_FD	0.191643	0.199886	0.958764	0.3511
C	11.75508	14.94916	0.786337	0.4425

R-squared	0.587942	Mean dependent var	4.898201
Adjusted R-squared	0.442510	S.D. dependent var	3.747841
S.E. of regression	2.798335	Akaike info criterion	5.134419
Sum squared resid	133.1215	Schwarz criterion	5.478018

Log likelihood	-54.61303	Hannan-Quinn criter.	5.225576
F-statistic	4.042724	Durbin-Watson stat	1.458983
Prob(F-statistic)	0.010646		

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

ARDL Bounds Test
Date: 10/09/21 Time: 09:54
Sample: 1997 2020
Included observations: 24
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	1.338675	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Test Equation:

Dependent Variable: D(GDPGR)

Method: Least Squares

Date: 10/09/21 Time: 09:54

Sample: 1997 2020

Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.98442	15.99132	-0.686899	0.5014
FD(-1)	1.054641	1.299144	0.811797	0.4281
GCF(-1)	0.136665	0.174635	0.782573	0.4446
INS(-1)	1.812543	1.659916	1.091948	0.2901
REM(-1)	1.441133	1.895671	0.760223	0.4575
REM_FD(-1)	-0.146250	0.209747	-0.697266	0.4951
GDPGR(-1)	-0.275848	0.208721	-1.321608	0.2038

R-squared	0.320871	Mean dependent var	-0.249591
Adjusted R-squared	0.081178	S.D. dependent var	3.361590
S.E. of regression	3.222259	Akaike info criterion	5.416535
Sum squared resid	176.5102	Schwarz criterion	5.760134
Log likelihood	-57.99842	Hannan-Quinn criter.	5.507692
F-statistic	1.338675	Durbin-Watson stat	1.737528
Prob(F-statistic)	0.294009		

Pairwise Granger Causality Tests

Date: 10/09/21 Time: 10:07

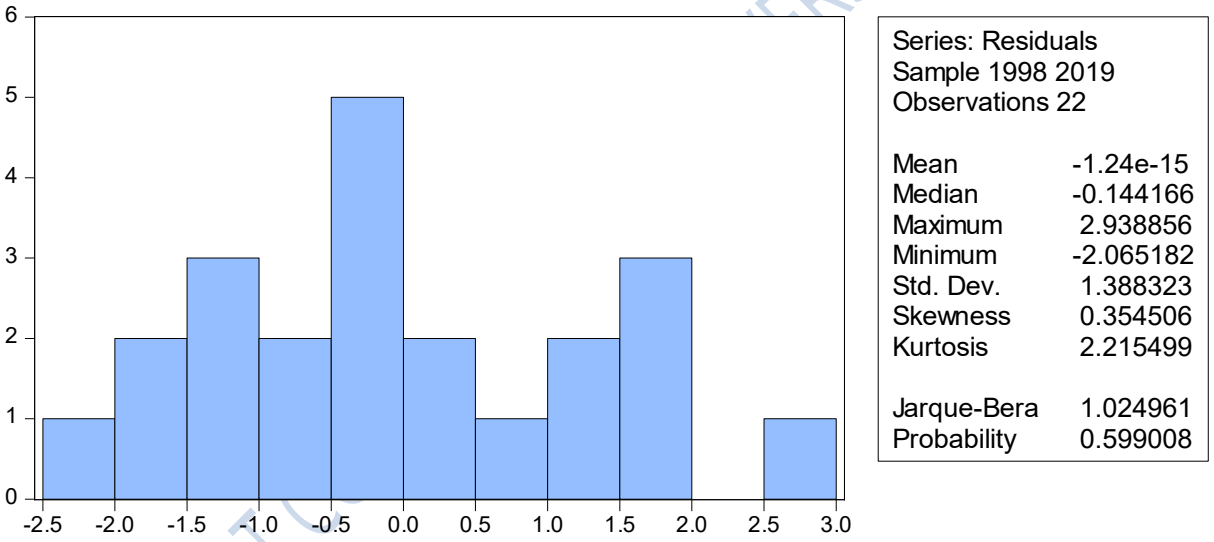
Sample: 1996 2020

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
REM does not Granger Cause GDPGR	23	0.08228	0.9214
GDPGR does not Granger Cause REM		0.14347	0.8673
GCF does not Granger Cause GDPGR	23	1.98453	0.1664
GDPGR does not Granger Cause GCF		1.64170	0.2214
FDI does not Granger Cause GDPGR	22	2.59463	0.1039
GDPGR does not Granger Cause FDI		0.43578	0.6538
FD does not Granger Cause GDPGR	23	0.73470	0.4935
GDPGR does not Granger Cause FD		0.13257	0.8767
GCF does not Granger Cause REM	23	0.75175	0.4858
REM does not Granger Cause GCF		1.06064	0.3669
FDI does not Granger Cause REM	22	1.28475	0.3023
REM does not Granger Cause FDI		0.79859	0.4661
FD does not Granger Cause REM	23	0.26722	0.7685
REM does not Granger Cause FD		16.2060	9.E-05
FDI does not Granger Cause GCF	22	3.11606	0.0703

GCF does not Granger Cause FDI		4.33957	0.0300
FD does not Granger Cause GCF	23	0.44885	0.6453
GCF does not Granger Cause FD		2.45379	0.1142
FD does not Granger Cause FDI	22	1.22467	0.3185
FDI does not Granger Cause FD		2.30564	0.1300

Model Equation 3: Relation between Remittance inflows and financial development in Nigeria.



Dependent Variable: FD
Method: ARDL
Date: 10/09/21 Time: 10:12
Sample (adjusted): 1998 2019
Included observations: 22 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (0 lag, automatic): REM GCF FDI GDPGR INS
Fixed regressors: C
Number of models evalulated: 2

Selected Model: ARDL(2, 0, 0, 0, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FD(-1)	0.970184	0.181657	5.340734	0.0001
FD(-2)	-0.684056	0.180182	-3.796476	0.0020
REM	-0.061513	0.260630	-0.236018	0.8168
GCF	-0.241627	0.080951	-2.984873	0.0098
FDI	1.377254	0.721254	1.909527	0.0769
GDPGR	-0.246990	0.154352	-1.600171	0.1319
INS	1.096589	0.918880	1.193398	0.2525
C	14.14404	3.696208	3.826636	0.0019

R-squared	0.826570	Mean dependent var	11.35895
Adjusted R-squared	0.739855	S.D. dependent var	3.333713
S.E. of regression	1.700341	Akaike info criterion	4.174823
Sum squared resid	40.47625	Schwarz criterion	4.571565
Log likelihood	-37.92305	Hannan-Quinn criter.	4.268283
F-statistic	9.532022	Durbin-Watson stat	2.025104
Prob(F-statistic)	0.000212		

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

ARDL Bounds Test
Date: 10/09/21 Time: 10:13
Sample: 1998 2019
Included observations: 22
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	3.292075	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Test Equation:

Dependent Variable: D(FD)

Method: Least Squares

Date: 10/09/21 Time: 10:13

Sample: 1998 2019

Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FD(-1))	0.685073	0.192443	3.559883	0.0031
C	5.910355	3.918211	1.508432	0.1537
REM(-1)	0.504012	0.333547	1.511069	0.1530
GCF(-1)	-0.037562	0.085982	-0.436856	0.6689
FDI(-1)	-0.971112	0.972952	-0.998109	0.3352
GDPGR(-1)	0.174037	0.189199	0.919863	0.3732
INS(-1)	-0.789395	1.142919	-0.690683	0.5011
FD(-1)	-0.637626	0.182066	-3.502164	0.0035

R-squared	0.620004	Mean dependent var	0.187589
Adjusted R-squared	0.430006	S.D. dependent var	2.432201
S.E. of regression	1.836261	Akaike info criterion	4.328628
Sum squared resid	47.20597	Schwarz criterion	4.725370
Log likelihood	-39.61491	Hannan-Quinn criter.	4.422088
F-statistic	3.263216	Durbin-Watson stat	2.321141
Prob(F-statistic)	0.028389		

Date: 10/28/21 Time: 11:46
Sample (adjusted): 1998 2019
Included observations: 22 after adjustments
Trend assumption: Linear deterministic trend
Series: FD FDI GCF GDPGR INS REM REM_FD
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.999832	416.4544	125.6154	0.0000
At most 1 *	0.993196	225.2776	95.75366	0.0000
At most 2 *	0.891418	115.4913	69.81889	0.0000
At most 3 *	0.809527	66.64589	47.85613	0.0004
At most 4 *	0.593590	30.16448	29.79707	0.0454
At most 5	0.367033	10.35585	15.49471	0.2543
At most 6	0.013295	0.294442	3.841466	0.5874

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.999832	191.1768	46.23142	0.0000
At most 1 *	0.993196	109.7863	40.07757	0.0000
At most 2 *	0.891418	48.84540	33.87687	0.0004
At most 3 *	0.809527	36.48141	27.58434	0.0028
At most 4	0.593590	19.80863	21.13162	0.0757
At most 5	0.367033	10.06141	14.26460	0.2079
At most 6	0.013295	0.294442	3.841466	0.5874

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
0.739885	-2.040541	0.347589	0.353857	-7.659881	0.135076	-0.060665
1.845033	0.746334	0.324940	-0.066915	-5.059442	2.788443	-0.325163
0.507967	-2.835473	-0.006667	0.348024	8.761994	2.055375	-0.064004
1.637240	1.564897	0.035080	-0.192565	2.763377	1.814107	-0.225904
0.547814	-0.371393	-0.026739	0.145286	-2.510160	0.876883	-0.109152
-0.564828	0.550559	0.045080	-0.224980	-3.634249	-1.049855	0.110131
-1.141856	-0.481762	-0.234197	0.382787	10.23566	-0.461597	0.189134

Unrestricted Adjustment Coefficients (alpha):

D(FD)	-0.446555	1.030030	0.277565	-1.545017	0.233822	-0.151227

D(FDI)	0.063868	-0.013118	0.233624	-0.080532	-0.155081	-0.119923
D(GCF)	-0.192843	-1.955239	0.676160	-0.782160	0.749426	0.078445
D(GDPGR)	-1.786166	0.206850	0.464669	0.976444	-0.891328	0.302728
D(INS)	-0.001694	-0.010323	0.164846	-0.128216	0.067857	0.126031
D(REM)	0.015085	-0.392815	-0.039625	0.231045	-0.305535	-0.666259
D(REM_FD)	-3.077591	3.157319	2.830166	-5.810924	-0.245906	-7.202241

1 Cointegrating Equation(s): Log likelihood -132.2494

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	-2.757917	0.469788	0.478260	-10.35280	0.182563	-0.081992
	(0.01931)	(0.00181)	(0.00344)	(0.07842)	(0.00974)	(0.00040)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.330399
	(0.42344)
D(FDI)	0.047255
	(0.08515)
D(GCF)	-0.142682
	(0.51232)
D(GDPGR)	-1.321557
	(0.35873)
D(INS)	-0.001254
	(0.06867)
D(REM)	0.011161
	(0.26450)
D(REM_FD)	-2.277062
	(3.03417)

2 Cointegrating Equation(s): Log likelihood -77.35626

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.213680	0.029546	-3.715677	1.341360	-0.164182
		(0.00391)	(0.00401)	(0.17178)	(0.02002)	(0.00082)
0.000000	1.000000	-0.092863	-0.162700	2.406572	0.420171	-0.029801
		(0.00152)	(0.00156)	(0.06676)	(0.00778)	(0.00032)

Adjustment coefficients (standard error in parentheses)

D(FD)	1.570040	1.679960
	(0.98578)	(1.07747)
D(FDI)	0.023052	-0.140116
	(0.22867)	(0.24994)
D(GCF)	-3.750163	-1.065757
	(0.85592)	(0.93553)
D(GDPGR)	-0.939911	3.799124

	(0.95704)	(1.04605)
D(INS)	-0.020301	-0.004247
	(0.18440)	(0.20155)
D(REM)	-0.713595	-0.323953
	(0.67684)	(0.73979)
D(REM_FD)	3.548297	8.636364
	(7.96393)	(8.70464)

3 Cointegrating Equation(s): Log likelihood -52.93356

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	-0.042891	6.148194	2.789561	-0.200935
			(0.01990)	(0.46093)	(0.07813)	(0.00419)
0.000000	1.000000	0.000000	-0.131220	-1.880165	-0.209202	-0.013829
			(0.00842)	(0.19503)	(0.03306)	(0.00177)
0.000000	0.000000	1.000000	0.338996	-46.16192	-6.777431	0.172001
			(0.09039)	(2.09391)	(0.35494)	(0.01905)

Adjustment coefficients (standard error in parentheses)

D(FD)	1.711033	0.892933	0.177629
	(1.00513)	(1.75000)	(0.23312)
D(FDI)	0.141725	-0.802551	0.016380
	(0.19501)	(0.33953)	(0.04523)
D(GCF)	-3.406696	-2.982991	-0.706873
	(0.79523)	(1.38455)	(0.18444)
D(GDPGR)	-0.703875	2.481567	-0.556736
	(0.95174)	(1.65705)	(0.22074)
D(INS)	0.063435	-0.471663	-0.005042
	(0.16560)	(0.28832)	(0.03841)
D(REM)	-0.733724	-0.211596	-0.122133
	(0.69822)	(1.21566)	(0.16194)
D(REM_FD)	4.985927	0.611504	-0.062668
	(8.06052)	(14.0339)	(1.86951)

4 Cointegrating Equation(s): Log likelihood -34.69285

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	4.494926	1.469913	-0.129353
				(0.68306)	(0.11698)	(0.00639)
0.000000	1.000000	0.000000	0.000000	-6.938195	-4.246551	0.205172
				(2.16807)	(0.37132)	(0.02028)
0.000000	0.000000	1.000000	0.000000	-33.09491	3.652736	-0.393769
				(5.18299)	(0.88767)	(0.04849)
0.000000	0.000000	0.000000	1.000000	-38.54620	-30.76780	1.668957
				(16.0601)	(2.75054)	(0.15024)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.818530	-1.524860	0.123430	0.167173
	(0.62323)	(0.92596)	(0.11329)	(0.12739)
D(FDI)	0.009874	-0.928576	0.013555	0.120292
	(0.24250)	(0.36030)	(0.04408)	(0.04957)
D(GCF)	-4.687280	-4.206991	-0.734311	0.448532
	(0.84311)	(1.25264)	(0.15326)	(0.17234)
D(GDPGR)	0.894798	4.009601	-0.522483	-0.672201
	(0.98857)	(1.46876)	(0.17970)	(0.20207)
D(INS)	-0.146485	-0.672307	-0.009540	0.082151
	(0.19019)	(0.28257)	(0.03457)	(0.03888)
D(REM)	-0.355448	0.149965	-0.114028	-0.026658
	(0.87730)	(1.30345)	(0.15948)	(0.17933)
D(REM_FD)	-4.527950	-8.481997	-0.266514	0.803643
	(9.40464)	(13.9729)	(1.70958)	(1.92240)

5 Cointegrating Equation(s):	Log likelihood	-24.78854

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	0.000000	6.326806	-0.470502
					(0.53707)	(0.03481)
0.000000	1.000000	0.000000	0.000000	0.000000	-11.74346	0.731756
					(1.15087)	(0.07460)
0.000000	0.000000	1.000000	0.000000	0.000000	-32.10724	2.118017
					(3.88552)	(0.25185)
0.000000	0.000000	0.000000	1.000000	0.000000	-72.41805	4.594477
					(6.88505)	(0.44627)
0.000000	0.000000	0.000000	0.000000	1.000000	-1.080528	0.075896
					(0.13212)	(0.00856)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.690439	-1.611700	0.117178	0.201144	-4.215193
	(0.61245)	(0.89478)	(0.10915)	(0.12696)	(3.02128)
D(FDI)	-0.075081	-0.870980	0.017702	0.097761	1.790898
	(0.21924)	(0.32031)	(0.03907)	(0.04545)	(1.08155)
D(GCF)	-4.276734	-4.485323	-0.754350	0.557413	13.25150
	(0.65662)	(0.95931)	(0.11703)	(0.13612)	(3.23919)
D(GDPGR)	0.406516	4.340634	-0.498649	-0.801698	21.64236
	(0.76185)	(1.11306)	(0.13578)	(0.15794)	(3.75832)
D(INS)	-0.109312	-0.697509	-0.011355	0.092010	0.984947
	(0.18762)	(0.27411)	(0.03344)	(0.03889)	(0.92555)
D(REM)	-0.522824	0.263438	-0.105859	-0.071048	2.930080
	(0.86692)	(1.26656)	(0.15451)	(0.17972)	(4.27664)
D(REM_FD)	-4.662661	-8.390669	-0.259939	0.767916	16.95709
	(9.60553)	(14.0336)	(1.71195)	(1.99127)	(47.3854)

6 Cointegrating Equation(s):		Log likelihood	-19.75784			

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-0.046568
						(0.01063)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	-0.055126
						(0.01517)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	-0.033357
						(0.06356)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.257960
						(0.09083)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.003495
						(0.00190)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	-0.067006
						(0.00310)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.605022	-1.694959	0.110361	0.235167	-3.665597	0.943333
	(0.61524)	(0.88820)	(0.10777)	(0.13464)	(3.07995)	(0.93060)
D(FDI)	-0.007345	-0.937004	0.012295	0.124742	2.226728	0.296052
	(0.20468)	(0.29548)	(0.03585)	(0.04479)	(1.02463)	(0.30959)
D(GCF)	-4.321042	-4.442134	-0.750813	0.539764	12.96641	-4.932478
	(0.66837)	(0.96491)	(0.11708)	(0.14627)	(3.34593)	(1.01096)
D(GDPGR)	0.235527	4.507304	-0.485002	-0.869806	20.54217	1.962555
	(0.74380)	(1.07380)	(0.13029)	(0.16277)	(3.72351)	(1.12505)
D(INS)	-0.180498	-0.628121	-0.005673	0.063655	0.526918	0.004395
	(0.16609)	(0.23978)	(0.02910)	(0.03635)	(0.83148)	(0.25123)
D(REM)	-0.146503	-0.103376	-0.135894	0.078847	5.351430	-0.324052
	(0.72697)	(1.04950)	(0.12735)	(0.15909)	(3.63927)	(1.09959)
D(REM_FD)	-0.594634	-12.35592	-0.584619	2.388280	43.13183	11.00939
	(8.14841)	(11.7636)	(1.42738)	(1.78318)	(40.7916)	(12.3251)

Date: 10/28/21 Time: 11:43
Sample: 1996 2020
Included observations: 22
Q-statistic probabilities adjusted for 2 dynamic regressors

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. *| . |	. *| . |	1	-0.118	-0.118	0.3496	0.554
. | . |	. *| . |	2	-0.061	-0.076	0.4487	0.799
. *| . |	. *| . |	3	-0.151	-0.171	1.0848	0.781
. *| . |	. *| . |	4	-0.132	-0.189	1.5997	0.809
. |* . |	. | . |	5	0.092	0.019	1.8648	0.868
. *| . |	. *| . |	6	-0.085	-0.134	2.1009	0.910
. | . |	. | . |	7	0.048	-0.032	2.1827	0.949
.**| . |	.**| . |	8	-0.278	-0.335	5.1063	0.746
. | . |	. *| . |	9	-0.043	-0.204	5.1824	0.818
. | . |	.**| . |	10	-0.019	-0.238	5.1985	0.878
. |**. |	. | . |	11	0.242	0.052	8.0114	0.712
. |* . |	. | . |	12	0.111	-0.044	8.6594	0.732

*Probabilities may not be valid for this equation specification.

Test Equation:

Dependent Variable: RESID

Method: ARDL

Date: 10/09/21 Time: 15:57

Sample: 1998 2019

Included observations: 22

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD(-1)	0.289826	0.351195	0.825258	0.4253
FD(-2)	-0.053943	0.227999	-0.236593	0.8170
REM	-0.192297	0.339467	-0.566467	0.5815
GCF	0.030987	0.096834	0.320005	0.7545
FDI	0.542912	0.947716	0.572864	0.5773
GDPGR	-0.086490	0.185923	-0.465196	0.6501
INS	-0.166683	1.122255	-0.148525	0.8844
C	-3.154259	5.458206	-0.577893	0.5740
RESID(-1)	-0.523158	0.556859	-0.939481	0.3660
RESID(-2)	-0.460825	0.574228	-0.802513	0.4379

R-squared	0.074525	Mean dependent var	-1.24E-15
Adjusted R-squared	-0.619581	S.D. dependent var	1.388323
S.E. of regression	1.766818	Akaike info criterion	4.279192
Sum squared resid	37.45974	Schwarz criterion	4.775121
Log likelihood	-37.07112	Hannan-Quinn criter.	4.396018

F-statistic	0.107369	Durbin-Watson stat	1.778271
Prob(F-statistic)	0.998889		

Descriptive Statistics

	FD	FDI	GCF	GDPGR	INS	REM	REM_FD
Mean	10.96258	1.466989	24.64907	5.147792	-0.836022	3.983425	47.86837
Median	10.42564	1.580200	23.73271	5.612804	-1.084001	4.373494	53.24586
Maximum	19.62560	2.931336	40.61495	15.32916	0.257137	8.311897	123.5226
Minimum	6.174444	0.195183	14.90391	-1.616869	-1.265116	0.580681	3.585380
Std. Dev.	3.459264	0.756280	8.498082	3.472089	0.554765	2.309330	33.79516

Skewness	0.943419	0.211377	0.449156	0.645114	1.387786	-0.036187	0.355666
Kurtosis	3.382551	2.116283	1.927265	4.490370	3.014325	1.759902	2.332345
Jarque-Bera	3.706504	0.959678	1.957726	3.885891	7.704005	1.543081	0.951756
Probability	0.156727	0.618883	0.375738	0.143281	0.021237	0.462300	0.621339
Sum	263.1019	35.20773	591.5777	123.5470	-20.06453	95.60219	1148.841
Sum Sq. Dev.	275.2296	13.15507	1661.000	277.2743	7.078587	122.6591	26268.59
Observations	24	24	24	24	24	24	24

Date: 10/28/21 Time: 11:46
Sample (adjusted): 1998 2019
Included observations: 22 after adjustments
Trend assumption: Linear deterministic trend
Series: FD FDI GCF GDPGR INS REM REM_FD
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.999832	416.4544	125.6154	0.0000
At most 1 *	0.993196	225.2776	95.75366	0.0000
At most 2 *	0.891418	115.4913	69.81889	0.0000
At most 3 *	0.809527	66.64589	47.85613	0.0004

At most 4 *	0.593590	30.16448	29.79707	0.0454
At most 5	0.367033	10.35585	15.49471	0.2543
At most 6	0.013295	0.294442	3.841466	0.5874

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.999832	191.1768	46.23142	0.0000
At most 1 *	0.993196	109.7863	40.07757	0.0000
At most 2 *	0.891418	48.84540	33.87687	0.0004
At most 3 *	0.809527	36.48141	27.58434	0.0028
At most 4	0.593590	19.80863	21.13162	0.0757
At most 5	0.367033	10.06141	14.26460	0.2079
At most 6	0.013295	0.294442	3.841466	0.5874

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
0.739885	-2.040541	0.347589	0.353857	-7.659881	0.135076	-0.060665
1.845033	0.746334	0.324940	-0.066915	-5.059442	2.788443	-0.325163
0.507967	-2.835473	-0.006667	0.348024	8.761994	2.055375	-0.064004
1.637240	1.564897	0.035080	-0.192565	2.763377	1.814107	-0.225904
0.547814	-0.371393	-0.026739	0.145286	-2.510160	0.876883	-0.109152
-0.564828	0.550559	0.045080	-0.224980	-3.634249	-1.049855	0.110131
-1.141856	-0.481762	-0.234197	0.382787	10.23566	-0.461597	0.189134

Unrestricted Adjustment Coefficients (alpha):

D(FD)	-0.446555	1.030030	0.277565	-1.545017	0.233822	-0.151227
D(FDI)	0.063868	-0.013118	0.233624	-0.080532	-0.155081	-0.119923
D(GCF)	-0.192843	-1.955239	0.676160	-0.782160	0.749426	0.078445
D(GDPGR)	-1.786166	0.206850	0.464669	0.976444	-0.891328	0.302728
D(INS)	-0.001694	-0.010323	0.164846	-0.128216	0.067857	0.126031
D(REM)	0.015085	-0.392815	-0.039625	0.231045	-0.305535	-0.666259
D(REM_FD)	-3.077591	3.157319	2.830166	-5.810924	-0.245906	-7.202241

1 Cointegrating Equation(s):	Log likelihood	-132.2494

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	-2.757917	0.469788	0.478260	-10.35280	0.182563	-0.081992
	(0.01931)	(0.00181)	(0.00344)	(0.07842)	(0.00974)	(0.00040)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.330399
	(0.42344)
D(FDI)	0.047255
	(0.08515)
D(GCF)	-0.142682
	(0.51232)
D(GDPGR)	-1.321557
	(0.35873)
D(INS)	-0.001254
	(0.06867)
D(REM)	0.011161
	(0.26450)
D(REM_FD)	-2.277062
	(3.03417)

2 Cointegrating Equation(s):	Log likelihood	-77.35626

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.213680	0.029546	-3.715677	1.341360	-0.164182
		(0.00391)	(0.00401)	(0.17178)	(0.02002)	(0.00082)
0.000000	1.000000	-0.092863	-0.162700	2.406572	0.420171	-0.029801
		(0.00152)	(0.00156)	(0.06676)	(0.00778)	(0.00032)

Adjustment coefficients (standard error in parentheses)

D(FD)	1.570040	1.679960
	(0.98578)	(1.07747)
D(FDI)	0.023052	-0.140116
	(0.22867)	(0.24994)
D(GCF)	-3.750163	-1.065757
	(0.85592)	(0.93553)
D(GDPGR)	-0.939911	3.799124
	(0.95704)	(1.04605)
D(INS)	-0.020301	-0.004247
	(0.18440)	(0.20155)
D(REM)	-0.713595	-0.323953
	(0.67684)	(0.73979)
D(REM_FD)	3.548297	8.636364
	(7.96393)	(8.70464)

3 Cointegrating Equation(s):	Log likelihood	-52.93356

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	-0.042891	6.148194	2.789561	-0.200935
			(0.01990)	(0.46093)	(0.07813)	(0.00419)
0.000000	1.000000	0.000000	-0.131220	-1.880165	-0.209202	-0.013829
			(0.00842)	(0.19503)	(0.03306)	(0.00177)
0.000000	0.000000	1.000000	0.338996	-46.16192	-6.777431	0.172001
			(0.09039)	(2.09391)	(0.35494)	(0.01905)

Adjustment coefficients (standard error in parentheses)

D(FD)	1.711033	0.892933	0.177629
	(1.00513)	(1.75000)	(0.23312)
D(FDI)	0.141725	-0.802551	0.016380
	(0.19501)	(0.33953)	(0.04523)
D(GCF)	-3.406696	-2.982991	-0.706873
	(0.79523)	(1.38455)	(0.18444)
D(GDPGR)	-0.703875	2.481567	-0.556736
	(0.95174)	(1.65705)	(0.22074)
D(INS)	0.063435	-0.471663	-0.005042
	(0.16560)	(0.28832)	(0.03841)
D(REM)	-0.733724	-0.211596	-0.122133
	(0.69822)	(1.21566)	(0.16194)
D(REM_FD)	4.985927	0.611504	-0.062668
	(8.06052)	(14.0339)	(1.86951)

4 Cointegrating Equation(s):	Log likelihood	-34.69285

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	4.494926	1.469913	-0.129353
				(0.68306)	(0.11698)	(0.00639)
0.000000	1.000000	0.000000	0.000000	-6.938195	-4.246551	0.205172
				(2.16807)	(0.37132)	(0.02028)
0.000000	0.000000	1.000000	0.000000	-33.09491	3.652736	-0.393769
				(5.18299)	(0.88767)	(0.04849)
0.000000	0.000000	0.000000	1.000000	-38.54620	-30.76780	1.668957
				(16.0601)	(2.75054)	(0.15024)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.818530	-1.524860	0.123430	0.167173
	(0.62323)	(0.92596)	(0.11329)	(0.12739)
D(FDI)	0.009874	-0.928576	0.013555	0.120292
	(0.24250)	(0.36030)	(0.04408)	(0.04957)
D(GCF)	-4.687280	-4.206991	-0.734311	0.448532
	(0.84311)	(1.25264)	(0.15326)	(0.17234)
D(GDPGR)	0.894798	4.009601	-0.522483	-0.672201
	(0.98857)	(1.46876)	(0.17970)	(0.20207)
D(INS)	-0.146485	-0.672307	-0.009540	0.082151

	(0.19019)	(0.28257)	(0.03457)	(0.03888)
D(REM)	-0.355448	0.149965	-0.114028	-0.026658
	(0.87730)	(1.30345)	(0.15948)	(0.17933)
D(REM_FD)	-4.527950	-8.481997	-0.266514	0.803643
	(9.40464)	(13.9729)	(1.70958)	(1.92240)

5 Cointegrating Equation(s): Log likelihood -24.78854

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	0.000000	6.326806	-0.470502
					(0.53707)	(0.03481)
0.000000	1.000000	0.000000	0.000000	0.000000	-11.74346	0.731756
					(1.15087)	(0.07460)
0.000000	0.000000	1.000000	0.000000	0.000000	-32.10724	2.118017
					(3.88552)	(0.25185)
0.000000	0.000000	0.000000	1.000000	0.000000	-72.41805	4.594477
					(6.88505)	(0.44627)
0.000000	0.000000	0.000000	0.000000	1.000000	-1.080528	0.075896
					(0.13212)	(0.00856)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.690439	-1.611700	0.117178	0.201144	-4.215193
	(0.61245)	(0.89478)	(0.10915)	(0.12696)	(3.02128)
D(FDI)	-0.075081	-0.870980	0.017702	0.097761	1.790898
	(0.21924)	(0.32031)	(0.03907)	(0.04545)	(1.08155)
D(GCF)	-4.276734	-4.485323	-0.754350	0.557413	13.25150
	(0.65662)	(0.95931)	(0.11703)	(0.13612)	(3.23919)
D(GDPGR)	0.406516	4.340634	-0.498649	-0.801698	21.64236
	(0.76185)	(1.11306)	(0.13578)	(0.15794)	(3.75832)
D(INS)	-0.109312	-0.697509	-0.011355	0.092010	0.984947
	(0.18762)	(0.27411)	(0.03344)	(0.03889)	(0.92555)
D(REM)	-0.522824	0.263438	-0.105859	-0.071048	2.930080
	(0.86692)	(1.26656)	(0.15451)	(0.17972)	(4.27664)
D(REM_FD)	-4.662661	-8.390669	-0.259939	0.767916	16.95709
	(9.60553)	(14.0336)	(1.71195)	(1.99127)	(47.3854)

6 Cointegrating Equation(s): Log likelihood -19.75784

Normalized cointegrating coefficients (standard error in parentheses)

FD	FDI	GCF	GDPGR	INS	REM	REM_FD
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-0.046568
						(0.01063)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	-0.055126
						(0.01517)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	-0.033357
						(0.06356)

0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.257960
						(0.09083)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.003495
						(0.00190)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	-0.067006
						(0.00310)

Adjustment coefficients (standard error in parentheses)

D(FD)	-0.605022	-1.694959	0.110361	0.235167	-3.665597	0.943333
	(0.61524)	(0.88820)	(0.10777)	(0.13464)	(3.07995)	(0.93060)
D(FDI)	-0.007345	-0.937004	0.012295	0.124742	2.226728	0.296052
	(0.20468)	(0.29548)	(0.03585)	(0.04479)	(1.02463)	(0.30959)
D(GCF)	-4.321042	-4.442134	-0.750813	0.539764	12.96641	-4.932478
	(0.66837)	(0.96491)	(0.11708)	(0.14627)	(3.34593)	(1.01096)
D(GDPGR)	0.235527	4.507304	-0.485002	-0.869806	20.54217	1.962555
	(0.74380)	(1.07380)	(0.13029)	(0.16277)	(3.72351)	(1.12505)
D(INS)	-0.180498	-0.628121	-0.005673	0.063655	0.526918	0.004395
	(0.16609)	(0.23978)	(0.02910)	(0.03635)	(0.83148)	(0.25123)
D(REM)	-0.146503	-0.103376	-0.135894	0.078847	5.351430	-0.324052
	(0.72697)	(1.04950)	(0.12735)	(0.15909)	(3.63927)	(1.09959)
D(REM_FD)	-0.594634	-12.35592	-0.584619	2.388280	43.13183	11.00939
	(8.14841)	(11.7636)	(1.42738)	(1.78318)	(40.7916)	(12.3251)